PUBLIC DEBT:

the Brazilian experience

Anderson Caputo Silva
Lena Oliveira de Carvalho
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(Editors)

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the Brazilian experience

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English adaptation: Barbara Koeppel

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SUMMARY

Foreword by the National Treasury Secretariat 07

Foreword by the World Bank 09

Acknowledgements 11

Preface 13

Introduction 17

Part I – UNDERSTANDING THE BRAZILIAN PUBLIC DEBT

Chapter 1 Origin and history of Brazil's public debt up to 1963 31
Anderson Caputo Silva

Chapter 2 History of public debt in Brazil:1964 to the present 53
Guilherme Binato Villela Pedras

Chapter 3 Public debt sustainability 73
Carlos Eugênio Ellery Lustosa da Costa

Chapter 4 Public debt concepts and statistics 91
Aline Dieguez B. de Meneses Silva and Otavio Ladeira de Medeiros

Part II – MANAGING THE BRAZILIAN PUBLIC DEBT

Chapter 1 Institutional structure and recent developments in Federal Public Debt management 117
Karla de Lima Rocha

Chapter 2 Strategic planning of the Federal Public Debt 131
Anderson Caputo Silva and Luiz Fernando Alves

Chapter 3 Federal Public Debt risk management 151
Anderson Caputo Silva, Rodrigo Cabral and William Baghdassarian

Chapter 4 The Federal Public Debt budget 193
Antônio de Pádua Ferreira Passos and Priscila de Souza Cavalcante Castro

Chapter 5 Regulatory frameworks and government auditing of public debt 213
Laércio M. Vieira

Part III – THE PUBLIC DEBT MARKET IN BRAZIL

Chapter 1 Recent evolution of the Federal Public Debt market 247
Anderson Caputo Silva, Fernando Eurico de Paiva Garrido and Lena Oliveira de Carvalho

Chapter 2 Pricing federal public securities 269
Márcia Fernanda Tapajós Tavares and Ronnie Gonzaga Tavares

Chapter 3 Organization of Brazil's financial market 301
Guilherme Binato Villela Pedras and Helena Mulim Venceslau

Chapter 4 Primary market of the Federal Public Debt 319
José Franco Medeiros de Morais and Lena Oliveira de Carvalho

Chapter 5 The investor base of the Federal Public Debt in Brazil 341
Jeferson Luis Bittencourt

Chapter 6 The secondary market for Federal Public Debt 369
Fabiano Maia Pereira, Guilherme Binato Villela Pedras and José Antônio Gragnani

Chapter 7 Treasury Direct: Internet public securities retail sales program 393
André Proite

Statistical annex 413
Remissive index 433
Acronyms 439
About the authors 447

Foreword by the National Treasury Secretariat

It is a great pleasure to introduce this book, which took shape as the fruit of a productive partnership between the Brazilian National Treasury and the World Bank. As can be seen in its very first lines, the book offers readers an in-depth view of Brazil's experience in managing its public debt. To that effect, the authors focused on the role of good debt management in reducing the costs and risks of government liabilities, and described the National Treasury's institutional evolution, along with that of Brazil's capital market - which were both key to achieving today's results.

Brazil is profoundly committed to transparency and sound public debt management practices. These objectives can only be attained through prudent fiscal policies that eliminate uncertainties about the sustainability of the debt. As said before, it was within this framework that the National Treasury has sought to manage the Federal Public Debt (FPD) in ways that would minimize its financing costs and reduce risks to prudent levels.

Over the past 10 years, Brazil has strengthened these practices so impressively that in early 2008, already with the perspectives of a strong financial crisis in the world ahead, the main rating agencies assigned Brazil the investment grade. It is also worth noting that, despite the serious financial crisis that actually erupted in 2008 - indeed, the worse since 1929 - Brazil's credibility with domestic and international investors remains high. The country's success in efficiently managing its public debt has also contributed to achieving macroeconomic stability, which allows us to envision a better future for all Brazilians.

The gains in this area are due mostly to the efforts of the National Treasury's technical team, whose high skill levels and commitment have allowed Brazil to be recognized as an international benchmark in public debt management.

We believe this book will help investors, financial analysts, rating agencies, researchers, journalists and our citizens better understand the country's public debt from its origin to the current state of the art. Moreover, we hope that other countries can find elements in the Brazilian experience that contribute to their own domestic debates and add interesting ideas to discussions among public debt managers around the world.

With innovative ideas like this, the National Treasury contributes to strengthen institutions and improve public management in Brazil. Producing this book was an integral part of that ongoing process, as it presents the unique experiences of current and former dedicated employees, along with other collaborators, who chronicle the rich history of debt since the 16th century and describe the concepts, institutional advances, development of the capital market, the creation of the Treasury Direct program and the Brazilian framework to manage public debt. Together, these features offer a pioneering publication that contributes to knowledge and understanding of an area that had not been previously explored.

Arno Hugo Augustin
Secretary of the National Treasury

Paulo Fontoura Valle
Under Secretary of the National Treasury

Foreword by the World Bank

It is a pleasure and a privilege for the World Bank to have been a partner to the Brazilian National Treasury in the development and launching of this book. It is a good example of the ongoing broad collaboration between the World Bank and the Brazilian government.

Public debt, debt management and the development of markets for government securities are core topics for development worldwide. The World Bank has been a partner to many countries both by providing international knowledge as well as by learning from their experiences. Since the late 1990s, with the Asian crisis and the turmoil that affected several emerging countries, it has become even clearer the relevance of good public debt management to support the implementation of efficient public policies and safeguard the quality of a country's credit. Likewise, increasing attention has been given to the importance of developing markets for domestic public securities as a way to reduce the economy's vulnerability to exogenous shocks, establish benchmarks for private sector issuances, and strengthen the financial system stability. These factors are all essential ingredients to ensure sustainable growth, support the productive sector and fight poverty.

In view of the relevance of these themes, the World Bank has sought to gather the best knowledge and analysis to formulate solid conceptual principles, encourage scientific production and, most importantly, provide technical assistance to support government reform programs in the areas of public debt management and market development. Therefore, one of the Bank's key roles is the continuous dissemination of good international practices and experiences about these themes and the assistance to countries that wish to improve their debt management practices. This book embodies this intention.

The partnership with the Brazilian National Treasury is a foremost example of the World Bank's contribution to support such national programs, especially in an already advanced and sophisticated setting such as Brazil. The Bank has followed closely the professionalization process of public debt management in Brazil - including a technical assistance loan - especially in the areas of risk management, governance, optimization of procedure flows among the departments responsible for managing the debt and, more recently, the development of a debt management integrated technological information system. In addition to their relevance in the Brazilian context, the experiences and lessons described in this book will certainly be examples of good practices to other countries facing challenges similar to those experienced by Brazil.

As it will become clear to the reader, the work of the Brazilian National Treasury yielded some very important economic dividends, and contributed to the country's advantaged international profile. The World Bank is proud of its support not only to the ongoing public management improvements in Brazil - including that of sub-national entities - but also the development of the country's capital markets, both of which are fundamental for the country's growth and development in the long run.

Makhtar Diop
World Bank Director for Brazil

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The editors

Preface

by Murilo Portugal Filho[1]

Due to its baffling history, the Brazilian public debt has for long endured a negative image with the public. Public debt has been associated not only with the payment of high interest rates as a proportion of fiscal revenue and gross domestic product but also with the periodical occurrence of explicit default, problems which unfortunately have been recurrent throughout our history.

However, these negative events do not stem from a problem inherent to the essential nature of public debt. Public indebtedness is a suitable instrument for financing public investment in the construction of high cost and long lasting assets like a hydroelectric plant, a port or a road. In this case, public indebtedness enables the equitable distribution among taxpayers of the present and the future, of the costs and risks involved in the construction of assets that will generate long term benefits and earnings supposedly higher than their cost for several generations of taxpayers to come. Public debt also allows purchasers of public securities to save their income in the present and transfer to the future purchasing power, increased by the positive yields of such investment, in a way that is much safer than that usually available through private securities. When used to finance productive public investment, public debt can work both as a mechanism of intergenerational equity and a low risk mechanism to intertemporal consumption transfer, with positive social results for all. Public debt is also a very useful instrument to finance emergency expenses, even when these are not investment expenses such as the ones that occur in times of public disasters or other temporary shocks, including wars. In fact, Brazilian public debt emerged to finance the independence war.

The problems related to high interest rates and default are due mainly to the continuous misuse of public debt to finance the public deficit generated by current expenditures. Payment of current government expenses should be normally made using taxes and not public debt, which involves paying interest. Financing a large and growing share of government consumption with debts that are subject to interest payments implies destroying public wealth. The rationale of compounded interest rates leads to the inevitable conclusion that this procedure is unsustainable in the long run. As time goes by, the growing weight of interest payments on the public budget and the need to increase the tax burden of the present generation so as to bear these costs make default increasingly appealing to the political system, which usually likes to spend but does not like to tax. This temptation gets bigger when creditors are foreigners and do not vote.

The problems related to high interest rates and explicit default result mainly from abandoning the classical principles of using public debt only to finance public investment or pay for emergency and extraordinary expenses, instead of using indebtedness simply to satisfy the penchant for spending without taxing.

Obviously, there are other types of mistakes that can contribute to making public debt management a hard road to travel. The bad choice and ineffective execution of public investment projects have certainly been serious problems in Brazil, which have reduced the expected ex ante yield rates of public investment, thus increasing the weight of financing these projects on future tax revenues. Debt mismanagement is another possibility, even when debt has been originally issued based on prudent principles. However, this type of

[1] Murilo Portugal Filho was National Treasury Secretary between 1992 and 1996 and Executive Director of the World Bank from 1996 to 2000. He also held other important offices at the Ministry of Finance and the IMF, where he is currently Deputy Managing Director.

problem has decreased considerably as a result of the growing improvement in public debt management, as convincingly shown in this book. I, therefore, believe that it was the abuse of public debt stemming from the proclivity of the political system to spend without taxing that tarnished its reputation.

The problem is similar to the misuse, also seen in Brazil, of the Keynesian monetary financing theory. In times of recession, when the existing productive capacity is clearly underused and there is an indisputable lack of private demand, it is not only possible but also recommended that public deficits be financed, in order to increase aggregate demand, through the third form of public financing (in addition to taxation and indebtedness) available to countries with independent monetary regimes, i.e., creating currency. However, financing deficit by creating currency is only recommended in a very limited number of circumstances, and excessive issuances have historically resulted in inflation, which is an implicit form of default and taxation.

Macroeconomic instability in the form of high and volatile inflation generates, in turn, public debt management problems that are difficult to tackle. In times of high and volatile inflation, buyers of public securities seek protection from either uncertainty or the growing probability of future default demanding increasingly higher real interest rates, shorter maturities and linking public debt to variables that are subject to high macroeconomic uncertainty such as exchange rates and future interest rates. This generates a public debt structure that is highly vulnerable to shocks and exposes public finances to high costs.

It is up to the government to provide macroeconomic stability and, if it does not, it has unfortunately to bear the high costs of public debt, instead of trying to pass them on to private savers. Attempts to transfer to savers the high costs of inflation and macroeconomic instability lead to a decrease in domestic savings, with capital flight to save overseas, flight from domestic currency, and finally the "dollarization" of the economy, as has been the case in many Latin American countries. These are not problems that can be solved through public debt management, regardless of how good it might be. They require changes in macroeconomic management.

Fortunately, these difficulties have been gradually overcome in Brazil since 1994, when inflation was controlled by the Real Plan. This allowed the public debt structure to begin improving, with longer terms to maturity and less indexed debt. However, change is difficult, takes time and inflation control is just the first step. As shown in this book, the small advances made in improving the public debt structure after 1995 suffered a setback in 1997 with the Asian crisis, and in 1998 with the Brazilian exchange rate crisis, which led to an increase in outstanding public debt as well as deterioration in its profile.

The greater institutionalization of monetary responsibility afforded by the adoption of a flexible exchange rate regime and inflation targeting, coupled with the renegotiation of state debts in 1997 and enforcement of the Fiscal Responsibility Law approved in 2000 were other important steps towards improving macroeconomic management.

I believe that the importance of maintaining a sound macroeconomic management has been gradually laying roots in the Brazilian society and among voters, which have shown to be less tolerant of monetary or fiscal irresponsibility, with positive repercussion in the political system. Maintaining monetary and fiscal responsibility, as evinced by the mature posture shown after the 2002 election, ensured a significant decrease in public debt risk. This opportunity was fully used by public debt managers who, since 2003, have implemented an overarching and significant improvement in the profile of the Brazilian public debt, with a meaningful decrease in indexed debt and an increase in maturity, which have endured in spite of new shocks, as described in this book.

With macroeconomic stability, the responsibility of public debt managers will grow. But as this book, which was competently written by practitioners of public debt management in Brazil, so appropriately shows, they are prepared for this challenge.

This book is an important contribution to understanding the problems and limitations related to public debt management in Brazil. It describes the theme in an overarching and consolidated fashion, efficiently covering its different aspects and gathering information available until then only from scattered sources. It, therefore, fills an important gap in the empirical knowledge of the theme in Brazil.

The authors start by presenting a historical, theoretical and conceptual framework, which is required for understanding the theme. The history of public debt in Brazil, from its origin to date, is presented in a summarized way, which nevertheless highlights its most important landmarks. The different theoretical models that define the fiscal and intertemporal sustainability of debt are presented and discussed in a competent way. The statistical concepts and definitions used in Brazil are also described and compared with good international practices.

The original contribution of this book lies in the authors' detailed description of how public debt is addressed by the two major players in the theme: the government and the market. The book also presents the mechanisms used for managing existing government debts and the major advances achieved in this institutional structure, as well as the organization of debt markets in Brazil.

With respect to the government side, the book describes the strategic planning, risk management, budget, control, and audit mechanisms of the Brazilian public debt. The descriptions of how fiscal and monetary policies are actually coordinated, the definition of an optimal debt structure, the use of information technology systems, and probabilistic risk management models provide an important original source for researchers willing to find out how the management system operates. In many cases, the information provided here had not been publicly available in an organized, consolidated and accessible fashion until now.

The book also offers valuable information on pricing, primary and secondary market operation, composition of the investor base, the role of the main institutions responsible for maintaining the market and the development of the retail market through Treasury Direct.

This book is a valuable effort to organize and systematize information on the theme. It also has the great advantage of having been written by authors with both theoretical knowledge and practical experience on the theme. This indeed enriches the presentation. It also enables evaluating the huge progress Brazil has attained in the area of public debt management. I am absolutely certain that by bringing the theme to public knowledge the authors have substantially contributed to improve the understanding and image of the Brazilian public debt in our country as well as overseas.

Introduction

Public debt is an often misunderstood theme. However, given its sweeping effect on a country's economy and social well-being, it must be explored. Thus, the book's authors, mostly public debt managers, describe the way Brazil handles its foreign and domestic debt, as well as the sequence of events that led to current practices, which are recognized on the international scene as highly effective.

Public debt functions: an overview

Just as citizens' prudent use of credit can help them improve their welfare – acquiring assets such as homes - so too can countries use public debt to improve social well-being and ensure economic stability.

Experts point to the importance of public debt in government investments and services and greater equity between generations – since revenues and expenditures are subject to cycles and frequent shocks. Indeed, without public credit, governments would have to increase taxes or massively cut expenditures, which could punish part of the population – often the most vulnerable.

Besides helping governments stabilize their levels of social services, access to public debt also allows them to cover emergency expenses (such as related to natural disasters or wars) and ensures that large projects with medium and long time-frames (say, for infrastructure) can be pursued. Thus, the widespread use of debt by every country in the world is hardly surprising.

Moreover, public securities assume an even broader role for achieving a sound economy as it is an instrument for devising monetary policy and consolidating the financial system: They are essential to central banks which use them daily to control market liquidity and stabilize the currency. Also, they are vital to the private sector, since they serve as key benchmarks for issuing corporate bonds. Thus, a well-developed public and corporate bond market can improve a financial system's efficiency in allocating funds and stabilize a country's finances and macroeconomy.[1]

The basic lesson from this discussion is the critical nature of public credit. Again, the analogy to individuals is useful: With sound credit, people can reduce the cost of borrowing and enjoy longer re-payment terms. The same is true of governments, whose borrowing conditions affect their credibility and payment capacity, which, in turn, are strengthened by good economic foundations linked to prudent fiscal, monetary and foreign exchange policies. Indeed, it is through balanced fiscal policies that governments secure a sustainable debt trajectory. Likewise, sound monetary and foreign exchange policies increase economic stability, reducing the costs and risks of public debt.

The way governments manage their debt is also critical, since good foundations alone will not ensure the quality of public credit or a country's capacity to absorb adverse shocks that jeopardize economic stability and public policies. Thus, governments should build capacity of debt managers to make key, sound decisions about financial instruments and optimal debt profiles, including maturity, indexation and types of credit.

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[1] See Eichengreen. *Rationale and obstacles to the development of bond markets in emerging economies*. Gemloc Advisory Services Guest Commentary, 2008. Available at: www.gemloc.org.

The global process to professionalize public debt management

While the public debt management profession is not new, efforts to professionalize its role gained momentum at the end of the 1980s. Since then, many countries have implemented institutional reforms and trained managers to design debt strategies to minimize the cost of government debt in the medium and long term and adopt prudent risk levels.

According to Wheeler (2004),[2] it was fitting that the first countries to substantially develop their debt management capacity – such as Belgium, Ireland and New Zealand - were precisely those with a history of fiscal missteps, high debt-to-gross domestic product (GDP) ratios, and high levels of foreign currency debt. He notes that these countries agreed, since the late 1980s and early 1990s, on the need for more professional debt management along with a sound debt structure (and not just its level); also, that poor debt management decisions could jeopardize the government balance sheet.

In the late 1990s and early 2000s, developing countries, including Brazil, followed the same path to improve professionalism, particularly after the Asian crisis and other economic shocks. Indeed, the advantage of better debt management, so as to improve countries' capacities to monitor risks and absorb domestic and international economic shocks, was abundantly clear. Thus, besides a global wave of institutional reforms in debt management agencies, significant progress was made in debt planning and risk management tools and techniques.

The impetus to develop governments' domestic debt markets was closely linked to the process of improving debt management; both themes have been explored. Indeed, the importance of issuing debt through domestic capital markets - as an alternative to borrowing from the banking sector - and of reducing reliance on international markets, was even more apparent after the Asian crisis of 1997.

While debt managers built technical capacity and models to support supply side decisions - i.e., on the optimal profile of government debt, including types of financing instruments, their indexation, maturity and currency - it was apparent these were linked to domestic debt markets. Also, good debt management would involve identifying opportunities and constraints on the demand side. Not surprisingly, countries such as Brazil, Canada, Korea and Thailand include an efficient domestic market for government securities among their debt-management objectives.

International organizations such as the World Bank and International Monetary Fund (IMF) have played important roles in improving debt management practices and encouraging international discussions with managers from different countries. Besides presenting the debate in "Guidelines for Public Debt Management," they produced "Developing Government Bond Markets: A Handbook," which have become a benchmark for debt managers.[3] They also provide important technical assistance and training and organize seminars where international managers share their experiences and major challenges.[4]

Brazil participated actively in the process, adopting important institutional reforms and training debt managers. As a result, procedures were improved, sophisticated decision-making tools were developed, and transparency was enhanced by clarifying the goals of the debt profile in the Annual Borrowing Plan (ABP). At the same time, the country developed its domestic debt market and improved its domestic and external debt structure.

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[2] Wheeler, Graeme. *Sound practice in government debt management*. World Bank, 2004.

[3] See for example World Bank and IMF, *Guidelines for public debt management*, 2001a; D*eveloping Government bond markets: a handbook*, 2001b; *World Bank, Managing public debt: from diagnostics to reform implementatio*n, 2007a; *Developing the domestic government debt market: from diagnostics to reform implementation*, 2007b

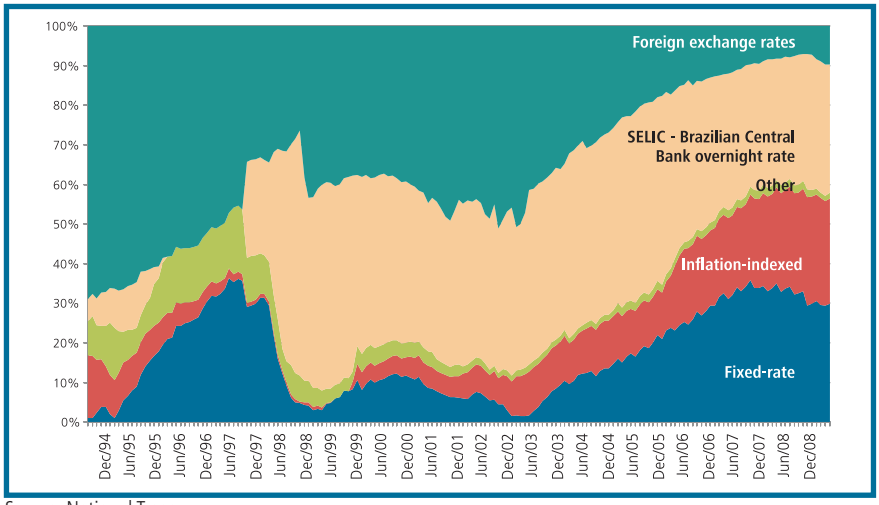
[4] Some examples of events are the *Sovereign Debt Management Forum* jointly organized by the World Bank and the *Global OECD-WB-IMF Bond Market Forum*. Brazil has participated in these events and is frequently invited to describe its experience.

Brazil's improved economic foundations and public debt management

It is axiomatic that the absence of sound foundations limits the scope of public debt management and improvements in the debt structure for which it is responsible. Hardly a theoretical argument, the Brazilian experience demonstrates the close connection. Thus, since the mid 1990s, its improved debt management coincided with successive institutional and macroeconomic advances. This combination, i.e., sounder foundations and qualified debt management, was the backdrop against which Brazil's public credit practices achieved greater credibility and scored high ratings.

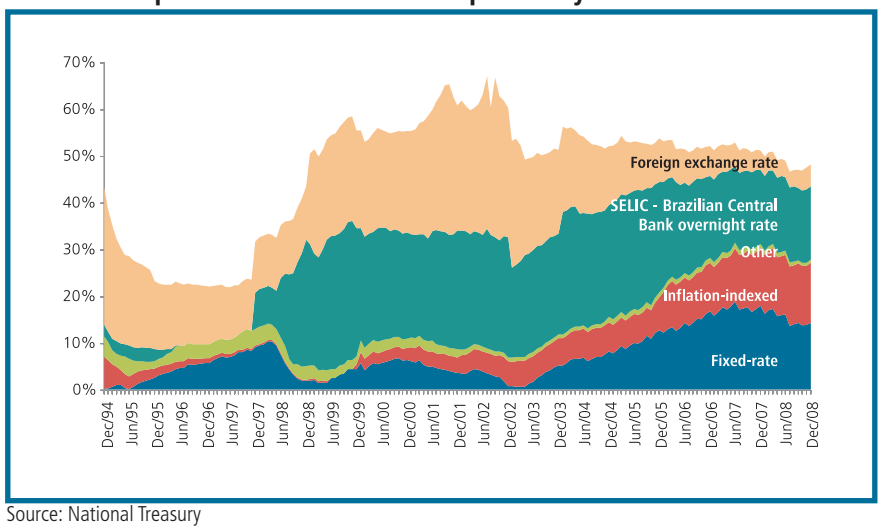
A review of the recent evolution of public debt structure and its relation to advances in macroeconomic policies illustrates this lesson, which is further explored in Part I, Chapter 2 and Part III, Chapter 1.[5] Graphs 1 and 2 show the evolution in the profile and stock of Brazil's Federal Public Debt (FPD)[6] since December 1994.

Graph 1. Federal Public Debt profile by index



Source: National Treasury

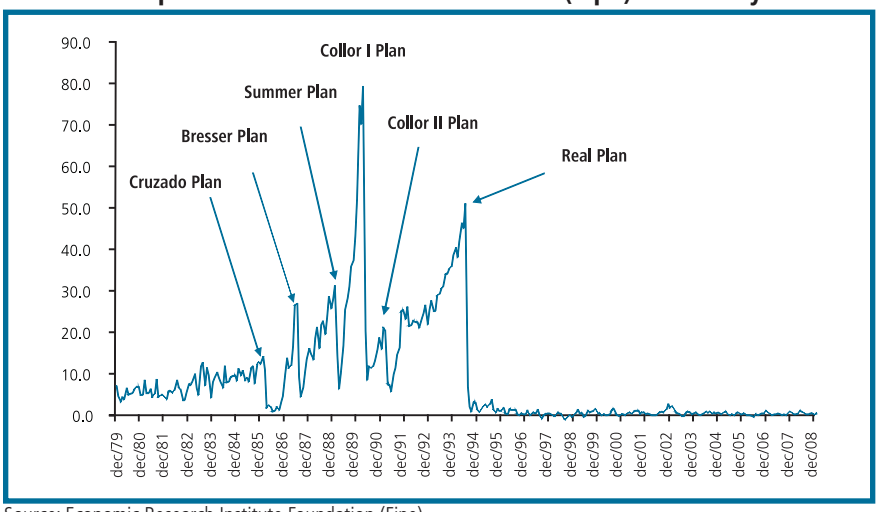
Graph 2. Federal Public Debt profile by index - GDP %



Source: National Treasury

This period is relevant, for it depicts the advances and occasional setbacks since the break with the historic inflation levels of 1994, due to the Real Plan (see Graph 3). An analysis of the FPD profile shows it was essentially formed by exchange and floating-rate debt, while the share of fixed-rate securities was nearly zero and the few that were issued had short maturities, usually no more than two months.

Graph 3. Evolution of inflation – CPI (Fipe) – monthly



Source: Economic Research Institute Foundation (Fipe)

The drop in inflation allowed authorities to stop indexing the debt and led to a continuous increase in fixed-rate debt, which reached 36% of FPD in August 1997. Due to the turmoil that began in Asia during the second half of that year, as well as the increasing confidence crisis that affected emerging economies, Brazil experienced the first major test for the soundness of its economic foundations: The strong pressure on the currency along with the fear of uncontrolled inflation turned debt de-indexation into a difficult and costly process. These events translated into a hike in exchange-indexed debt as well as in floating-rate debt, known as SELIC. In December 1998, the share of fixed-rate securities had dropped to less of 5% of FPD.

In fact, part of the setback in the debt de-indexation process was due to debt managers' greater focus on reducing the refinancing risk. While they continued to issue fixed-rate securities for a few months (with shorter maturities), signs that the crisis was serious and its extension uncertain indicated the need for a temporary change in strategy. At that point, the fear was that debt maturity could become too short[7] and entail maturity concentrations that would negatively affect the government's payment capacity and thus aggravate the crisis even further.

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[5] See Part I, Chapter 2: "History of public debt in Brazil: from 1964 to present"; and Part III, Chapter 1: "Recent Developments in the Federal Public Debt market".

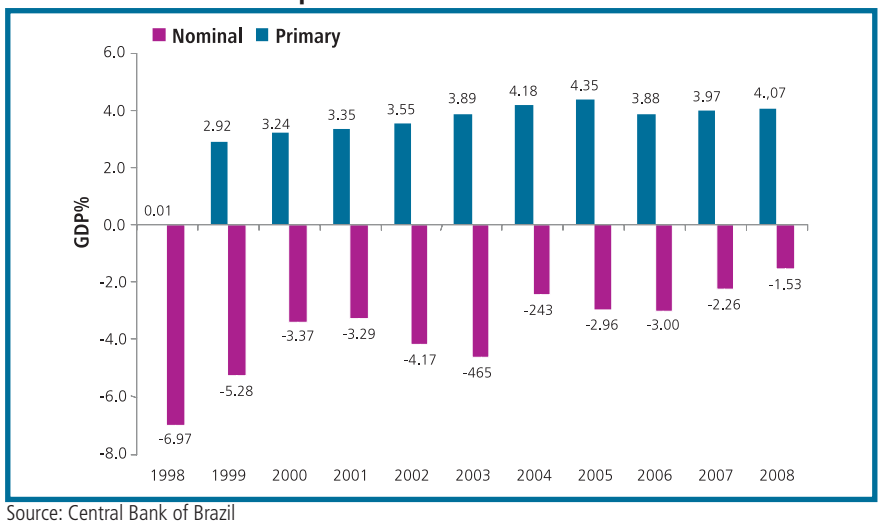
[6] FPD, which is the central theme in several chapters of this book, includes the domestic and external, marketable and contractual debt for which the National Treasury and the Central Bank are responsible. As stated in the Fiscal Responsibility Law, after 2002, the Treasury became the only agency issuing FPD bonds. As an indication of its importance, in December 2008 the FPD accounted for 70% of liabilities in the public sector which, besides the FPD, also included the liabilities of states, municipalities and state-owned companies.

[7] The average maturity of the FPD, which had remained below 12 months for over a decade, finally reached levels above one year in 1997. For managers, this advance in debt structure could not be missed, even if it meant "sacrificing" the composition (more floating and exchange-rate debt) at that point and then recovering it. For more details on the evolution of public debt indicators see the Statistical Annex at the end of the book.

The severe setback in fixed-rate debt and resulting increase in floating rates and exchange-indexed debt promoted a debt strategy based on macroeconomic foundations: The importance of an economy anchored in sound fiscal policies and solid external accounts was once again evident. These foundations would strengthen resistance to exogenous shocks, increase credibility regarding the country's debt payment capacity, and ensure greater stability to its profile.

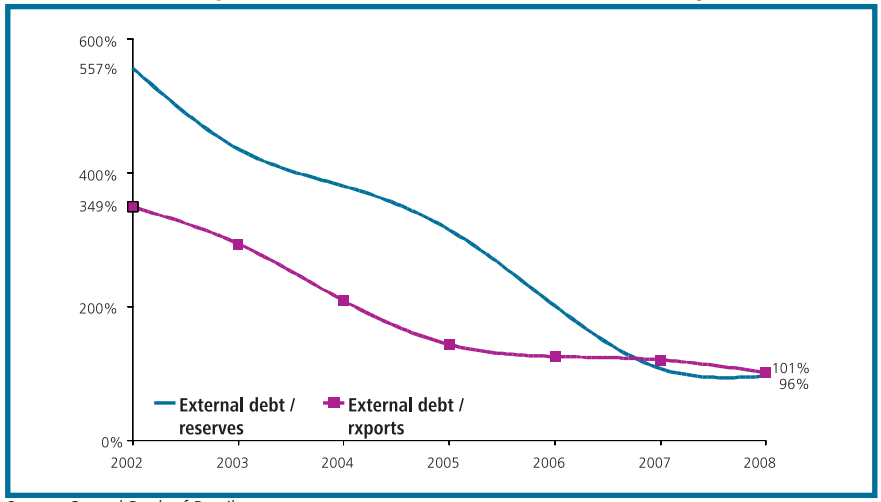
In a long, consistent path towards improving economic foundations, Brazil's fiscal policy gained credibility from successive primary surpluses starting in 1999 (see Graph 4) and the Fiscal Responsibility Law passed in 2000, which introduced greater discipline in public finance management at all government levels.[8] External accounts, in turn, went through major adjustments that considerably reduced the country's international vulnerability: For example, the external debt-to-international reserves ratio plummeted from 557% to 96% from 2002-2008[9] (see Graph 5).

Graph 4. Public sector balance



Source: Central Bank of Brazil

Graph 5. Indicators of external vulnerability



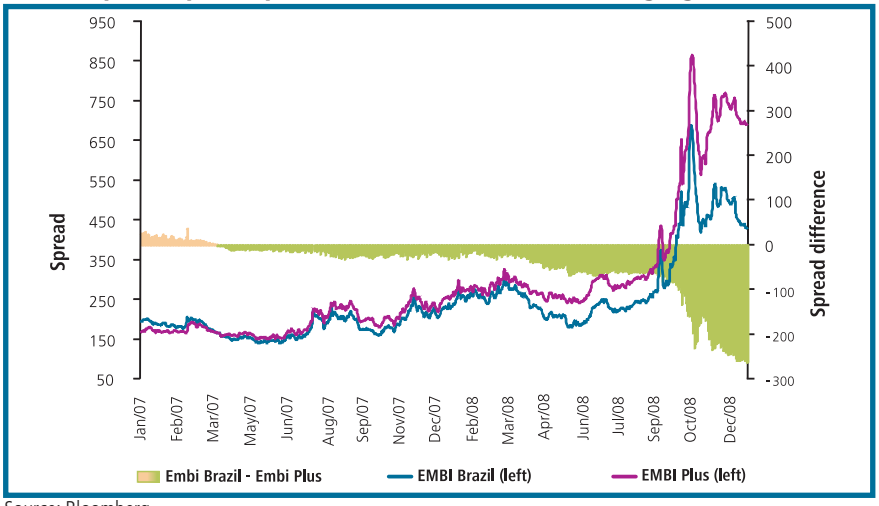
Source: Central Bank of Brazil

Such economic gains ensured an environment conducive to good debt management. Under a carefully developed strategy disseminated through annual borrowing plans, the National Treasury consistently improved the structure of public debt by greatly reducing exchange-rate liability and gradually increasing the share of fixed-rate and inflation-linked debt.[10]

These improvements are also part of the Treasury's proactive debt management strategy, which includes swap and-buyback operations that help improve the debt profile and reduce the economy's vulnerability to shocks.

The combination of sound macroeconomic foundations linked to efficient Federal public debt management scored significant gains, as shown by the risk indicators (see Graph 6) and the sound (BBB-) investment grade established by Standard & Poor's, on April 30, 2008, which also noted that pragmatic fiscal policies and debt management[11] had allowed Brazil to earn that rating for the first time in its history.

Graph 6. Spread performance – Brazil and emerging countries



Source: Bloomberg

Book organization and summary

The book is organized into three parts: Part I – Understanding the Brazilian Public Debt; Part II – Managing the Brazilian Public Debt; and Part III – The Public Debt Market in Brazil.

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[8] For more information on the Fiscal Responsibility Law, see the chapters on budget and audits (Part II, Chapter 4 and Chapter 5).
[9] This is an important indicator, for it shows that foreign currency funds deposited in the Central Bank would be sufficient to pay the country's external, public and private debt. To illustrate the relevance of the present level, the external debt (public and private)-to-international reserves (1952-2008)-ratio started at 1.3 and reached 20 during the crisis of the early 1980s and then dropped gradually to as low as 0.96 in December 2008 - the lowest value in the series. For details, see the Statistical Annex at the end of the book.
[10] According to studies, these securities are ideal to make up most of the outstanding debt, with due regard for cost and risk criteria. For details,see Part II, Chapter 3.
[11] See Standard & Poor's report "Brazil's long-term foreign currency rating raised to investment grade BBB- Outlook Stable," April 30 2008.

Part I - UNTERSTANDING THE BRAZILIAN PUBLIC DEBT

Part I provides an historical and conceptual analysis of Brazil's public debt, exploring its main concepts and sustainability, and offering a view of its progress from its inception to the present. It is divided into four chapters, summarized below.

Chapter 1 - Origin and history of Brazil's public debt up to 1963

This chapter seeks to compile and analyze key aspects in Brazil's history of public debt. Each section is divided into periods (colonial, imperial and republican) and type of debt (domestic and external), with detailed accounts. Rather than presenting in-depth analyses of debt evolution at specific points in time, the first chapter offers an overview of events and challenges. This overview is important for understanding the issues during each period, which greatly affected public debt management in recent years.

Chapter 2 - History of public debt in Brazil: 1964 to the present

This chapter describes the evolution of domestic and external debt since 1964: It presents their quantitative development and illustrates the advances made from the institutional perspective, noting the challenges at each stage.

Regarding domestic debt, the chapter presents the reasons for increases in outstanding debt during the period and the connection to macroeconomic events. Also, it illustrates relevant institutional aspects as they relate to the domestic FPD. The history is particularly interesting since it shows how past policy decisions contribute to constraints on recent macroeconomic policy. As for the external debt, the chapter describes the different stages in its evolution and explains (1) the root causes of the 1980s' debt crisis, (2) how it was overcome and (3) the way in which access to international capital markets resumed.

The last part describes the current environment of relative stability in external debt management, emphasizing qualitative issuances, the buy-back program and the construction of a yield curve in local currency (i.e. in Brazilian real) in the international market.

Chapter 3 - Public debt sustainability

Since public debt should meet its objectives, as noted earlier in this Introduction, the issuer must adopt a credible policy in which contractual values are honored. In other words, public debt must be sustainable. In this regard, the chapter presents different evaluation measures that offer disciplined ways to determine if a policy is sustainable or not. Lastly, the chapter describes how public debt management can play a fundamental role in determining sustainability over time.

Chapter 4 - Public debt concepts and statistics

The first part of this chapter presents the main aspects of Brazilian public debt, along with government statistics and reports. An interesting feature relates to the recommendations from international organizations on the form and scope of public debt and compares their numbers with data published by Brazil, suggesting improvements that would complement the progress achieved to date.

Part II - MANAGING THE BRAZILIAN PUBLIC DEBT

Part II describes all aspects of FPD management, particularly the institutional framework and recent developments, the process of designing an efficient debt-financing strategy, risk management, public budget and its link to debt management, and finally, the regulatory framework and audit process. It is divided into five chapters.

Chapter 1 - Institutional structure and recent developments in Federal Public Debt management

In its introduction, the chapter describes how public debt management has adjusted to international best practices, including (1) the importance of coordinating with fiscal and monetary policies; (2) the process of developing effective governance; (3) the relevance of a prudent debt and risk management strategy; and (4) steps taken to improve the debt managers' technical capacity and information technology systems. Also, the chapter explains the country's trajectory from introducing reforms and developing debt management capacities to disseminating the details of good practices to other countries.

Chapter 2 - Strategic planning of the Federal Public Debt

Given the importance of suitable, consistent debt management strategies that take into account the optimal debt profile over the long term, the risks associated with the strategies, and the commitment to developing a public securities market, the chapter describes the main aspects in the planning of Brazil's public indebtedness: It highlights the economic background and changes in the Treasury's institutional framework, which influenced the strategic planning of the FPD, its management objectives - including the optimal debt structure in the long term (benchmark), and the stages in the transition strategy from the short to the long term.

Chapter 3 - Federal Public Debt risk management

Following the overall risk-management activities that were essential to the financial market and prudent rules that were adopted to manage specific risks identified by capital market regulators and central banks, the National Treasury launched a program in 2002 to build technical capacity and develop risk-management tools and systems. These were subsequently validated at a seminar of specialists from different countries and representatives of international organizations.

The chapter describes the scope of activities and challenges involved in managing Brazil's public debt risks and, in particular, how the National Treasury addressed these issues. Further, it examines the tools Brazil applied, the skills needed to use them and the responsibilities that had to be assumed so as to guide researchers and countries starting to build capacity about how to improve risk management.

Chapter 4 - The Federal Public Debt budget

This chapter explains the way in which the Brazilian budget is an essential tool for managing public funds and, specifically, the FPD. It presents the main features of the government budget as well as the

processes/entities involved and Brazil's institutional financial and budget management framework. An interesting aspect is its focus on budget as it relates to the FPD which, besides operating under the same general rules as other public systems, is afforded special treatment, given the legal controls over public indebtedness and transparency: Within these legal constraints, debt managers still seek the flexibility needed to manage the debt and reduce budgetary risks.

Chapter 5 - Regulatory frameworks and government auditing of public debt

This chapter describes the regulatory framework and audit process, since consistent regulations and strong institutions are critical for managing public debt. In this regard, the text describes rules that set limits to the public debt and enforcement mechanisms such as penalties and evaluations by an independent government audit institution.

Part III - THE PUBLIC DEBT MARKET IN BRAZIL

Part III describes how the public debt market operates in Brazil. It reviews recent developments and follows with the characteristics of public securities traditionally used to finance debt, along with their pricing schemes. Next, it describes the organization of Brazil's financial markets, the operation of primary and secondary debt markets, the expansion of the investor base over time and the main holders of government securities. The final chapter describes the sale of public securities to individuals (small investors) over the Internet through the *Tesouro Direto* (Treasury Direct) Program developed by the Brazilian Treasury.

Chapter 1 - Recent evolution of the Federal Public Debt market

This chapter provides an overview of the FPD securities' market and highlights its recent developments against the backdrop of best practices reported by international organizations. The first part examines Brazil's public debt, taking into account macroeconomic developments, improvements in public debt management and the evolution of international markets, which have substantially affected both the domestic and external debt markets. Finally, it discusses the main steps taken to develop the market and the improvements achieved in light of best practices.

Chapter 2 - Pricing federal public securities

This chapter describes the main bonds the National Treasury uses to finance the FPD, their characteristics and calculation methodologies, as well as inputs that form the basis for their prices. It also highlights the institution's efforts over the years – collaborating with various market players – to simplify its instruments and ensure that investors value them correctly.

Chapter 3 - Organization of Brazil's financial market

This chapter reviews the main players within the financial market, such as class associations, clearinghouses and stock exchanges, and their relevance to the public security market and helping achieve the financial system's objectives. It also examines the roles and relevance of the agencies responsible for regulating intermediaries and investors who, in turn, are the ultimate security holders.

Chapter 4 - Primary market of the Federal Public Debt

The chapter reviews the securities the government issues through the National Treasury: It describes the institution's strategies and issuing methods in both domestic and international markets and discusses its liability management operations (buybacks and exchanges). The chapter also describes how the National Treasury adopted the principles of transparency and predictability, according to best international practices.

Chapter 5 - The investor base of the Federal Public Debt in Brazil

As noted by the World Bank (2007 and 2001),[12] countries must promote a diversified investor base in terms of investment horizons, risk preferences and motivation for asset trading, as this increases transactions, improves government bond liquidity and makes government financing feasible under different economic scenarios. To this end, Brazil has sought to expand and diversify its FPD investor base as well as increasingly improve its relations with representative groups.

The chapter describes this evolution and the composition of Brazil's investor base in public securities and examines the various groups' profiles in terms of security preferences and how these were included in strategic debt planning. Also, it discusses the main measures that were implemented, the practices adopted in investor relations, and the trends and challenges expected in the future.

Chapter 6 - The secondary market for Federal Public Debt

An efficient public financing mechanism needs a well-developed secondary public securities market through which price references for different assets are set. These, in turn, determine the financing cost of government securities. Thus, the degree to which investors can buy and sell securities in this market without high transaction costs (i.e. liquidity), is a variable that determines the extent of their interest in the assets. For this reason, debt management efforts should continually aim at improving the secondary market. The chapter describes the current features of this market in Brazil, as well as recent efforts to provide it with greater liquidity and transparency.

Chapter 7 - Treasury Direct: Internet public securities retail sales program

This chapter describes the Treasury Direct Program, an initiative developed and managed by the National Treasury, to sell public securities directly to individuals over the Internet. It reviews its growth since its inception in 2002 and its prospects, including a comparative analysis with programs in other countries.

The Editors

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Part I

UNDERSTANDING THE BRAZILIAN PUBLIC DEBT

Part I
Chapter 1

Origin and history of Brazil's public debt up to 1963

by Anderson Caputo Silva

1 Introduction

Sovereign debt is hardly something new. Brazil and other countries have been borrowing to fund various functions for centuries. To understand Brazil's economy and debt today, it is vital to review the past.[1]

This chapter reviews the most important aspects of the history of Brazil's domestic and external debt. For clarity, sections have been organized according to historical periods - Colonial, Imperial and Republican - and examine the sequence of events and challenges during each.

The chapter discusses (a) the beginning of debt, (b) its institutionalization, (c) its legal framework, (d) the first debt management office, (e) characteristics of the main loans, and (f) difficulties encountered in repaying them, over time. Next, it describes restructuring and consolidation operations within the political-economic context of each period. This analysis sheds light on the challenges for managing the debt, inherited over this long period.

Following this Introduction, the chapter is organized in three sections. Section two describes public debt in Colonial Brazil (1500-1822). Section three covers the Imperial years (1822-1889), with two subsections on domestic and external debt, and Section four, also with two subsections, covers 73 years of history of both domestic and external debt in the Republican period (1889-1963). The history of debt from 1964 to the present is discussed in Chapter 2.

2 Public debt in colonial Brazil (1500-1822)[2]

The history of public debt in Brazil dates to the Colonial period when, during the 16th and 17th centuries, governors indulged in borrowing. Like debts assumed in other countries even much prior to that (see Box 1), they were private loans taken out by the rulers. However, unlike today, "in the Colonial period everything was unknown: the size of the debt, the purpose of the loan, the conditions under which it was made, etc."[3]

Historians say[4] Luiz de Vasconcelos e Souza, the "vice-king during the golden age of Colonial Brazil," was the first to require that records be kept of the Colony's finances. Studies show that from 1761 to 1780, "instead of surpluses, the official bookkeeping recorded annual deficits in excess of 100 *contos*; as a result, public debt in that last year rose to more than 1,200 *contos*, arising from payments and uniforms to the troops, food supplies,

[1] The history of Brazil's public debt is described in several studies. Excellent references to its debt during the Imperial period, for example, can be found in the works of Carreira (1980), or on the external debt, from its origin to 1937, according to Bouças (1950).
[2] Main reference: Bouças (1950).
[3] Neto, 1980.
[4] Bouças, 1950.

Box 1. Origin of the public debt

Although the origin of public indebtedness is not easy to identify, there is evidence it existed in Ancient Greece. For example, Baleeiro (1976) mentions a study by Xenophon on the income of Athens, which refers to loans for publically owned war boats.

The rebirth of trade in the 11th and 12th centuries introduced new consumption patterns that included luxury items and influenced the behavior of noblemen, princes and kings. Financial surpluses, which were common, began to be replaced by deficits due to increased spending without an increase in revenues. Since tax hikes and issuing currency were viewed as difficult or undesirable,* rich merchants began to take loans to finance ordinary and emergency expenses, such as those associated with wars.

However, loans at that time were quite different from today: Usually, they were personal loans to the ruling monarch and were not transferred to his heirs or successors. Interest rates were therefore enormous and, according to Baleeiro (1976), the guarantees required could even be humiliating: For example, Baleeiro notes "from the hair of the sacred beard of His Majesty, princes taken as hostages, and relics of saints to pawning of the crown, jewels or the linking of certain incomes to debt interest services and amortization."

The separation of the monarch's wealth from the public treasury started in the 17th century and was a landmark for the increased used of public credit as a means to finance government expenses.

* Hicks (1972) argues that since the tax base in these eras was narrow and collection inefficient and unfair, tax increases sparked a very negative public response. Issuing currency was also discouraged, given the limited supply of precious metals and the inflationary situation it created where adopted.

Source: Neto (1980) and Baleeiro (1976)
Prepared by: Anderson Caputo Silva

salaries and even the money which the government, under formal promise of future reimbursement, had taken during wars."

The Colony's debt was not settled until 1799, when, "seeking to mitigate the threat of economic collapse, D. João VI ordered the payment of the debt, as well as others not yet recorded, through debt certificates with 5% interest rates." This laid the foundation for Portugal's debt in Brazil. Similarly, the Royal Charter of October 24, 1800, the Order of May 9, 1810 and the Decree of October 12, 1811 contributed to classifying all debts into legal and illegal, considering as *old debt* all that was incurred until 1797[5], and establishing an amortization mechanism.[6] Bouças[7] argues that this procedure greatly benefited the Colony and served later "to prove that in the liabilities an independent Brazil inherited from the Colony totaled just 42 *contos*".[8]

[5] This order stated that all debts should be submitted for validation to the Finance Council, within a three-year deadline, a Spread-Over-Treasury (SOT) after which - if not validated - they would be considered legally prescribed. According to Leão (2003), since 1810, debt bonds prescribed within a determined timeline (in this case, three years) in the consolidation of the domestic debt. This tradition was then repeated in the other events of debt consolidations in 1956, 1962, 1967.

[6] Every year, creditors would receive 6% over the balance of their loans - half as premium and bonus for the delay and the rest as capital amortization.

[7] Bouças, 1950.

[8] "*Contos*" or "*contos de réis*" was the expression used to indicate 1 million units of *reais* (or *réis*), the currency at the time, which was replaced by the cruzeiro only in 1942. Its financial representation was 1:000$000. For details on Brazil's monetary systems, see the Annex.

Despite these advances, deficits increased between 1808 and 1821, when D. João VI settled in Brazil with his Court at the time that Napoleon took over Portugal. The costs of maintaining the king's subjects and most of all, supporting the Portuguese army were high, and resources very limited, since Brazil could not count on Portugal's financial assistance.

During this time, events that would affect Brazil's political, economic and financial history occurred, such as the opening of the ports in 1808 (which launched the process for the country's economic independence), creation of the first Banco do Brasil and introduction of paper money (Box 2).

Box 2. Creation of the *Banco do Brasil*

One of D. João VI's initiatives while in Brazil was to create the first *Banco do Brasil* through the Order of October 12, 1808, following the suggestion of the Portuguese Finance and Navy minister, D. Rodrigo de Souza Coutinho.

With the initial authorization set to last 20 years, *Banco do Brasil* began operating the following year (December, 1809) after its minimum capital was underwritten (100 shares). The capital fund totaled 1,200 contos, divided into 1,200 shares of *one conto* de réis each.

"The start of operations of the first *Banco do Brasil*, in 1809, can be considered a fundamental landmark in the monetary history of Brazil and Portugal, both because it was the first Portuguese banking institution and represented a meaningful change in Brazil's currency through the issuance of banking notes."

The Bank's creation was closely related to the Crown's need to raise money to finance increasing public expenditures. Banco do Brasil was the fourth issuing bank in the world, behind the Bank of Sweden (1668), the Bank of England (1694) and the Bank of France (1800).

From 1810 to 1828, *Banco do Brasil* issued 28,866,450$000 réis. Not surprisingly, the Bank's insolvency was already apparent in March, 1821, when its Board of Directors reviewed its balance sheets. The situation became even more serious after D. João VI left for Portugal with his entourage, since the guarantees represented by most of the Crown's movables and jewels had lost their effect.

With Parliament strongly opposed to renewing its authorization to operate, it decided in September, 1829 that the first Banco do Brasil would close in December of that year, when the institution would celebrate its twentieth anniversary.

Sources: Müller & Lima (2007), Bouças (1950) and Wikipédia (http://pt.wikipedia.org/wiki/Banco_do_Brasil)
Prepared by: Anderson Caputo Silva

However, the financial situation that D. João VI left behind was indeed worrisome, when D. Pedro (D. João VI's son) took office as prince regent (Regency 1821-1822) and later, as the first emperor of independent Brazil (1822-1831). Bouças (1950) notes[9]:

> "The situation became even more critical when he (D. João VI) left with his entourage for the Kingdom, since most of the existing gold and silver currency was transferred to Lisbon on the fleet that took the king; and the Public Treasury, in the very words of the Finance Minister, counselor Martim Francisco Ribeiro de Andrada was left, 'without *reais* in its safes.'"

He adds that D. Pedro expressed his concern in letters to his father in the period before Independence. In one, from September 21, 1821, he wrote[10]: "If Your Majesty will allow me, I will move on to describing the sad and

[9] Free translation of the original in Portuguese.
[10] Free translation of the original in Portuguese.

pitiful situation this province has been reduced to, so that Your Majesty can give me your orders and instructions you deem convenient and I can, with dignity, free myself from the net I have been caught in."

D. Pedro reports the difficulties due to the very limited resources[11]: "[...] the Treasury's cash is only that from the Province revenues and these are paid in paper; it is necessary to pay off everything that has been established, [...] there is no money, as already said; I don't know what I will do".

In the same letter, D. Pedro notes he was "amidst ruins." A commission appointed by the Prince Regent to evaluate the Public Treasury status determined that D. João VI's debt was 9,870:918$092.

There was still time for a loan in the amount of 400:000$, with a 10-year maturity and a 6% interest rate, during the months that preceded independence, with the Province of Rio de Janeiro revenues offered as the guarantee. The so-called independence loan, which was quickly underwritten, was authorized by a decree on July 30, 1822 and the money was to be used primarily to "acquire war vessels." An additional amount was subsequently underwritten on October 27 "to meet the expenses, also higher, related to the consolidation of independence."

3 Public debt in imperial Brazil (1822-1889)[12]

Brazil's financial difficulties in the period before independence, coupled with the natural demands connected to the country's first years of independence, were a serious challenge. Given these problems, public debt during the Imperial Period was the stimulus that created the first debt management office, institutionalized domestic debt, enhanced financing mechanisms and instruments, and introduced debt restructuring operations (the so-called liability management operations), which were, to a great extent, very similar to today's operations.

Moreover, as will be discussed throughout this section, the evolution of domestic and external debt was closely related to a host of political-economic factors that characterize financial history during the Empire, which can be divided into two periods: The first, from 1822-1850, which was a rough period of "conflicts and consolidation," and the second, from 1850-1889 (Republic), which was "mainly of construction."[13]

Despite the difficulties, the state of Brazil's public finances was admired by Latin American nations in the 19th century, given the country's success in issuing debt[14] and meeting external commitments, while its neighbors failed to do so.[15] More interestingly, domestic issuances included large amounts of long-term domestic debt in the local currency at a time when the other countries defaulted on their domestic creditors.[16]

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[11] Free translation of the original in Portuguese.

[12] Brazil's Imperial Period included two reigns: (a) Pedro I (1822-1831) and Pedro II (1831-1889). The latter, however, initiated as a Regency Period, which lasted until the proclamation of Pedro II's majority just before he turned 15 by the Legislative Branch in July 1840. Therefore, the personal reign of Pedro II extended from 1840 to the advent of the Republic on November 15, 1889.

[13] Bouças, 1950.

[14] According to Cardoso & Dornbusch (1989), the history of the Brazilian Empire is one of deficits financed by domestic and external loans. The authors cite the report by Minister Ouro Preto on the budget situation on the occasion of the Proclamation of the Republic, according to which only 30% of the Empire's expenses were actually covered by taxes and other revenues. All the rest was financed by debt.

[15] In fact, already in 1825, except for Brazil, all recently independent Latin American nations had already defaulted, a situation that would be repeated many times during the 19th century (Dawson, 1990; Marichal, 1989).

[16] According to Summerhill (2008), the success during the Brazilian Imperial Period was linked to institutional changes (particularly the Constitution of 1824). The sharing of power with Parliament, for example, ended the emperor's ability to unilaterally tax, spend, borrow or default.

3.1 Domestic public debt during the Empire[17]

Imperial Brazil's domestic public debt becomes significant after the decree of Emperor Pedro I to appoint a commission in September, 1825 to deal with it. "For the first time in the country's history, a measure was implemented to institutionalize the domestic public debt, give it the character of national debt for which the entire Nation is responsible, and distinguish it from the ruler's personal debt."[18]

3.1.1 "The cornerstone of public credit in Brazil" (law of November 1827)

The Law of November 1827,[19] based on the commission's work, established the legal framework for Brazil's indebtedness policy, and is considered to be the cornerstone of public credit in Brazil.[20] It was rarely amended until the Central Bank was created, nearly 140 years later.

The Law, with its 75 articles, (a) acknowledged past debt up to 1826 (except for those prescribed by the Order of May 9, 1810); (b) created ledgers for recording national and provincial debt; (c) set rules for registering all acknowledged debt in the Great Ledger of Brazil's Debt and, with provincial debt, in the Auxiliary Ledger of the Great Ledger , duly "initiated and closed by the president of the respective province" (art. 5o); (c) provided the "foundation" for public debt and launched the first securities of the funded domestic debt in the amount of 12,000 *contos de réis* (automatically registered in the Great Ledger); and (d) created the first institution responsible for managing both the domestic and external debt (Box 3).

Box 3. *Caixa de Amortização*: the first public debt management institution

The *Caixa de Amortização*, one of the main features introduced by the November 1827 Law, included a great many details with regard to institutional arrangements and operational procedures for the new entity. The Law even provided for annual salaries for its members and dedicated nearly half its articles (36 of the 75) to Title IV, the *Caixa de Amortização*.

Two aspects are noteworthy: (a) *Caixa's* independence from the Public Treasury and (b) procedures involving its control, rendering of accounts and transparent management.

The entity was managed by a directorate independent from the Public Treasury, formed by the minister and secretary of Financial Affairs (the latter served as chairman), five Brazilian capitalists and the *Caixa* General Inspectorship (art. 41).* The institutional arrangements provided for a more autonomous debt structure and anticipated a debate that would re-emerge long after its time.

The law also restricted the *Caixa's* control: "the safe of the *Caixa de Amortização* shall have three keys, of which one will be kept by the inspector-general and the others by the accountant and the treasurer [...] the safe of each branch shall have an equal number of keys [...] A safe shall never be open unless all three key-holders are present." Further, it included provisions about transparency and rendering accounts that were in keeping with the best international practices of the time. Also, the council was obliged to submit an annual general balance of accounts to the House of Representatives and publish an account of all Caixa operations and its branches every six months.

[17] Main references in this subsection: Carreira (1980), Leão (2003) and Neto (1980).
[18] Neto, 1980.
[19] According to Leão (2003), the 1827 Law "follows the tradition of the English financial history". In 1715, King George III ordered the English public debt to be consolidated and recorded in a ledger (Great Ledger) in the Bank of England.
[20] Neto (1980) mentions as an example the analyst C. J. de Assis Ribeiro.

After 1945, when the Bureau of Currency and Credit (Sumoc), the precursor of the future Central Bank, was established, the *Caixa* would no longer manage the currency. In 1967, all its responsibilities were transferred to Brazil's Central Bank. Thus, the institution that managed the domestic and external debt for 140 years was closed, and no scandals had ever been recorded.**

* Branches were opened in the provinces, where debt certificates were issued. These were managed by a council formed by the president of the province, the general treasurer and the clerk of the Finance Council (Arts. 52 and 53).
**Leão (2003).

Sources: Law of November 15, 1827; Carreira (1980); Neto (1980) and Leão (2003)
Prepared by: Anderson Caputo Silva

3.1.2 Origin and evolution of funded domestic debt in imperial Brazil

The November 1827 law established the rules for recording, controlling and managing new debt. Also, it introduced funded domestic debt, by issuing 12,000 *contos de réis* (Art. 19). Table 1 shows the evolution of funded domestic debt and divides domestic indebtedness into four sub-periods that follow the first issuance in 1827. Table 2 presents the numbers attached to the domestic debt service as well as its weight, which is sometimes higher, relative to the external debt service. These data illustrate the importance of domestic indebtedness during this period.

Table 1. Evolution of funded domestic debt in imperial Brazil
(in *contos de réis*)

Period	Issuance	Redemption	Balance
1827	12,000	-	12,000
1828-1840	23,500	3,800	31,700
1841-1860	32,000	-	63,700
1861-1880	340,000	-	403,700
1881-1889	46,000	11,300	435,500

Source: Laws of Imperial Brazil – Rio de Janeiro: *Tipographia Nacional* (reproduced from Leão, 2003)

Table 2. Domestic and external debt service in Brazilian budgets
(in *contos de réis*), 1828-1889

			debt service	
Law nº	Date	Budget year	External	Domestic
	10/08/1828	1829	1,178	381
	12/15/1830	1831/32	856	1,003
	11/15/1831	1832/33	2,988	1,046
	10/24/1832	1833/34	2,425	1,241
58	10/08/1833	1834/35	1,640	1,529

debt service				
Law nº	**Date**	**Budget year**	**External**	**Domestic**
38	10/03/1834	1835/36	480	1,348
99	10/31/1835	1836/37	2,125	1,500
70	10/22/1836	1837/38	2,111	1,490
106	10/11/1837	1838/39	2,069	1,600
60	10/20/1838	1839/40	2,055	1,970
108	10/26/1840	1840/41	2,168	2,170
243	11/30/1841	1842/43	3,020	3,120
317	10/21/1843	1843/44	3,088	2,449
369	09/18/1845	1845/46	3,026	3,909
396	09/02/1846	1847/47 e 47/48	3,026	3,473
514	10/28/1848	1849/50	2,797	3,391
555	06/15/1850	1850/51	2,798	3,479
668	09/11/1852	1853/54	4,213	3,447
719	09/28/1853	1854/55	3,823	3,447
779	09/06/1854	1855/56	3,823	3,462
840	09/15/1855	1856/57	3,823	3,461
884	10/01/1856	1857/58	3,787	3,461
939	09/26/1857	1858/59	3,787	3,460
1.040	09/14/1859	159/60	3,787	3,460
1.114	09/27/1860	1861/62	3,648	3,460
1.177	09/09/1862	1863/64	3,683	4,174
1245	06/28/1865	1865/66	3,646	4,817
1507	09/26/1867	1867/68 e 68/69	8,277	6,338
1836	09/27/1870	1871/72	8,056	15,785
2670	10/20/1875	1876/77	12,535	17,551
2940	10/31/1879	1879/80 e 80/81	14,374	24,904
3017	11/05/1880	1881/82	12,499	26,338
3141	10/30/1882	1882/83 e 83/84	20,887	20,276
3349	10/20/1887	1888	22,383	19,090

Source: Collection of Imperial Brazil Laws – Rio de Janeiro: *Tipographia Nacional* (reproduced from Leão, 2003)

The periods in Table 1 feature an indebtedness dynamic that is intrinsically linked to the socio-economic evolution of Imperial Brazil: It increased greatly in the 1860s and 1870s, followed by long periods when debt redemption was suspended, which indicate the Empire's financial difficulties.

The period from 1827-1839 was marked by issuances of securities designed almost exclusively to cover deficits and expenses incurred to appease the provinces. However, the first financial difficulties with respect to amortization service began to emerge, and in October, 1839, Law No. 91 suspended the redemption of outstanding securities.

Nevertheless, the suspension did not prevent new securities from being issued. While it became more difficult to place securities, especially from 1840-1860, which was reflected in the increased discounts - which reached 35%, 32,000 *contos de réis* were still issued and their funds were used for widely different purposes, such as covering deficits and paying the dowry of the princess of Joinville.[21]

Financing conditions began to improve in the 1860s and issuances from 1861-1889 increased in an unprecedented way. Not surprisingly, the domestic debt service also increased abruptly in those two decades (Table 2). While the expenses to be financed continued to be widely diverse, including the weddings of princesses Isabel and Leopoldina, the biggest share (more than 80% of the 340,000 *contos de réis* issued) covered war expenses and deficits, which totaled 150,000 and 130,000 *contos de réis*, respectively.

From 1881-1889, the most impressive operation was one of liability management. Although amortizations were still suspended, the high amount of issuances made annual spending on domestic debt interest rather significant, which, in 1884, reached 21% of budget revenues. To reduce this amount, a new law determined that securities paying interest of 6% a year could be converted into those paying 5% (Law No. 3,229 of September, 1884). This strategy was successfully introduced in 1886 and yielded an annual interest savings of 3,294 *contos de réis*.[22]

Brazil thus ended the Colonial Period with a relatively high domestic debt, which was 435,500 *contos de réis*, while the external debt was 270,000 *contos de réis*.[23]

3.2 External public debt during the Empire[24]

The history of external debt in Brazil dates back to the first years of the Empire.[25] Altogether, 15 loans were taken out from 1824-1888. In addition, due to the Secret Additional Convention to the Treaty of August 29, 1825, Brazil assumed responsibility for the loan taken by Portugal in 1823, in the amount of £1,400,000[26] and in October 1889, on the eve of the Proclamation of the Republic, a sizeable conversion operation was carried out (more below). Table 3 illustrated the characteristics of the 15 loans.

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[21] Francisca de Bragança, the fourth daughter of Emperor Pedro I and Empress Maria Leopoldina.

[22] According to Leão (2003), Belisário Soares de Souza, who was then the Finance minister, "despite the aggressions, insults and bullying conducted the operation with extreme care, discretion and efficiency [...] First of all, he authorized the amortization fund to purchase all the securities offered at par thus causing the price of securities to rise. When these were above par, which brought their yields close to 5%, the legislative option was used and the conversion effected in 1886 (Decree No. 9,581 of April 1886)".

[23] Leão, 2003.

[24] Main references in this subsection: Bouças (1950) and Carreira (1980).

[25] According to Abreu (1999), "the Brazilian external debt is characterized by two long indebtedness cycles followed, in both cases, by moratoria, temporary renegotiations and permanent agreements". The Imperial years fit into what the author calls the first cycle, which spans from 1824 to the permanent agreement of 1943; the second starts in the mid-1960s and extends to the Brady Plan negotiations in 1994.

[26] Bouças, 1950.

Table 3. Financial history of Brazil

The different conditions of the loans raised by Brazil in London since 1824

Loans	Date of agreements**	Price of issuance	Commission and other negotiation expenses	Total amount in £	Nominal mount in £	Number of installments	Maturity of installments	Discount for advanced payments	Interest rate
1824	13 August	75%	1%	1,000,000	1,333,300	12	12 months	-	5%
	12 de January/25	85%	1%	2,000,000	2,352,000	12	12 months	-	5%
1829	3 July	52%	2%	400,000	739,500	12	12 months	-	5%
1839	5 February	76%	-	312,500	411,200	-	-	-	5%
1843	11 January	85%	-	622,702	732,000	1	-	-	5%
1852	27 July	95%	3%	954,250	1,010,000	1	-	-	4 ½%
1858	19 May	95 ½%	2 ¼%	1,425,000	1,523,500	4	6 months	-	4 ½%
1859	23 February	100%	2%	508,000	508,000	1	-	-	5%
1860	16 March	90%	2 1/8%	1,210,000	1,373,000	4	5 months	-	4 ½%
1863	7 October	88%	2 5/8	3,300,000	3,855,300	5	5 months	-	4 ½%
1865	12 September	74%	21 1/16%	5,000,000	6,963,600	7	12 months	5%	5%
1871	23 February	89%	2 ½%	3,000,000	3,459,000	5	6 months	5%	5%
1875	18 January	96 ½%	2 ¼%	5,000,000	5,301,200	7	10 months	5%	5%
1883	23 January	89%	2 ¼%	4,000,000	4,599,600	5	10 months	4 ½%	4 ½%
1886	26 February	95%	1 ¼%	6,000,000	6,431,000	5	6 months	5%	5%
1888	-	97%	1 ¼%	6,000,000	6,297,300	-	-	5%	4 ½%

Amortization rate	Date of first interest payment	Date of first amortization payment	Commission for interest payment	Drawing by lots	Purchase	Amortization system	Term for extintion
1%	1 October 1824	1 January 1825	1%	-	1/8 %	Purchase or drawing by lots	30 years
1%	1 October 1824	1 January 1825	1%	-	1/8 %	Idem	30 years
1%	1 October 1829	1 January 1830	1%	-	1/8 %	Idem	30 years
1%	1 April 1839	1 January 1840	1%	½%	1/8 %	Idem	30 years
Not fixed	1 June 1843	1 January 1844	1%	½%	1/8 %	Idem	20 years
1%	1 July 1853	1 December 1853	1%	½%	-	Idem	30 years
1.19.0%	1 December 1858	1 December 1858	1%	½%	1/8 %	Idem	20 years

Amortization rate	Date of first interest payment	Date of first Amortization payment	Commission for interest payment	Drawing by lots	Purchase	Amortization system	Term for extintion
1%	1 October 1859	1 October 1859	1%	½%	1/8 %	Idem	30 years
1.13.0%	1 June 1860	1 October 1860	1%	½%	1/8 %	Idem	30 years
1.13.0%	1 April 1864	1 October 1864	1%	½%	1/8%	Idem	30 years
1%	1 March 1866	1 March 1867	1%	½%	1/8 %	At par drawing	37 years
1%	1 August 1871	1 February 1873	1%	½%	1/8 %	Purchase or drawing by lots	38 years
	1 July 1875	1 July 1877	1%	½%	1/8 %	Idem	38 years
1%	1 June 1883	1 June 1884	1%	½%	1/8 %	Idem	38 years
1%	1 July 1886	1 July 1887	1%	½%	1/8 %	Idem	-
1%	-	-	1%	½%	1/8%	Idem	-
1%	-						-

Source: Carreira (1980)
Note: The date of the second loan phase in 1824 was adjusted. The original table showed September 7, 1824. According to Carreira (1980) and Bouças (1950), the date was January 12, 1825. (The author of this chapter takes full responsibility for any errors herein).

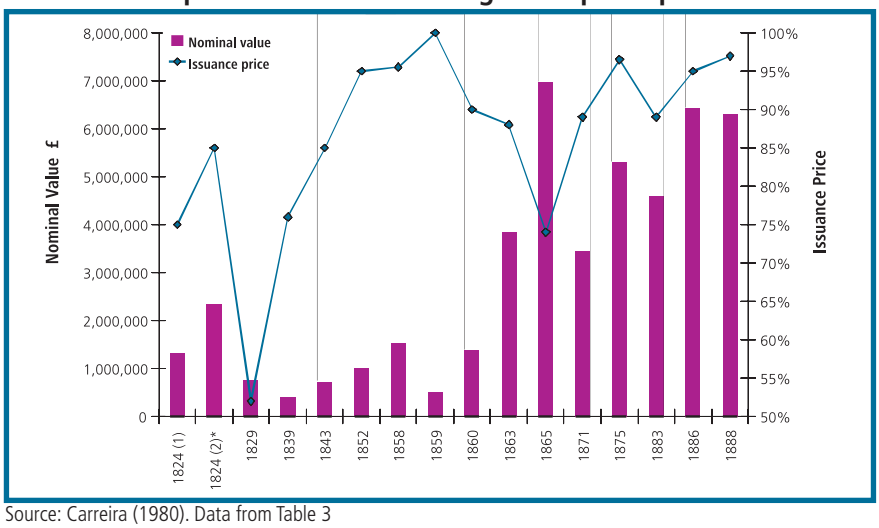
Note that the 1824 loan was made in two tranches and with different bankers;[27] also, all the loans were taken in pounds, mostly through the house of Rothschild & Sons or their representatives. Loans in other currencies would only become more common during the Republic, starting with loans in Swiss francs in 1905 and gaining momentum, with other loans in US dollars in the 1930s.[28]

The evolution of external indebtedness is quite similar to that of the domestic debt.[29] As they were related to the country's socio-economic conditions, they can be analyzed in line with the two periods of Brazilian financial history during the Empire:[30] (a) the rough period (1822-1850) and (b) the construction period (1850-1889).[31] Graph 1 illustrates this evolution by highlighting loans volumes and prices in each period.

Loans taken during the *rough* period of "conflicts and consolidation" (1822-1850) began with the "first independence external loan" in 1824-1825, to shore up the Empire's finances that had been plundered due to the extraordinary expenses on defense, security and stability.[32] Because the financial crisis persisted,

[27] The first tranche of £1,000,000 was raised among the bankers Bazeth, Farqhuar, Crawford & Co., Fletcher, Alexander & Co., and Thomas Wilson & Co., while the second tranche, of £2,000,000 was contracted with the house of Nathan Mayer Rothschild.
[28] Abreu (1988) describes the loans by currency, in three categories: pounds, US dollars and others. He also classifies loans into those made at the Federal, state and municipal levels. External public debt during the Imperial Period was formed almost exclusively by Federal loans. States and municipalities became indebted from the mid-1880s onward.
[29] For example, both grew substantially in the 1860s and 1870s.
[30] The two periods are described by Bouças (1950).
[31] Of the 15 loans, two (in addition to the assumption of the Portuguese debt by the Secret Convention of 1825) were taken out in the First Reign, one was during the Regency Period in the Second Reign, and the other 12 were during the government of Pedro II, in the Second Reign.
[32] Bouças, 1950.

Graph 1. Loans issued during the imperial period



Source: Carreira (1980). Data from Table 3
Prepared by: Anderson Caputo Silva

another loan was taken in 1829, historically known as "ravaged", due to its extremely unfavorable conditions (e.g. the price of issuance was only 52% of its face value), caused by: (a) the precarious state of the Treasury's finances,[33] and (b) the high risk-aversion of creditors against international loans following the default of other South American countries.[34] This is probably the first example of a "contagion effect" on Brazilian debt, where external events not necessarily related to the country's capacity to honor its obligations affect the price/issuance conditions. This phenomenon was repeated later, such as during the Asian Crisis in the late 1990s, which particularly affected sovereign bonds issued by emerging economies in the international markets.

The loans of 1839, the only one taken during the Regency period, and 1843 (in the first years of the Pedro II government) are the last of those contracted before the Construction Period began in 1850. While the first was taken to meet the deficits of the Ministries of Finance, Navy and War,[35] the second was motivated by the Convention of July 1842, which ratified settlements of accounts between Brazil and Portugal, according to the Treaty of August 1825.[36]

In general, contractual conditions began to improve in 1850, during the growing period. Also, the volume of loans rose dramatically in the 1860s, mainly to cover expenditures for the Paraguay War[37] and the more favorable perception of Brazilian credit overseas.

Most of the loans from the Imperial Period - 11 out of 15 external loans were taken during the Construction Period (1850-1889). Three are worth highlighting. The first (1852) marked the beginning of this new phase and was the first with interest rates below 5%. The second (1859) represented an exchange

[33] In a speech on April 2, 1829, Pedro I said: "The miserable situation of the public treasury is clear under any circumstances and I feel sorry for having to foresee that, if in this extraordinary session and in the course of the ordinary one the assembly, despite my reiterated recommendations, fails to find a substantial business to engage into, the future awaiting us is bound to be disastrous" (Bouças, 1950).

[34] Bouças, 1950.

[35] The Regency period was marked by several political conflicts in many provinces (Pará, Maranhão, Pernambuco, Alagoas, Bahia and Rio Grande do Sul), which deeply affected the country's finances.

[36] Carreira, 1980.

[37] This had a temporary negative effect on the price of Brazilian securities.

operation, at par, of the very instruments remaining from the "ravaged" loan of 1829. Investors could choose from receiving payments in cash or new securities in exchange for the debt of 1829; since their perception of the country was so positive, more than 90% opted for securities. The third loan (1865) was notable for its large size (£6,963,600) and was taken to finance "extraordinary services of the Empire," mainly connected to the Paraguay War. Interestingly, its conditions were not as good as those offered in most previous loans (the issuance price was 74% of face value and interest rate was 5%), due to the war and an international crisis affecting financial markets.[38]

In October 1889, due to a positive financial situation, the government (under the leadership of the viscount of Ouro Preto, who was Minister of Finance) launched a mega-operation in the amount of £19,837,000: It converted old debts with interest rates of 5% into a new and single loan with interest rates of 4% and longer maturity (56 years). This operation to restructure liabilities, negotiated with the Rothschild bankers, was seen as a big success: Besides unifying nearly the entire debt into a single interest level and payment schedule, the loan led to an annual savings of £437,985 in interest and amortization quotas.

Brazil stepped into the Republican Period "with the long list of external loans contracted in the previous regime, redeemed almost in its entirety [...]." Those of 1883, 1888 and 1889 were outstanding, in the amounts of £4,248,600, £6,265,900 and £19,837,000, respectively.[39] The initial capital of the Empire's external loans, whether redeemed or not, totaled £68,191,900 or 640,913 *contos de réis*, according to the average exchange rate at the time. Redeemed loans totaled £37,458,000.[40]

4 Public debt in the republican period

The first 74 years of public debt during the Republican Period are marked by events that help explain the characteristics of the current debt. Although management of the public debt was relatively stable, as it continued to be the responsibility of the *Caixa de Amortização*, the Period was marked by difficulties in domestic and external financing and restructuring.

4.1 Domestic public debt during the Republic (to 1963)[41]

Despite the impressive liability management operation at the end of the Imperial Period, when securities paying interest rates of 6% a year were converted into others paying 5% (subsection 3.1), the management of domestic debt was seriously challenged at the start of the Republican Period. First, the long stretch of time during which outstanding securities could not be redeemed (1839-1889) affected its credibility. Second, the debt was highly fragmented, due to the great diversity of instruments with different maturities and interest rates. Finally, all outstanding securities were still nominative and their transfers were thus bureaucratically complicated. The last two issues spelled trouble for domestic debt negotiation and liquidity.

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[38] "The depression in the securities market was widespread: the 7% Egyptian securities were being quoted at 95" (i.e. securities were negotiated in the market at 95% of their face value, which required returns above the interest rate contractually agreed upon—the lower the percentage, the higher the discount); similarly, "the 5% Italian and Turkish securities remained at 65 and 70, whereas US securities, with the same interest rate, had not succeeded in getting a quotation above 68" (Bouças, 1950).

[39] According to Carreira (1980), revenue collected by the National Treasury during the old regime, including ordinary and extra-ordinary revenues, did not exceed 3,738,383 contos, while expenses totaled 4,496,565 contos; hence, this produced a deficit of 758,182 contos.

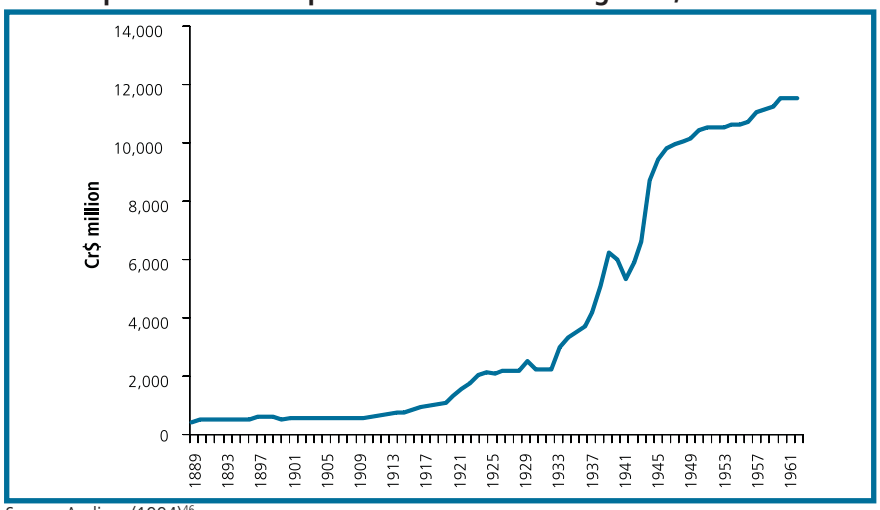
[40] Bouças, 1950.

[41] Main references in this subsection: Andima (1994), Leão (2003) and Neto (1980).

Rui Barbosa, the first Finance Minister of the Republic, tried to resume the redemption of securities and issue securities to the bearers (instead of nominative). However, this process was short-lived, suspended soon after he resigned in January 1891, and the first issuance of securities to the bearers did not occur until1903,[42] after the consolidation of 1902, as described below. The mechanism would only be used again in 1917.[43]

The 1902 consolidation tried to solve the problem of debt fragmentation and succeeded, at least initially. Nearly all outstanding securities were exchanged for new ones, all nominative, totaling 529,750 *contos de réis,* yielding interest rates of 5% a year.[44] However, the effect of this unification was also short-lived. From 1902-1956 (the year of a new consolidation), 145 authorizations for bond issues were granted, but they were not standardized: e.g., annual interest rates varied from 3%-7%. Further, the loans had different purposes: e.g., for covering budget deficits, sterilization of excess liquidity, funding civil works, acquiring fixed assets or companies, and repaying compulsory loans. The latter was crucial in the Republic's financing policy, especially for issuing war bonds,[45] which began in 1942, and influenced the evolution of outstanding funded domestic debt (see Graph 2).

Graph 2. Balance of policies and outstanding debt, 1889-1963



Source: Andima (1994)[46]

The total amount of public securities outstanding increased by virtually 100% from 1942-1949, mainly due to the issuing of compulsory subscriptions, and was kept relatively constant until the end of 1963. In fact, the nominal growth rate from 1950-1963 was just 1% a year.[47] Some attempts to launch securities in a voluntary basis from the mid-1940s onwards were frustrated,[48] and the only relevant issuances during this

[42] These were issued to pay for the port of Rio de Janeiro.

[43] The practice of replacing nominative securities with bearer securities was also regulated (Law No. 3,232, of January 1917).

[44] "The few securities that were not exchanged (fewer than 1%) lost their legal validity and prescribed in five years, i.e., in December 1907, as provided for in Decree 857 of November, 1851" (Leão, 2003).

[45] "War bonds were underwritten by compulsory loans of 3% of the salary of individuals, withheld by employers, in the amount equal to the income tax paid by individuals and corporations, for up to 3 million contos de réis. Collection receipts were exchanged for the bonds. They were also voluntarily underwritten, a course taken by many individuals, so they would not be seen as sympathizing with the three Axis powers" (Leão, 2003).

[46] Values shown in Cr$ million (the monetary system in force from November 1942 to February 1967), according to Leão (2003). See Annex 1 for a summary of the Brazilian monetary system.

[47] Andima, 1994.

[48] For example, the government tried, unsuccessfully, to issue 6 billion securities in 1959 and 140 billion in 1962, to finance public deficit (Leão, 2003).

period were the compulsory subscriptions of Economic Re-equipment Bonds ("Obrigações de Reaparelhamento Econômico") starting in 1958.[49]

The fact that Brazil placed securities in a compulsory way pointed to the difficult situation of its public credit, after years of not paying interest or redeeming outstanding securities. Further, rising inflation made the interest paid on the debt insufficient (normally between 5%-7%), thus generating negative real yields and reducing the demand for these securities.

The stagnation of the voluntary issuing of public securities complicated the financing of growing budget deficits even further, especially as of the mid-1950s. Since it had no public credit and was unable to raise the tax burden, the government financed almost all its deficit by issuing currency, thus increasing inflation.[50]

Table 4. Brazil: financing federal government budget deficits, 1954-1963
(Cr$ current million)

		Deficit Financing		
Years	**Deficit**	**Currency issuance**	**Net placement of securities and bonds with the public**	**Others***
1954	4.0	3.8	-2.5	2.7
1955	5.7	7.7	0.0	-2.0
1956	23.9	24.4	0.2	-0.7
1957	41.2	38.4	0.0	2.8
1958	30.7	19.0	9.4	2.3
1959	40.5	31.9	8.9	-0.3
1960	76.6	75.4	7.2	-6.0
1961	137.5	128.9	1.5	7.1
1962	280.9	223.8	22.8	34.3
1963	504.7	424.4	55.5	24.8

Source: Neto (1980). Central Bank of Brazil – 1965 Report, p. 222.
* Includes the following items: National Treasury Cash with Banco do Brasil S. A., compulsory loans and emergency loans.

If, on the one hand the Government was failing in its primary issuances, on the other it was able to carry out two large liability management operations (or consolidations). In 1956, it issued a law on restructuring the domestic federal public debt (DFPD) service, so as to standardize the debt and improve its control. Also, it was

[49] Law No. 1,474 of November 1951 established the compulsory loan in the form of additional income tax to be collected in fiscal years 1952-1956 (subsequently extended for another 10 fiscal years by Law No. 2,973 of November, 1956), so as to establish an Economic Re-equipment Fund of up to 10 billion cruzeiros. Reimbursement of the loan would occur six years after its collection, in the form of Economic Re-equipment Bonds. As a result, securities were not issued until late 1958 (Leão, 2003).
[50] Neto, 1980.

responding to strong pressure from financial institutions that were having a hard time purchasing securities in amounts sufficient to meet compulsory requirements: A key problem was the large debt fragmentation (there were over 130 different types of securities, with different printings and long-term maturities).

Thus, the law consolidated all outstanding loans into four grades, unified the redemption term for each and set new minimum amortization periods (21, 32, 36 and 68 years, respectively, for grades 1 to 4). However, there was at least one important flaw: because interest rates were not unified, several types of securities with varying rates had to be maintained. Also, the financial market thought the maturity period of the new securities was too long.

In 1962, the government approved a new and more complete consolidation. It issued the so-called Financial Recovery Securities ('Títulos de Recuperação Financeira") to unify its domestic debt: It replaced all funded DFPD except for the economic re-equipment bonds. These securities could be used in exchange for old debt or issued to cover budget deficits, but Government attempts at the latter did not work. However, the exchange succeeded and interest rates were unified at 7% a year. Thus, by late 1963, the funded DFPD was formed exclusively by Financial Recovery Securities, Economic Re-equipment Bonds and compulsory loan receipts, which were to be exchanged by securities in the future.

A main feature in the 1962 consolidation was the introduction of a new form of redemption, which became effective in the fiscal year after it was issued: It allowed for 20 equal annual installments, each in the amount equal to 5% of the security's nominal value. A tradition that had been maintained since 1827 was thus broken: i.e. redeeming public securities through buybacks when quoted below par, or on drawing lots for a percent of the total volume issued.[51]

4.2 External public debt during the republican period (until 1963)[52]

"Much will have done for the Republic the government that does nothing but taking good care of its finances." This quote, from the Electoral Manifest of Campos Salles,[53] points to the critical situation of the country's finances in the first years of the Republic.[54]

In fact, the long period of stability and gradual external indebtedness experienced from the 1840s onwards (described in Section 3.2) was temporarily disrupted at the start of the Republic Period. Successive balance of payment crises, beginning in the 1890s, marked that period in Brazil's public debt, which involved a series of funding loans in 1898, 1914 and 1931.

The doors for resuming external indebtedness in the medium term were reopened after the two first funding loans, but the last of the three launched negotiations that led to the permanent external debt agreement of 1943. After that, Brazil would be absent from private financial markets until the mid-1960s, with the start of the second indebtedness cycle.[55]

This section reviews the evolution of the external debt, funding loans and permanent agreement. Tables 5 and 6 illustrate, respectively, the balances of the external sector indebtedness (including states and

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[51] Leão, 2003.
[52] This subsection is based mainly on Abreu (1999).
[53] Campos Sales was the fourth President of the Republic (1898-1902) and the second to be elected directly by the people, following Prudente de Morais (1894-1898).
[54] Guanabara, 1902.
[55] For the definition of indebtedness cycles according to Abreu (1999), see footnote 14.

municipalities)[56] and the impact of successive balance-of-payments crises on some of the main external solvency indicators: e.g., the decline in the public external debt-to-exports ratio started during the period of stability in Imperial Brazil (falling from 168% to 57%, from the end of 1830 through 1881), and then the rapid rise before the turn of the century, reaching its peak in 1930, at 404%.

Table 5. Outstanding balances of external public loans launched before 1931, from 1825-1955 (in millions)

	pounds*	francs*	dollars*	florins*	total in pounds*
1825	4.1	0	0	0	4.1
1840	5.6	0	0	0	5.6
1865	13.0	0	0	0	13.0
1875	20.4	0	0	0	20.4
1885	23.2	0	0	0	23.2
1895	37.5	1.5	0	0	39.0
1900	42.4	1.5	0	0	43.9
1905	83.3	5.0	0	0	88.3
1913	129.1	902**	0	0	166.0
1920	135.2	900**	0	0	172.1
1930	163.0	1,850***	371.2	0	254.4
1940	152.6	748.8**	334.7	6.5	241.0
1950	51.9	1,708****	154.3	6.4	114.4
1955	28.4	411*****	99.2	3.6	64.7

Sources: Abreu (1985); Abreu (1994), Brasil (1955) and *Anuário Estatístico do Brasil*,1952 e 1956.

* Balances on Dec. 31.
** Provisional re-estimates. Loans in francs in 1920, considered constant since 1913.
*** Re-evaluation to take into account the French conversion of 1928 and the Hague decision against Brazil (Abreu,1994).
**** 1951.
***** 1956.

Table 6. External debt, 1830-1940*

Year	External debt in *contos de réis***	FOB Exports in *contos de réis*	Debt-to-exports ratio	External debt service in *contos de réis****	Service-to-exports ratio	Revenue*****	Service-to-total revenue ratio
1830	59,013	35,135	1.68	3,289	0.0936	16,779	0.1960
1840/1841	40,995	57,727	0.71	2,087	0.0361	16,311	0.1280
1850/1851	38,181	67,788	0.56	3,547	0.0523	32,697	0.1084
1860/1861	52,281	123,171	0.42	5,151	0.0418	50,052	0.1029
1870/1871	130,660	168,000	0.78	11,044	0.0657	95,885	0.1152

[56] State and municipal loans accounted for about 4% of the total in 1895; in 1930, this share had increased to about 30% of total external indebtedness (Abreu, 1999).

Year	External debt in *contos de réis***	FOB Exports in *contos de réis*	Debt-to-exports ratio	External debt service in *contos de réis****	Service-to-exports ratio	Revenue*****	Service-to-total revenue ratio
1880/1881	130,995	230,963	0.57	19,696	0.0854	128,364	0.1534
1890	328,431	280,665	1.17	16,077	0.0573	195,253	0.0823
1900	1,471,359	850,339	1.73	37,128	0.0436	307,915	0.1206
1910	1,929,746	939,413	2.05	149,867	0.1595	882,189	0.1699
1920	3,506,408	1,752,411	2.00	231,155	0.1319	1,548,168	0.1493
1930	11,753,476	2,907,354	4.04	857,432	0.2929	3,276,171	0.2617
1940	16,288,024	4,960,538	3.28	205,401	0.0414	4,664,813	0.0440

Source: Abreu (1999), base data from *Brasil em números 1960.*
* Until 1930, the nominal value of redeemed securities. After 1930, the market value.
** End of the calendar year.
*** Calendar year.
**** Federal until 1900. Federal, states and municipalities starting in 1910. The debt-service-to-Federal revenue ratio was 28.56% in 1910. Until 1880, the external debt was exclusively Federal

4.2.1 The first funding loan, 1898

As noted earlier, Brazil had serious balance-of-payments problems in the years before the turn of the century.

The trade balance fell, the debt service increased, and the entry of new loans decreased. The result was a steep decline in the exchange rate from some 27 pence per each 1,000 *réis* in 1889 to 7 pence in 1898. The financial crisis in Brazil had encouraged the search for solutions that mitigated the exchange crisis (Abreu, 1999).

Thus, the suspension of debt service payments was somewhat expected on the international scene.[57] In addition to the clear signal in Campos Sales' Electoral Manifest on behalf of the Republic's financial recovery, there was also the Argentine experience (the country negotiated its funding loan in 1891), which inspired a similar initiative in Brazil.

The 1898 funding loan involved the gradual issuing of £8.6 million to pay interest on (a) external federal loans, (b) the 1879 domestic loan in gold and (c) all railroad guarantees. Besides, amortizations of all debts included in the transaction (including those from new securities) were suspended for three years, until 1911. The new securities were issued at par, with a 5% interest rate and 50-year amortization, starting from the end of the suspension period. These features explain the outstanding balance of the 1898 funding loan (see Table 7).

4.2.2 The second funding loan, 1914

Table 5 shows the rapid increase in the country's external indebtedness in the first 13 years of the 20th century, when debt rose four-fold, from £43.9 million to £166 million. This impressive increase and the resumption of debt service payments were just some of the factors that deteriorated the balance-of-payments as of 1912.[58]

[57] "British diplomats had expected debt payments would be suspended since early 1898. In February of that year,, N. M. Rothschild & Sons Limited were visited by the Treasury delegate in London and tested with regard to their reaction in the case of a temporary suspension of the amortization funds of the Brazilian external debt" (Abreu, 1999).
[58] Abreu's (1999) examples include reduced coffee exports (due to price drops in the US) and rubber exports (due to the compe-

Table 7. Outstanding balance of funding loans in pounds and dollars, 1898-1945

(in millions)

	Funding loan 1898 pounds	Funding loan 1914 pounds	Funding loan 1931 pounds 20 years	Funding loan 1931 pounds 40 years	Funding loan 1931 dollars 20 years
1898	1.4	0	0	0	0
1899	4.3	0	0	0	0
1900	7.2	0	0	0	0
1901	8.6	0	0	0	0
1913	8.5	0	0	0	0
1914	8.4	0	0	0	0
1915	8.4	6.2	0	0	0
1916	8.3	10.0	0	0	0
1917	8.2	13.1	0	0	0
1918	8.2	13.2	0	0	0
1919	8.1	13.8	0	0	0
1920	8.0	14.5	0	0	0
1930	6.9	14.2	0	0	0
1931	6.8	14.0	n/a	n/a	n/a
1932	6.5	13.9	n/a	n/a	n/a
1933	6.3	13.7	1.9	6.6	21.8
1934	6.2	13.6	2.6	7.9	29.5
1943	5.0	12.3	1.8	6.6	18.6
1944	4.7	11.2	1.5	5.1	16.4
1945	4.4	10.7	1.4	6.8	15.5

Source: Abreu (1999) and Brasil (1955)

As a result, negotiations were begun in 1913; however, difficulties arose with banks of different nationalities which slowed the process, and talks were suspended on June 27, 1914, on the eve of Austria-Hungary's declaration of war against Serbia, and its rapid spread across Europe.[59]

Brazil suspended external debt service as of August 1, 1914 and began to assess the conditions for a new funding loan. The nominal capital of the second loan would not exceed £15 million and, like the first, new securities were gradually issued at par, with 5% interest, a 63-year amortization period and redemption starting in 1927. The amortization of all Federal loans denominated in pounds or Swiss francs was also suspended until August 1, 1927 as was interest on loans falling due between August, 1914 and July, 1917.

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tition from Asia) and the difficulty in contracting new international loans given the political deterioration in Europe, especially in the Balkans.

[59] Abreu, 1999.

4.2.3 The third funding loan, 1931

The history behind the third loan is similar to that of the previous ones: Rapid growth of external indebtedness as of 1925[60] (although on a smaller scale than that as of 1913), followed by factors that deteriorated the balance-of-payments, starting in mid-1928.

The funding was issued in two series, both with a 5% interest rate, which planned redemption for 20 and 40 years, depending on the guarantee of each loan, whose interest rates were being refinanced. For loans in dollars, only 20-year securities were issued. Total issuance was limited to about £18 million to refinance the interest of Federal loans falling due as of October 1931 for a three-year period.[61]

4.2.4 The permanent agreement of 1943

As mentioned earlier, the third funding loan (1931) was the first step in long negotiations that led to the permanent external debt agreement of 1943. There were some noteworthy events during this period: (a) a temporary agreement in 1934 named the "Aranha scheme" which was to last four years and resume paying the external debt in that same year; (b) the 1937 default, which was blamed on the November 1937 coup,[62] and which interrupted the "Aranha scheme" before its planned deadline;[63] (c) another temporary agreement (the "Souza Costa scheme") in 1940, also interrupted before the end of its planned four-year duration; and (d) signing of the 1943 permanent agreement, which solved the issue regarding servicing the external debt incurred until 1931.

The rush to find a permanent solution even before the end of the "Souza Costa scheme" arose from the realization (by Souza Costa himself) that Brazil once again had difficulties financing its balance-of- payments.[64]

As described by Cardoso and Dornbusch,[65] the permanent agreement consolidated the external debt, lengthening its maturity from 40 to 60 years and reducing both interest and principal. The plan offered bondholders two options:[66] Option A, which did not include reducing the principal, lowered interest with a provision for a sinking fund. As a result, debt service (interest plus the sinking fund) would reach 2.9%-5.9% of the principal annually. Option B would involve reducing principal and interest. For each $1,000 of the original security, new securities with a face value of $800 (or $500 in some cases) and 3.75% coupons were issued. Also, bondholders would receive a cash payment from $75-$175. These securities had no fixed maturity but rather a sinking fund. Debt service in this option (interest plus sinking fund) totaled 6.4% of the principal. These conditions implied a 50% drop in the balance of outstanding external debt (Table 5).

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[60] "The unique aspect of the new indebtedness was the presence of loans in dollars, which, over the decade, accounted for 75% of the inflows of external resources relative to loans in Brazil" (Table 5) (Abreu, 1999).

[61] Abreu, 1999.

[62] November 20, 1937 witnessed the beginning of the Getúlio Vargas dictatorship. Vargas took office for the first time in 1930 and through a coup d'etat, remained until October 29, 1945. This republican period became known as the New State. He would be elected president again and remain in office from 1951-1954 (when he committed suicide and his term of Office, which should have lasted in 1956, was ended).

[63] This is the only complete default by the Brazilian central government before 1987

[64] Souza Costa realized early in 1943 that, after the war, Brazil's exports would have problems adjusting to the competition in a normalized global market, and there would be intense pressure on the existing foreign exchange reserves for imports of essential capital goods, for which there was a strong pent-up demand (Abreu, 1999).

[65] Cardoso and Dornbusch, 1989.

[66] This exchange proposal, early in 1946, was agreed to by 78% of bondholders; 22% chose option A and the other 56% chose option B (Cardoso and Dornbusch, 1989).

Despite the impressive debt reduction resulting from the 1943 consolidation, Brazil once again experienced imbalances in its external accounts early in the 1950s as a result of the high trade deficits that followed the flexible import controls during the Korea War. The explosive growth of current account deficits exhausted international reserves and led to a crisis in the balance-of-payments in 1952.[67] Since these imports were financed mostly by trade credits that were subsequently rolled over by short- and medium-term loans, the total external debt (public and private) doubled between 1946 and 1953, reaching over $1 billion.[68]

The policy to expand infrastructure and industrialization led by the incumbent president Juscelino Kubitschek in his "Plano de Metas" or Target Program (1957-1960), increased the demand for imported capital goods, which were financed mostly by suppliers' loans with sovereign guarantees. Thus, by the end of 1961, total external debt was already twice that of 1955 and the balance-of-payments situation was critical.[69]

Kubitschek's successor, Jânio Quadros, tried to stabilize external accounts but his resignation a few months after taking office created renewed pressure on current accounts in 1962. Economic problems (inflation, low economic growth and the balance-of-payments crisis) worsened during the short administration of President Goulart, who was removed from office by a military coup in 1964.

As the next chapter shows, the management and characteristics of the domestic and external public debt were strongly influenced by institutional reforms begun in 1964. Significant changes occurred since then. The second cycle of Brazilian external indebtedness was emerging at the same time that an internal debt market was developing; these shed light on the current structure and institutional development of the country's public debt.

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[67] Abreu and Fritsch ,1987.

[68] See Cardoso and Dornbusch (1989).

[69] The Kubitschek administration started negotiations with the International Monetary Fund. However, in mid-1959, the Government did not accept the IMF conditions and ended negotiations.

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Annex 1. Brazilian monetary systems

Monetary system (symbol)	Legal effect	Equivalence to previous standard	Equivalence R$ 1.00 (one real)
Réis **(Rs) and ($)**	Beginning of colonization, early 16th century to 10/30/1942	...	Rs2,750,000,000,000:000$000
Cruzeiro **(Cr$)**	11/01/1942 - 12/01/1964	Rs1$000 = Cr$1.00 (1,000 *réis* = 1.0 *cruzeiro*)	Cr$2,750,000,000,000,000
	12/02/1964 - 2/12/1967	Cr$ 1.00 = Cr$ 1 (1.0 = 1.0) * cents were abolished	Cr$2,750,000,000,000,000
Cruzeiro Novo **(NCr$)**	2/13/1967 - 5/14/1970	Cr$1,000 = NCr$1.00 (1,000 *cruzeiros* = one *cruzeiro novo*)	NCr$2,750,000,000,000
Cruzeiro **(Cr$)**	5/15/1970 - 8/15/1984	NCr$1.00 = Cr$1.00 (one *cruzeiro novo* = one *cruzeiro*)	Cr$2,750,000,000,000
	8/16/1984 - 2/27/1986	Cr$1.00 = Cr$1.00 (one *cruzeiro* = one *cruzeiro*) * cents were abolished	Cr$2,750,000,000,000
Cruzado **(Cz$)**	2/28/1986 - 1/15/1989	Cr$1,000 = Cz$1.00 (1,000 *cruzeiros* = one *cruzado*)	Cz$2,750,000,000
Cruzado Novo **(NCz$)**	1/16/1989 - 3/15/1990	Cz$ 1,000.00 = NCz$1.00 (1,000 *cruzados* = one *cruzado novo*)	NCz$2,750,000
Cruzeiro **(Cr$)**	3/16/1990 - 7/31/1993	NCz$1.00 = Cr$1.00 (one *cruzado novo* = one *cruzeiro*)	Cr$2,750,000
Cruzeiro Real **(CR$)**	8/01/1993 - 6/30/1994	Cr$1,000,00 = CR$1.00 (1,000 *cruzeiros* = one *cruzeiro real*)	CR$2,750.00
Real **(R$)**	As of /07/01/1994	CR$ 2,750.00 = R$ 1.00 (2,750 *cruzeiros reais* = one *real*)	...

Source: Central Bank of Brazil
Note: Equivalences are neither to correct values nor to show the purchasing power of the currency.

Part I
Chapter 2

History of public debt in Brazil: 1964 to the present

by Guilherme Binato Villela Pedras

1 Introduction

The period from 1964 to the present has been marked by profound changes in the structure of public debt, both domestic and external. Not only have outstanding debts increased substantially, but their structures have also altered dramatically. Understanding them, along with the country's economic conditions, which affect the size and profile of debt, is needed to correctly evaluate Brazil's indebtedness.

This chapter focuses on the quantitative aspects of public debt and illustrates the institutional changes that have occurred over time.

From a macroeconomic standpoint, domestic and external debts are related, though they were influenced by different factors. The origin of the external debt in the early 1980s, for example, lies chiefly in exogenous factors, just as the substantial rise in outstanding domestic debt in the mid-1990s is linked to internal factors.

Section 2 describes the evolution of the domestic debt, relating it to macroeconomic events of the period. It also describes the institutional aspects related to the Domestic Federal Public Debt (DFPD). Based on the history, it is clear that some decisions made in this period have affected present economic policy constraints.

Section 3 notes the different stages of the external debt, which help explain the crisis of the 1980s, how the country overcame it and resumed voluntary issuances until it finally reached the relative calm it enjoys today.[1]

2 Domestic Federal Public Debt (DFPD)

According to the economic literature, four basic objectives justify the existence of public debt: (1) financing public deficit; (2) providing instruments for implementing monetary policy (in the case of domestic debt); (3) establishing long-term benchmarks for public sector funding, since public issuances, given their high volume and lower credit risk, serve as reference for private debt pricing; and (4) allocating resources among generations, insofar as (depending on the maturity of funding instruments) future generations will pay for today's expenditures (funded through debt). As will be discussed, the history of DFPD management in Brazil represents an evolution of all these objectives.

The first objective, set in the 1960s, was to create instruments to fund public investments without generating inflation. Once that was accomplished, the goal was to create an instrument that would be more suitable for implementing monetary policy. Standardization and the systematic placement of securities, occurring

[1] The Statistical Annex (at the end of the book) presents an historical series for the different Federal Public Debt indicators as well as the country's economic aggregates.

in the 1990s, accompanied the third objective, but, given the economic turmoil of that era, the goal was not achieved. The fourth was launched in 2000, with the issuing of 20- and 30-year bonds.

A turning point occurred when, in April 1964, Castelo Branco became president. Until then, issuances were designed to fund specific projects. After this time, however, the Government introduced a host of reforms that profoundly changed the capital market and sought to follow the previous objectives. In fact, the changes significantly affected the public debt, as it was the first time an attempt was made to create a structured public debt security market.

This section explains the reasons why DFPD has its current volume and profile; also, it examines the DFPD evolution since 1965 and how it was influenced by Government decisions as well as by macroeconomic conditions. It is divided into three parts. Part 1 covers the period starting in 1964, discussing the steps taken to develop the capital market and thus achieve the objectives mentioned above. Part 2 describes the evolution since the mid-1980s, when public accounts had deteriorated to the point where the Government had to focus more on fiscal issues, thus motivating institutional changes. Part 3 examines more recent years, describing efforts to better manage the debt and thus improve its profile.

2.1 1964-1986: building a debt market

In political and economic terms, 1964 was a critical year. The Castelo Branco administration was determined to produce a sustainable development model by introducing new economic policies: In 1965, the Government launched the Government Economic Action Plan to reduce the inflation of previous years through a restrictive monetary policy and fiscal adjustment. The scope of the change raised the need for reforms in the domestic financial system and, among these, actions that would make the public debt security market more efficient.

Plan objectives included, *inter alia*:[2] (1) raising additional debt to cover Federal Government deficits; (2) encouraging individual savings and (3) developing a voluntary market for public securities, which pointed up the need for an efficient public securities market. In this context, several changes were made to the economy, particularly with regard to public debt, such as reforms in the fiscal and financial systems. To this end, Law nº 4,357 of July 1964, which established the monetary correction, and Law nº 4,595 of December 1964, which reformed the banking system and created the Central Bank and National Monetary Council (CMN),[3] were particularly important.

As noted in Chapter 1, before these reforms, public debt was perceived as diversified public securities issued for varied purposes, with little credibility. Further, in the mid-1960s, inflation was running 30% a year. These factors made it abundantly clear that debt policy needed to be overhauled.

Interestingly, the measures adopted to develop Brazil's capital market, especially creating the Central Bank, included two objectives related to public debt management policies. Their main goals were to establish an efficient public debt security market so as to (1) spark demand for public deficit funding and (2) allow for monetary policy operations. Law nº 4,595, which defined the Central Bank's duties, established in Article 10 "…to carry out, as an instrument of monetary policy," the purchase and sale of federal public securities. In fact, the main measures that led to Brazil's large federal securities market were taken late in the 1960s. They aimed explicitly at:[4]

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[2] Campos, 1994.

[3] Despite the creation of the Central Bank as a monetary authority, Banco do Brasil, which already existed, also performed monetary policy-related duties as, in practice, it had the power to create currency.

[4] Central Bank – Public Debt Management, 1972 Activity Report.

- Raising non-inflationary resources to cover the Federal Government budget deficits as well as to make specific investments not included in the budget;[5]
- Consolidating open market operations;
- Ensuring turnover of the Domestic Federal Public Debt.

Thus, the Central Bank was responsible for using public securities to implement monetary policy and also finance the public debt.

One measure designed to improve the public debt security market was the monetary correction, created to protect investors from losses due to mounting inflation. In fact, if the goal to create a liquid public debt security market was to be achieved, this would require that securities should protect investors from losses in the currency's purchasing power. This led policy-makers to choose inflation-linked securities as a natural solution. Thus, the first public debt standard instrument was the *Obrigação Reajustável do Tesouro Nacional* (ORTN), legally established by Law nº 4,357/64 and Decree nº 54,252/64.

The introduction of indexed securities protected investors from losses due to inflation and was a major leap towards developing the public debt security market. As Garcia[6] notes, "the existence of indexed public debt held by private savers on a voluntary basis defined a bedrock for the development of financial markets in Brazil in the following years."

Given this environment, public debt had high growth rates, both in absolute volume and percentage of GDP: While DFPD represented 0.5% of GDP in 1965, it was close to 4% by the end of 1969.[7] This fact is quite impressive, since the economy grew at extremely high rates in that same period.

Despite the large growth of public debt during those years, the volume of issuances was not yet sufficient to cover the budget deficits. As shown in the table below, until 1968, the Central Bank was a major financer of the Government's fiscal needs.

It was only after 1969 that public funding reached a level that exceeded the Government's fiscal needs. Thus, growing indebtedness was basically responsible for establishing an efficient public debt security market that paved the way for conducting monetary policy. It should be noted that the portion of the fiscal deficit not covered by the issuance of securities to the market was financed by the Central Bank, which implied that the monetary authority operated as a source of Government financing. As will be seen, this particular aspect in the relations between fiscal and monetary authorities has evolved considerably since then.

At the end of that phase, the first of the four public debt objectives (public debt financing) had been met. Thus, authorities now needed policies to achieve the second objective, i.e., to provide appropriate instruments for implementing monetary policy.

At that time, the inflation-linked securities were the Government's only instruments to implement both monetary and debt policies. As the capital market gained considerable volume by the early 1970s, the Central Bank decided it was necessary to create another type of security, more useful for monetary policy. Thus, Executive Law nº 1,079 of January 1970 and CMN Resolution No. 150 of July 1970 were passed, establishing

[5] Interestingly, the whole period was one of significant economic growth. Raising funds for public investment was thus a Government priority.
[6] Garcia, 1998.
[7] Andima, *Séries Históricas Dívida Pública*, 1993.

the *Letras do Tesouro Nacional* (LTNs) (National Treasury bills) for monetary policy purposes. These changes greatly advanced the country's public debt security market. According to Edésio Ferreira:

> *Nevertheless, there was still a need for complementary measures for the public debt security market to attain the objectives stipulated within the scope of monetary policy. There was therefore a need to establish a short-term security, not to make up for deficits on the handling of the debtor financing budgetary imbalances, but with necessary requisites to absorb possible surplus liquidity in the system, and even transforming it into a second-line reserve for the commercial banks through the mechanism of reserves exchange.*[8]

Table 1. Deficit funding 1964-1972
(In % of GDP)

Year	Outstanding debt	Federal deficit	Net placement of ORTN	Funding by the public (% of total funding)
1964	0.2%	3.2%	0.2%	10.3
1965	1.2%	1.6%	0.9%	54.5
1966	2.6%	1.1%	1.2%	132.4
1967	3.5%	1.7%	0.6%	32.3
1968	3.5%	1.2%	0.1%	12.1
1969	4.4%	0.6%	0.6%	235.6
1970	5.8%	0.4%	1.3%	212.9
1971	6.6%	0.3%	1.3%	600.6
1972	8.8%	0.2%	2.3%	1605.0

Source: Bacen/Gedip Activity Report, 1972

The late 1960s and the first part of the 1970s were particularly good for the country. Economic growth was at historically high levels, both for Brazil and internationally,[9] and inflation was still running below that of the second half of the previous decade. In this context, the spectacular success of the debt policy in the early 1970s was understandable, and a unique time for DFPD in Brazil.

During this time, the country began to issue fixed-rate securities and placed them through public offerings (auctions) at competitive prices. Still, the share of LTNs in total debt rose steeply; this was a response to the increased use of this instrument in monetary policy, which was linked to open market operations. In fact, while LTNs were just 5% of outstanding debt in 1970, they rose to 33.6% in 1972, and their share would continue to grow until the second half of the decade. It was during that period that public debt became not just a Government funding instrument but an important tool in monetary policy.

However, from the mid-1970s onwards, the country began to feel the effects of the first oil shock. In 1974, inflation rates doubled from the previous year. Growth rates also broke the pattern they had followed

[8] Ferreira, 1974. Originally written in Portuguese. Free translation by the author.
[9] From 1968-1974, Brazil's economy grew at an average rate of 10.8% a year. This period was called "Milagre Econômico," internationally known as "Brazilian Miracle".

until then, and dropped to 5% a year. As inflation rose, investors again preferred the inflation-linked ORTNs, to the detriment of LTNs, a pattern that persisted until the decade ended. As a result, the share of fixed rate instruments that had reached 52% in 1977 dropped to 41% by the end of the decade and would decline even further, afterwards.

In the 1980s, the problem was compounded by the second oil shock (in 1979). At that time, inflation reached unprecedented three-digit levels, and economic growth rates were drawn to dangerous grounds.[10] he so-called "lost decade" had just begun. From the DFPD standpoint, the consequence was the investors' preference for ORTNs - throughout the first half of 1980 - given the expectations raised by inflation. At the same time, a process was begun to reduce the maturity of fixed securities offered to the market. By the end of 1983, ORTNs which accounted for 96% of public debt, were once again the main public debt instrument, i.e., they had returned to 1960s' levels. A positive effect of this movement - the switch from fixed, shorter-term securities (LTNs) to longer-term, inflation-linked ones (ORTNs) - was to increase the average maturity of debt, which rose from 15 months in 1972 to 26 months at the end of 1983.

Solutions to the difficulty of refinancing securities in the market involved reducing their maturity and increasing the issuance of indexed instruments, mainly inflation and floating rate bonds. Alternative solutions to those traditionally used would not be introduced until 1986.

In 1984 and 1985, the country experienced steep growth, 5.4% and 7.8%, respectively. However, the public deficit was still out of control and rampant inflation forced the Government to introduce a restrictive monetary policy, raising real interest rates to historically high levels (around 10% a year). The failure to combat inflation through orthodox means was leading to alternatives to deal not only with inflation but also with public indebtedness. At the same time, the bad fiscal situation called for strengthening the governance, in order to curb high public deficits.

It should be noted that, in 1985, although the instruments offered in the market were the same as those auctioned earlier in the decade (LTNs and ORTNs), their maturities were reduced and their rates began to reflect the growing inflation. Even more relevant, data on the debt revealed that, by the year's end, ORTNs represented 96.6% of the overall debt, a huge rise from the 58.8% in 1979. Likewise, the average maturity that had reached 31.2 months in April 1983 fell to 10.4 months at the end of 1985, the lowest recorded to date.

This policy was only possible given the relatively reduced amount of outstanding debt.[11] If the level were higher, holders of public securities could have assumed the country was insolvent, further compromising the situation, since the dimension and length of the crisis were still unknown.

2.2 Domestic public debt after 1986 and institutional changes

The fiscal difficulties of the mid-1980s sparked the need to change the institutional framework of the fiscal sector. Indeed, 1986 was a landmark for public debt management, due to measures taken to improve fiscal controls, which included closing the *Conta Movimento* (operational account)[12] used by the Central Bank to fund the Banco do Brasil's imbalances. Also, the National Treasury Secretariat was created[13] to centralize and improve the effectiveness of public spending controls.

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[10] In 1981, when recession reached its peak, economic growth fell by 4%.

[11] At that time, the debt-to-GDP ratio was below 10 percent.

[12] The *Conta Movimento* allowed Banco do Brasil to create currency and therefore turned the institution, in practice, into a monetary authority alongside the Central Bank.

[13] By Decree nº 92,452 of August, 1986.

The major concern with controlling and monitoring domestic debt - which had increased in previous years due to the precarious fiscal situation coupled with the perceived need for an institutional distinction between monetary and debt policies – lead to the transference of the debt management from Central Bank to the Ministry of Finance. The Decree nº 94,443 of June 1987 transferred activities related to the placement and redemption of public debt to the Ministry of Finance, where the function was assigned to the National Treasury Secretariat. Among the Secretariat's duties[14] were:

> [...] maintaining physical/financial control over the debt issued
>
> [...] determining the securities and volumes of Public Offers, including preparing and publishing public notices, in close cooperation with the Central Bank of Brazil [...] and
>
> [...] managing bond issuance limits [...]

In this context, in order to curtail further distortions between fiscal and monetary policies, the Government[15] created measures to control the public debt, which could only be raised to cover deficits in the Federal Government Budget (OGU) through legislative authorization, as well as the debt service share not included in the OGU. Despite the segregation of functions and the creation of the National Treasury Secretariat, the same Executive Law established that: "[...] if the National Treasury fails to issue bonds to the public in an amount equivalent to that of redeemed securities, the Central Bank of Brazil may underwrite the share of securities not placed." In other words, although this represented an institutional advance over the previous practice, whatever the need to roll over the debt, the amount could be financed through the Central Bank once the market refused to provide financing.

The failure of anti-inflation policies led the Government to more "heterodox" approaches, which influenced debt management strategies in subsequent years. In early 1986, the country had the first heterodox anti-inflation experience: Early that year, the rise in inflation and public indebtedness were cause for concern; thus, on February 28, the Government introduced the Cruzado Plan, which froze prices, abolished monetary correction and reduced real interest rates. These measures, coupled with the need to reduce fiscal deficits, led the Central Bank, and not the market, to absorb new debt issuances, as stipulated in the new laws.[16]

Because it was difficult to place LTNs and impossible to place ORTNs (now called OTNs) in the market, and the economy was de-indexed (due to the end of monetary correction), the Central Bank chose to create a bond under its responsibility. Then, in May 1986, due to the lack of instrument options, the National Monetary Council authorized the monetary authority to issue securities of its own (for monetary policy purposes); this introduced the *Letra do Banco Central* (LBC), whose unique characteristic was that it was linked to floating rates (the Selic rate) and indexed on a daily basis.[17] The idea was to limit the issuance of LBCs to the volume of National Treasury securities held by Central Bank. Given the characteristics of the new security and the economic environment, the market welcomed it enthusiastically.

Since (1) the LBCs were successfully placed, (2) no other options existed with respect to funding instruments, and (3) there was a new guideline separating fiscal and monetary activities, the National Treasury created the *Letras Financeiras do Tesouro* (LFTs). These new National Treasury bills had the same characteristics as the Central Bank LBCs, except they were designed to fund budget deficits, not for monetary policy purposes.

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[14] Originally written in Portuguese. Free translation by the author. The Decree was regulated by Administrative Rule nº 430, of December 1987.

[15] Executive Law nº 2,376, of November 1987.

[16] In 1986 and 1987, the debt in the Central Bank portfolio reached 68% and 72% of the total outstanding debt, respectively.

[17] The Selic rate is the average interest rate on overnight repo operations of inter-bank loans collateralized by Government bonds.

What was the impact of issuing daily interest rate-backed securities? As will be noted, these securities represented a considerable share of DFPD and were an important instrument by which the Government could maintain its funding capacity.

The failure of the Cruzado Plan in 1987 marks the beginning of even greater difficulties in conducting economic policy: Public deficits were out of control, and the external debt was problematic. In fact, the external debt moratorium in February of that year led to a greater need for funding via domestic debt.

Once the 1988 Constitution was adopted, the Central Bank, which at that point was not allowed to issue securities, was also prevented from funding the Government: Instead, the Central Bank could only purchase securities from the National Treasury in an amount equal to the principal falling due in its portfolio. The classic relationship between the monetary and fiscal authorities had finally been achieved. Later, in 2000, the Fiscal Responsibility Law imposed even stricter controls; thus, placements for the Central Bank's portfolio could only be made at the average rate of the auction held on that particular day (in the market). This rule still holds.[18]

Despite the successive economic shocks since 1986, inflation rates remained at very high levels, as did the uncertainty about the near future. As a result, in 1988 and 1989, virtually no LTNs were placed, not even with regard to the Central Bank portfolio, illustrating the country's difficulties. Public funding, in turn, began to be provided through LFTs and, for those two years, this security was practically the only way for the Government to raise funds (via security issuances). Interestingly, this originally heterodox instrument became fundamental for the country's solvency. Without it, the country would have needed to issue LTNs with increasingly shorter maturities, which would have led to a considerable increase in the debt refinancing risk.

The creation of LBCs and subsequently, LFTs, points up the search for non-traditional solutions for economic problems. Nonetheless, debt maturity was not changed by the daily renegotiation instrument and at the end of the decade the debt average maturity was still reduced, while the debt to GDP ratio represented the highest value recorded until then, indicating the country's growing vulnerability.

When the new Government took office[19] in 1990, the public debt situation was critical, with outstanding securities in the market accounting for 15% of GDP - a historical record. The debt was formed basically by LFTs, with an average maturity of just five months. Further, inflation rates were above 1,000% a year and the primary deficit had reached 1% of GDP the year before.[20]

Against this backdrop, President Collor took office with the explicit goal of ending the inflationary process and lack of fiscal control. The economic policy strain and crisis with the public debt led to the drastic measures included in the 1990 Collor Plan: Among other things, it froze 80% of the country's financial assets, producing an unprecedented effect on public debt. Through this measure, the Government swapped the debt in the hands of the market into another debt held by the Central Bank for 18 months, yielding BTN[21] + 6% a year. In other words, the outstanding debt that had been remunerated at the Selic rate was now repaid at a much lower rate, generating considerable gains for the Government. However, the measure so greatly reduced liquidity that the Central Bank was forced to re-purchase the LFTs still in the market. These two moves, coupled with the primary surplus obtained

[18] During the first years, the Central Bank submitted sealed proposals to the auctions, as if it were a financial institution. Later, the system was changed and the Central Bank was allowed to receive, in securities, the difference between the volume offered in auction and the volume actually placed in the market.

[19] In March 1990, the President handed the presidential sash over to Fernando Collor de Melo, the first president to be elected by popular vote in nearly 30 years (the last was Jânio Quadros, who took office in January 1961), following a long period of indirect elections of military rulers.

[20] For further details on the evolution of macroeconomic statistics during that period, see the Statistical Annex at the end of the book.

[21] BTNs were created in 1989 as an economic indexing instrument and were adjusted by an IBGE inflation index known as Con-

in the first year of the new government (over 4% of GDP), caused a historic downfall of 82.5% in the outstanding debt held by the public in 1990.

In 1991, with inflation rising and difficulty in issuing LTNs (due to the loss of Government credibility after the asset freeze in the Collor Plan), the Central Bank chose to create an identical instrument for monetary policy purposes - the Central Bank Bonus (BBC),[22] in December 1990. In the first months of 1991, this was the only security offered to the public.

In September of that year, the values related to frozen assets began to be returned and, as of October, funds to repay them were obtained from new security issuances. By the end of that month, another decree[23] created a new financial instrument, *Notas do Tesouro Nacional* (NTNs), with different series depending on the index factor: Among the most common were the US dollar (NTN-D), IGP-M (NTN-C) and TR (NTN-H). The idea was to diversify the instruments in order to expand investor base and obtain funds to pay off the BTN-Es falling due. The creation of such varied instruments reflects the turmoil in the domestic economy in the 1980s and early 1990s, as well as the heterodoxy in the macroeconomic scenario.

Seeking another step to curtail the remaining distortions between fiscal and monetary activities that had begun in the previous decade, some measures were proposed in 1993, which became known as "*Operação Caixa Preta*." These sought greater transparency to National Treasury-Central Bank relations by, among other strategies, restructuring the security portfolio under National Treasury responsibility in the Central Bank, thus providing the monetary authority with instruments more suitable for conducting monetary policy. Another measure was the early redemption of National Treasury securities in the Central Bank portfolio, with funds obtained by issuing Treasury bonds in the market. This was one of the factors responsible for the 24% decline in the Central Bank's portfolio of outstanding securities that year.

During the 1990s, the Government continued to fight inflation which was now over 1,000% a year. Meanwhile, economic growth remained very low, with negative average real growth of 1.3% from 1990-1993. Seeking to end this situation, the Government launched another heterodox program in 1994, this time known as Real Plan. Although based on the same principles as its predecessors, i.e., the existence of an inertial component in Brazilian inflation, the plan sought to reconcile this aspect with some components of the orthodox formula, such as maintaining high real interest rates. This time the formula succeeded and the country would, after many years, experience reasonable and falling inflation rates. As of 1995, the economic scene became more predictable, but the move would affect the structure of domestic public debt.

Despite the relative success in stabilizing inflation, from that year onwards, debt spiraled upwards, which could be explained by (1) a strict monetary policy, which included an extremely high average real interest rate, (2) a reduced primary surplus, which was even negative for some Government entities, and (3) greater transparency of public accounts, when several liabilities previously unrecognized were acknowledged, such as the state and municipal financial adjustment program and the capitalization of some federal banks.[24] In fact, in the second half of the 1990s, DFPD in the market increased in real terms at an average of 24.8% a year.

Also during that period, the reduction in the debt average maturity became a key part of the debt strategy. For this reason, despite the successful economic stabilization, the change in the debt strategy mainly reflected the turmoil within the global economy.

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sumer Price Index (CPI).

[22] Established by Resolution nº 1,780.

[23] Decree nº 317, of 1991.

[24] The Box at the end of this section provides a brief description of the program.

During the first years of the Real Plan, the Government substantially improved its debt profile. With economic stability, it increased the volume of LTNs issued and gradually increased their maturities (offered in auctions) from two to three months. In 1996, only six-month LTNs were offered; their maturities continued to lengthen until 1997, when the National Treasury finally placed two-year, fixed bonds in the market. When the Asian crisis erupted, the immediate option was to reduce maturities; as a result, three-month LTNs returned to the market. Until then, the Government had resisted offering LFTs and it was only after the Russian crisis that the Treasury decided to return to issuing them and temporarily stopped issuing fixed-rate securities.

Throughout that period, the share of LTNs, which stood at less than 1% at the end of 1994, jumped to 27% in 1996, while outstanding LFTs disappeared that same year. However, starting in 1997, as a result of the Asian crisis and despite the success in maintaining economic stability, the advances were reversed in such a way that, late in 1998, outstanding fixed-rate bonds did not exceed 20% of the total, and LFTs soon accounted for nearly half.

As debt grew considerably, its share of fixed-rate securities was small, largely due to the increased perception of the refinancing risk, which caused the average maturity to be lengthened, and thus not jeopardize the market perception about sustainability. This prevented fixed-rate securities with maturities below six months from being placed, thus giving preference to longer-indexed instruments (especially LFTs). One factor that contributed to this process was the 1999 change in the exchange rate; as this reduced the volatility of interest rates, the public debt market risk – from the Government perspective – was also reduced. In fact, as of 1999, the maturity of LFTs offered in auction increased to two years, while LTNs returned to three- and six-month maturities.

It should be noted that, despite the advances gained by economic stabilization, they did not affect the public debt profile as much as might have been expected. The substantial bond issuances due to the assumption of contingent liabilities (crucial for a definitive adjustment of Government accounts), coupled with the high interest rates required to consolidate stability, caused outstanding public debt to reach extremely high levels. This fact meant the average maturity needed to be lengthened, so as to prevent the refinancing risk at each period from being too high.

Also in 1999, the Government began again to issue inflation-linked securities (IGPM), so as to strengthen the public debt lengthening process and take advantage of the high potential demand from pension funds. Since then, an effort has been made to regularly improve the profile of domestic federal debt, both by increasing its maturity and by reducing the share of Foreign Exchange (FX) rate-indexed and floating-rate securities. This course has successfully been followed since 2003.

2.3 Efforts to improve the debt profile

Starting in 2003, investors' perceptions about the direction of the economy improved. This was due to the new administration's efforts to maintain fiscal responsibility and the monetary and exchange policies started in the second half of the previous administration. This contributed to considerable advances in public debt management.

In fact, by the end of 2002, the share of floating-rate securities in the domestic debt had reached 60.8%, while the share of fixed securities was just 2.2% and FX-indexed securities were 22.4%. Since then, debt managers began to adopt different practices aimed at market development.[25] One such practice was to concentrate maturities on specific dates, so as to increase the instruments' liquidity; this reduced the number of maturities and increased the volume issued.

[25] These policies are described further in Part 3, Chapter 1.

Box 1. Securitization of government debts

Early in the 1990s, the Government started to restructure debts through a securitization process. Debt stemming from the assumption of state-owned companies and sub-nationals liabilities was renegotiated and transformed into public securities issued to original creditors.

This process benefited the Government, insofar as it adjusted payment flows to its payment capacity, and also contributed to the public sector debt credibility recovery. To creditors, it meant transforming a contractual debt, with no liquidity, into an instrument that could be negotiated in the secondary market.

The National Treasury recorded the securities issued to refinance the states' debts in the Central Bank's Special Settlement and Custody System (SELIC) and those related to the assumed debts of state-owned companies, known as Securitized Credits, in the Center for custody and financial settlement of securities (CETIP). These securities are freely negotiated in the secondary market.

Also in the 1990s, securitized credits were used, together with other public debt securities, as currency in the privatization of state-owned companies - part of the instruments known as "privatization currencies."

In 1999, and within the process to standardize public debt instruments, the National Treasury began to accept these securities as payment in the second phase of NTN-C auctions and, more recently, in NTN-B auctions. Nevertheless, the outstanding volume of securitized debts expanded, due mainly to the regular issuing of CVS, a type of security whose origin is the securitization of debts arising from the Salary Variation Offsetting Fund (FCVS).

To minimize the refinancing risk attached to this measure, the National Treasury began to hold auctions for the early redemption of fixed-rate securities. It also held auctions for the repurchase of inflation-linked securities, as a way to increase market liquidity. In other words, holders of these securities could leave their positions if they wished. NTN-Bs also began to be issued: This CPI-indexed security now accounts for a significant share of the public debt profile.

Longer-maturity, fixed-rate securities with periodic payments of interest coupons (NTN-Fs) were issued for the first time in 2003, so as to lengthen the fixed-rate debt. This course was consistent with procedures adopted by countries with more developed markets.

In the same year, the dealers' system - previously under the Central Bank - was changed, so as to match rights and duties to the objective of developing a public bonds market. Two "primary" and "specialist" groups were established, with the main objectives, respectively, of purchasing securities in auctions and negotiating them in the secondary market.

In 2004, changes were made in order to match the guidelines in the Annual Borrowing Plan - particularly introducing the Investment Account and lowering taxes. In 2006, the Government lengthened the debt and fixed its rates by issuing Provisional Measure nº 281,[26] which exempted foreign investors from income tax levied on capital gains in public debt bonds. As these investors prefer to buy longer maturity NTN-Fs (fixed-rate bonds) and NTN-Bs (inflation linked bonds), the exemption hastened the movement to extend the domestic debt profile.

In 2007, due to foreign investors' demands, the National Treasury issued its first 10-year fixed-rate security, the NTN-F 2017, which was a landmark in Brazil's public debt management. Over the year, the security was issued at weekly auctions (except during higher volatility periods due to the international scene).

[26] Later converted into Law nº 11,312 of June 27, 2006.

In 2008, as the international crisis deepened, Brazil's debt management policies became more conservative (in terms of debt profile), so as to reduce the market's volatility. Thus, the share of fixed securities decreased and that of floating-rate securities increased. However, despite the volatility, refinancing risks were reduced and the indicators of average maturity and the share falling due in 12 months, increased.

The table below shows the huge advance these practices represented in improving the structure of public debt.

Table 2. Recent evolution of the Federal Public Debt

Indicators	2003	2004	2005	2006	2007	2008
Outstanding FPD* in the market (R$ billion)	965,8	1.013,9	1.157,1	1.237,0	1.333,8	1.397,0
Average maturity of FPD**	3,3	2,9	2,8	3,0	3,3	3,5
% due in 12 months	30,7	39,3	36,3	32,4	28,2	25,4
Share in outstanding FPD (%)						
Fixed	9,5	16,1	23,6	31,9	35,1	29,9
Price Index	10,3	11,9	13,1	19,9	24,1	26,6
Floating rate	46,5	45,7	43,9	33,4	30,7	32,4
FX rate	32,4	24,2	17,6	12,7	8,2	9,7
TR and others	1,4	2,2	1,8	2,0	1,9	1,4

* Includes the domestic and external debts under National Treasury responsibility.
** In years

From the microeconomic perspective, the history illustrates how difficult it was for the Government to lengthen debt maturity and increase the share of fixed-rate instruments to replace floating-rate securities. Most analysts agree that the reason lies in the culture of daily indexation, due to the country's track record of high inflation. However, Brazil had to break this cycle if the structure of its domestic public debt was to mirror that of developed countries.

The big challenge, besides maintaining fiscal surpluses to reduce the debt, is to enhance the domestic debt profile (so as to improve investors' perception and consolidate the move towards reducing interest rates). This structural change has allowed public debt to be seen as an efficient source for channeling resources to public investments, and a benchmark for issuing private bonds.

3 External public debt

Just as domestic debt management policies responded to domestic macroeconomic events, external debt policies reflected events in the international economy, which went through various phases since the 1960s. From 1964 to the first oil shock in 1973, and even afterwards, the international economy enjoyed abundant liquidity, which helped the country maintain its external indebtedness. However, in 1979, due to the second oil shock, international interest rates rose abruptly, squeezing external resources and prompting the developing countries' external debt crisis in the 1980s. Since then, Brazil has worked hard to manage the external debt issue, which has included the adoption of the successful Brady Plan and the recent sovereign bond issuances in the international capital market, along with building the external curve in Brazilian real.

The history of Brazil's external debt during those years can be divided into four phases: (1) from 1964 to the end of the 1970s, when a great deal of debt was accumulated due to the country's growth and the oil shocks; (2) from the 1980s until the Brady Plan (early in the 1990s), with successive attempts to correct the

imbalances caused by the previous policy; (3) the return of sovereign issuances in 1995 and the relative calm in the management of external liabilities, despite the international crises in the late 1990s; and (4) the new qualitative issuance policy, begun in 2006.

3.1 The external debt policy

Launched during the 1960s, the Government Economic Action Program (PAEG) sought to respond to the main economic bottlenecks. For example, its projects sought to enhance the infrastructure sector and restore the country's credit abroad, mitigating short-term pressures on the balance of payments. As already mentioned, despite innovations in the capital market structure promoted by the PAEG, the new administration still had fiscal deficits in its early years, which were also funded through external loans.

The PAEG reforms and, more precisely, high economic growth and stable inflation rates, generated a positive outlook for the country's economy. However, the very fact that economic growth was high meant external resources had to be obtained to finance it. Thus, during the second half of the 1960s, the external capital inflow rose dramatically: Brazil was the fourth largest recipient of external resources from 1964-1967.[27] This represented an increase in external debt (public and private), which rose from $3.2 billion in 1964 to $4.4 billion at the end of 1969, i.e., a 37.5% increase in just six years.[28]

In fact, in the early 1970s, the country searched for resource inflows through sovereign indebtedness in the international market. This was significant since the last time Brazil used this type of funding was in 1931. Even before the first oil crisis in 1972, the country placed Government bonds in foreign markets: Three issuances were completed that year in European and US markets and, in 1973, another was completed in the Japanese market. After this, despite the first oil shock, the country not only continued to access that market, but large Brazilian companies built on the success of the Government placements and issued securities in external markets.[29]

High growth rates with abundant international economy liquidity caused outstanding external debt to grow considerably[30] without bringing risks to the Brazilian economy. But the situation would begin to reverse in 1973, due to the sudden rise in oil prices. In 1974, given the deteriorating balance of payments, the country began to remove restrictive measures to foreign capital. Obviously, the strong capital inflow until that year had, as a side effect, increased the outflow of resources in the form of interest and amortizations.

At that time, indebtedness was already a potential problem. Any setback in international liquidity or in the growth rates of the global economy would have a strong negative effect in Brazil's external accounts. According to Mollo,[31]from 1973 onwards, indebtedness would hamper growth, since capital outflows in the form of interest and amortizations already exceeded inflows. As a result, inflation returned to the domestic front, and externally, indebtedness increased; thus, "in 1973, inflation and indebtedness were seen as areas with potentially growing problems to be faced by the next administration".[32]

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[27] Resende, 1989, p. 219.
[28] Mollo, 1977.
[29] Corporate issuances started with Vale do Rio Doce and continued with Light, BNDE, Eletrobrás, Petrobras, CESP and Nuclebrás. For details, see Gomes, 1982.
[30] From 1965-1975, external debt rose by more than 400%, soaring from $3.9 billion to $21.2 billion.
[31] Mollo, op. cit.
[32] Lago, 1989.

The country adopted policies to overcome the crisis, but these did not slow growth. In fact, as Garrido noted,[33] since the increased oil prices did not reduce international liquidity (the transfer of resources to oil-exporting countries involved deposits in European and US Banks), these banks still had abundant resources to lend to developing countries (a process known as "recycling of petrodollars"). As a result, from 1974 to 1980, even more external debt accumulated, which would lead to the debt crisis early in the next decade. It should be noted that, during that time (1974-1980), the share of public debt in total external debt soared from about 50% to nearly 70%.

The second oil shock, between August 1979 and October 1980, sparked a high increase in the cost of loans mainly due to the rise in interest rates promoted by the US Federal Reserve, in an attempt to curb inflation in that country. As a result, indebted developing countries could not attract international investors to finance their economic activities: The countries quickly lost their reserves (which declined for the first time in the decade) and Brazil's balance of payments changed dramatically, from a $4.3 billion surplus to a $3.2 billion deficit.

As Brazil's situation was becoming critical, a new dark phase began in which external constraints were dictating the direction of the domestic economy: The bottleneck generated by external debt would no longer be a potential problem but an actual constraint.

3.2 The search for solutions

Against this backdrop, external financing began to dry up in the early 1980s. Reduced international liquidity combined with increased international interest rates made it harder to renew loans, at a time when financing the balance of payments was critical. These facts, along with external recessions, provoked a domestic recession that strained the entire decade (it became known as "the lost decade"). At that time, the country had not yet turned to the International Monetary Fund (IMF).

Despite a small surplus in the 1981 balance of payments, the situation would become dire in 1982. In August of that year, Mexico declared a moratorium on its external debt, which aggravated the crisis in Brazil: The balance of payments deficit would skyrocket to a record $8.8 billion.

Under such conditions, there seemed to be no alternative but to seek international cooperation. In September 1982, the country began talks with the IMF and the international financial community; also, it negotiated bridge loans of about $3 billion, to close the balance of payments. Given the size of the external constraint, renegotiating the external debt became the country's hot subject. Late that year, the Government announced its policies were in line with IMF recommendations.

As it became vital to design measures to overcome the crisis, authorities developed the Program for the External Sector in 1983: To meet external commitments, it focused mainly on increasing exports and decreasing imports. For several months, negotiations were conducted and several letters of intent were signed with the IMF, which contained targets for the domestic economy. In the two years after August 1983 (the date of the first letter), seven letters of intent were signed to the IMF, whose promised targets were never achieved.

Negotiations were also held to reschedule the country's debt. Thus, from 1983-1987, Brazil's external debt was restructured several times; this involved maintaining short-term credit lines, rescheduling the principal of debts falling due in the following years, and arranging for the inflow of new money. By the end of 1982, a first package was developed, which included, besides the inflow of new money to honor short-term commitments,

[33] Garrido, 2003.

the rescheduling of medium and long-term bonds. In 1983 and 1984, negotiations were held to solve balance-of-payments problems; and it was only in 1985 that a proposal for multi-annual restructuring materialized, for 1985-1991. However, these measures didn't solve the country's balance of payments deficits. As a result, international reserves dropped to worrisome levels in 1986.

The grim situation both in Brazil and other developing countries prompted a search for global solutions that would be backed by the international financial community. However, despite the recovery of the US economy and loosening of external constraints in 1984, developing countries faced great difficulty adjusting to the policies recommended by the IMF.

During those years, the international financial community promoted the concept of "payment capacity," in which countries would repay their loans in ways that would not compromise them, thus moving in a direction opposite to that prescribed by the IMF, which required strict monetary and fiscal policies that were causing serious economic side effects in the countries that adopted them. A new government took office in 1985, with President José Sarney,[34] whose administration chose not to enter into an agreement with the IMF, fearing it could compromise the country's growth.

In this context (where foreign banks required some sort of agreement with the Brazilian Government to continue paying the debt and the Government didn't sign an agreement with the IMF) a conciliatory attempt emerged, defended by James Baker, Secretary of the US Treasury, known as the Baker Plan: It stated that agreements should not compromise the country's economic capacity and growth, and that creditor banks would keep providing new resources to debtor countries. However, each bank wanted other banks to assume the task, preferring not to increase its own exposure to those countries, in order to reap the benefits of the renegotiation without bearing the risks (known in economic literature as the "free rider"). The Baker Plan failed to obtain the expected benefits[35] and external indebtedness remained a serious issue for developing countries over the next years.

After hot debates between the Central Bank and the Ministry of Finance,[36] in February 1987, the Brazilian government finally declared a moratorium on interest payments on medium and long-term debts, based on the principle that the external debt was not just an economic but also a political issue. This did not resolve the country's balance of payments problems; on the contrary, it contributed to the weakening of the economic team, which in April of that year, was changed, with Minister Dilson Funaro replacing Bresser Pereira.

The new team sought a negotiated solution to the crisis and an agreement that ended the moratorium was signed in September 1988: It provided for the inflow of new money ($5.2 billion), the rescheduling of some medium and long-term bonds, the maintenance of short- term credit lines, and the swap of $1.05 billion in old debt into bonds (Brazil Investment Bond Exchange Agreement). Nonetheless, due to lack of payment capacity, at the end of 1988 and in July 1989, the country stopped honoring its external commitments (a *de facto* – although not declared – moratorium).

At that time, the financial community was introduced to a new plan that attempted to solve developing countries' indebtedness problems, conceived by another Secretary of the US Treasury, Nicholas Brady: The US government would participate in negotiations to avoid the free rider problem, and previous loans would be exchanged for new bonds (known as Brady Bonds), which could subsequently be negotiated in the market, extending maturities and reducing debt service. As described by Garrido, "despite hurting individual interests, the

[34] The president elected by the electoral college (formed by National Congress members) was Tancredo Neves, the first civilian to be elected since 1960. However, he fell sick and was hospitalized the day before his inauguration. Vice-President José Sarney was then inaugurated and remained in office until the end of his term, as Tancredo Neves died a few days later.

[35] It was never actually implemented by any country.

[36] These debates are described in Paulo Nogueira, *Da crise internacional à moratória brasileira*, 1988.

collective interest of the banks was secured, since the plan enabled debtors to remain in the capital market".[37] In 1989, Mexico was the first country to sign an agreement based on the Brady Plan.

In that international context, Fernando Collor[38] took office as Brazil's President in March 1990, advocating a liberalizing policy in which critical credit lines to the country were resumed. As a result, Brazil began new negotiations that year with the international financial community to regularize the country's credit. In December, the Federal Senate passed a resolution (Resolution nº 82), which set guidelines for negotiating the external public debt. At the same time, part of the payments still owed to creditors was disbursed. In April 1991, an agreement was signed to regularize the interest due; some of these amounts were paid in cash and others ($7 billion) were exchanged for a new bond issued by the Government – Interest Due and Unpaid (IDU) Bonds – in November 1992.

Negotiations continued and a new agreement was signed, which became known as the 1992 Brazilian Financing Plan, and approved by the Federal Senate.[39] In January 1993, the document was submitted to the international financial community so it could approve it. In November, several agreements were signed with creditors.

The Brazilian "Bradies" (Discount Bonds, Par Bonds, Front-Loaded Interest Reduction Bonds, Capitalization Bonds, Debt Conversion Bonds, New Money Bonds and Eligible Interest Bonds) were issued in April 1994, after values were reconciled and bonds were distributed to creditors.

The table below shows the securities issued during the external debt renegotiation process, which started in the late 1980s and ended in the mid-1990s. The first two instruments became known as "Pre-Bradies", while the others are the "Brady Bonds".

Table 3. External debt renegotiation: securities issued

Instrument	Amount issued ($ billion)	Maturity date
BIB or Exit Bond	1.06	09/15/2013
IDU (Interest Due and Unpaid)	7.13	01/01/2001
Discount Bond	7.28	04/15/2024
ParBond	8.45	04/15/2024
Flirb (Front-Loaded Interest Reduction Bond)	1.74	04/15/2009
C-Bond	7.41	04/15/2014
DCB (Debt Conversion Bond)	8.49	04/15/2012
New Money Bond	2.24	04/15/2009
EI (Eligible Interest Bond)	5.63	04/15/2006

The agreements also provided for transferring responsibility for the external debt from the Central Bank to the Federal Government, which became the debtor of external securities; this meant responsibilities would be more appropriately shared between the monetary and fiscal authorities. The Central Bank then began to operate as a National Treasury agent, issuing securities in the foreign market.[40]

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[37] Garrido, op. cit.

[38] President José Sarney passed the presidential sash to Fernando Collor de Melo, the first to be elected by popular vote in nearly 30 years (the last had been Jânio Quadros, in 1961), after a long period of indirect elections of military presidents (with the exception of Sarney).

[39] Through Resolution nº 98, in December 1992.

[40] The responsibility remained within the Central Bank for nearly a decade. In 2003, a transition agreement was signed, in which the National Treasury became, starting in 2005, the sole agent responsible for managing the Brazilian external securities debt.

Two of the agreement's features that would help solve the external indebtedness contention (described more fully in the next section), were (1) the existence of collateral (through the purchase of US Treasury bonds) for three of the bonds issued and mainly (2) the possibility for Brazil to do structured operations with the new bonds issued.[41]

3.3 The resumption of voluntary issuances

The existence of Brazilian securities in the international market, a situation promoted by the Brady Plan, created the new indebtedness model adopted by the country, which is still in effect: The securities' debt structure, with assets freely negotiated in the secondary market with relative liquidity (which investors can resell in the market), provided the conditions for the new phase of external liabilities, which today can be managed with much more flexibility.

With the inception of the Real Plan in 1994 and its "anchor" via the exchange rate, an inflow of capital became essential. A new phase of external indebtedness began that involved raising funds in foreign currencies by issuing securities in the international market.[42] In the new context, the country could choose the best combination of maturities and costs and also the market in which it wanted to raise funds.[43]

In fact, even in times of global crises (for Mexico, Asia, Russia and Argentina), the country was able to raise funds overseas. At the very beginning of this new phase of "sovereign issuances" in 1994, the world experienced the first truly global international financial crisis,[44] mainly within emerging countries; e.g., the Mexican crisis negatively affected Brazil's access to the US market. However, Brazil's flexibility in managing external liabilities allowed it to operate in other markets, so that in June 1995, Brazil resumed its voluntary issuances in the Japanese market. The success of the first issuance was so large and demand so great that the country raised its originally planned volume of Y$20 billion to Y$80 billion, with no corresponding cost increases.[45] Another issuance was made soon after, in German marks, in the European market, which contributed to about $1.7 billion the first year, nearly exhausting the $2 billion limit authorized by the Federal Senate.

In 1996, following other issuances in the Japanese, Italian and British markets, and with the effects of the Mexican crisis already diminished, Brazil finally had access to the dollar market (more liquid, thus allowing for issuances in higher volumes), with a five-year bond.

By 1997, when the Asian crisis exploded, the country had accessed the international market eight times, with issuances in Europe and the United States. One, in the US market, involved a 30-year bond, the longest maturity ever issued (called Global 2027). This showed that the market readily accepted the Brazilian debt. Also, for the first time, the country exchanged securities, which allowed $2.2 billion in Bradies to be repurchased.

Despite the successive international crises, the country took advantage of financial assistance packages from the IMF and continued to access external markets. Three operations were carried out in 1998, in the European and US markets, until the Russian crisis erupted. In 1999, even after the exchange devaluation (early in the year), Brazil returned to the market doing debt exchange operations. Despite the 2002 election and the uncertainties it fueled in the debt market, Brazil still had access to the markets, through the flexibility

[41] These included the anticipated purchase, which allowed for future restructurings of external liabilities, based exclusively on market parameters, without the need for political and/or diplomatic negotiations.

[42] The Statistical Annex to this book features a table with all Federal Government issuances since 1995.

[43] The main ones were the US, European and Japanese markets.

[44] For a discussion of the contagious effect of the crises on the debt market of emerging countries, see Botaro, 2001.

[45] It is worth noting that this issuance was also chosen by the International Finance Review as the best one in 1995.

of choice in relation not only to the right moment to carry out an operation but also to the market itself and the instrument to be used. With the return of economic stability in 2003, Brazil was able to access external markets without major impediments, for the next years.

A turning point in Brazil's indebtedness occurred in 2005, when the C-Bond was changed into a bond with similar characteristics, known as A-Bond. This operation was the kick-off for retiring the outstanding Brady Bonds and was completed the following year. Also that year, the indebtedness strategy began to focus on defining benchmarks, reopening the same security many times, thereby increasing its market liquidity. This strategy was intended to build a more efficient external yield curve.

A third and crucial aspect in the recent history of external debt was the first issuance, in the international market, of a real-denominated bond due in 2016 (the BRL 2016). Further, in 2006, the country would take the first step towards consolidating an external yield curve in domestic currency.

3.4 Current stage: qualitative issuances

In 2006, due to the considerably decreased need for external borrowing to reduce the debt and the strong inflow of dollars, the country no longer depended on external issuances as a source of funds. Since then, several operations were carried out to prepay the external federal debt, totaling $35.7 billion. As for the contractual debt, the country bought back the remaining debt with the Paris Club for $1.7 billion and, in 2005, prepaid its $20.4 billion debt to the IMF.

The 2006 operations to reduce the securities' debt included the early redemption of outstanding C-Bonds (begun the previous year) and the country re-purchased the other Bradies, totaling $6.5 billion. Thus was ended an important phase in Brazil's external indebtedness. Also, early in 2006, the Treasury started an external debt repurchase program through the Central Bank trading desk to improve the debt profile, and initially redeemed securities due by 2012. Over the year, $5.8 billion were repurchased at face value.

Regarding the debt profile, the country issued another real-denominated instrument in 2006 with a 15-year maturity (BRL 2022), creating a second part of the external curve in the local currency. This security was issued twice during the year, and its outstanding volume reached R$3 billion. The BRL 2028, a real-denominated bond with a 20-year maturity, was issued four times the next year. As a result, Brazil ended 2007 with an outstanding volume of some R$10.2 billion in external bonds issued in the local currency, thus helping set a reference in the external market for a yield curve in domestic currency.

A permanent program to repurchase external debt bonds along the entire curve was introduced in 2007, whose aim was to construct an efficient and liquid external curve. In 2007, $5.4 billion was repurchased, which represented 12.2% of the outstanding external debt at the end of 2006. In 2008, with market liquidity reduced as a result of adverse international conditions, repurchases occurred at a lower volume ($1.5 billion), but continued to reflect the strategy to retire less liquid instruments and exchange them into benchmark securities.

Given its recent actions, the country's external debt structure has not only been reduced but also diluted, compared to the beginning of the decade.[46] Thus, one of Brazil's major economic problems over the past 30 years has turned into an issue whose management is fully within a comfort zone.

[46] The share of external debt in the volume of outstanding Federal Public Debt held by the public is below 10%. Also, when the volume of this debt reaches approximately $60 billion, international reserves exceed $200 billion in a floating rate regime.

Box 2. Brazil and the rating agencies

The first rating agency to evaluate Brazil's credit risk was Moody´s, in 1986. Lacking negotiable debt instruments for some years, the evaluation by such agencies was the only way to rate the country's credit. With the process of external debt securitization and the consequent market development through these instruments, especially after the return of voluntary issuances, it was no surprise that other rating agencies began to assess the risk of the country's credit instruments. Since 1994, Standard & Poor's and Fitch have also published credit ratings for the country.

In the first years of the Real Plan and at the beginning of the voluntary issuance phase, there were some upgrades by the rating agencies (Moody's in 1994 and S&P, in 1995 and 1997). However, the deterioration of macroeconomic conditions in 1998 led Moody´s to lower the rating. Other agencies followed in 1999, when the real was devalued. After the perception that the country dealt with the crisis better than expected, the three agencies increased their rating by one notch.

In 2002, due to the uncertainties produced by the elections and their impact on economic and financial conditions, the three rating agencies lowered their ratings again. It was the last time Brazil was downgraded. Since 2003, constant improvements in the country's economic foundations have ensured a process of continuous upgrades leading to the current situation in which Brazil is rated investment grade by S&P, Fitch and Moody's.

In this credit rating category assets are no longer considered risk investments and demand tends to increase as there are some investors prohibited from buying bonds issued by non-investment grade countries. In other words, earning the investment grade means not only market recognition of the quality of the issuer's credit, but also market access for a significant share of investors.

4 Conclusions

The history of Brazil's public debt shows advances and setbacks, and the debt profile has experienced considerable variations, reflecting changing economic conditions. Nonetheless, improvements are indisputable.

With respect to the domestic debt, the country adopted a more efficient structure in terms of profile and maturity that allows for easier and smoother debt management as well as for growth in the domestic capital market. As for the external debt, the present structure offers considerable certainty that exchange rate instabilities (produced by the large share of public sector liabilities in foreign currency) are increasingly ancient history.

Thus, the country's stable macroeconomic policy improved the structure of both the public domestic and external debt, contributed to consolidate economic stability, and ensured the debt would be managed efficiently.

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Part I
Chapter 3

Public debt sustainability

by Carlos Eugênio Ellery Lustosa da Costa

1 Introduction

Public debt is a basic instrument for optimally distributing public policies over time. Through public indebtedness, the provision of public goods can be temporally disassociated from the taxation process required to fund it. For the debt instrument to fulfill its role, debt holders must believe that policies are such that contracts will be fulfilled. This requires fiscal policy to be sustainable.

This chapter focuses on three areas. First, it formalizes the idea of a sustainable fiscal policy. Second, it presents different evaluation measures that offer disciplined ways to assess whether a policy is sustainable. Last, it shows how the management of public debt plays a critical role in determining its sustainability.

A country's public debt is considered sustainable when government budget constraints can be met without disrupting its monetary and fiscal policies. As the chapter will clarify, this implies that the amount of the public debt should not exceed the present value of all future primary surpluses.

The concept of maintaining stable monetary and fiscal policy is crucial. Ultimately, government budget constraints can be met by acknowledging circumstances in which default on the debt (non-payment) or monetization will occur in ways that are consistent with mathematical expressions. In this case, the equations no longer represent true budget constraints but are rather pricing equations that answer the question about what is the current value of this debt which may not be payed.

Pricing equations allow two assets with identical contractual payment promises to have different market prices. Underlying the price difference is the perception that some contractual promises will not be kept. In contrast, an equation that represents a budget constraint must anticipate full payment in all periods and under all circumstances. Thus, the latter is the relevant concept for defining sustainability.

The relationship between sustainability and a government's fiscal balances gives the impression that the former can be determined in a way that is both objective and unambiguous. Unfortunately, that is not the case. In practice, it is impossible to know what future primary balances[1] will be, or the rate at which they will be discounted. Further, since a government's primary balance is a choice variable, any inferences with respect to future balances require expectations not only about the government's ability to generate the required surpluses but its willingness to produce them.

The remainder of this chapter is organized as follows. Following this Introduction, Section 2 makes the concepts more objective and Section 3 discusses practical ways to *evaluate* sustainability. Italics are necessary because, in general, no single measure can offer a definitive way to determine sustainability; rather, useful indicators for developing an educated view about the fiscal situation will be presented. Section 4 shifts the

[1] Fiscal savings generated by the government for debt payment. For details, see Part I, Chapter 1.

focus and discusses short-term aspects that can lead entities with perfectly sustainable debt management practices to insolvency. Section 5 addresses how a debt structure relates to its sustainability. Section 6 explains how public debt management in Brazil faces sustainability challenges, while Section 7 offers conclusions. Finally, the Appendix presents some debt sustainability and structure exercises performed by the Brazilian National Treasury.

2 Sustainability: formalization

To define debt sustainability in a very simple form, the world is considered deterministic, where all uncertainty regarding future behavior of relevant variables is disregarded. In this setting, a debt is sustainable when the present value of future revenue flows minus debtor expenses can pay for all that has been contractually agreed. However, even with this simplistic concept, some issues need to be clarified. First, the emphasis on values specified in the contract (or securities) is fundamental to avoid the circularity associated with the use of market value. Second, in most of what follows, debt will be considered in real terms, since the price level can be seen as a variable to adjust the debt value and create circularity similar to that related to the use of market value when discussing public debt.

2.1 A deterministic world

The inter-temporal government budget constraints is the set of all sequences of taxes and expenditures that guarantees that the contractual promises associated with the government's debt will be met. It is, however, useful to split the description of the budget constraints into two parts: the government flow constraint and the transversality condition. The combination of these two will then be shown to be equivalent to the present value representation.

For each period (in this case, a period corresponds to one year, since this is what is relevant from the budget standpoint), public debt evolves according to the following expression:

$$B_{t+1} = (1 + r_t)B_t + G_{t+1} - T_{t+1}, \tag{1}$$

where B_t is the value of government debt at moment t; r_t is the interest rate in t; T_t and G_t are government revenues and expenditures in t.

Obviously, this equation must hold to all periods. Therefore, in the following period:

$$B_{t+2} = (1 + r_{t+1})B_{t+1} + G_{t+2} - T_{t+2}$$

Recursively substituting in (1) leads to,

$$B_{t+2} = (1 + r_{t+1})[(1 + r_t)B_t + G_{t+1} - T_{t+1}] + G_{t+2} - T_{t+2},$$

i.e.,

$$B_t = \frac{B_{t+2}}{(1 + r_{t+1})(1 + r_t)} + \frac{T_{t+2} - G_{t+2}}{(1 + r_{t+1})(1 + r_t)} + \frac{T_{t+1} - G_{t+1}}{(1 + r_t)}$$

The process can be continued to any $t+s$ time and express:

$$B_t = \frac{B_{t+s}}{\prod_{v=1}^{s}(1+r_{t+v-1})} + \sum_{v=0}^{s}\frac{T_{t+v}-G_{t+v}}{r_v} \tag{2}$$

It is important to define the variables: r_t expresses the interest rate of a security purchased in t, to be paid in $t+1$. Likewise, G_t-T_t represents the primary deficit in t.

The constraint-flow (1) represents a minimum requirement, which could even be seen as an accounting identity. What makes the concept of sustainability interesting is the transversality condition. To understand it, the price in t of consumption in $t+s$ is given by

$$P_t = \left(\prod_{v=1}^{s}(1+r_{t+v-1})\right)^{-1}$$

The transversality condition is, in this case,

$$\lim_{t\to\infty} P_t B_t \leq 0, \tag{3}$$

thus forcing the present debt value to approach a non-positive value when a sufficiently long time span is considered. This condition eliminates so-called Ponzi schemes, where a debt is always rolled over and never paid. In other words, it corresponds to the assumption that governments cannot live in a permanent state of indebtedness.[2]

If, on the one hand, the present value of government debt should not be positive, i.e., a government should not pay off its debt with more debt indefinitely, on the other it is only natural that the private sector cannot go into debt against the government indefinitely either. This justifies the imposition of a constraint (3) with an equal sign, in which case

$$B_t = \sum_{v=0}^{\infty}\frac{T_{t+v}-G_{t+v}}{\prod_{v=1}^{s}(1+r_{t+v-1})} \tag{4}$$

Imposing the transversality condition (3) with an equal sign ensures that the present value of primary surpluses will be the same as the debt value, thus showing the equivalence between the two representations.

In a world without uncertainties, the condition for public debt sustainability is precisely what can be expected: the Government, at some point, will raise enough money to cover its current expenses and also honor its commitments plus the corresponding interest.

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[2] The underlying fact is that individuals (debt holders) are willing to postpone consumption, but not forever. It is interesting to acknowledge that, when prices fail to satisfy this condition, the outcome is called a bubble. The possibility of a bubbly asset cannot be discarded when there is uncertainty and individuals must form beliefs about the future behavior of prices. A large literature investigates conditions under which a bubble may arise and whether it is possible to empirically identify them. See Brunnermeier (2009) for a recent review.

In a world with uncertainties, however, the definition is not so simple. There are two fundamental differences with respect to the deterministic case. First, there are many possible trajectories for a government's primary surplus. How, then, should sustainability be defined? Should surpluses be sufficient to pay off the debt in all scenarios or only in the average? Second, while in the deterministic case, only one discount rate is defined (to avoid the emergence of arbitrage opportunities), in the stochastic case several rates of return are possible, according to their risk characteristics. Thus, the issue of what constitutes the relevant discount rate must be explored.

2.2 Uncertainty

Two dimensions exist where uncertainty matters. First, the value of government revenues and expenses and thus of primary surpluses is uncertain, hence there is uncertainty regarding the debt trajectory. Second, for each scenario, the *value* of accumulated surpluses or deficits may be different, depending on the rate at which they are discounted.

In the first case, if the surplus flow was variable but could be discounted at a rate that did not depend on the scenario[3] (i.e., the value of a purchasing power unit is the same in all different scenarios), then the new sustainability condition would be one where the present value of government surpluses would be the same (equal to the debt value) for all scenarios discounted at this common rate.

Again, the issue is not simple. Given uncertainty, different assets with different risk features pay different dividends, a fact that makes the discount rate issue fundamental. Without uncertainty, there is only one rate – the risk-free rate. However, with uncertainty, there are several discount rates. Which is relevant?

The value of a purchasing power unit varies according to the state of the economy; this is the very essence of the risk concept. In difficult times (for example, during recessions), having an additional resource is much more valuable than in times of abundance. Thus, the surplus obtained during a recession is far more valuable than one secured in a period of abundance, for it is discounted at a lower rate. This rate, which varies according to the state of the economy, is the so-called risk-adjusted rate.

An intuitive way to understand government budget constraints in the presence of uncertainty is by imagining that at a given point in time, the government will decide or need to produce primary deficit, i.e., will choose to use more resources than what the money from taxes allows it to purchase. The question is: how will the government be able to finance the difference between the value collected and its total expenditures?

For individuals to temporarily and voluntarily relinquish purchasing power to the government, public authorities must promise that, when it is returned, purchasing power will be worth at least the same as it was when originally assigned to the government.

As payment will only be made in the future – and the future is uncertain – it has to be adjusted in temporal and risk dimensions. In the former, purchasing power will be worth less tomorrow than today. Thus, a positive interest rate must be paid. In the latter, risk-averse people are those who value income more when they have less of it. Thus, adjusting for risk requires that the government pay more, if it chooses, in states of nature (or scenarios) where the person's income is higher. It also implies that the government can afford to pay a little less in the states of nature where the person has no income at all.

[3] The concept of history is formally used to define a sequence of random exogenous events affecting the problem's relevant variables. The word scenario will also be used to mean history, since this is a commonly used term.

The reasoning behind risk adjustment entails two consequences: (a) a fiscal policy in which surpluses are generated mainly in times of recession – i.e., when consumption is lower – is associated with lower-cost public debt; (b) the lower cost of debt stems from imposing higher taxes and/or reducing public goods/services when society is less capable of paying taxes and need more public goods and transfers. This is the great challenge of fiscal policy. If only the average cost of debt is considered, this might promote a socially perverse fiscal policy, where a decrease in the supply of public goods and an increase in the tax load occur precisely in times of recession.

Thus, although the issue of sustainability is emphasized here, policies which seem to make more sense with respect to reducing the financial cost of debt could be the most costly from the social perspective and thus politically unsustainable.

Nonetheless, even in a world marked by uncertainty, the condition of sustainability with real debt continues to be a present value calculation.[4]

$$B_t = \mathrm{E}_t\left[\sum_{v=1}^{\infty} m_{t+v}\left[T_{t+v} - G_{t+v}\right]\right] \tag{5}$$

where $E_t[\ ]$ expresses the mathematical expectation conditioned on the information available at time t, and m_t denotes the so-called stochastic discount factor (or pricing kernel), a random variable that discounts future payoffs to incorporate the time and risk dimensions. In other words, the discount rate that is relevant for discounting surplus flows is risk-adjusted.[5]

It should be noted that this discussion is about real resources. For example, the private sector refrains from using certain resources today so as to somehow get them back in the future. Thus, the counterpart of a debt increase today is also in real resources and its true cost a situation of reduced public services in the future and/or increased taxes, with the latter including its deadweight costs.

2.2.1 Pricing equation *versus* budget constraint

Before moving to the next section, it is important to note that equation (5) is interpreted as a budget constraint rather than a pricing equation.

In the deterministic case, it was assumed in equation (5) that individuals cannot hold perpetual debts against the government,[6] and B_t in (4) represents the present value discounted by the stochastic discount factor.

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[4] Bohn (1995) discusses the importance of correctly choosing the discount rate when building an economy where the fiscal policy rule ensures maintenance of the debt-to-GDP ratio, but debt is not sustainable (the transversality condition is violated) when the market interest rate is used as a discount criterion.

[5] A good example occurs in the Consumption Capital Asset Pricing Model (CCAPM), where $m_{t+1} = u'(c_{t+1})/u'(c_t)$ is the intertemporal marginal substitution rate of the representative individual. Risk aversion causes $u'(c)$ to be decreasing in c, thus assigning a higher value to recession times, when consumption declines. Unfortunately, this model, devised by Breeden (1979) and Lucas (1978), is based on a very strong assumption of market completeness and has not been empirically successful. In a world without complete markets, the willingness to pay for consumption in different states of the world will differ across individuals, as will the measure of risk. While this form of heterogeneity makes the evaluation of sustainability more subtle, it may be important to improve the performance of the CCAPM. Indeed, several variables that incorporate heterogeneity in access to markets, utility functions where relative consumption is relevant, long-run risks have proven to be promising for developing an acceptable model for m_t.

When interpreted as a pricing equation, contractually established values should be replaced by those that will actually be paid. The latter will not coincide with the first whenever default, even if partial, occurs. In this case, there is no reason why contractually established values brought to present value should coincide with B_t. In other words, if discount rates are held constant, making $\mathcal{B}_t$ values and payment flows expected from the government compatible, this requires accepting that under certain circumstances, the values actually paid will differ from those contractually established.

Underlying the market value is, *inter alia*, the possibility of a state of insolvency. As a result, the lower the present value of expected surpluses, the lower the market value of public debt. In technical terms, equation (5) becomes a pricing equation rather than a constraint on possible surplus trajectories.[7]

The flip side of the above reasoning is that, if the value of the debt is lower than its contractual value discounted by that same rate, this means there are scenarios for which the value paid will be lower than the one contractually established, since future surpluses in pricing equations are discounted by the relevant rate in order to determine the debt's value. Default can occur in any of these scenarios.

The pricing equation nature of expression (5) is compounded when considering the nominal debt - here, the price level becomes an important debt-adjustment variable (Cochrane, 2005): Explicit default is replaced by price increase as a way to adjust the future surplus flow to the debt value established in contract.

If, however, equation (5) represents a budget constraint - and the contractually established values are set - then the equation shows which surplus trajectories are compatible with the contractual promises, i.e., those trajectories whose present value is equal to $\mathcal{B}_t$ which, in turn, is equal to the contractually determined flow discounted by the stochastic discount factor. It is only in the latter that government behavior is restricted, and only here that one can talk about sustainability.

3 Sustainability assessments

The concept of sustainability precludes definitions of objective measures to determine whether debt is sustainable. However, this chapter will present indicators that explore the future trajectory of surpluses, their related discount rates, and their compatibility with meeting government budget constraints.

3.1 Debt stationarity tests

One way to assess sustainability is based on public debt stationarity tests. This methodology, which gained momentum from the work of Hamilton and Flavin (1986), may be one of the most commonly used by researchers: In general, a stochastic process is stationary when it tends to revert to its average or to its trend following a random shock.

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[6] In this case, $\lim_{t\to\infty} E[m_t B_t] \geq 0$, combined with the no-Ponzi condition on the government (similar to (2)), gives us $\lim_{t\to\infty} E[m_t B_t] = 0.$

[7] Mendoza and Oviedo (2003) posed the same question in a different way: "[...] The sustainability criterion assumed implicitly a mechanism for adjusting the fiscal accounts to meet the constraint, and failure to meet the criterion means failure to comply with that implicit mechanism." In other words, there is always a way to adjust the variables in order to ensure equality. Thus, the intent is to restrict possible adjustment mechanisms so as to ensure the equation will actually be a budget constraint and not a "way to determine the value of the debt."

In this case, the government's fiscal posture is such that following a shock which changes the value of the debt, surpluses are raised to force the debt to slowly return to its original value (or, if the debt shows a sustainable growth rate, surpluses are raised to the point at which debt growth returns to the previous rate. For example, if the debt has a rate of increase that is equal to the Gross Domestic Product (GDP) growth rate, surpluses are raised in such a way for the debt to revert to this trend). Here, the fiscal posture causes the value of the debt to comply with the transversality condition (3), i.e., that the debt be sustainable.[8]

In Brazil, this method was first used by Rocha (1997) and Issler and Lima (2000), who demonstrated that the hypothesis of stationarity for the Brazilian public debt between 1947 and 1992 cannot be rejected. The works also stated that adjustments are almost always obtained by raising taxes and that *seignorage* revenue needs to be added to tax revenue so it correspond to what is required by the expenditures in the long run. In other words, sustainability was maintained due to inflationary revenue. Ourives (2002) expands Issler and Lima's study (2000) to include quasi-fiscal deficits whereas Simonassi (2007) raises the possibility of structural breaks in the analysis.

Bohn (2007) questions this literature, claiming that an integrated debt of any order is sustainable.[9] As stationarity cannot be tested for all orders, it is impossible, in practice, to reject sustainability (based on these tests). Thus, there is no way to prove that a debt is non-sustainable.

Another important criticism of stationarity tests is that they are performed with the observed time series: i.e., it is assumed the past is a reliable guide to the future. Even if researchers (and, for that matter, any theories) ultimately depend on "history" to project the future, stationarity tests are simplistic in that regard. Fundamental aspects of the historical evolution may be missed as they neglect very recent structural changes. Although purely statistical procedures can mitigate the problem (Simonassi, 2007) they cannot eliminate it.[10]

Alternatives to incorporating information not presented in the historical series are studies that seek to simulate debt dynamics through scenario-building approaches as a way to project the future. This could be an interesting and complementary way to evaluate situations where it is not thought that "the future will repeat the past," at least in a purely mechanistic form".

3.2 Trajectory of the debt-to-GDP ratio

In practice, a country's fiscal situation is usually determined by its debt-to-GDP ratio. There are many reasons to consider this measure an important solvency indicator. First, debt value *per se* means very little unless the size of the economy is known, since the value of potential surpluses depends, *inter alia*, on the overall resources an economy can produce. Also, every sustainability assessment requires assumptions about a country's capacity to make the sacrifices needed to generate surpluses which can ensure that equation (3) will be fulfilled. The real cost of this sacrifice depends on the wealth proportion to be used for this purpose.[11]

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[8] Along this line, Bohn (1991) proposed testing to determine if the series of taxes and expenditures are co-integrated (with a (1,-1) co-integration vector). In other words, if the G_t-T_t series is stationary.

[9] If a series is stationary to begin with, i.e., Bt is stationary, it is called integrated of order zero; if their first differences are stationary, i.e., Bt+1-Bt is stationary, it is called integrated of order 1; if differenced twice (i.e., taken the first difference of the first differences), it is called integrated of order 2 and so on.

[10] Simonassi (2007) explores a model of multiple endogenous structural breaks to assess the sustainability of debt in Brazil from 1991-2006.

[11] Special mention should be made of the crucial difference between situations where debt is held by non-residents and those where the opposite is true. In the first case, the total debt and its charges represent a cost for residents. In the second, when distributive aspects are neglected, actual costs are only those associated with the so-called deadweight cost of taxation.

To express the dynamics of the debt-to-GDP ratio, the two sides of (1) are divided by $Y_{t+1,}$

$$\frac{B_{t+1}}{Y_{t+1}} = (1+r_t)\frac{B_t}{Y_t}\frac{Y_t}{Y_{t+1}} + \frac{G_{t+1}}{Y_{t+1}} - \frac{T_{t+1}}{Y_{t+1}}$$

i.e.,

$$b_{t+1} = \frac{1+r_t}{1+\gamma_t} b_t + g_{t+1} - \tau_{t+1}, \tag{6}$$

or also by

$$b_{t+1} - b_t = \frac{r_t - \gamma_t}{1+\gamma_t} b_t + g_{t+1} - \tau_{t+1} \quad , \tag{7}$$

where b, g e τ are, respectively, public debt, government expenditures, and tax collection as a proportion of GDP, and γ_t is GDP growth rate.

Throughout this discussion, the interest rate will be (at least on average) higher than the GDP growth rate. If both the GDP growth rate and interest rate are constant and the former is higher than the latter, then the first term on the right-hand side of the equation (7) is negative. This suggests that a government could experience deficits over its entire history, and debt as a percentage of GDP would still drop, permanently.

This is the practical reason why this possibility should be eliminated. However, there is also an economic reason: Situations where the economic growth rate exceeds that of the return on capital are cases of dynamic inefficiency (Blanchard et al., 1991). Basically, such an economy is one with excessive capital accumulation. In this case, consumption can increase without sacrificing the income available for future generations. In a dynamically inefficient economy, the government should, in terms of well-being, increase public debt to a point where pressure on the interest rate would halt the expansion of production and force capital accumulation to slow, driving the economy to an efficient path.

However, while there are policies that eliminate dynamic inefficiencies, this does not mean the inefficiencies do not exist. It is ultimately a purely empirical issue. With respect to the US economy over the last decade, the real interest rate of public debt securities did not reach an average of 1%, while the economic growth rate was over 3%. Does this mean the American economy is dynamically inefficient? Not necessarily.[12] In a world with uncertainty, the relevant rate of return issue is not as immediate. Indeed, alternative forms to verify dynamic efficiency have been proposed; the vast majority of these suggests that dynamic inefficiency, in the sense referred to above, does not characterize the capital accumulation process in the United States. In the case of Brazil, it appears no such studies exist.

Even where an economy is dynamically inefficient, with an average interest rate below the GDP growth rate, a question is whether this allows a government to build on this differential when conducting its debt trajectory.

[12] As previously noted, dynamic inefficiency is associated with excessive accumulation of capital. This seems to oppose the idea that US savings are below the optimal level. In addition, the average return for the physical capital stock in the US is much higher than the T-Bill rate, close to 10% a year.

The answer depends on the reasons for the low rate of return on public debt securities as compared to the GDP growth rate. Without precisely understanding its causes, it is impossible to say whether there is an opportunity to build on – through, for example, improving risk-sharing among individuals – or if the reduced interest rate reflects a high degree of risk-aversion, in which case there is no social gain in exploring the differential between the economic growth rate and interest rate. Unfortunately, given the current state of the art, there is no consensus for the low rate of return on American securities of recent years. Therefore, for the sake of simplicity, it will be assumed the rate of return is higher than the GDP growth rate, which is true in Brazil.

3.2.1 Calculating the surplus required for stabilizing the debt-to-GDP ratio

Most studies that use the debt-to-GDP ratio sustainability indicator explore this variable's behavior over time, to determine whether it shows a stable or downward trend.

In principle, fiscal policy sustainability indicators should result from the government's inter-temporal budget constraint, according to which the present value of taxes should be the same as that of expenditures, including interest on public debt and payment of the debt itself. How is stability of the debt-to-GDP ratio related to fulfilling (3)? If $r_t > y_t$, a stable debt in relation to GDP implies that the value of debt decreases over time. The stability of the debt/GDP ratio is therefore a *sufficient* condition to guarantee public debt sustainability.

The simplest use of the equation (7) to evaluate sustainability is to assess the surplus required to keep the debt-to-GDP ratio constant. In other words, supposing that $b_{t+1} = b_t = b$, the equation (7) will be

$$0 = \frac{r_t - \gamma_t}{1+\gamma_t} b + g_{t+1} - \tau_{t+1} \Rightarrow \tau_{t+1} - g_{t+1} = \frac{r_t - \gamma_t}{1+\gamma_t} b \qquad (8)$$

The right side of the previous equation provides the surplus (as a proportion of GDP) required to stabilize the debt-to-GDP ratio in view of the current debt-to-GDP ratio, as well as the interest and growth rates of the economy.

For moderate GDP growth rates, the denominator of the expression on the right-hand side of (8) is of little relevance and an approximate estimate can be produced by using a very elementary method: For example, in a country whose debt-to-GDP ratio is 40% and where the cost of carrying (real rate) this debt is 7% while GDP grows by by 5% a year, the surplus required to stabilize the debt-to-GDP ratio would be equal to

$$(r_t - y_t) \times b_t = (0{,}07 - 0{,}05) \times 0{,}4 = 0{,}008.$$

i.e., 0.8% of GDP.

Although simple, this method can be useful. Building tables for each hypothesis on the behavior of interest and GDP growth could serve as a basis, for example, for formulating the government's annual budget.

Keeping the debt-to-GDP ratio constant will ensure fiscal sustainability. However, forcing the primary surplus to satisfy this rule perpetually implies eliminating the fundamental role of public debt, which is to temporally disassociate public expenditures from debt financing by independently choosing the best time for producing one and the other. Therefore, forms to evaluate sustainability need to be presented that consider alternative trajectories of variables in (6) and do not necessarily imply keeping the debt/GDP ratio constant.

3.2.2 Tests based on the Value-at-Risk (VaR) methodology

Recent studies have used the adaptation of the Value-at-Risk (VaR) and Cost-at-Risk (CaR) risk management tools to assess debt sustainability,[13] (see Barnhill and Kopits (2003), Bonomo et al. (2003), and Garcia and Rigobon (2004). Several alternative trajectories for the debt/GDP ratio are generated from the stochastic version of the equation (1).

According to the VaR methodology, the highest value is evaluated in a way that the debt-to-GDP ratio does not exceed it at a predefined probability. In other words, first a level of confidence is chosen, which is generally 95%. A stochastic model generates alternative paths for all relevant variables and from them for the debt-to-GDP ratio. A future time period is set and the 95th percentile of the associated distribution of debt-to-GDP ratio is then found.

The CaR methodology is similar to that of the VaR and possibly more compatible with public debt management. First, while calculating the VaR requires that debt be marked to the market, the CaR methodology considers debt development as based on contractually established costs. Also, longer horizons are usually applied with the CaR methodology. Both favor the use of the second methodology for public debt management.

An important constraint in these studies is that determining the quantile (depending on the distribution share, deciles, percentiles, etc. can be evaluated) is a subjective act. Lima et al. (2008) use a quantile auto-regression approach, which combines stationarity tests (for the debt-to-GDP ratio) with the VaR methodology, in order to verify fiscal sustainability.

The first great advantage of this methodology is that instead of arbitrarily establishing a quantile to be considered "of risk," it identifies the critical quantile in which the debt trajectory switches from sustainable to unsustainable. It also incorporates non-linearities, which can produce interesting consequences in understanding how a government conducts its debt policy. When the debt-to-GDP ratio develops in a non-linear way, it might display moments of explosive behavior, while at the same time maintain a globally sustainable trajectory. However, this is not possible in a linear model, where local and global behaviors are identical.

Identifying the critical quantile helps determine the fraction of the time when the debt trajectory is sustainable as well as when it is explosive. The methodology also determines a tolerance limit for the fraction of time when the debt might be explosive, without implying it is non-sustainable, i.e., without the stochastic process being globally explosive.

An analysis of the Brazilian debt from 1976-2005 shows that, although it was above the critical quantile, i.e., it displayed an explosive behavior, debt was still globally sustainable 55% of the time: The tolerance limit was found by Lima et al. (2008) to be 60% of the time in the Brazilian case.

As the concept of sustainability is associated with that of stationarity, the methodology of Lima et al. (2008) is also subject to Bohn's (2007) criticism. Still, it seems an interesting way to provide information on the government's fiscal posture.

3.3 Government net assets and Asset and Liability Management (ALM)

If a company has total assets of R$100 million and a debt of R$50 million, in principle, its creditors believe that in a bankruptcy process, there will be enough assets to pay off the company's debt and thus feel

[13] These methodologies are included in the set of instruments used by the Brazilian Treasury in the evaluation and strategic planning of public debt.

safe to grant new loans or roll over the existing debt. Ultimately, the firm will not need to enter a bankruptcy process, as it will find individuals willing to provide it with the necessary funds.

Using such reasoning, several countries have begun to survey their assets and liabilities to determine their state of insolvency. More important, they have applied measures that categorize their assets and liabilities with similar risk characteristics, which would reduce the volatility of the governments' net debt. This type of risk management, involving the administration of assets and liabilities, and known as Asset and Liability Management (ALM) has echoed in discussions about debt structure and set a benchmark in the way governments conduct their financial policies.

However, a government's main asset is its power to tax; its main liability is its obligation to provide public goods. Thus, any attempt to adapt the government's liability structure to its asset structure requires (a) good planning of how expenditures and collections will be distributed over time and (b) a debt structure that allows for the best planning.

4 Sustainability and solvency

This presentation considers that sustainability is associated with a government's capacity or willingness to honor its commitments, and that it has an infinite time horizon to do so. However, when analyzing the confidence crises many countries have experienced, it appears they usually arise not from fundamental changes in the way governments conduct their policies but rather from constraints in global liquidity. Such an observation seems to indicate that simply meeting inter-temporal constraints might not suffice. The reason global illiquidity and crises are related is that capital markets are not perfect, which affects most debt.

Along these lines, Xu and Ghezzi (2002) developed a methodology that identifies the probability of a country being unable to meet its financial commitments with other countries, allowing them to assess the likelihood of external debt crises due to global liquidity contractions. Baghdassarian et al. (2004) adapted the Xu and Ghezzi model to analyze total public debt and applied it to the Brazilian case.

By analyzing external debt, Xu and Ghezzi focused on the level of reserves and assessed the probability of a country running out of them at a given point in time.[14] It is important to note that the emphasis in this chapter has now shifted from an analysis of sustainability to that of financial fragility. Both are important and the analysis of each should be seen as complementary rather than as a substitute for the one presented earlier.

Xu and Ghezzi's (2002) study refers to the fragility of external debt from the standpoint of scarce international reserves in a context of reduced international capital inflow. The same analysis applies to a country with high domestic debt concentrated in the short term, which Baghdassarian et al. (2004) explore. Under conditions of high domestic indebtedness, if the government does not have enough cash to pay its debt when the domestic market is volatile, the risk of default could increase significantly after successive failures to raise funds for this purpose; this could occur even when the debt is at a level that might be considered sustainable.

5 Sustainability and debt structure

Last, the sustainability of a country's public debt with respect to its characteristics could depend on the volatility of both the domestic and international financial markets as well as on the volatility of its economy.

[14] In a world with perfect capital markets, reserves would be irrelevant since a country following a sustainable policy would always be able to raise money to cover its outstanding debt. However, capital market imperfections imply that perfectly solvent countries may not be able to raise money in times of global liquidity contractions.

For example, consider two countries with the same debt-to-GDP ratio at a given point in time and which, period-by-period, show the same expected behavior in the r_t–γ_t difference. If neither country generates any surplus in the period, the country with the higher volatility in the r_t–γ_t ratio will tend to present, at the end of the period, a debt-to-GDP ratio higher than that of the country with the lower volatility.

Based on additional hypothesis on the stochastic process of variables r and γ (takinkg r and γ as the instant rates corresponding to the initial formulation), the expected value of the debt-to-GDP ratio after a time interval of size s, $E_t[b_{t+s}]$, will be given by

$$E_t[b_{t+5}] = b_t \exp\{\bar{r} - \bar{y} + \tfrac{1}{2}\sigma^2\}$$

where $\bar{r}$ and $\bar{\gamma}$ are, respectively, the average interest rate and growth rate of the economy and σ^2 is the r–γ variance. In other words, the more volatile this difference, the higher the expected debt-to-GDP ratio.

This ratio can be explained further by recalling that

$$\sigma^2 = var\,(r) + var\,(\gamma) - 2 \times cov\,(r,\gamma),$$

where $var(.)$ expresses the variance of a variable and $cov(.,.)$, the co-variance between two variables. In this case, the variance of r-γ depends both on the sum of the variance of the rate of return and the variance of the growth rate of the economy, and, as well as, on the co-variance between these two variables.

Controlling the volatility of the GDP growth rate is something far beyond what debt managers can attempt to achieve. Volatility of the debt-carrying rate, however, can be reduced by efficient public debt management: Long-term, fixed debts (or price linked) for example, have a more or less constant carrying rate, which means volatility of r can be kept at acceptable levels. But managers can follow an even more interesting strategy: They can choose a debt structure through which the carrying rate strongly co-varies with the GDP growth rate. At the same expected cost, this type of public debt design ensures a lower expected growth of the debt-to-GDP ratio.

An appropriate question, therefore, is if this type of design is possible at a given cost. The issue is that an asset that co-varies positively with GDP growth rate is a risky asset for savers (as opposed to an asset that co-varies negatively and thus offers hedging possibilities). Savers will demand a risk premium to carry a debt with high GDP correlation by raising $\bar{r}$.[15] The optimal debt design should take all such effects into account.

It has been assumed that surplus in the period is equal to zero. In practice, however, the timing of surpluses is another choice variable that can be used to prevent volatility of the growth rate of the debt-to-GDP ratio from being high. In fact, there is an important reason why this instrument might be attractive.

[15] In a world of complete markets and perfectly rational agents, the increase in is such that the debt management policy becomes irrelevant, in the sense that savings of resources occur through an increase in the risk associated with the debt structure. Obviously, markets are not complete and agents are not endowed with the unlimited rationality required for irrelevance to apply. The importance of this consideration lies more in showing that apparent savings of resources could occur at the expense of a rise in the associated risk, especially in the form of a demand to deviate the temporal distribution of taxes and/or more efficient public expenditures from the standpoint of social well-being. Also important is the fact that a full answer to the question of the optimal debt structure will ultimately depend on the use of structural models for the underlying economy.

If a country fails to sufficiently increase its primary surplus during a crisis of confidence, the perception that public debt is not sustainable could result in higher interest rates, which in turn could push the government into a vicious cycle where higher debt leads to an increase in its own carrying costs. This non-linearity in debt behavior exacerbates the value of a stable structure.

Thus, excessive volatility should be avoided through a debt structure whose dynamic is not too sensitive to the short-term movements of relevant variables and through fiscal behavior aimed as much as possible at neutralizing these adverse events.

Favero and Giavazzi (2007) also suggest that countries characterized by a less stable economic environment should consider that the conditions required for stabilizing the debt are more demanding than those for countries with a steadier environment. In particular, a country's solvency is subject to closer scrutiny where economies are more volatile. A policy that seeks to generate greater stability increases the creditors' perception of the government's fiscal responsibility and, consequently, reduces the adverse effects of these non-linearities in debt behavior.

Finally, as noted in Section 4, many events that lead to a repudiation of the countries' debts are not associated with an abnormal increase in the debt-to-GDP ratio; rather they are connected with a liquidity crisis in financial markets that prevents countries that were maintaining some stability in their debt-to-GDP ratio from refinancing their debt. Therefore, to avoid vulnerability in such times, a government should eschew short-term debts or those whose maturity is far too concentrated, for they expose a government to a risk that is not only excessive but, in the case of concentration, unjustifiable.

6 Sustainability and public debt management in Brazil

In Brazil, the Finance Ministry continually analyzes public debt sustainability. To that effect, the Economic Policy Secretariat (SPE) and the National Treasury carry out different, although complementary, evaluations. While SPE evaluates the dynamic of the debt-to-GDP ratio in light of the formalization mentioned in equation (6), to better define the primary surplus required to ensure fiscal solvency[16] and ultimately long-term macroeconomic equilibrium, the National Treasury incorporates elements of sensitivity into this analysis, in light of governmental assets and liabilities.

As discussed in the previous section, public debt managers can contribute to sensitivity analyses by adding the profile of the current public debt and the financing strategy for the coming years. They can also add the risk dimension and refine the evaluation of the costs of assets and liabilities to this same analysis, given their expertise in managing debt risks.

In this sense, the National Treasury's public debt managers developed tools to analyze debt sustainability: For data, they use the primary surplus for the following years, as established in the Budgetary Guidelines Law (LDO) and add expectations with respect to the real interest rate and economic growth, and the debt financing strategy. Uncertainties associated with both the debt and the variables included in the analysis are also considered. These include studies on the optimal public debt profile, or benchmarks, that seek to measure the cost and risk of different profiles in terms of their impacts on the debt-to-GDP ratio.[17]

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[16] According to a proposal by the Ministries of Finance and Planning, the Federal government would submit to the National Congress annually the Budgetary Guidelines Law (LDO), which will guide the budget for the following year. In its annex on fiscal targets and based on SPE parameters, the law establishes the government's primary surplus target for the three subsequent years as well as its expectation regarding evolution of the public debt vis-à-vis the projected macroeconomic parameters.

[17] For details on the optimal public debt composition model, see Part II, Chapter 3.

In this regard, debt structure has an important effect on fiscal sustainability. First, higher outstanding debt volatility leads to increased financing costs for the longer term. Second, there are the non-linearities described by Fávero and Giavazzi (2006), in which temporary changes in debt trajectory can be seen as permanent and thus raise costs and ultimately exacerbate volatility, with the already-mentioned consequences for debt carrying costs.

In view of the debt structure-sustainability ratio, debt management becomes an important component in a nation's fiscal policy. For this reason, the National Treasury has, for over a decade, improved the debt evaluation and planning instruments. The choice of appropriate instruments has increasingly taken into account not only immediate costs but also the risks involved in a balanced profile. Descriptive statistics, exercises using the Cost-at-Risk (CaR) methodology for outstanding debt (financial risk) and Cash-Flow-at-Risk (CFaR) for future flows (refinancing risk), among others, are produced to evaluate the current situation as well as formulate long-term guidelines through the development of optimal profiles (benchmarks) and transition strategies.[18]

With regard to refinancing risks, Brazilian public debt managers have attempted to "smooth" securities' maturity. Even when interest rates are highly volatile, the use of floating-rate securities has allowed the government to separate the interest rate risk from the refinancing risk, thus allowing it to carry the first risk (whose effects are fundamentally associated with sustainability) as it eliminated, or sharply reduced, the second.[19]

7 Conclusion

Although the concept of sustainability can be formalized in a way that is free of ambiguities, no test exists that can clearly indicate whether the debt trajectory of a country is sustainable. In practice, debt sustainability, in addition to involving great uncertainty about the behavior of variables that are difficult to foresee, depends on political options whose evaluation involves developing concepts about the posture of present and future governments.

Still, several indicators examined here could be of great use in assessing, with some discipline, the information contained in historical series. All the indicators assume, somehow, that the past is a good guide for understanding the future (which is what really matters from the standpoint of sustainability) in view of the way fiscal policy is conducted. Institutions change, governments change, and the future need not repeat the past. Thus, it is important that technical evaluations not be isolated but rather understood as a consistent way to organize some of the information offered by history.

It is also important to note that although the concept of sustainability is associated with long-term fiscal policy, many government insolvency crises are characterized by short-term liquidity constraints. Thus, an analysis of a government's fiscal situation should include both dimensions of the issue.

Finally, the government's fiscal posture and public debt structure should not display a trajectory that could be seen as unsustainable, mainly because this can affect the cost of debt roll-over and ultimately make non-sustainability a self-fulfilling prophecy.

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[18] The appendix to this chapter provides an example of a study carried out within the National Treasury, for merely illustrative purposes. More information on these methodologies as well as on how they affect public securities emission strategies will be provided in Part II, Chapters 2 and 3.

[19] This effect is demonstrated by the securities' characteristic of having high average maturity, simultaneously with minimum duration.

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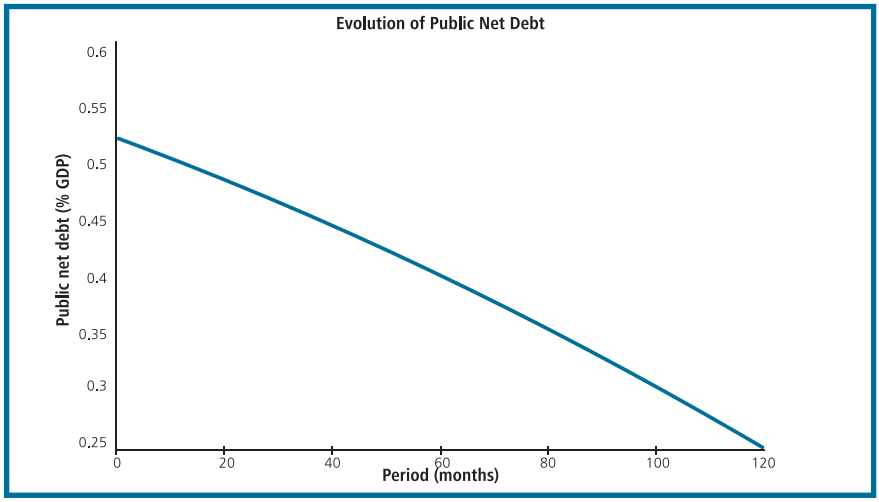
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Appendix

The exercise presented in this Appendix illustrates the type of sustainability analysis that can be performed when introducing the uncertainty aspect and public debt profile. It is intended for illustrative purposes alone and reflects the market perception of the behavior of some key-variables in the recent past. Similar exercises will be explored in Part II, Chapter 3.

The exercise considers some basic premises for the chief determinants of the debt dynamic for a 10-year period: nominal interest rates, inflation, GDP growth, and primary surplus.[20] A first sustainability test is performed in the basic deterministic scenario. Graph 1 shows the trajectory expected for the debt-to-GDP ratio.

Graph 1. Trajectory expected for the debt/GDP ratio - deterministic scenario



Stochastic trajectories are then generated for all variables. At each point in time, it is possible to obtain a distribution of debt-to-GDP ratios. The parameters of underlying stochastic processes have been chosen in such a way as to produce an average value similar to that of the deterministic scenario.

Alternatively, the parameters can be chosen in a way that would produce the deterministic scenario when volatility is "neutralized," to illustrate its impact on the average debt-carrying cost

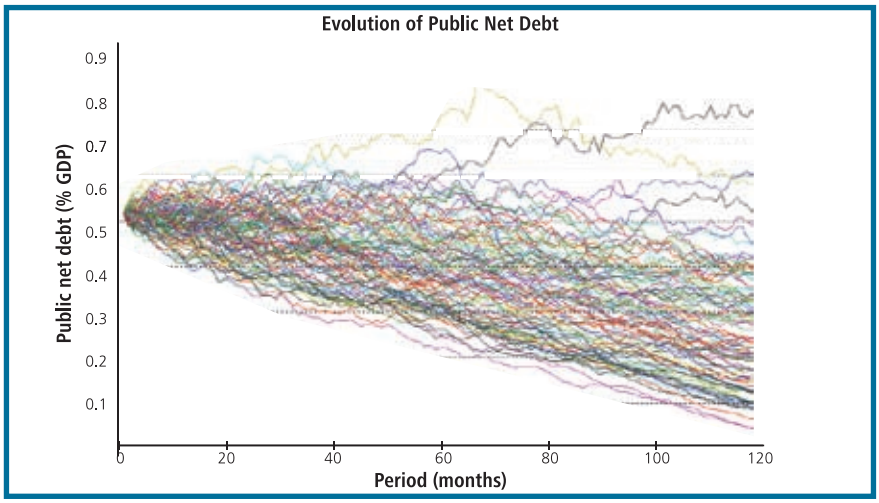
The exercises also include an explicit hypothesis on the financing strategy. If a government chooses to lengthen the debt term by either extending the maturity of fixed securities or reducing the share of post-fixed securities, variations in the interest rate will affect a smaller public debt percentage, thereby reducing its carrying cost volatility. This strategy involves an additional cost, but a rationale such as this can be formally incorporated and, under some explicit hypothesis, quantified.

These exercises provide the government with a powerful tool when it designs its long-term debt strategies.

Graph 3 illustrates an exercise similar to that in Graph 2, as it includes an explicit hypothesis on the debt refinancing strategy

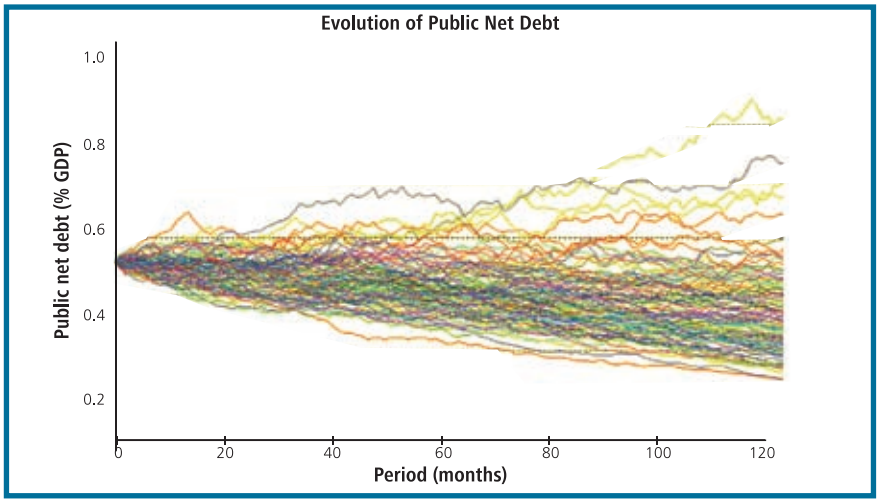
[20] For details on comparable simulations, see Part II, Chapter 3.

Graph 2. Distribution of debt-to-GDP ratios within different horizons without a refinancing strategy



While debt is composed 100% of floating rate instruments in the first exercise, the refinancing strategy involves 10-year fixed instruments.[21] Its higher cost, which is due to the risk premium of the interest rate charged by creditors, is offset by lower debt vulnerability to changes in interest rates.

Graph 3. Distribution of debt-to-GDP ratios within different horizons, including a refinancing strategy



[21] The refinancing strategy assumes that 1% of the floating share falls due and is exchanged on a monthly basis for 10-year fixed instruments. At the end of this period, 100% of the debt is in fixed instruments.

Part I
Chapter 4

Public debt concepts and statistics

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1 Introduction

The aim of this chapter is to present the main public debt-related concepts, statistics and reports published by the Brazilian government in a way that furthers the understanding of the topics addressed throughout the book. It is divided into five sections, including this Introduction.

Section 2 describes the public debt concepts regularly included in official documents, reflecting Brazil's specific characteristics. Section 3 discusses the debt indicators used, since this should promote a better understanding of the quality of Brazil's public debt. Section 4 features current Federal Public Debt (FPD) reports, produced by the National Treasury, along with other debt statistics produced by Brazil's Central Bank.

Finally, Section 5 presents international organizations' recommendations about the form and scope of statistics with respect to a country's public debt (noted in their official documents), compares them with data published in Brazil, and suggests some improvements that would allow the country to move ahead, following progress already achieved.

2 Basic concepts

The public sector includes the three tiers of governments (federal, state and municipal administrations) and their respective public companies (state-owned non-financial Federal, state and municipal companies), as well as the Central Bank of Brazil and the public social security system. To describe the debt indicators, the concept of public debt includes non-financial institutions as well as public funds that have no characteristics of financial intermediaries - i.e., those whose sources of funds are fiscal or para-fiscal contributions - in addition to the joint Brazil-Paraguay electric energy company Itaipu (*Itaipu Binacional*).

Public debt statistics are produced by different areas within the public sector (listed above), which are also defined as the central government (National Treasury, Social Security and Central Bank), Federal government (National Treasury and Social Security), general government (federal, state and municipal administrations), regional governments (state and municipal administrations), and state-owned Federal, state and municipal companies.

Debt can be defined as the obligation of an entity to a third party, derived from the difference between the entity's revenues and expenditures. In other words, for a debt to exist there needs to be a deficit (the entity spends more than it acquires), although sometimes there is a time lag between the moment the deficit occurs and the time at which the debt is registered.

[1] The authors drew from the valuable contribution of Ethan Weisman, from the International Monetary Fund (IMF), who wrote the fifth section of this Chapter (International Benchmarks and Comparison with Statistics on Brazilian Debts).

The concept of public debt, like all other fiscal concepts,[2] can be presented in different ways: The most common types are the gross debt (government liabilities) and net debt (government assets minus its liabilities).

The Net Public Sector Debt (NPSD) refers to the *total obligations of the non-financial public sector*[3] deducted from its *financial assets* held by non-financial private agents as well as public and private financial agents. In Brazil, unlike other countries, net debt includes Central Bank assets and liabilities including, among other items, international reserves (assets) and the monetary base (liabilities).

In the Central Bank's NPSD statistics,[4] outstanding Domestic Federal Public Debt (DFPD) is assessed on the accrual criterion, i.e., interest is computed on a *pro-rata* basis by appropriating the amounts due, independent of the payments made in the period. Outstanding External Federal Public Debt (EFPD), in turn, is based on the cash criterion, and interest is computed only when payments are made. However, in National Treasury statistics, both DFPD and the EFPD are classified according to the accrual criterion.[5]

The concept of net debt[6] is the one most commonly used to monitor a country's fiscal sustainability. The IMF advocates developing a broader concept to represent the "net worth," which would include, *inter alia*, non-financial assets (such as equities of state-owned companies and state real estate) as well as contingent liabilities.[7]

Box 1. Net Fiscal Debt

In 2001, an alternative concept of net debt began to be published - called the Net Fiscal Debt - which corresponds to the NPSD without contingent liabilities already recognized and registered (the so-called "skeletons"), privatization revenues and other items that affect outstanding debt but do not represent the fiscal effort at the time they were recorded. The Net Fiscal Debt variation corresponds to nominal fiscal balances in the period.

Total Net Debt (A)
Privatization Adjustment (B)
Patrimonial Adjustment (C)
Methodological Adjustment to external debt (D)
Net Fiscal Debt with foreign exchange rate (E=A-B-C-D)
Methodological Adjustment to domestic debt (F)
Net Fiscal Debt (G=E-F)

[2] See the Annex at the end of this chapter for details on other fiscal concepts.
[3] These include internal and external debts – DFPD and contractual debt, reserve requirements, repurchase agreement's operations (repo) and the monetary base.
[4] See the Fiscal Policy Press Release available on the Central Bank website (www.bcb.gov.br). The Release is a monthly document containing the main statistics on NPSD as well as interest, primary balance and borrowing requirements of the public sector in general, and each entity in particular.
[5] For more details, see the Federal Public Debt Monthly Report, which includes the main statistics on the Federal government's domestic (DFPD) and external (EFPD) debt and which is available on the National Treasury's website (www.tesouro.fazenda.gov.br).
[6] In Brazil, for example, the Net Public Sector Debt (NPSD) is the debt indicator used by the government as a reference for economic policy decisions.
[7] For additional references, see Section 5 of this Chapter.

In other words, the above adjustments correspond to variations in NPSD balances that are not considered when assessing the public sector's nominal balance, for lack of equivalence in revenues and expenditures. Privatization adjustment refers to revenues received in the form of funds and securities during the National Privatization Program (PND). Patrimonial adjustments, in turn, are the so-called "skeletons," which correspond to debts arising from contingent liabilities not included in outstanding debt at the time they were assumed.[8]

Finally, the methodological adjustment aims to correct three types of effects, of which the most important is the FX-rate variation on outstanding debt, in a way that corresponds to the public sector's borrowing requirements (revenue and expenditure flows). In this regard, it corresponds to the difference between the debt position, to which the period-end FX-rate is used, and the fiscal flow, whose closest FX-rate for measuring the value in Brazilian *real* is the average FX-rate in the period. The second effect corresponds to the difference between the cash and accrual criteria used to compile external debt interest.[9] Finally, the third refers to the parity adjustment of the basket of currencies that make up the external debt and international reserves. The two latter effects were first determined in September 2005.

As for gross debt,[10] it can be classified according to origin, scope and nature.[11]

Debt can be classified as either domestic or external. In addition, it is classified internationally in two other ways, which vary according to, among other factors, the risks deemed relevant for debt managers. In countries that have historically experienced balance of payments crises, the criterion to best capture the risk associated with debt is the one related to the security-trading currency: i.e. debt denominated in the domestic currency would be classified as domestic and debt denominated in other currencies would be external.[12] This provides a better idea of the pressure from the flow generated by either type of debt on the balance of payments over time, as well as on the risks attached to a foreign exchange crisis. This classification is currently used in Brazil.

Another possibility is to consider the debt held by residents as domestic and that held by non-residents as external. This classification is more interesting for countries with free capital flows, assuming that non-resident investors behave differently than resident investors. As a result, securities denominated in local currencies but held by non-residents would be considered external debt while foreign-currency-denominated securities held by residents would be considered domestic debt. This second practice is the one the IMF suggests be used when publishing statistics on countries' debts,[13] despite the difficulties in obtaining information on the

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[8] The Central Bank publishes information on the main assets adjusted in its Fiscal Policy Press Release, which is available at www.bcb.gov.br.

[9] This is because statistics on the NPSD reflect external debt interest rates based on the cash criterion, rather than those of the domestic debt, which are based on the accrual criterion.

[10] For didactic purposes, from this point onwards, gross debt analysis will be restricted to the Federal Public Debt (FPD), which is the responsibility of the Brazilian National Treasury. Among the liabilities included in NPSD and not covered in FPD are the domestic and external contractual debts of the Central Bank, state-owned companies and states' and municipalities' debt as well as the monetary base. For comparison purposes, total NPSD liabilities - i.e. public sector gross debt - was R$1,786 billion in June 2007, while FPD in the hands of the public was R$1,325 billion on the same date, which represented approximately 75% of the gross debt.

[11] Brazilian legislation provides additional forms of debt classification such as floating and funded debt, which do not conflict with those presented in this chapter. These classifications can be found in Section 2, Chapter 5, (Regulatory Frameworks and Government Audit of Public Debt).

[12] Domestic debt could ultimately be paid by the Central Bank issuing Brazilian reais; however, the same does not apply to external debt. This is one reason why some credit rating agencies see domestic debt as less risky than external debt.

[13] For additional information, see International Monetary Fund. Government Finance Statistics Manual 2001 (GFSM), December, 2001.

end-holders of public debt securities from custody/settlement clearing houses (mainly the international ones). This situation could compromise the quality of the statistics produced.

Another important point is that this criterion allows the debt profile to change only in terms of market trading, without debt managers changing their strategies. Although this peculiarity does not compromise the quality of the statistics, an alternative would be to produce parallel statistics, so as to avoid distortions in the analysis, particularly in times when holders of securities substantially change their positions.

A third although less usual criterion would be to classify the debt according to the venue chosen to resolve disputes between creditors and debtors. Thus, domestic debt would be the one in which disputes on amounts due or related subjects would be discussed within the Judicial Branch of the issuing country; and, disputes about external debt would be handled by courts in a country other than the one of the security/contract issuer.

A methodology should not be considered right or wrong until each country evaluates its pros and cons. Thus, countries should classify debt in ways that reflect their perception of the associated risk, which would be related to their macroeconomic policies and perspectives for the future, as well as the difficulties involved in generating quality statistics based on the chosen criterion.

In terms of scope, as mentioned earlier, besides the concept of public sector, the most commonly used concepts are those of central government (National Treasury, Social Security and Central Bank); federal government (National Treasury and Social Security); general government (federal, state and municipal administrations); regional governments (state and municipal administrations); and state-owned companies (federal, state and municipal).

With regard to its specific nature, public debt can be classified as either contractual or securities (bonded) debt. In the first case, debt arises from a contract, which defines its characteristics. In the second, debt results from a security (bond), which is autonomous vis-à-vis the debt it stems from. In Brazil, contractual debt under the National Treasury refers exclusively to external debt, since the domestic contractual debt has been securitized over the years and is therefore classified as part of the DFPD.[14] The characteristics of DFPD securities are provided for in specific legislation.[15] In the case of the external debt (EFPD), a general authorization is required for each external loan, except for external securities' debt, for which the general authorization for issuing securities establishes, *inter alia*, the top value to be issued.[16]

The DFPD can be classified according to (1) form of issuance, (2) form of trade, and (3) holders.

Regarding the form of issuance, debt is classified as "public auction" when securities are issued through an auction and rates are set based on a competitive process; it is defined as "direct," when securities are issued to meet a specific contract or legal provision. These may or may not have financial resources as counterpart funds.[17] Examples of "direct" issuances are debt securitization and Agrarian Debt Securities (TDA), while "public auction" issuances involve the most commonly traded government securities, namely *Letras Financeiras do Tesouro* (LFT), *Letras do Tesouro Nacional* (LTN) and *Notas do Tesouro Nacional* (NTN).[18]

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[14] The detailing of bonds issued in the program of debt securitization can be found in the National Treasury website (www.tesouro.fazenda.gov.br).

[15] As the Central Bank no longer issues securities, the National Treasury's DFPD represents the Federal Government's domestic debt. The main legal instruments governing it are Law nº 10,179 of February 6, 2001, and Decree nº 3,859 of July 4, 2001.

[16] This is based on Federal Senate Resolution nº 20 of 2004, authorizing operations with financial derivatives.

[17] Most of these issuances have no financial resources as counterparts and increase the outstanding net debt. They generally correspond to the needs generated by public policies such as the equalization of funding rates and exports, and agrarian reform.

[18] Current market-issued series of NTNs include the B series, which is corrected by a Consumer Price Index called IPCA, and F, which corresponds to a fixed-rate security with interest coupons.

With regard to the form of trading, securities are classified as marketable, where there is no restriction on their being freely traded, and non-marketable, when legal or operational issues prevent them from being transferred from one holder to another.[19]

Securities can be in the Central Bank's portfolio or in public hands.[20] In the former, the outstanding debt has no effect on NPSD, since the debt, notably DFPD securities, would be registered as Central Bank assets and National Treasury liabilities in equal values, and the accounts would be cancelled when the public sector's balance sheets are consolidated. In this regard, the outstanding debt on the market is the relevant statistic for monitoring the risks and costs of FPD, fiscal sustainability and monetary liquidity.

External securities debt can be classified into two major groups: (1) renegotiated debt and (2) new issuances. The first includes securities issued within external debt renegotiation programs such as BIB, IDU and Brady Bonds;[21] the second are securities issued in public auctions, which occurred when the external debt renegotiation process was completed[22] and Brazil regained access to the international market. It is important to note that Brazil's state and municipal governments do not have direct access to the international market through issuing securities. Rather, the external funds they raise are solely with loans (contracts) from multilateral organizations - mainly the International Bank for Reconstruction and Development (IBRD) and the Inter-American Development Bank (IADB) - and government agencies.

Finally, the external contractual debt has many lenders which include, in Brazil, projects and programs financed by (1) multilateral organizations (chiefly IBRD and IADB) and (2) private banks and government agencies (JBIC – Japan Bank for International Cooperation and KFW among others). The debt refinanced with the Paris Club, within the external contractual debt renegotiation program, which ran from the 1980s to 1992, was paid off in advance during the first half of 2006. Whenever a debt was contracted with the International Monetary Fund (IMF) within the scope of balance of payment adjustment programs, the Central Bank included the debt in its balance sheet.

The table below describes the main categories of EFPD.

Table 1. External Federal Public Debt

1. Securities debt		2. Contractual debt
1.1 Restructured Debt*		2.1 Multilateral Organizations
BID	C-Bond	IBRD
IDU	DCB	IADB
Par Bond	NMB	CAF
Discount Bond	EI	FONPLATA
FLIRB		Others

[19] Currently, securities are only classified as tradable in outstanding FPD, either domestic or external.

[20] The investor base is presented in greater detail in Part 3, Chapter 5.

[21] Debt renegotiations resulting in BIB and IDU issuances occurred prior to renegotiation within the 1992 Brady Plan. For further details on the renegotiation of the Brazilian external debt, see *Dívida Externa Brasileira*, by Ceres Aires Cerqueira, 1997.

[22] The last external debt renegotiation agreement was signed in April 1994, through which seven Brady Bonds were issued - which formed, together with BIB and IDU, the nine bonds of the renegotiated external debt. These bonds were redeemed in advance, at par, by the National Treasury in April 2006. The first sovereign issuance after renegotiation of the external debt occurred in 1995 through the so-called Samurai Bonds.

1. Securities debt	2. Contractual debt
1.2 New Loans	2.2 Private Banks / Government Agencies
1.2.1 Euro-denominated Bond	IFAD
Eurobond	KfW
Europound**	JICA
1.2.2 US Dollar-denominated Global Bond	JADECO
Global in USD	JBIC
A-Bond***	USAID
1.2.3 Real-denominated Bond****	Others
Global in BRL	

* Bonds representing the restructured debt (Bradies and pre-Bradies) were redeemed in April 2006, except for the BIBs, which had no repurchase clause and are still outstanding.
** Although issued in the European market, these bonds are denominated in pounds sterling.
*** Bonus issued in October 2005, in exchange for part of the C-Bonds then in circulation.
**** Denominated in US dollars.

3 Statistics on the Brazilian public debt

3.1 Main indebtedness indicators

3.1.1 General Government Gross Debt (GGGD)

The General Government Gross Debt (GGGD) pertains to that of the federal, state and municipal governments, both with the private sector and the public financial sector.[23] However, debts that are the responsibility of state-owned companies (at the three levels of government) are not covered by the GGGD category. Although the Central Bank is not an entity whose liabilities figure in this indicator, its open-market operations committed to the financial sector are classified as general government debt.[24]

An entity's liabilities held by other entities covered by the GGGD are deducted from the gross debt. In this respect, credits represented by public securities held by agencies, federal public funds and other federal entities are disregarded.[25]

This is the main argument against the practice of some analysts and credit rating agencies, who have historically attached significant weight to GGGD, without regard for each country's specific conditions. In the net debt, as we can see below, government operations representing mere exchanges in assets and liabilities[26] do not change public net worth, keeping the perception of fiscal risk.

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[23] Unlike the NPSD, the GGGD takes into account only liabilities but not assets under the responsibility of the entities it comprises. External obligations are converted into Brazilian real at the end-of-period FX-rate.
[24] It is understood that, since repurchase agreement (repo) operations should be "paid" through the issuance of federal public securities on the market, their inclusion in the GGGD would capture general government indebtedness more effectively by anticipating FPD movements. The decision to include repo operations in the GGGD was made in 2008, when the method used to assess this indicator was introduced. Another relevant change was to exclude National Treasury securities from the Central Bank's liability portfolio; this was because these securities are refinanced by a legal decision with the Central Bank itself, at the auction rates on the date of refinancing and therefore do not represent any risk of increasing the need for Government financing, even at times of high market volatility.
[25] These are investments in public bonds by the Social Security, Workers' Assistance Fund and other funds as well as by states and municipalities, if any.
[26] These kinds of operations do not change the Government's net worth, as they represent just the exchange of amounts between

3.1.2 General government net debt

General government net debt corresponds to the net debt (assets and liabilities) of the federal (including Social Security), state and municipal governments with the non-financial private sector, the public (including the Central Bank) and private financial system, and the rest of the world.[27]

3.1.3 Net Public Sector Debt (NPSD)

NPSD is the main indebtedness indicator used by the Brazilian government when making economic policy decisions and more adequately reflects the dynamics of public liabilities and the government's fiscal efforts, which are shown by the consolidated primary balance at all levels. For example, in its fiscal reports, the federal government constantly refers to maintaining the NPSD/GDP ratio in a downward trend over time, and includes in its Budgetary Guidelines Law (LDO) an annual estimate of this indicator's evolution for the current year and three subsequent years, based on its expectations about real interest rates, economic growth and primary surplus targets for the whole public sector.

As mentioned earlier, the concept of public sector used to calculate NPSD is that of the non-financial public sector plus the Central Bank. For the purpose of this indicator, it includes: federal, state and municipal administrations (direct and indirect); the Social Security System; non-financial federal, state and municipal state-owned companies; and public funds not characterized as financial intermediaries, i.e., those whose sources are fiscal contributions.[28] The NPSD is used as the basis for assessing Public Sector Borrowing Requirements (PSBR), also known as "below-the-line" nominal results. Balances are assessed based on the accrual criterion, i.e., interests are computed on a pro-rata basis by appropriating the amounts due, independent of payments made in the period. Accounting records that do not use this criterion are corrected for the sake of ensuring a homogeneous assessment.

Box 2. Brazil's debt indicators and the main credit rating agencies

Moody's and Fitch

For the purpose of assessing Brazil's fiscal sustainability risk, both Moody's and Fitch credit rating agencies use the concept of GGGD. As explained in footnote 24 of this chapter, GGGD methodology was changed in 2008, including Central Bank repo operations and excluding National Treasury securities held by Central Bank. However, the agencies continue to use the former Central Bank concept, for a better international comparison. Despite the change in the methodology, CB releases in its Fiscal Policy Press Release all the information needed to calculate the old GGGD.

Standard & Poor's (S&P)

S&P publishes three statistics on general government debt, all based on a method of its own: its categories are "gross debt," "net debt of government deposits" and "net debt." As calculated by S&P, "gross debt" excludes

two or more accounts. Examples are the purchase of international reserves through the issuance of securities on the market and maintenance of part of the primary surplus in a specific public fund rather than using it to pay the debt. These economic policy decisions should not change risk perception as they do not change the government's debt-payment capacity.

[27] This includes federal, state and municipal state-owned companies.

[28] Most of the text describing the statistics replicate the Central Bank's technical notes on the subject, which are available in the institution's time series.

general government liabilities that are assets of other government entities, such as Treasury securities held by Central Bank and the restructured debt of states and municipalities (federal government assets). As liabilities, the concept includes the Central Bank repo operations, among others. "Net debt of deposits" is equal to the "gross debt" minus the amount of government deposits in the Central Bank and commercial banks, i.e., government assets of immediate liquidity. The "net debt" in turn, is the "net debt of deposits" minus the value of other assets considered liquid, such as taxes collected and royalties. It should be stressed that S&P's "net debt" is not directly comparable to the Brazilian NPSD, in view of the differences in asset liquidity criteria and coverage in terms of the government entities considered. Finally, among these three indicators, S&P, in its credit rating reports, refers regularly to "net debt" as the relevant fiscal sustainability indicator. However, S&P indicators do not include important NPSD assets, such as FAT and international reserves, and liabilities, like the monetary base.

Main liabilities in the NPSD include the federal government's domestic and external debts,[29] which together make up the FPD, the monetary base and the repo operations - the last two being in the Central Bank.[30] Main assets, in turn, are the Central Bank international reserves and the federal government public funds such as the Workers' Assistance Fund (FAT).

3.1.4 Federal Public Debt (FPD)[31]

The Federal Public Debt (FPD) is expressed by the sum of the domestic and external debt for which the federal government is responsible: Its domestic debt is known as domestic federal public debt (DFPD) and the external debt as the external federal public debt (EFPD).

3.1.4.1 Domestic Federal Public Debt

DFPD is the federal government's debt in the form of government securities received and paid for in Brazilian reais. As already mentioned, Brazil uses the currency of denomination to distinguish between domestic and external debt.[32]

DFPD can be held either by individuals or the Central Bank. Since the federal government's debt to the Central Bank is a debt between government institutions, it is not included in the analysis of risks and costs associated with the Brazilian debt. As a result, the main DFPD statistics and reports published by the National Treasury only consider the public debt.[33]

In keeping with the federal government's strategy to reduce the share of external debt so as to minimize the exchange rate risk, DFPD currently represents nearly all outstanding FPD held by the public.[34]

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[29] These two types of debt, which together comprise Federal Public Debt and are managed by the Brazilian National Treasury, will be discussed later.

[30] For the purpose of implementing monetary policy, the Central Bank uses, among other instruments, government security sales operations with a repurchase or reverse sale agreement on a future date. The aim of these operations, known as repo operations or open market operations, is to control the liquidity of the economy.

[31] FPD statistics are available on the National Treasury's website (www.tesouro.fazenda.gov.br). Also, the National Treasury publishes the FPD Annual Borrowing Plan in January of each year and the Federal Public Debt Monthly Report, roughly 20 days after the closing of every month.

[32] For more details on the different methods used to classify debt as domestic and external, see Section 2 of this chapter.

[33] Information on the profile of outstanding Federal Government debt held by the Central Bank can be found in the statistical report of the Federal Public Debt Monthly Report published by the National Treasury and available at www.tesouro.fazenda.gov.br.

[34] In December 2008, outstanding DFPD held by the public totaled R$1,265 billion, or 90.5% of the FPD. The other 9.5% (R$133

The DFPD profile is a crucial aspect of its structure, since it is intrinsically associated with both market risk and refinancing risk. Presently, the main securities issued in National Treasury auctions to refinance the FPD portion due each year include:

- *Letra do Tesouro Nacional* (LTN): A bond whose yields are defined at purchase (fixed rate). Form of payment: at maturity.
- *Letra Financeira do Tesouro* (LFT): A floating rate bond whose daily yields are linked to the economy's basic interest rate (average rate of repo operations with public bonds registered in the SELIC system, or simply SELIC rate). Form of payment: at maturity.
- *Nota do Tesouro Nacional* - B series (NTN-B): A bond whose yields are linked to variations in the Consumer Price Index (IPCA), along with the interest defined at purchase. Form of payment: every six months (interest) and at maturity (principal).
- *Nota do Tesouro Nacional* - F series (NTN-F): A bond with fixed-rate yields, along with the interest defined at purchase. Form of payment: every six months (interest) and at maturity (principal).

In addition to outstanding debt, another indicator routinely monitored by analysts, in general, and debt managers, in particular, is the average maturity of public debt. This indicator calculates the average time of the debt to maturity. In Brazil, calculation of both DFPD and EFPD takes into account all intermediate cash flows, i.e., the values related to the interest and principal of each debt. In general, the longer the average maturity, the better it is for public debt management, although other elements such as market structure and investor base size and diversity should also be included in the analysis.

With regard to the methodology applied, the average maturity of each security or contract is computed by weighting the maturity of its flows (principal and interest) relative to the amount falling due on that date. The amount used in the calculation is discounted at present value, using the interest rate assessed on the date of issuance. The average maturity of each security or contract is then weighted relative to the others, ultimately producing the average maturity of the debt. This methodology, used by the National Treasury to monitor the average maturity of the FPD in the market, is the most conservative a debtor can use; it is also the most correct, as it takes into account all the flows, without any distinction between principal and interest, and compares them on the same date, which brings them to present value.

Cash flows generated for computing the average maturity of FPD are also used to calculate another refinancing risk indicator - the debt percentage falling due in 12 months. This indicator and the average maturity are routinely monitored by the National Treasury (and published in its FPD Monthly Report) and calculated by dividing the principal and interest flows due in 12 months by the outstanding debt (stock). These flows are brought to present value through the same method used to calculate the average maturity.

Another indicator the National Treasury monitors (and publishes monthly) is the average debt financing cost. It uses the same factors to calculate the average maturity and percentage falling due, i.e., the interest rates of each security issued (on a monthly basis) and its outstanding debt, for weighting the rates. Once calculated, the average monthly rate is annualized for publication purposes.

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billion) represents the EFPD. It should be noted that outstanding domestic and external debts include not only the principal of each security or contract, but also the interest accrued between the date of issuance or payment of the last interest tranche, and the reference date.

While the FPD Report publishes the average monthly cost of domestic and external debt, the preferred indicator is the "average 12-month cumulative cost," also published in the report. This indicator is the best expression of the behavior of the public debt financing cost over time, since the average monthly cost is strongly affected by short-term variations in FPD indicators, mainly exchange rates, interest rates and inflation.

It should be noted that the average cost of DFPD has been less volatile than that of EFPD, since its indicators are more stable in the short run, especially with regard to its very reduced share in exchange-rate linked securities (about 1%), whereas more than 90% of outstanding EFPD is linked to currencies other than the *real*.[35] A high correlation is also perceived between the average cost of DFPD and the repo operations interest rate (Selic). This is not surprising, given the strong share of floating rate bonds in outstanding domestic debt (above 35%).

3.1.4.2 External Federal Public Debt

The EFPD is the federal government's debt in the form of securities and contracts, whose receipt and payment flows are denominated in currencies other than the *real*. As noted earlier, Brazil adopts the currency of denomination to distinguish between domestic and external debt.[36] The outstanding EFPD[37] is computed using the same methodology as that of the DFPD, which considers both the principal of each security and contract, and the interest accrued.[38]

The external securities' debt refers to securities issued in the international market. As with contractual debt, Brazil carried for over a decade the so-called "Brady Bonds"[39], issued in the early 1990s within the scope of the "Brady Plan" negotiations. New bonds started to be issued in 1995, just after the renegotiation of the external debt. Although the new bonds have historically been issued in different markets, each with its currency of reference, most of this debt is concentrated in US dollars, euros and Brazilian *reais*.

Since 2006, the steep decline in Brazil's need for external borrowing created conditions for the government to improve qualitatively the external issuance program. At the same time, the government introduced the early redemption program, so as to withdraw from the market the so-called high coupon bonds, which were considered inefficient.

The external contractual debt is that established with the creditor when the contract is signed, defining the amount, term, amortization schedule and rate. As with securities, Brazil's external contractual debt was restructured in the form of contracts with a group of nations, known as the Paris Club, and bought back in 2006.[40] Currently,

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[35] Represented by Global BRL securities, which are external debt securities (since their flows are in US dollars) denominated in Brazilian *reais*.

[36] For details on the methodologies used to classify debts as domestic and external, see Section 2 of this chapter.

[37] For reference purposes, in December 2008 the EFPD reached R$133 billion (9.5% of the FPD), or US$57 billion, of which R$101 billion (US$43 billion) accounted for the securities debt and R$32 billion (US$14 billion) for the contractual debt.

[38] From the date of issuance or payment of the last interest tranche to the date of reference, for outstanding debt computing purposes.

[39] The seven bonds that made up the so-called "Brady Bonds" were issued on April 15, 2004 and their outstanding debt was repurchased in advance on April 15, 2006. Two additional bonds had been issued prior to that date, the IDU and the BIB/BEA, as they were an integral part of previous stages of the external debt renegotiation. That is why they were termed "Pre-Brady Bonds." Of these, only the IDU was repurchased together with the Bradies. Bonds in the BIB/BEA "family" are still in public hands.

[40] For more information about contractual debt creditors and amounts, see the Brazilian Treasury's website at http://www.tesouro.fazenda.gov.br/divida_publica/downloads/estatistica/Estoque_Divida_Externa.xls.

this kind of debt is used to finance specific projects through loans from multilateral organizations (mainly IBRD and IADB) as well as from foreign private creditors and government agencies (such as KFW, USAID and JBIC).

As mentioned earlier, the method used to calculate the average maturity of EFPD is the same used for DFPD. This indicator calculates the average time to maturity of outstanding debt on the market, taking into account all intermediate cash flows, i.e., the values related to both the interest and principal.

Likewise, the method used to calculate the average financing cost of EFPD is the same as for DFPD, which considers the issuance rates of each security (on a monthly basis) and the respective outstanding debt for weighting the rates. Once calculated, the average monthly rate is annualized for official release. In the case of the external debt (similar to the exchange-rate indexed domestic debt), exchange rate fluctuations between the local currency and the one in which the debt is denominated are also taken into account. As expected, the average cost of EFPD is more volatile than of DFPD, in view of the large share of debt in other currencies in its profile.[41]

Box 3. Indicators of public debt refinancing risk: country comparisons

Average maturity and average life

Unlike average maturity, which includes both the principal and interest flows in its calculation, average life indicates only the remaining life of the public debt principal. The latter, which is adopted by many countries as the only indicator of their debt maturity, is often compared to the average maturity computed by Brazil and published in its monthly reports as well as in the Annual Borrowing Plan and the Annual Report. It should be noted that, with respect to refinancing risk, when average life of the FPD is used instead of average maturity, the former was 5.6 years in December 2008 against 3.5 years of average maturity. Despite the difference between these indicators, Brazil continues to use the latter as it believes it more accurately captures the risks attached to FPD. However, it still mentions the average life indicator in its reports to allow analysts and investors to compare Brazilian debt indicators to those of other countries that use it.

Maturity structure

Just as some countries do not include interest flows when calculating statistics on the maturity of public debt, a similar approach is observed when comparing the percentage of this debt falling due in the short term. With Brazil, for the sake of consistency with average maturity statistics, both the principal and interest are considered when the debt flow and the debt percentage falling due within different terms are published in public documents, thus accurately capturing the public debt refinancing risk. However, when reporting the flows and percentage due in the short term, some countries consider just the principal, excluding the interest accrued and, in some cases, without bringing the flows to present value. To qualify the difference in perception of the refinancing risk when interest flows are disregarded, the percentage of the Brazilian FPD due in 12 months would decrease by more than six points, falling from 25.4% to less than 20% in December 2008. The percentage due in up to two years, in turn, would drop from 47.9% to less than 40% and, consequently, the percentage due in more than two years would be higher than 60%, instead of 52.1%. As with the average maturity, despite the difference in perception with respect to the second indicator, it is believed that the refinancing risk of FPD is more accurately captured when both the principal and interest flows are considered in the calculation of the percentage falling due.

[41] In the DFPD, the exchange-indexed share stands at approximately 1%. In contrast, over 90% of outstanding EFPD is linked to currencies other than the *real*.

4 Public debt reports

4.1 Federal Public Debt monthly report

The Federal Public Debt Monthly Report has been published by the Brazilian National Treasury since February 2007, replacing the *Press Release – DFPD and Open Market Operations*, which had been jointly published by the Central Bank and the National Treasury since November 2000.[42]

Its main purpose is to publish unified FPD statistics by consolidating information on the DFPD (that until then had been published in the *Press Release*), with material on the EFPD previously published by the National Treasury. The report also added new features, such as the average cost of FPD, its factors of variation and data on the secondary bond market. Finally, it presents information on the *Tesouro Direto* (Treasury Direct) Program[43] – which sells government bonds to individuals through the Internet.

This report, available in Portuguese and English,[44] contains monthly information as well as the historical series of all statistics described in Chapter 3 of this section, among others. It describes FPD financing operations through issuances and redemptions, segregated by type of debt. Next, it presents the profile of outstanding debt held by the public and the structure of maturities within 12 months by indexing factor and maturity schedule. Also, it publishes the average maturity and average life of FPD, along with its components. In the sequence, it provides data on the FPD average cost, its variation factors in the month and statistics on the secondary public security market. Finally, an annex contains time series of each indicator, and information on holders of public securities and on monetary policy indicators.

4.2 Federal Public Debt Annual Borrowing Plan (ABP)

The Annual Borrowing Plan (ABP) has been published by the National Treasury since January 2001, presenting its objectives, guidelines, strategy and targets related to FPD. More than a planning tool, the ABP has become an instrument to increase debt management transparency and predictability. Also, it provides an in-depth analysis of the National Treasury's activities by listing guidelines and targets to be taken into account in FPD management each year. Information in the ABP is expanded by the Annual Public Debt Report, which reviews the relevant facts recorded in the previous year as well as their outcomes.

The aim of FPD management, which has been stated in the ABP since 2003, is to minimize long-term borrowing costs by maintaining prudent risk levels; at the same time, it seeks to contribute to the smooth performance of the public securities market. This involves reducing the share of floating-rate debt while increasing the fixed-rate and inflation-linked share, and extending average debt maturity while reducing the share that falls due in the short term.

Based on established strategies, the ABP provides the minimum and maximum amounts projected for the end of the period for each relevant indicator,[45] expressed in the form of indicative limits. The plan also

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[42] Both the FPD Monthly report (from 2007 on) and the DPFD Press Release (between 2000 and 2006) can be found on the National Treasury's website at www.tesouro.fazenda.gov.br.

[43] For additional details on Tesouro Direto, see Part 3, Chapter 7. Information on the program can also be found on the National Treasury's website at http://www.tesouro.fazenda.gov.br/tesouro_direto/.

[44] See Portuguese version at http://www.tesouro.fazenda.gov.br/hp/relatorios_divida_publica.asp and English version at http://www.tesouro.fazenda.gov.br/english/hp/public_debt_report.asp.

[45] FPD indicators whose limits are published in the ABP include: outstanding debt, average maturity, percentage due in 12 months, and profile (distributed into fixed rate, inflation-linked, interest-rate linked and exchange-rate linked debts).

contains a chapter on market and refinancing risk indicators. The expectations expressed in the ABP reflect technical criteria, consistent with the best international practices in public debt management. In fact, the National Treasury's planning and execution of FPD management activities has been strengthened over the years, which has guaranteed the quality of results.

4.3 Annual Federal Public Debt Report (ADR)

The aim of the ADR[46] is to complement the ABP and thus improve the predictability and transparency of National Treasury actions. It presents a retrospective analysis of FPD management for the previous year, which evaluates the process of defining objectives and goals (including human and technological resources, and outcomes). Historically, this information was covered by the ABP in its final chapters, but since 2004, the review of the previous year's events was transferred to the Annual Report.

The ADR assesses the economic-financial expectations over the year and summarizes the advances in FPD management vis-à-vis the goals set in the previous year; also, it provides the results achieved in terms of outstanding debt, debt maturity and profile, and analyzes the risks to which the debt was exposed. Finally, it highlights the main institutional advances with respect to organizational framework, technological systems, events and decision-making processes.

4.4 Other sources – press releases by the Central Bank of Brazil

4.4.1 Press release – external sector

The *press release - external sector* is a Central Bank monthly publication that includes a text along with statistical data in the form of spreadsheets. The release offers information on the position of the external sector in Brazil, including data on flow and outstanding external debt. The tables are grouped into the following: Balance of payments (by main groups), direct investments and portfolio investments, issuance and amortization of Brazilian securities overseas, international reserves, external debt by debtor and currency as well as main principal and interest flows, and traditional external debt indicators. This publication, also available in English, provides important details by groups of creditors and debtors and compares statistics in different time periods.

4.4.2 Press release – fiscal policy

The *press release - fiscal policy* is a Central Bank monthly publication that also includes a text along with statistical data in the form of spreadsheets. The release provides details on government financing requirements in its different spheres as well as indicators of general government and public sector debt. The information is produced according to the "below-the-line" criterion and allows for historical comparisons of indicators. The tables are grouped into the following: PSBR (public sector borrowing requirements),[47] profile and average maturity of federal public securities, Central Bank repo and swap operations, net public sector

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[46] Both the ABP and the ADR are also available in English. The first can be found in Portuguese and English free of charge at http://www.tesouro.fazenda.gov.br/divida_publica/ABP.asp and http://www.tesouro.fazenda.gov.br/english/public_debt/annual_borrowing_plan.asp and the latter at http://www.tesouro.fazenda.gov.br/divida_publica/ADR.asp and http://www.tesouro.fazenda.gov.br/english/public_debt/annual_public_debt_report.asp

[47] Calculation of public sector borrowing requirements includes accrued interest and the primary balance of each government

debt by its different entities,[48] conditioning factors, implicit interest rate and main NPSD indices, general government gross and net debt,[49] and harmonized net public sector debt.[50] This publication, which is also available in English, provides statistics in different time periods.

4.4.3 Time series

The Time Series Management System[51] is a tool provided by the Central Bank to survey the time series of the data contained in the press releases as well as monetary statistics. The system aims to consolidate and make available economic-financial information and ensure that documents produced from the time series and stored in the system are consistent. The series can be consulted individually or collectively, or in customized lists.

5 International benchmarks and comparisons to statistics on Brazilian debt[52]

Ethan Weisman[53]

This section presents the recommendations of international organizations on the methods, form and scope of statistics on a country's public sector debt, compares them to data published by Brazil, and suggests some improvements that would advance the progress already achieved. The section also highlights important aspects of public debt statistics.

5.1 International organizations: public sector debt methodologies, data collection, and publication

Several international organizations collect and publish statistics on public debt. Currently, the most important is the IMF's Government Finance Statistics database,[54] which presents the public sector debt of IMF member countries. The database on the general government debt of each European Union member country is produced by Eurostat and the European Central Bank.[55] The Organization for Economic Cooperation and Development (OECD) also keeps a database on the central government debt of its member countries.[56]

Another important database, jointly developed by the Bank for International Settlements (BIS), the IMF, the OECD and the World Bank,[57] covers statistics on countries' external public and private debt and

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entity - the National Treasury, Central Bank, Social Security, federal, state and municipal government-owned companies, and states and municipalities. Statistics are provided in nominal values and percentage of GDP related to the month and accumulated in the past 12 months.

[48] These include the National Treasury, Central Bank, Social Security system, federal, state and municipal government-owned companies, and states and municipalities. Statistics are provided in nominal values and percentage of GDP.

[49] National Treasury, Social Security, states and municipalities. Statistics are provided in nominal values and percentage of GDP.

[50] For the purpose of standardizing fiscal statistics published by other members of the Southern Cone Common Market – Mercosur.

[51] For details, see the Central Bank website in Portuguese at http://www4.bcb.gov.br/?SERIESTEMP and in English at http://www.bcb.gov.br/?TIMESERIESEN.

[52] The opinions expressed in this section are those of the author's and do not necessarily reflect the positions of the International Monetary Fund (IMF), its Board of Directors or its policy. The author appreciates the comments by Otavio Ladeira de Medeiros.

[53] Deputy Division Chief, Department of Statistics, IMF. This section was drafted when the author was Lead Economist for Brazil at the World Bank.

[54] For more information see http://www.imf.org.

[55] For more information see http://epp.eurostat.ec.europa.eu and http://www.ecb.int respectively.

[56] For more information see http://stats.oecd.org.

[57] For more information see http://devdata.worldbank.org/sdmx/jedh/jedh_dbase.html).

contains information from UNCTAD, the Commonwealth Secretariat, and multilateral development banks. An important element that standardizes and assists compilers with data on public debt is the International Public Sector Accounting Standards (IPSASs) published by the International Federation of Accountants' Public Sector Accounting Standards Board.[58]

5.1.1 IMF: methodologies, statistics, and dissemination standards

The IMF has developed methodologies and practices with which to compile reports on public sector debt, presented in the *Government Finance Statistics Manual 2001* (*GFSM 2001*) and the *External Debt Statistics: Guide for Compilers and Users*. These manuals, which are consistent with the 1993 *System of National Accounts* (*1993 SNA*), were prepared from materials and technical assistance provided by the IMF.

The *GFSM 2001* defines debt as all liabilities that require payment of interest and/or principal by the debtor to the creditor at a date in the future, thus excluding shares and other equities, as well as financial derivatives. These debt liabilities are separated into domestic and external liabilities, and cover the following instruments: currencies and deposits, securities, loans, insurance technical reserves, and other accounts payable.

Also, the *GFSM 2001* classifies debt by counterpart; thus, public sector debt comprises: (1) domestic financial institutions, other depositary institutions not classified elsewhere, non-profit institutions, and households; and (2) external counterparts, which are international organizations, financial institutions, and other non-residents. It should be noted that this definition of debt is found in other international statistical manuals, and the classification considers the analytical needs of different sets of data (for example, balance of payments or the national accounts).

The correct recording of public sector debt, which consolidates the debt incurred by different public entities, must specify the government units covered. With respect to public sector coverage, the *GFSM 2001* framework uses a building-block approach, according to which the public sector is formed by government units including federal, states, and local governments, based on the circumstances of each nation. Public debt can, therefore, be analyzed relative to different public sector components such as central government, general government, non-financial public sector and financial public sector, among others. Public sector debt includes the liabilities of all its units and consolidates debt transactions across these units. As explained in this section, Brazil does not use the public-sector-by-block framework.

The *GFSM 2001* framework does not define net debt; instead, data are recorded on a gross basis. Still, this framework contains details on assets (distinguishing between financial and non-financial assets), and liabilities (debt and non-debt).[59] Thus, the *GFSM 2001* framework can be used to calculate net worth (assets minus liabilities) or financial net worth (financial assets minus liabilities). These concepts can be further refined so as to be closer to the concept of net debt (understood as assets minus debt liabilities or financial assets minus debt liabilities). The details should be compiled in a manner that is robust enough to identify the components used in the calculations.

[58] For more information see http://www.ifac.org/PublicSector/.

[59] According to the 2007 IMF Manual on Fiscal Transparency, non-debt liabilities include unfunded social security obligations, exposure to government guarantees, due debts, and other contractual obligations. For example, a contract that allows a company to perform mining activities can either explicitly or implicitly force the government to bear the costs of restoring the area after the mine has been abandoned.

The *GFSM 2001* recommends compiling both outstanding debt and related flows. To that effect, a consistent balance for public sector data should be compiled, showing: 1) the initial outstanding debt for each asset and liability; 2) transactions; and 3) other economic flows (both gains and losses due to price changes, such as exchange rate movements; as well as other changes in volumes, such as debt write-offs); and 4) the outstanding closing debt stock. The closing stock of each asset (including the net acquisition of non-financial assets) or liability should be equal to the initial balance plus transactions and other economic flows. Further, this balance should be consistent with data on the transactions affecting net worth (revenue and expense).

To assist in recording debt transactions and other economic flows, the *GFSM 2001* contains an appendix (Appendix 2) outlining the appropriate manner to register typical events like interest, principal, arrears, assumed, cancelled or restructured debts, payments of debts on behalf of other entities, write-offs, write-downs, debts convertible into shares, leasing operations, and asset-liability matching operations. In summary, the data series should be internally consistent and cover all public debt-related economic transactions and other economic flows.

The *GFSM 2001* public debt recording uses both cash and accrual bases, but the balance sheet uses accrual. The system also recommends compiling a cash flow statement to record all transactions on a cash basis. Although the emphasis has switched to an accrual basis, many countries continue to compile their fiscal statistics using cash, and it will take some time before they migrate fully to the new methodology. Brazil, however, has a reasonably strong accounting base with which to compile information, based on either a cash or accrual basis. In this regard, migration of the entire set of fiscal statistics to a fully accrual-based accounting process could occur fairly quickly.

It should be stressed that by using the same accrual-based accounting and definitions, *GFSM 2001* data are consistent with the main macroeconomic databases such as the national accounts (compiled according to the *1993 SNA*), balance of payments, and international investment position (compiled according to the 5th edition of the *IMF's Balance of Payments Manual - BPM5*), or external debt statistics (compiled according to the *External Debt Statistics: Guide for Compilers and Users*). To further harmonize external debt statistics, the IMF has developed and is beginning to pilot (with member countries) a format in which a bridge between fiscal and external debt databases can be built.

The IMF also developed a series of data dissemination standards that could serve as a benchmark for countries seeking to produce transparent, high-quality statistics.

The General Data Dissemination System recommends that annual central government statistics be published within two quarters after the end of a reference period, listed by currency, maturity, debt holder or instrument. The IMF encourages publication of government-guaranteed debt.[60] The Special Data Dissemination Standard (SDDS), which involves some additional effort, requires that quarterly data on central government debt be disseminated within one quarter after the end of the reference period. In addition, the SDDS encourages that debt service projections be disseminated.

5.1.2 The European Union: methodologies and statistics

Data on the debt of European Union member countries are reported to Eurostat, responding to legal and statistical requirements. The data are initially used to verify compliance with the Stability and Growth

[60] For For more information see http://dsbb.imf.org/Applications/web/dsbbnewfeatures/

Pact's Excessive Deficit Procedure (EDP), as set out in Council Resolution (EC) nº 1,467 of July 1997. Regular reports in the standard format are required by Eurostat from European Union members through the ESA95 Transmission Program. Their fiscal data are defined according to the European manual for national accounts called *European System of Accounts 1995 (ESA95)* which, in turn, is based on the *1993 SNA*.

Annex B of *ESA95*, according to Council Regulation (EC) nº 2,223 of June 1996, lists all legally required tables, and describes the series, criteria for timely publication and extent of historical series. It also lists cases in which specific countries are exempted from meeting certain requirements and features the general government debt on a quarterly basis (by instrument and public sector unit). This annex has been frequently changed through understandings between Eurostat and national data providers. Data are reported with a three-month lag and available in the public database of Eurostat.[61] More detailed breakdowns of the debt are also available.

The *ESA95* was supplemented by Eurostat interpretations and orientations in its *ESA95 Manual on Government Debt and Deficit (MGDD)*. New chapters have been added to the *MGDD* since its first edition. As a result, the second edition includes chapters on securitization, capital contributions, social security, and capitalization models,[62] lump-sum payments related to transfers of social security obligations, and long-term contracts between governmental and non-governmental organizations. Although not a legal instrument, the *MGDD* offers interpretations and an orientation for incorporating the statistics provided into consensual methodological practices. Fiscal data used in these documents cover the general government (central, regional, and local administrations).

It should be noted that Eurostat data are increasingly consistent with those of the *GFSM 2001*. Both are based on the main national accounts principles including sectorization, valuation principles, recording bases (cash and accrual), outstanding debt and flows, consolidation (at least at the general government level), and distinction between financial and non-financial assets. Debt data generated from the two methodologies are therefore consistent. A review of remaining discrepancies between the two databases is available on the Eurostat website.

Fiscal statistics from the European Union are also published in the European Central Bank's monthly bulletin and its database. Debt statistics are based on general government securities. However, these data are not directly comparable to those collected by Eurostat for the Excessive Deficit Procedure (EDP).

5.1.3 OECD: methodologies and statistics

The OECD also maintains a database on government sector. Debt statistics are derived from national sources based on a questionnaire prepared under the OECD Working Party on Government Debt Management. Where possible, concepts and definitions are based on the *1993 SNA*. Individual country data are presented in a comprehensive standard framework to facilitate inter-country comparisons.

Data are available from 1980 onwards and provide information on general government debt in all OECD member countries. They exclude state and municipal government debt and social security funds, and are expressed in US dollars, or as a percentage of GDP. They are accompanied by notes on the details of debt instruments in each member country and provide information on the institutional and regulatory frameworks as well as on selling techniques regarding debt instruments. In addition to a website on public finances, the OECD publishes a yearbook on central governments' debt.

[61] For more information see http://epp.eurostat.ec.europa.eu

[62] Social security capitalization models contradict the pay-as-you-go models. The capitalization model is based on the establishment of pension funds; it is therefore a "funded" model as opposed to the "unfunded" pay-as-you-go model.

5.2 International organizations: statistics (public and private)

5.2.1 The World Bank's external Debt Reporting System (DRS)

The World Bank's external Debt Reporting System (DRS) provides statistics on external debt gathered by instruments and at an aggregate level for both the public and private sectors. The main sources of public debt and government-backed debt are data from loan agreements supplemented by information furnished by other multilateral organizations and development banks. DRS data are published on a cash basis and using book values. These annual statistics show outstanding debts and flows in US dollars and debt breakdowns by short- and long-term maturities. They are also sub-classified by creditor.

Public debt profile by currency (including guaranteed debt) is provided in percentage points. The database presents an outstanding debt-flow reconciliation exercise. Details on the DRS can be found in The World Bank's *Debtor Reporting System Manual* (World Bank, 1989), which defines the data to be included in DRS reports and instructions on how to report data. The database is also featured in the World Bank's publication entitled *Global Development Finance*.

5.2.2 The joint external debt hub: BIS – IMF – World Bank

As with the DRS, the joint BIS - IMF - World Bank external debt hub considers the public and private debt of each country. The standards used by these organizations to define external debt and compile statistics are presented in the *Outstanding Debt, Debt Flows and the Balance of Payments* (OECD, 1994). Another example is the BIS, which publishes a set of data whose main components are bank loans and deposits, short-term debts and security issuance on the market.

5.3 Information on Brazil's public debt compared to internationally accepted statistical methodologies[63]

5.3.1 Debt statistics from the Central Bank and the National Treasury

Brazilian statistics on public debt are available in the Central Bank database and National Treasury publications.[64] The institutional coverage of public sector debt in Brazil spans the federal government (including Social Security), states and municipalities, their non-financial companies, and the Central Bank. However, Brazil does not use the set of public sector standard elements alone; rather, data also consolidate the Central Bank and non-financial public sector corporations (a cluster known as "non-financial public sector").

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[63] The GFSM 2001 obtained the status of an internationally accepted statistical methodology when it was issued (in 2001), due to the fact that it has been developed through the work of a collection of national statistical agency representatives and international organizations. A list for the SDDS data categories can be found here for macroeconomic statistics: http://dsbb.imf.org/Applications/web/getpage/?pagename=internationallyacceptedstatisticalmethodologies.

[64] Central Bank data on public sector debt are published monthly in the Fiscal Policy Press Releases (mainly Net Public Sector Debt and General Government Gross Debt) and External Sector Press Releases (public and private external debt) (http://www.bcb.gov.br). The characteristics of Central Bank statistics are contained in the Manual of Fiscal Statistics Published by the Central Bank's Economic Department (BACEN: June 2006). The National Treasury compiles and publishes monthly statistics on the Federal Public Debt in the FPD Monthly report (http://www.tesouro.fazenda.gov.br) and on the Federal Treasury Net Debt in the National Treasury balance. The National Treasury posts on the Internet a table with information on consolidated and security debt, credit operations, and concession of guarantees, as provided for in Art. 32 of LRF (Fiscal Responsibility Law). Also in compliance with the LRF, states and municipalities publish a quarterly Fiscal Management Report containing their Net Consolidated Debt.

The Central Bank is included in the NPSD and PSBR assessments, as its balance is automatically transferred to the National Treasury. The NPSD therefore incorporates the monetary base and repo operations[65] among other Central Bank liabilities. The relationship between the Treasury and the Central Bank is presented separately in the NPSD publication. In this regard, Brazilian fiscal statistics cover all public entities whether endowed with budget autonomy or not.

The data, however, exclude deposit-taking public financial corporations (banks), which are relevant players in the Brazilian financial system. Since fiscal statistics mainly assess the impact of public sector activities on aggregate demand, the exclusion of financial entities is due to the nature of these corporations, which operate as financial intermediaries and have a different kind of macroeconomic impact. Dividends paid by these entities to the public sector, in turn, are included in the assessment of borrowing requirements, as are expenses on possible public fund contributions for payment of these financial entities' subscribed capital.

Statistics on public indebtedness are compiled on a gross and net basis (debt minus financial assets). Instruments covered include, *inter alia*, the monetary base, Central Bank open market operations, internal and external debts, and financial assets (including international reserves).

Data on the general government (central government and sub national governments) are also compiled within the IMF's Special Data Dissemination Standards (SDDS) as are data on the national government. The latter refers to the MERCOSUR Harmonized Net Debt of the National Government, which includes the central government, non-financial public corporations and the Central Bank and excludes the harmonized monetary base.[66] National Treasury data contained in the Federal Public Debt Monthly Report have, by definition, a more restricted institutional coverage.

The timeliness and frequency of both Central Bank and National Treasury data meet the highest standards: Monthly data are published within 30 days from the reference period.

Brazilian data are still based on the *GFSM 1986* methodology, which reconciles "above-the-line" and "below-the-line" balances. Consistency between outstanding debt and flows is maintained by using the net debt of the non-financial public sector to determine its net borrowing requirements. Discrepancies are found between above-the-line (flows) and below-the-line (outstanding debt variations) fiscal balances, which can be imputed to other non-recorded flows as well as to errors in coverage or time of recording.[67] These discrepancies have been significantly reduced in recent years.

Brazilian public debt is not recorded based on market values (as recommended by *GFSM 2001*). Rather, FPD (both domestic and external) is recorded at present value, i.e., the amount due at a given time, including accrued interest assessed from the rate stipulated in the contract or security as well as discounts and premiums, if they exist.[68] The National Treasury records all FPD data on an accrual basis (for Public Debt Monthly Reports, the Annual Report and the Annual Borrowing Plan alike), taking into account all principal and interest flows relating to securities and contracts under federal government responsibility.

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[65] It should be pointed out that for international comparisons, the most used coverage includes the General Government Gross and Net Debt, which in turn includes the federal government, states and municipalities and excludes the Central Bank and government-owned companies.

[66] This excludes the monetary base amount in the harmonized concept, i.e. the money issued and funds in banking reserves, remunerated and non-remunerated, deposited in the Central Bank.

[67] It should be noted that privatizations and the acknowledgement of contingent liabilities do not generate discrepancies between above-the-line and below-the-line data, because they are not considered in either of the two methodologies used to assess the fiscal result of the period. In the case of below-the-line assessments, privatizations and the acknowledgement of debts are considered as asset adjustments and therefore do not affect borrowing requirements, only debt.

[68] In practice, this corresponds to the net present value of future payments of principal and interest discounted according to the

Data on public debt published by the Central Bank and the National Treasury are compatible and consider issuances and redemptions in the period, as well as accrued interest. Such data allow assessments to be made on borrowing requirements, based on the primary balance concept, which is measured on a cash basis. There is no mismatch between debt redemption value and outstanding debt value.

In the case of debt swaps, such as in external debt early redemption, the value (marked-to-market) will not be the same as the nominal value recorded by the accounting unit. The difference is recorded as a change in net worth but without affecting the fiscal balance or its funding. In the *GFSM 2001*, a variation in outstanding debt between two periods due to changes in market value would be classified as an "other economic flow."

Government-owned companies also record their assets and liabilities at present value, consistent with Brazilian public accounting standards. As for information on sub national governments, Art. 51 of the Fiscal Responsibility Law provides for the standardization of fiscal statements for the three layers of government (federal, state and municipal) for the purpose of consolidating public accounts. To that end, since 2000, the National Treasury has produced the *Fiscal Risks and Fiscal Management Report Guidelines* and the *Guidelines for the Preparation of the Fiscal Targets Annex and Summary Budget Execution Report*.[69] In 2007, the Treasury set up Technical Groups on Reports and Accounting Procedures Standardization which, with the participation of several public and civil society organizations, produced the first edition of the *Technical Manual of Fiscal Statements*, which appeared in January 2009.

Information on NPSD published by the Central Bank includes debt between governments, in addition to government debt to other sectors of the economy. This information - which shows government credits and debits, and those among different levels of government - is made available in order to avoid duplication in data consolidation.

Information on outstanding debt and flows provided by the Central Bank are fully integrated.[70] Changes in indebtedness deriving, for example, from changes in the FX-rate, privatizations and acknowledgement of contingent liabilities are explained as assets and methodological adjustments in fiscal publications and, together with borrowing requirements, make up the period flows. In addition to reconciling outstanding debt and flows, the effects of interest rates, primary balance and economic growth on the debt/GDP ratio are also explained.

It is important to note that the fiscal statistics published by the Central Bank are taken from the accounting records of the public sector creditor (debtor), i.e., the funding sources. Data are taken from the financial sector accounting, public securities settlement and custody systems, and Balance of Payments records.

An interesting innovation and a strong aspect of fiscal statistics in Brazil and, indirectly, of public debt statistics, is provided for by the Budgetary Guidelines Law (LDO).[71] This law contains important supplementary information on fiscal risks, particularly on contingent assets and liabilities, which are further described in an annex. This information is required pursuant to the Fiscal Responsibility Law (LRF, 2000).

The LRF also (1) determines that debt (outstanding debt and flows) caps should be set for the federal government as well as for state and municipal governments;[72] (2) defines legal payroll thresholds among

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interest rate stipulated in the contract or security.

[69] Annex II, Volume III of the Fiscal Management Report addresses the Net Consolidated Debt standardization.

[70] As presented in tables contained in the Fiscal Policy Press Release and in the special time series available on the Central Bank's website.

[71] This law is passed annually by the National Congress to provide the general guidelines for the budget proposal for the following year, which is submitted to Congress as soon as the LDO is passed.

[72] These indebtedness thresholds are defined in laws and resolutions (of the Federal Senate) and are usually based in percentages of the current net revenue of each government entity. Details on public debt thresholds defined by the Fiscal Responsibility Law

other current spending restrictions; (3) prohibits inter-governmental financing and Central Bank financing to the federal government; and (4) provides for other sound fiscal policy practices.

5.3.2 Comparisons to international databases

As mentioned earlier in this chapter, statistics on the Brazilian public sector debt are presented on the Central Bank's website and in its publications; also, the National Treasury publishes data on central government debt. The Central Bank is the chief provider of information about the public debt to international agencies[73] and the liaison for Brazil's participation in the SDDS.

Data on the Brazilian public sector debt are published in the IMF's GFS database and data on the external public debt are available in the World Bank's DRS database (and in the database of the BIS – IMF – World Bank integrated system). Brazil provides the IMF with information each month on its indebtedness and fiscal balance, as a subscriber in good standing in the SDDS.

5.3.3 The IMF's public sector debt standard

The IMF developed a public sector debt template[74] that encourages participating countries to disaggregate their balance sheets into different components of the non-financial public sector, as follows: Table 6A shows debt by original maturity, residence and instrument; Table 6B, by currency, residual maturity and instrument; Table 6C, by currency, interest rate and instrument; and Table 6D, by sector of security holders. Also, Table 6E shows debts in arrears, if applicable. Two annexes are included in the debt template: Annex 3A, which contains the schedule of debt service payments (principal and interest) by residence, and Annex 3B, which provides the schedule by currency. The IMF is collaborating with other international organizations to promote the use of this tool.

With respect to the GFSM 2001, in 2007 the Brazilian government created an Inter-Ministry Working Group (composed of the Ministry of Finance, the Ministry of Planning and the Central Bank), to identify conditions that would allow for developing fiscal statistics according to the GFSM 2001. This exercise is indisputably valuable, even if conducted for internal purposes alone. An attempt to fully apply this methodology can reveal gaps and other statistical deficiencies that could be corrected over time.

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can be found in Part 2, Chapter 4, Section 2 (Item 3.1 – The Fiscal Responsibility Law in the Public Debt Context) and Chapter 5, Section 2 (Item 1.4.1 – Conditions, Prohibitions, Limits and Penalties).

[73] This is true except for rating agencies, which are regularly in contact with the Institutional Relations Division at the National Treasury, linked to the Ministry of Finance. The Division also maintains an extensive communications network with FPD investors, market analysts, journalists, and other FPD and fiscal policy opinion makers.

[74] Its most recent version was published in September 2006.

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Annex

Fiscal statistics

CAs mentioned in Section 2 of this chapter, debt is a given entity's obligation to a third party, arising from a gap between that entity's revenues and expenditures. In Brazil, the gap can be assessed based on different concepts, as described below.

The nominal balance of the public sector, also known as public sector borrowing requirements (PSBR), is the broadest concept of fiscal balance and expresses the difference between nominal revenues and expenditures in the period, including financial ones.[75] Currently, the nominal balance is assessed based on the net fiscal debt variation,[76] which excludes, *inter alia*, the effect of recorded contingent liabilities (the so-called "skeletons") as well as privatization revenues, which do not represent the fiscal result for the year in which they were computed.

Due to existing indexation mechanisms, when inflation rates were high, the nominal result failed to accurately express the fiscal policy's expansions and contractions, since the result stemmed basically from the incorporation of monetary correction effects. For example, in 1992, 1993 and 1994, the public sector nominal deficit was 44 percent, 58% and 48% of GDP respectively; in 1995, it fell to 7.3%, a difference of more than 40% of GDP in relation to the previous year. This difference is explained almost entirely by the sharp decrease in inflation that followed the Real Plan.

To eliminate the distorting effect of inflation on fiscal statistics, Brazil publishes the so-called public sector operational balance,[77] which corresponds to the real increase in the net public sector debt, by discounting the inflationary effects on the nominal evolution of the stock of assets and liabilities. This indicator was used to measure the real increase in absorption by the public sector of private agents' financial savings.

The public sector primary balance is the nominal balance minus the effect of nominal interest accrued on both domestic and external public debt. This indicator measures the actual effort determined by the fiscal policy, removing the effects of the nominal interest rate on existing outstanding debt, which results from past deficit accumulations. The primary balance can be measured in two ways: (1) by the difference between revenues (except financial revenues) and expenditures (except interest), which is called "above-the-line" and calculated/published monthly by the National Treasury; and (2) by the net fiscal debt variation – nominal balance calculated by the Central Bank according to the "below-the-line" concept – deducted from the amounts related to nominal interest rates.

Statistical discrepancy

Theoretically, figures obtained for the primary balance based on the "above-the-line" and "below-the-line" concepts should be equivalent for the same government entity. However, this correspondence does not happen because of methodological differences, which official statistics refer to as "statistical discrepancies," mainly due to divergences between the cash and accrual concepts, as well as to operational issues related to the survey of information representing the fiscal balance. It is important to emphasize that this "statistical discrepancy" has been substantially reduced, following discussions promoted by the National Treasury and the Central Bank.

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[75] Financial revenues correspond to those resulting from financial investments or returns of loans to third parties whereas financial expenses refer to the nominal interest rates of loans granted.

[76] For details on the Net Fiscal Debt, see the box in Section 2.

[77] Since 1998, this feature has no longer been published in the Fiscal Policy Press Release, although its historical data are still being assessed by the Central Bank and made available in its database, which can be accessed through the Time Series Management System (SGS). For additional details see www.bcb.gov.br.

Part II

MANAGING THE BRAZILIAN PUBLIC DEBT

Part II
Chapter 1

Institutional structure and recent developments in Federal Public Debt management

by Karla de Lima Rocha

1 Introduction

The best course to manage public debt efficiently[1] has been debated for years, given its role in helping countries protect monetary and fiscal policies against financial contagion and shocks.

The search for an efficient management framework prompted institutions such as the International Monetary Fund (IMF) and World Bank to design *Guidelines for Public Debt Management*, (March 2001). The aim was to encourage developed and developing countries to enact reforms to strengthen the process and reduce their vulnerability to international financial shocks. The Guidelines identify areas considered critical to sound medium-and long-term strategies to deal with the public debt: These include fiscal and monetary policies, governance, institutional structures, technical capacity, and information systems.

This chapter, divided into six sections, describes the Brazilian experience, illustrating how public debt management (PDM) has drawn on international best practices.[2] Following this introduction, Section 2 describes the coordination between PDM and fiscal and monetary policies. Section 3 reviews the process of developing sound and efficient governance. Section 4 examines the ways to develop a prudent, consistent public debt strategy and create a risk-management structure. Section 5 describes the measures taken to improve the management team's technical capacity and information systems. Section 6 explains how Brazil progressed from developing PDM capacity to disseminating information about best practices. Section 7 reviews the main points and relates how Brazil's methods are consistent with international best practices.

2 Coordinating public debt management with fiscal and monetary policies

According to the IMF and World Bank guidelines, public debt and fiscal policy managers and central bank authorities must share the same policy goals, given the inter-dependence of their instruments. Thus, if authorities introduce a new PDM policy, it must be consistent with other macroeconomic policies, so as to maintain public debt at sustainable levels.

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[1] "Sovereign debt management is the process of establishing and executing a strategy for managing the government's debt in order to raise the required amount of funding, achieve its risk and cost objectives, and meet any other sovereign debt management goals the government may have set, such as developing and maintaining an efficient market for government securities" (IMF and World Bank, 2001)

[2] It should be noted that several of the measures adopted for Brazil's PDM were supported by the Fiscal and Financial Management Technical Assistance Loan Project (PROGER) financed by the World Bank. This project aimed to improve the government's performance in fiscal and financial areas and the quality of public services.

In countries with more developed, efficient financial markets, debt management and monetary policy are clearly separated, which reduces possible conflicts. Countries less able to separate the goals and responsibilities face greater challenges. In most cases, these arise mainly because the countries lack a developed bond market and an independent central bank; also, because they adopt similar market instruments for both monetary and debt policies. With respect to the latter, in Brazil, until the Fiscal Responsibility Law (LRF) was passed in 2000, the Central Bank used the National Treasury bonds in its portfolio as well as its own bonds to conduct monetary policy. Thus, the market could not detect the goals of a certain issuance, which undermined the policies.

To correct this problem, the enactment of LRF stopped the Central Bank from issuing its own bonds. Also, to separate monetary and fiscal policies, in 2002, the Central Bank began to do repurchase agreements exclusively with the National Treasury bonds registered in its portfolio.

Another key step was to transfer the management of External Federal Public Debt (EFPD) operations from the Central Bank to the National Treasury. Until October 2003, the Central Bank performed almost all tasks associated with issuing external debt bonds, under an agreement between it and the Ministry of Finance. When the agreement ended, in order to apply international best practices, the two institutions began a one-year transition process through which decisions about issuing bonds were first taken jointly and then became the sole responsibility of the National Treasury.

The process of transferring the foreign debt management occurred throughout 2004, and by January 2005, the National Treasury began to centralize decisions for managing both the domestic and external FPD. It should be noted that by managing the two together, risk is handled more efficiently as this allows for synergies in the integrated planning of related operations. It also generates transparency with respect to the FPD's goals, guidelines and strategies.

The government's funding needs are based on economic projections, including interest rates, primary surplus and inflation expectations. Since PDM is closely related with fiscal and monetary policy guidelines, National Treasury and Central Bank authorities, who are closely connected, hold regular meetings to share information about their market perceptions and future actions.

3 Governance

Achieving good governance requires that (a) administrative structures be regulated, (b) managers' rights and duties be well defined, along with the goals, responsibilities and rules regarding PDM institutions, and (c) rules for transparency and accountability be legally set.

3.1 Legal structure

Best international practices require laws that clearly define responsibilities with respect to issuing new debt instruments, investing, and carrying out transactions for the government.

In Brazil, these were defined by a decree[3] according to which the Ministry of Finance is responsible for the "administration of the domestic and external public debt." The decree specified the National Treasury as the Ministry of Finance entity responsible for "managing the domestic and external securities and contractual public debts."

[3] Decree nº 4,643, of 2003.

Brazil's indebtedness policy is based on five legal instruments:[4] (a) the Federal Constitution, which establishes the general guidelines for public debt;[5] (b) the LRF, which defines public finance standards to achieve responsible fiscal management as well as several FPD limits; (c) a law[6] that defines the general characteristics of public debt bonds under the National Treasury; (d) the Budgetary Guidelines Law (LDO);[7] and (e) the Annual Budgetary Law (LOA)[8].

The Federal Constitution invests the Federal Senate with the power to authorize all the government's external financial operations. Further, it sets global limits[9] and external credit conditions for the national and sub-national levels of government and establishes the limits/conditions for the concession of guarantees in external credit operations. Up to the approved limit, the National Treasury has decision-making autonomy regarding the choice of markets, amounts, timing and types of bonds. The process by which these limits have been renewed and adjusted to the government's funding needs has been smooth, ensuring both accountability and good debt management.

3.2 Institutional structure

Internationally, there is increasing consensus about the value of concentrating public debt management functions in a single government unit, as this can make the process more efficient and, consequently, allow for more coordinated strategic management. In countries where responsibility for managing public debt is shared by various institutions, strategies may be inconsistent and functions may overlap.

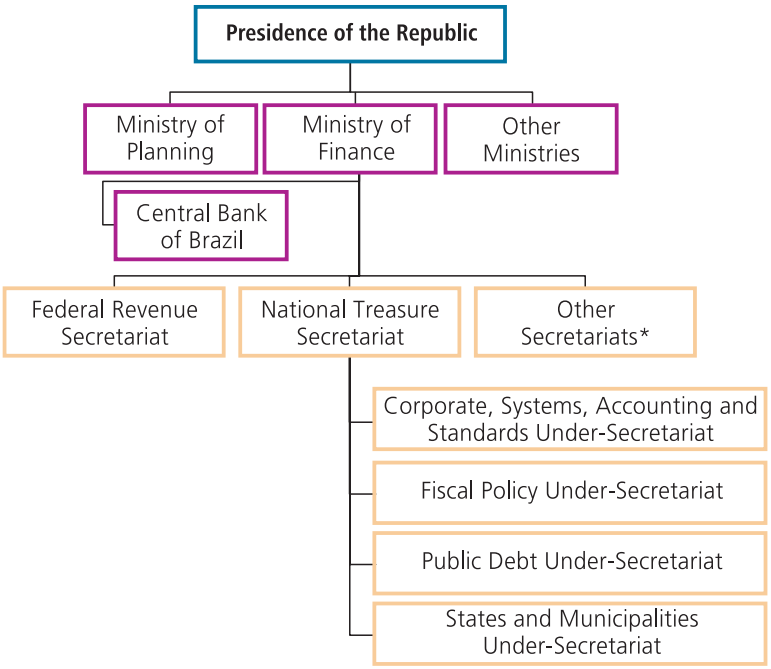
According to Wheeler and Jensen (2000), several countries have tried to centralize and improve their public debt management by creating an independent department located either outside or inside the Ministry of Finance or Treasury. These are known as Debt Management Offices (DMOs), whose aim is to separate the agency's functions, usually into front, middle and back offices, according to the different objectives and responsibilities of the public debt managers.

In Brazil, the functions are centralized by the Ministry of Finance within the National Treasury. The reasons for maintaining them within the Ministry include the need for a close relationship with other parts of the administration, linked, say, to executing the budget and fiscal policy.

The following figure demonstrates how the National Treasury fits into the Federal government's administrative structure.

[4] For more information, see Part II, Chapter 5 (regulatory frameworks and government auditing of the public debt).
[5] Among the guidelines, attention should be drawn to the Golden Rule (the amount of revenues from credit operations should not exceed the amount of capital expenditures), the competence of the Federal Senate to authorize and propose limits for external operations and the ban on financing the National Treasury by the Central Bank.
[6] Law nº 10,179, of 2001.
[7] The LDO establishes annual targets and priorities for the next financial year and guides the preparation of the budget.
[8] The LOA lists public revenues and expenditures and presents the government's economic and financial policies and working program, in compliance with the principles of unity, universality and balance.
[9] The current ceiling for issuing Federal bonds in the international market is US$75 million, established by the 2004 Federal Senate Resolution nº 20.

Figure 1. Federal government's administrative structure



* Executive Secretariat (SE), Economic Policy Secretariat (SPE), Economic Monitoring Secretariat (SEAE) and International Affairs Secretariat (SAIN).
Note: Under-Secretariat V, created in 2008, is responsible, among other functions, for economic-fiscal studies within the National Treasury's scope.

To improve its structure for managing debt, the National Treasury designed a new model in 1999[10] based on the Debt Management Office (DMO) concept, in line with international practices. It reorganized two of its offices[11] which were divided into three new areas, known as CODIV, COGEP and CODIP (see Figure 2). The three are supervised by the Treasury's Public Debt Under-Secretariat.

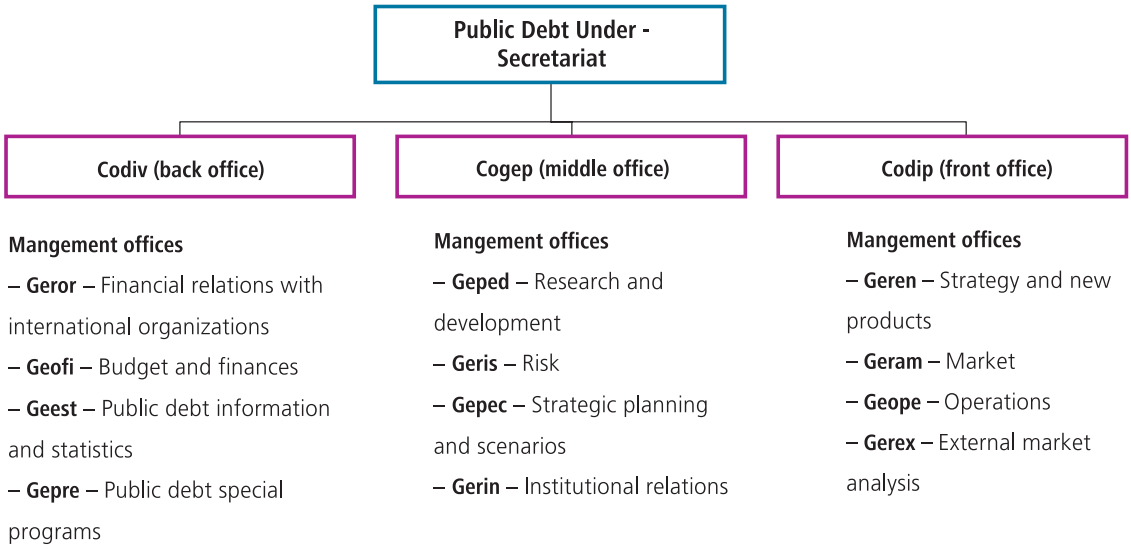
The Public Debt Control Department - CODIV (the back office) (a) registers and controls the FPD and also relates to central depositories, (b) draws up the annual public debt appropriations bill, (c) executes the budget, (d) calculates the main public debt statistics and (e) issues bonds derived from special operations,[12] such as PROEX[13] and FCVS[14].

The Public Debt Strategic Planning Department - COGEP (the middle office) (a) develops and oversees medium and long-term borrowing strategies, (b) sets and monitors debt risk parameters, (c) conducts studies to support decision makers, (d) analyzes the macroeconomic outlook and (e) promotes relations with investors, the press, rating agencies, among others.

The Public Debt Operations Department- CODIP (the front office) is responsible for (a) short-term public debt strategies, (b) new products issued to finance the deficit and (c) special operations.

[10] The middle office (COGEP) was created in 1999 first as working group; the new structure was formally created in 2001, through Presidential Decree nº 3.782, of 2001.
[11] Domestic Debt Management General Coordination (CODIP) and Foreign Affairs General Coordination (COREX)
[12] Special operations are those involving issuances/buybacks of public bonds for specific purposes that are not conducted through open auctions.
[13] Export Financing Program.
[14] Salary Variation Compensation Fund.

Figure 2. Structure of the Public Debt Under-Secretariat



Good governance practices are devised by committees in the Treasury; their goal is to share information and decisions that will affect the PDM. To this end, the National Treasury created the Federal Public Debt Management Committee, chaired by its Deputy Secretary for Public Debt, and composed of heads and deputy heads of each of the three departments that comprise the Public Debt Under-Secretariat, among others.

The Committee meets once a month and proposes the debt strategy for the next month. Also, it publicizes the schedule of auctions for domestic public bonds. Key decisions from these meetings are sent to the National Treasury for approval. It also meets once a year to define medium- and long-term guidelines for the FPD and propose a borrowing strategy for the next fiscal year, along with limits for the Annual Borrowing Plan (ABP). After approving the committee's proposal, the National Treasury presents it to the Minister of Finance for final approval. Thus, the committee has an advisory role to the secretary and ultimately the Minister of Finance, who makes the final decisions.

This management model has improved the debt management process as it standardized operational and risk-monitoring controls; it also promoted more efficient medium- and long-term strategic planning and short-term tactical planning

3.3 Transparency

According to Wheeler and Jensen (2000), a transparent policy can be defined as:

[…] an environment in which the objectives of policy, its legal, institutional and economic framework, policy decisions and their rationale, data and information related to … policies, and the terms of agencies' accountabilities are provided to the public on an understandable, accessible and timely basis.

It is essential to publicize the goals and responsibilities of debt management to ensure credibility. According to IMF and World Bank guidelines, such goals, including those related to cost and risk measures,

and timely information on financial assets, debt profile and outstanding debt, should be clearly defined and available to the public.

In Brazil, transparency reduced the market uncertainties related to debt management goals and made political decisions more consistent. It also helped reduce market volatility and the risk premium required by investors: Once the public was aware of the targets and instruments of debt management policy, and authorities were committed to them, debt management became more effective.

The functions and responsibilities of public debt managers are defined by legal instruments that are publicly available on the National Treasury's website,[15] along with regulations related to debt management and primary and secondary market activities.

The Public Debt Institutional Relations Office[16] has been key to ensuring that policies would be transparent and the Treasury's actions (as the manager of public debt) would be publicized. It was also crucial in expanding the investor base, conducting regular meetings with risk-rating agencies and updating the website with relevant information for investors and the public (see Box 1).

Some of the material it publicizes include:

- *The Annual Public Debt Borrowing Plan,* since January 2000, which presents the National Treasury's targets, assumptions and priorities;
- *The Annual Debt Report,* which offers a retrospective analysis of PDM for previous years, describing the goals and targets in terms of human and technological resources, and results;
- *The Monthly Debt Report,* which presents information and statistics on issuances, buybacks, outstanding debt and its average maturity and life, maturity profiles and average costs for the FPD, including domestic and external debt for which the Treasury is responsible;
- *Monthly issuance schedules,* which, at the start of each month, list the dates of auctions, as well as the maximum volume and bonds to be auctioned in the period;
- *A debt newsletter,* which provides information on issues related to the public debt;
- *Presentations for investors,* updated weekly, which include information on the public debt in Portuguese and English. These offer a macroeconomic overview and describe the advances and challenges in PDM, highlighting the Treasury's financing strategy.

Also, the Institutional Relations Office releases statements made by government representatives at national and international events.

Finally, it arranges for regular teleconferences in which the Treasury secretary talks with domestic and foreign investors to describe the latest policies on PDM, fiscal issues, etc., that investors and the public need to know.

All Treasury communications are sent by direct mail to the various stakeholders, such as domestic and foreign investors, multilateral organizations, rating agencies and the press.

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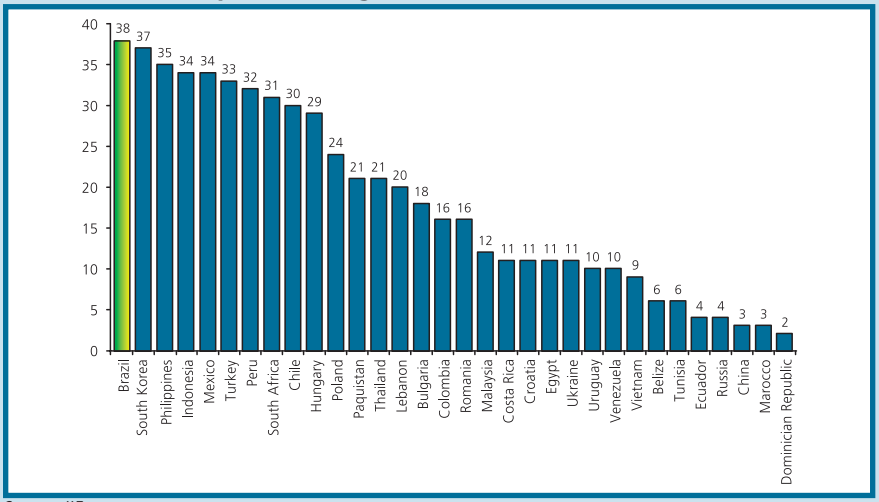
[15] http://www.tesouro.fazenda.gov.br/legislacao/leg_divida.asp.

[16] The Institutional Relationship Office (GERIN) was created in 2001 within the Public Debt Strategic Planning Department, as part of the National Treasury restructuring process.

Box 1. The market's recognition of the institutional relationship program

According to the Institute of International Finance (IIF), which studies the world's main financial institutions, Brazil is now the emerging country with the best investor relations and the most transparent in the way it disseminates information on public accounts and indebtedness. Its study[17] of 30 countries, including China, India, South Korea, Russia and South Africa, which have already reached investment grade, provides investors with a comparison of the countries' communications and transparency in disseminating data.

Graph 1. Rating of relations with investors



Source: IIF

In Brazil, two institutions are responsible for investor relations: (a) the Central Bank, whose task is to improve communications with the private sector, focusing on domestic and foreign investors, by providing information on the country's economic and monetary policies; and (b) the National Treasury, whose task is to develop and improve contacts with national and international financial markets, so as to ensure transparency and better dissemination of information about the FPD and the Treasury's funding policies, as well as help expand the investor base.

According to the IIF, the two institutions have consistently met their goals for presenting information about fiscal statistics in a timely, regular manner. The IIF study highlighted the two agencies' efforts, which have promoted Brazil's transparency.

The top rating reflects Brazil's having adopted best practices with regard to investor relations and disseminating information. This can translate into important benefits for PDM, such as increased protection against market uncertainties, not only in favorable times, but in periods of high volatility or low international liquidity.

3.4 External audits[18]

Good debt management practices suggest that external auditors should review activities annually. These audits should evaluate the institutional environment (organizational structures and information systems), operational risks, information flows, and monitoring of internal controls.

[17] http://www.iif.com/press/press+14.php.

[18] For more information, see Part II, Chapter 5.

Brazilian debt management is audited internally each year by the Office of the Comptroller General (CGU), an agency of the executive branch, and externally, by the Federal Court of Accounts (TCU), within the legislative branch.

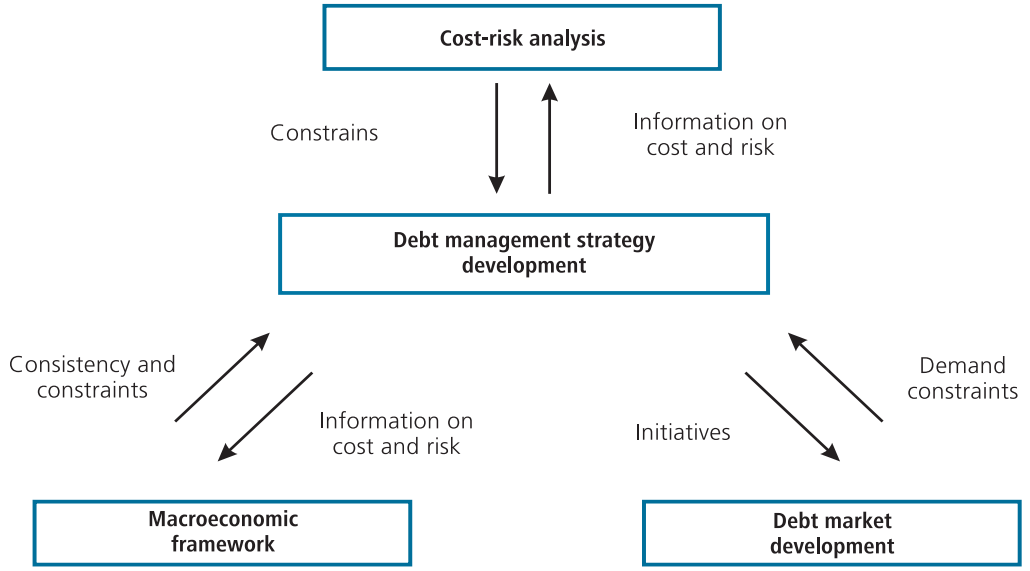
4 PDM strategy and risk management

The most important elements of PDM are a consistent, sustainable strategy for the public debt based on cost and risk analyses that consider macroeconomic and market restrictions and a developed domestic market (World Bank, 2007).

Guidelines advocated by debt strategy experts stress the importance of monitoring and evaluating risks in the debt structure, considering, for example, its maturity profile and exposure to fluctuations of economic-financial variables. In particular, managers should be concerned about risks associated with variations in interest and exchange rates, and in securing debt payment and refinancing.

The strategy should assess distinct medium- and long-term debt structures for defining optimum debt profiles which would help managers identify and manage cost-risk tradeoffs. It should also consider macroeconomic restrictions and the market's level of development. The figure below outlines the process.

Figure 3. Elements of a public debt strategy



Source: World Bank

The strategy, presented in the ABP, aims to minimize long-term borrowing costs, ensure prudent risk levels and contribute to the good performance of the public bond market. Also, it is a tool that increases transparency and ensures predictability.

In recent years, the Treasury has sought to improve debt management by drawing on international best practices, through technical discussions on methodologies and indicators used by the private sector and international debt management agencies.

Also, staff visited agencies in Portugal, the UK, Sweden, Denmark and Belgium that were selected for their reputation with regard to debt management. Information derived from the meetings led to a proposal to improve Brazil's debt risk management and were included in a Treasury report, to guide the next steps.

After this, a seminar was held in early 2003[19] in Rio de Janeiro, jointly organized with the Organization for Economic Cooperation and Development (OECD) and the World Bank, that focused on framing the current Brazilian model in the context of international best practices. It included participants from the National Treasury, academics and international experts. The visits and the seminar were fundamental to better position Brazil's DMO within the international best practices group, as well as to bring new ideas to enhance the tools used to measure the cost-risk tradeoff of a debt portfolio.

In this regard, and according to IMF and World Bank guidelines, debt managers must identify debt-related risks, measure their extent, and design cost-risk tradeoff strategies. The increased focus on managing risk requires specific tools. The IMF and World Bank[20] examined different countries'[21] models to measure the cost-risk tradeoff of the debt portfolio. The study found that many use very simple ones, based on deterministic scenarios. However, more sophisticated models are being developed; and, most prefer stress tests as a way to assess market risks and the sensitivity of various borrowing strategies.

In Brazil, there have been important institutional and technical advances regarding risk as it relates to domestic and external debt. These include improvements to (a) stochastic risk models; (b) information processing systems and analytical tools; (c) integrated systems for managing assets and liabilities[22] and (d) benchmark models.[23]

The National Treasury's stochastic models to analyze market and refinancing risks, such as Cost-at-Risk (CaR) and Cash-Flow-at-Risk (CFaR), improved significantly in estimating parameters related to risk factors (interest rates, inflation, currency exchange) and adapting the models to assess external debt-related risks.

Along with these models, the data processing and analysis systems were redesigned to provide more information on the external debt, drawing on links with the domestic debt. Also, new computer tools were developed to run liability management simulations and outline efficient parameters for the FPD (see Box 2).

The Assets and Liabilities Management (ALM) system gathers information on the Federal government's assets and liabilities that directly or indirectly relate to the public debt. It is also being re-designed, particularly to make the integrated domestic and external debt study more effective, by considering distinct financing sources. This approach allows assessments of cost and risk, and helps determine an optimum debt structure. Finally, studies and discussions on a Brazilian public debt benchmark have also progressed: The 2007 Annual Borrowing Plan described the FPD benchmark for the first time, along with its guidelines.

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[19] Hosted by the Getulio Vargas Foundation.

[20] "Guidelines for Public Debt Management: Accompanying Documents and Selected Case Studies".

[21] Brazil, Colombia, Denmark, India, Ireland, Italy, Jamaica, Japan, Mexico, Morocco, New Zealand, Poland, Portugal, Slovenia, South Africa, Sweden, the UK and United States.

[22] ALM – Assets and Liabilities Management.

[23] The benchmark is a long-term optimum debt structure that guides the short- and medium-term borrowing strategy. It is a key risk management and strategic planning instrument.

Box 2. Strategic planning and risk management system (Gerir)

The Gerir system, adopted in December 2002, provides inputs for designing and analyzing alternative public debt issuance strategies: It presents cost and risk indicators for each strategy, as well as maturity and composition profiles. With this information, debt managers can better evaluate different plans of action for specific scenarios.

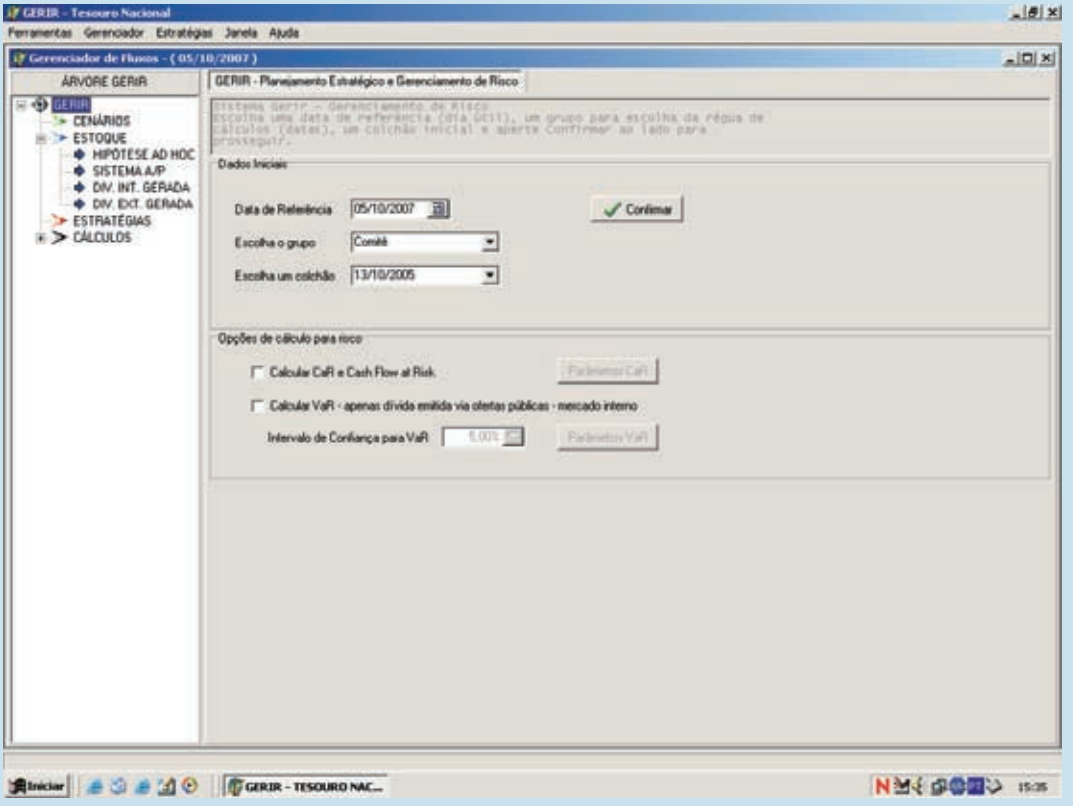
Specifically, the system (a) integrates asset and liability analyses, (b) designs and evaluates public debt strategies, (c) estimates financial and risk indicators of assets and liabilities under the National Treasury, and (d) evaluates other National Treasury operations with the market.

Its main inputs are:

- Macroeconomic scenarios, based on market information;
- Asset and liability portfolios;
- Domestic and external debt strategies that can be simulated and compared.

Its main outputs are reports containing debt indicators and risks (regarding outstanding debt flows and stocks, average maturity and percentage due in 12 months), stochastic indicators such as CaR, CFaR, BaR[24] and VaR,[25] and a mapping of the Treasury's assets and liabilities.

Figure 4. Gerir's opening screen



[24] Budget-at-Risk.
[25] Value-at-Risk.

5 Technical capacity and technological information systems

5.1 Technical capacity

"Public debt management requires staff with a combination of financial market, economics, and public policy skills. Regardless of the institutional structure, the ability to attract and retain skilled debt management personnel is crucial, both for developing and executing an effective strategy and for mitigating key-person risk" (World Bank, 2007).

In Brazil, such recruitment has improved significantly in recent years. Despite competition with institutions in the public or private sector, the Treasury has assembled a qualified team by restructuring the finance and control analyst career. This category was created to support the Treasury, and includes technical staff and analysts who enter through civil service competitive examinations.

The selection process is designed to attract professionals with solid backgrounds in economics and finance. The last examination for the position was held in 2008, and the Under-Secretariat responsible for managing the debt received 10 new analysts, which brings the total to 96.

The Treasury also offers development and qualification programs for its technical staff, together with institutions that focus on professional specialization, and international organizations. Many in the debt team are highly qualified in economics and finance, and have masters and doctorate degrees, as well as post-graduate training.

Another measure to improve debt management was the adoption of Code of Ethics and Standards of Professional Conduct for National Treasury staff. The code was designed to create rules/principles to guide relations with the financial market, the main buyer/holder of public bonds. It describes responsibilities and restrictions, such as standards of conduct and rules for investing personal finances. Those who drafted the code analyzed international and domestic experiences, the training of staff in civil servant ethics, and collected suggestions from all Treasury units.

This measure conforms to IMF and World Bank guidelines which state that public debt managers should be subject to a code of conduct and guidelines regarding conflict of interest related to personal financial affairs.

5.2 Technological information systems

The guidelines also state that debt management needs a single, secure information system to record debt data, ensure payments, and improve transparency; if multiple systems exist, they can create obstacles to tasks that require consolidated debt information, such as analyzing data and developing strategies.

To adopt best international practices, the Treasury developed an integrated system that incorporated the existing systems (*Dívida Pública Interna – DPI, Dívida Externa, Elabora*[26] and *Gerir*, among others). This was needed because the commercial packages available in the market were incompatible with Brazil's DMO.

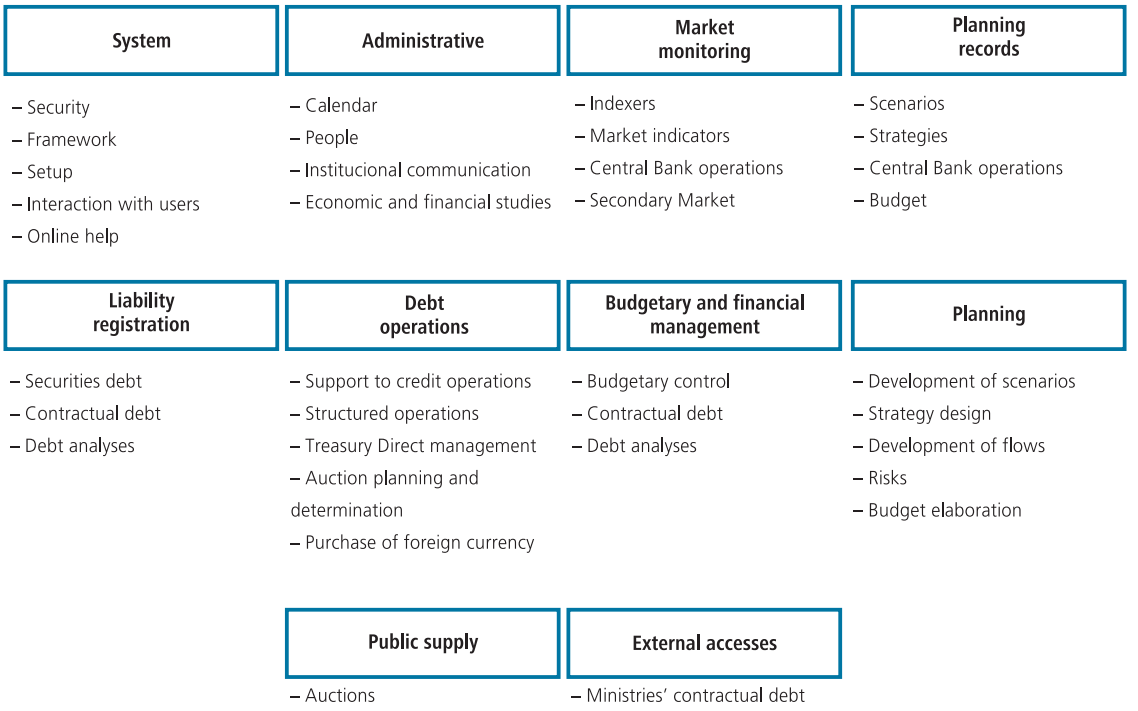
The Integrated Debt System (IDS), introduced in 2004, is being developed in two phases. Phase I includes the IDS operational core, which, after 2011, will unify the entire Federal Public Debt database, eliminating redundancies and reducing operational risks, since various actions will be automated. Also, it will improve statistical analysis and decision making since information from the entire FPD will be integrated.

[26] System for elaborating and monitoring the Federal Public Debt budget.

Phase II, expected to last two and a half years, will develop technical support for analyzing risk, planning strategies, executing auctions, managing the Treasury Direct program,[27] and carrying out budget/financial programming. Previous systems will be discontinued.

Thus, the IDS will cover the complete cycle of FPD activities and simplify the tasks of extracting data, generating information and issuing reports. Specifically, it will (a) integrate the actions of the Public Debt Under-Secretariat's three coordination offices; (b) eliminate calculation redundancies; (c) integrate the greatest possible amount of data and functions; (d) integrate the main systems by rewriting them with new technology; (e) expand capacity for extracting managerial information; and (f) minimize operational risks.

Figure 5. IDS modules and sub-modules



6 Integration and dissemination of public debt management best practices

The Treasury's achievements in PDM paved the way for Brazil's broader participation in the international debate and dissemination of best practices. Along with support from the Inter-American Development Bank (IADB) and some countries in the region, Brazil oversaw the creation of the Latin American and Caribbean Expert Group on Public Debt Management (the LAC Debt Group). Set up in 2005, the group includes professionals who work on sovereign debt management. Members can share experiences related to various activities, thus improving the agencies involved with PDM: The group helps managers harmonize governance, institutional structures, standards and regulations and develop a secondary market of public bonds, as well as improve each country's capital market.

[27] The Treasury Direct is a program designed to sell bonds to the public, developed by the Treasury in partnership with BM&FBovespa. For more information, see Part 3, Chapter 7 (Treasury Direct Program).

At the group's first meeting, in Rio de Janeiro[28] in March 2005, discussions focused on the (a) institutional structures for public debt departments, (b) regional secondary markets for public bonds, (c) methodologies to calculate debt indicators, (d) experiences and recent advances in public debt risk management, and (e) the prospect of opening domestic public debt markets to foreign investors. On that occasion, the first steering committee was elected which included Brazil (chair), Colombia (vice-chair), Chile, Jamaica, Mexico and Panama. The IADB was assigned the role of executive secretary.

The second annual meeting, in April 2006, in Cartagena, Colombia, focused on (a) best practices related to the institutional structure of PDM and developing regional secondary public bond markets, (b) the link between debt management and fiscal policy, and (c) standardizing debt statistics across the region. During the meeting, Brazil described the process of developing the bond market and creating regional information systems for the public debt and derivatives market.[29]

LAC Debt Group participants also met in Brasilia, in October 2008, for a special one-week seminar which included 35 experts on PDM from 21 countries. It focused on governance, institutional structures, macro-processes and instruments used in Brazil's PDM, as well as its interaction with various institutions.[30]

7 Conclusions

Best international practices show that efficient PDM entails, among other factors: (a) sound institutional structures, with functions consolidated in a single department; (b) coordination between PDM policy and fiscal/monetary policy; (c) a solid governance structure, with goals, responsibilities and rules stipulated for PDM institutions; (d) a medium- and long-term public debt strategy based on cost and risk analyses; and (e) a high level of technical capacity among the team in charge of PDM along with secure, accurate technological information systems.

In recent years, the Treasury invested in promoting transparency, separating debt from monetary policy, building institutional structures with distinct functions (in front, middle and back offices), as well as improving statistics, information systems and technical staff. Also, goals were set and a medium- and long-term strategy was consolidated in its Annual Borrowing Plan. Thus, The Brazilian Treasury succeeded in adopting international best practices.

[28] Participants represented 19 LAC countries, experts from Spain, Portugal, Denmark and Italy, and from the World Bank, IADB, IMF, OECD and UN Conference on Trade and Development (UNCTAD).

[29] Brazil's representative, who was coordinating the project, described how the process was evolving at the third annual meeting in April 2007, in Costa Rica.

[30] Brazil was represented by members of the National Treasury's Strategic Planning, Operations and Public Debt Control Departments. Guest speakers were from the National Association of Financial Market Institutions (Andima), the Securities, Commodities and Futures Exchange (BM & FBovespa), the Securities and Exchange Commission (CVM), the Open Market Operations Department (Demab) and the Economic Department (Depec), both of the Brazilian Central Bank.

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Part II
Chapter 2

Strategic planning of the Federal Public Debt

by Anderson Caputo Silva
Luiz Fernando Alves

1 Introduction

It is essential to adopt a sound strategy to manage public debt as a way to ensure, or at the least not affect, macroeconomic stability. This need became especially clear following events that shattered emerging markets in the late 1990s. To achieve this aim, strategies must be designed that take into account, *inter alia*, the optimal profile of debt in the long run, as well as the risks and commitment to developing the debt market.

Brazil is a good example of a country that promoted many changes in the process of designing strategies, after policymakers and professionals in the debt office studied international best practices and agreed that strategic planning was needed to achieve greater equilibrium between costs and risks over time.

Changes focused on institutional structures and governance mechanisms, and, at the beginning of the decade, a new framework was designed to better distribute the functions of the department that manages public debt. This has improved technical capacity and ensured greater integration in the analysis of domestic and external debt.

The new governance mechanisms required that analytical strategic planning and risk management tools be developed and introduced into the decision making process. These were reinforced by the Debt Management Committee (which meets monthly[1]) and by Annual Borrowing Plan (ABP) publications and the Annual Debt Report.[2] Thus, when the ABP was launched in 2001, it expanded the scope of debt management and developed long-term financing strategies. Since then, it has gained importance in the financial community and is currently the main channel for conveying debt management goals, as well as one-year targets for the main debt profile indicators. Its preparation is coordinated by the middle office, but also involves the back and front offices.

This chapter discusses the main aspects in Brazil's public debt strategic planning process. Section 2 briefly describes the economic history and changes in the institutional framework of the National Treasury that influenced the design of debt strategies. Section 3 discusses the basic elements of planning, especially as they relate to debt management objectives. Section 4 addresses the issue of optimal debt structure in the long term (benchmark), the step that precedes the development of short term financing strategies. Section 5 explores the stages in the design of a transition strategy from the short to the long term. Section 6 offers some conclusions.

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[1] The Committee, as well as the entire strategic planning process, includes representatives of the three public debt management coordinating units (*back-*, *front-* and *middle-offices*), in addition to the undersecretary responsible for the public debt and the National Treasury secretary.

[2] The *Annual Borrowing Plan* and *Annual Debt Report* are published in Portuguese and English at the beginning of each year and are available on the National Treasury website at www.stn.fazenda.gov.br.

Box 1. Annual Borrowing Plan – objectives and guidelines

Since 2001, the National Treasury has presented its Annual Borrowing Plan (ABP) which is based on the goals and guidelines for Federal Public Debt (FPD) management, especially with regard to greater transparency and predictability.

The objective of FPD management is "to minimize long-term borrowing costs, with maintenance of prudent risk levels; at the same time, it seeks to contribute to the smooth operation of the public bond market".

Thus, the ABP for 2009 sought to:

- Lengthen average maturities and reduce the percentage of FPD maturing in 12 months;
- Gradually substitute floating rate securities by fixed-rate or inflation-linked securities;
- Improve the External Federal Public Debt - EFPD profile through issuances of benchmark securities, the anticipated buyback program and structured operations;
- Provide incentives to develop the yield curve for Federal public securities on the domestic and external markets;
- Expand the investor base.

Source: Annual Borrowing Plan, 2009

2 Macroeconomic background and institutional arrangement

The introduction of the Real Plan in 1994 created the context for macroeconomic stability that was later reinforced by improvements in other areas. Also, the conditions for adopting best debt management practices were established in a way that allowed managers and investors to design medium- and long-term strategies using more realistic scenarios.

Further, as a result of the growing confidence in inflation controls, the country was able to gradually de-index its debt and develop strategies to change its composition and maturity profile. These actions were crucial since earlier, a high percentage of domestic debt was attached to floating interest rates: For example, in July 1995, 79.1% of domestic debt was linked to overnight interest rates, while fixed-rate debt accounted for just 8.5% of the total, with maturities of up to two months.

The National Treasury gradually sought to replace floating-rate for fixed-rate debt and also lengthen its average maturity. A decade later, public debt management had gained more flexibility due to the consolidation of economic stability; this allowed for broader choice when defining public financing strategies and changing the composition and maturity profile of the debt. Thus, by December 2008, 32.4% of FPD was linked to floating rates while 29.9% was the fixed-rate share. Also, another 26.6% was inflation-linked, an index that is positively correlated to government revenues and therefore desirable from the standpoint of public debt risk.

As we stated before, the changes in Brazil's public debt profile took place in the context of changes in the institutional structures and governance mechanisms of the National Treasury, which involved building capacity in strategic planning and risk management as sound practices to define debt management policies. Indeed, one main lesson from the past refers to the fundamental role of creating a financing strategy according to clearly defined debt management objectives and implemented within an efficient institutional and decision-making (governance) framework.

The new institutional arrangements helped establish an organizational culture less focused on short-term objectives and more on strategic planning and risk management in daily activities. As discussed in Chapter

1, Part II, an important element in the institutional arrangement is that the National Treasury adopted a function-based organization for debt management, with back-,[3] front-[4] and middle-offices.[5] Another element is the integration of domestic and external debt analyses in the same institution[6], which promotes efficiency, physically placing those with similar skills in the same area.

One result of integrating domestic and external debt in the National Treasury and creating a function-based organization for debt management was the need to improve the communications among the different units which are inter-dependent.

To improve communications and avoid inconsistencies, the Debt Management Committee holds monthly meetings - a tradition at the National Treasury - usually in the last week of the month. These offer an opportunity to consolidate views and information on past performance, present actions and future perspectives. The group analyzes the probability of achieving the ABP's goals and, if necessary, designs corrective strategies. Also, it defines the strategy for the next month, including aspects such as maturity and type of indexation (fixed, floating, FX-rate or inflation), after it analyzes market conditions. Further, it sets a schedule for public security auctions.

3 Building a debt strategy: the Brazilian experience

The first step before designing the strategy is to define the global debt management objective, which is complex. Some questions must first be answered. These include:

- Should a country minimize the costs of financing its debt?
- What are the trade-offs between costs and risks?
- What weight should be given to the role of government in developing the domestic debt market?
- How should the balance between domestic and external financing be achieved?

Clearly, there are no single correct answers to these questions, and this chapter does not explore the range of answers, as they are unique to each country. However, once they are answered and the main objectives defined, another challenge emerges: How should the objectives be translated into strategies? This question will be explored in the rest of this chapter.

For many countries, including Brazil, the main objective is to minimize long-term costs (rather than costs, in general) and maintain prudent risk levels.[7] The former translates into choosing policies that will be more efficient in the medium and long term and reducing the myopic behavior that short-term strategies can promote. With regard to the latter, risk management has become increasingly sophisticated and an important element in debt management. It is particularly challenging and, possibly, more important in emerging

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[3] The back office is responsible for statistics, recording, control, payment and monitoring activities related to domestic and external debt budgets.

[4] The front office is responsible for developing short-term strategies related to issuing securities in the domestic and external markets as well as for auctions in those two markets.

[5] The middle office is responsible for developing medium- and long-term strategies, for research and development and risk management, and for monitoring macroeconomic relations with domestic and foreign investors.

[6] Before the integration, the Central Bank issued external securities; by January 2005 this task was transferred to the National Treasury.

[7] See *Guidelines for public debt management*, published in 2001 by the World Bank and the International Monetary Fund, for the precise definition of debt management objectives in different countries

economies, which are usually more vulnerable to sudden changes in the macroeconomic environment and often do not have fully developed and liquid debt markets.

For the debt manager, who is concerned with meeting the objective, a useful way to address this question is to think about it as a minimization issue, where the objective function is the long-term cost and the constraints are the prudent risk levels. This is the approach used in many countries such as Portugal and Denmark (see the next box), and helps establish the scope of action for developing debt strategies.

A common practice is to divide the process into two stages: (a) the search for a benchmark, which considers long-term issues like the optimal composition of the debt in terms of types of instruments, maturities and currencies; and (b) the development of a transition strategy based on the objectives set by the benchmark, with regard to initial conditions (i.e., current debt composition and its maturity profile) and that seeks to address the issue of how quickly the new composition should be obtained. This stage includes developing short- and long-term strategies, managing risks and monitoring their implementation. These two stages will be described next.

Box 2. Objectives of debt management in selected countries

South Africa	The Liability Management subprogram, which is part of the National Treasury Strategic Plan, seeks to meet the following *outputs*: a) Finance government's gross borrowing requirement; b) Sound domestic and foreign debt management policies; c) Reduce debt service costs; d) Contribute to the development of financial markets; e) Sound investor relations. Source: *The 2008/11 National Treasury Strategic Plan.*
Denmark	a) The overall objective of the government debt policy is to cover the central government's financing requirement at the lowest possible long-term borrowing costs, while taking the degree of risk into account; b) Furthermore, the aim is to facilitate the central government's access to the financial markets in the longer term and to support a well-functioning domestic financial market. Source: *Danish Government Borrowing and Debt*, 2007.
Finland	The objective of Finland's central government debt management is to fulfill the state's financial requirements and to keep the long-term costs of servicing the debt as low as possible in relation to risks resulting from the debt in such a way that the risks are acceptable in terms of national risk-bearing capacity. Source: *Debt Management Annual Review*, 2007.
Ireland	The Agency's primary objectives are, first, to protect liquidity in order to ensure that the Exchequer's current and future funding needs can be financed prudently and cost effectively and, secondly, to ensure debt service costs are kept to a minimum subject to containing risk within acceptable limits. In addition to achieving these objectives, the Agency's performance is measured by reference to an externally approved and audited benchmark portfolio (the "Benchmark"). Sources: *Report and accounts for the year ended*, 31 December 2006; Benchmark and strategy, available at http://www.ntma.ie/NationalDebt/benchmarkStrategy.php

Italy	Reducing borrowing costs and limiting the exposure to financial risks. Debt management seeks to reduce medium- and long-term exposure to the risk of interest rates (nominal and real) and refinancing, as well as to maintain expenditures on interest as a GDP proportion under control. Source: *Guidelines for Public Debt Management*, 2008
Mexico	The central objective of the public debt policy is "to satisfy the financing needs of the federal government at the lowest possible cost, subject to a level of risk compatible with a healthy evolution of public finances and the development of local financial markets"; Guidelines: a) To finance the federal government deficit entirely in the local debt market, favoring the issuance of long-term nominal fixed rate bonds; b) To reach a net external public sector debt reduction target and improve the cost and term structure of foreign liabilities. Source: *Plano Anual de Financiamento*, 2008
Portugal	The objective of debt management is "to guarantee the financial resources required for the execution of the State budget and be conducted in such a way as to: a) Minimize the direct and indirect costs of public debt on a long-term perspective; b) Guarantee a balanced distribution of debt costs through several annual budgets; c) Prevent an excessive temporal concentration of redemptions; d) Avoid excessive risks; e) Promote an efficient and balanced functioning of financial markets." Source: (Public) Debt Framework Law (law no. 7/98 of February 3, 1998)

Note: See Currie, Dethier and Togo (2003, p. 32) for other groups of selected countries.

4 In search of a benchmark

Several countries have already used benchmark models for this purpose, among which are Portugal, Sweden, Ireland, Denmark and South Africa.[8] Further, international organizations like the World Bank and IMF recommend that sovereign debt managers adopt benchmark models as a risk management and strategic planning tool.[9]

In summary, the benchmark represents an optimal long-term debt structure that guides the decision-maker in defining the financing strategy. In a steady-state situation, it indicates a single optimal profile for the public debt or a possible set of profiles that are efficient from the standpoint of the trade-off between the expected cost and risk. In this approach, determining the benchmark requires selecting the maximum risk or cost level the government should bear and then the corresponding debt profile. It is precisely at this point that senior managers play a crucial role, in the same way that well structured governance procedures become important in determining the main guidelines for conducting the debt process. These include the types of instruments to be issued, their maturity structure and the debt global maturity profile (including limits on the amount of debt falling due in the short term).

[8] See Cabral (2005) for a more complete description of the international experience with benchmark models for public debt.
[9] The analytical aspects of the Brazilian model are further explored in Chapter 3, Part 2.

Box 3. International experience: the Portuguese benchmark model

Portugal was one of the first countries to develop a benchmark to quantify the long-term objective of public debt management, in terms of a long-term portfolio for public liabilities. This type of benchmark would increase consistency between daily debt management decisions and long-term objectives.

The set of instruments used to define the benchmark was presented in the 1999 Public Debt Management Annual Report, released by the Treasury Management and Public Credit Institute (IGCP) of Portugal. The IGCP determines a steady-state benchmark, which is approved by the Minister of Finance.

The Portuguese model is a combination of simulation and optimization, where decision variables as well as cost and risk measures are defined in terms of cash flow of liabilities (government assets are not incorporated), based on the assumption that oscillations in financial variables cause budget volatility and therefore can reduce the degrees of freedom of the fiscal policymaker. Finally, there are explicit constraints to the refinancing risk (limits to the temporal concentration of debt maturity).

The model is simulated in steady-state under the hypothesis of constant debt in nominal terms and has basically three inputs: (a) stochastic simulation of interest rates; (b) different financing strategies that meet predefined rollover and management constraints; and (c) deterministic scenarios for other macroeconomic variables. Next, a computer mechanism simulates the dynamics of the debt portfolio and generates a set with several efficient portfolios from the standpoint of the trade-off between cost and risk.

A restricted set of best model solutions, considering efficiency and robustness to changes to model hypotheses, is submitted to the authorities for final choice. As a result, the decision-maker (the minister) determines the acceptable trade-off between cost and risk by defining the efficient strategy most suitable for the long term, i.e., the benchmark. The final decision also takes into account market constraints, since the strategy chosen should be feasible for a sovereign issuer.

Source: 1999 *Public Debt Management Annual Report.*
Portugal – Public Debt Management

The information generated by the model helps debt managers conduct their financing operations - both new issuances and those associated exclusively with risk management - so that the debt is gradually developed towards an optimal composition from the standpoint of solving the cost minimization problem conditioned to prudent risk levels.

According to best international practices, the technical team typically develops the studies regarding the benchmark and submits the results, in terms of efficient debt compositions, to the fiscal and debt policymaker (the Minister of Finance, the Treasury Secretariat or an Executive Committee), responsible for choosing the acceptable risk level. At this moment, other issues which may influence the final choice, such as those linked to debt sustainability, must also be considered when defining a maximum acceptable risk or cost level.

Sometimes, discrepancies can be seen between the optimal and current composition of the debt. Often, these are related to an adverse or repeatedly volatile macroeconomic environment, undeveloped debt markets, and demand for the types of instruments debt managers consider optimal, in its early stages. Under these conditions, robust theoretical analyses, simulations of debt dynamics, and probing discussions to define long-term objectives are even more important and needed than identifying an exact benchmark in which the optimal debt profile is defined in detail.[10]

[10] It is important to recognize that any model to simulate debt dynamics and define a benchmark is a simplified representation of reality and, therefore, has several limitations. As highlighted by Bolder (2008), although the model adds benefits to decision-making, it cannot replace the debt manager's knowledge and discretion.

Box 4. International experience: the South African benchmark model

The National Treasury of South Africa, which is responsible for managing the country's debt, has also advanced in developing a methodology to define a benchmark for its debt portfolio. The model was first developed in 2000 and proposed a benchmark based on a target for the modified duration of the portfolio. The proposal was based on the expected behavior, in terms of cost and risk, of a limited number of strategies for the debt portfolio evaluated under different macroeconomic scenarios.

The model was reviewed in 2006 and a new proposal was based on a Cost-at-Risk methodology, which sought to measure the cost (in absolute terms) of deviations from the expected budget cost of the debt service. Estimates were based on a model of econometric simulations, using current and historical data on yield curves, exchange rates, GDP, inflation and borrowing requirements. A stochastic frontier expressing the trade-off between cost and risk, and where the desired debt profile was developed based on the analysis of more than 20,000 different portfolios' track record for over 30 years.

The model proposed not only a long-term benchmark for the debt portfolio in terms of modified duration but also an optimal debt profile (fixed as opposed to floating rates, domestic as opposed to external) and, then calculated the duration of the desired portfolio.

Source: National Treasury: Republic of South Africa

This fact should not weaken the relevance of careful benchmark studies. The concern here is that the time needed to develop an appropriate methodology can vary in each country and that all models represent an effort to simplify reality. Neglecting this fact could lead to postponing important policies based on solid theoretical benchmarks and the managers' expertise, in order to wait for a model to be completed. Thus, a proper balance between the use of sophisticated tools and the practical debate connected to creating policies generally produces the best combination for designing debt strategies.

Recently, the National Treasury developed an optimal long-term debt composition model (benchmark) for Brazil's public debt. This model takes as a theoretical reference the idea of tax smoothing, thus applying a framework that seek to minimize the impacts of shocks on public debt and the government's fiscal balance. However, even before the development of the model, the design of strategies already counted on several tools to evaluate them in their multiple aspects of costs and risks.

To quantify trade-offs between expected costs and risks, the National Treasury uses the concept of simple market risk (e.g. the share of fixed-rate debt versus the share of floating-rate debt) and refinancing risk (e.g. the percentage due in 12 months and debt average maturity) indicators. Also, it maps assets and liabilities to identify the main mismatches according to the most important market risk factors and maturity structure - Assets and Liability Management (ALM). Further, the risks are assessed using stochastic indicators such as the Cost-at-Risk (CaR) and Cash-Flow-at-Risk (CFaR), analyses of debt sensitivity to changes in macroeconomic variables and market stress tests.[11]

Regardless of more specific formulations for defining the benchmark, these latest studies and traditional indicators help to identify the main financing guidelines, e.g. (a) to avoid issuing FX-rate linked debt; (b) to reduce the weight of floating interest-rate securities; and (c) to increase the share of fixed-rate and inflation-linked securities.

[11] In this regard see Baghdassarian (2004) and Bonomo et al. (2003).

Although traditional financial analysis instruments, such as with Brazil's benchmark model[12], is an useful tool to investigate the trade-off between expected costs and risks, the choice of an optimal composition must consider other aspects of the debt management which are not explicitly inserted in the model. For instance, the government may have other objectives than just reducing costs by maintaining prudent risk levels, e.g. "contributing to the well functioning of the public bond market", as in the case of Brazil. Further, the size and nature of public security issuances and the debt profile may cause the government to strongly influence prices, so limiting the ability of government to quickly achieve the optimal debt composition. Moreover, indicators related to cash flows and impacts on the annual budget, for example, also affect the choice of the optimal debt structure.

5 Design of the public debt strategy

The strategic planning of public debt has many dimensions and it is important to ensure that the main aspects are covered. This chapter has already explained the importance in Brazil of building institutional and governance capacity, as well as the need to identify benchmarks and traditional risk indicators.

This section offers a systematic overview of how Brazil develops its debt management strategy, from the point at which the objectives are defined to implementing and monitoring the process. Some aspects related to modeling techniques will be omitted in order to focus on the broader issues.

The debt management strategy consists of a short-term plan (up to a year) and a medium/long term *transition* strategy (over a year); it is closely related to the long-term benchmark (steady state) and the objectives and guidelines defined. The strategic planning process involves seven steps:

a) Defining long term objectives;

b) Developing macroeconomic scenarios;

c) Holding preliminary discussions on scenarios and constraints;

d) Designing the short-term strategy (up to one year);

e) Setting targets (the expected results);

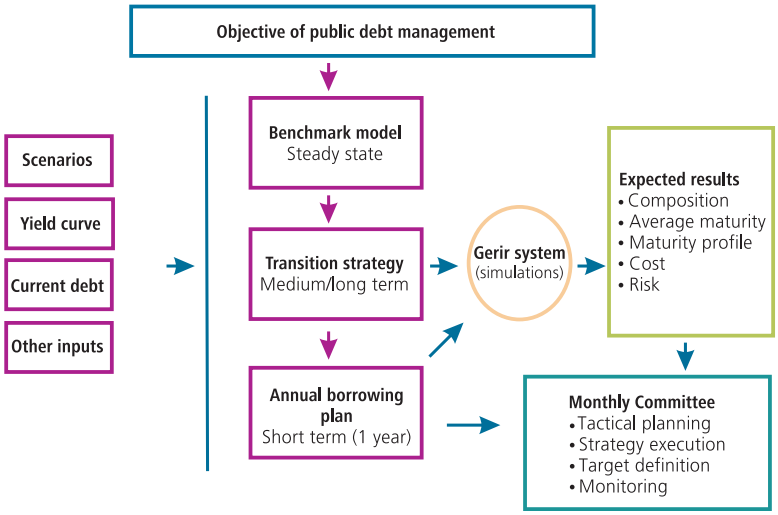
f) Designing the transition strategy (medium and long-term);

g) Tactical planning of the debt, execution and monitoring.

Figure 1 shows the public debt management process in Brazil from a broad perspective. Once the management objective is defined, the modeling, discussion and definition of long-term objectives (benchmark) are reviewed. Next, the design of the transition strategy is explored, which involves mapping risk factors and opportunities for and constraints on achieving the optimal FPD profile. These elements are crucial to the next stage, when the short-term strategy is defined and subsequently expressed in the ABP and reflected in the tactical decisions of the Debt Monthly Committee.

[12] This model is based on stochastic finance and efficient portfolio theory.

Figure 1. Simplified scheme of FPD strategic planning



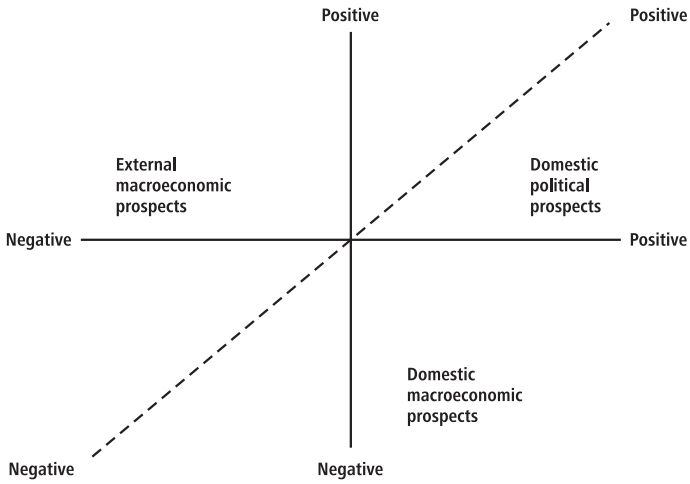
Step 1. Defining long-term objectives

This first stage in the strategic planning process has already been addressed in some detail and includes defining the optimal debt management (based on well-defined objectives and constraints), developing a methodology and the exercise to establish an optimal debt structure (or a set of profiles), and defining a benchmark (steady state).

Step 2. Developing macroeconomic scenarios

Discussions at this stage include defining the methodology to be applied under different scenarios and identifying the most relevant risk factors (e.g. the Brazilian and global economy, political environment, etc.). Next, deterministic scenarios are developed based on various hypotheses that consider the identified risk factors, domestic and external macroeconomic prospects, and domestic political prospects that could influence FPD management.

Figure 2. Simplified development scenario



Although projections by private market analysts exist, they mainly serve as references for baseline scenarios. Thus, a technical team with strong macroeconomics currently plays an important role creating alternative scenarios (usually not shared with the public) that differ from those anticipated by the baseline. Debt managers need to develop this expertise.

For the National Treasury, at least four scenarios are devised—optimistic, conservative, neutral (the baseline case) and stress. The latter, where conditions are more difficult, is useful for designing contingent strategies and assessing the vulnerability of debt to major macroeconomic shocks.

Step 3. Discussions on scenarios and constraints

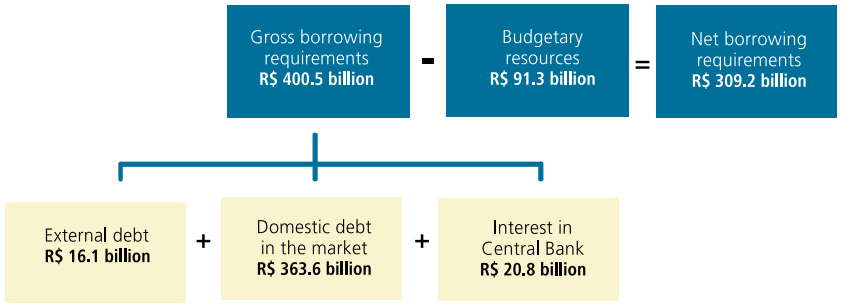
The alternate scenarios—developed by a team whose members have backgrounds in macroeconomics—generate probing discussions in the National Treasury, with all units (front-, middle- and back-offices) involved. They are then combined with public debt guidelines and constraints related to budget, demand, risk and contingent liabilities. The main issue is how quickly long-term objectives can be reached, taking into account the constraints; the quality of the answer depends on the extent to which the discussions are coordinated and the expertise involved in producing strategies.

Step 4. Designing the short-term (up to one year) strategy

This stage, when most of the quantitative work is performed is the most important in the strategic planning process. Although not crucial, the availability of some type of technological tool can make the analysis more precise; in Brazil, the *GERIR system* is applied.[13]

The next step involves reviewing the borrowing requirements for the planning period. With regard to the Annual Borrowing Plan (ABP), these include: (a) redemptions projected for the year for both domestic and external commitments, and (b) budget resources earmarked for public debt payments, as listed in the 2009 ABP (see Figure 3).

Figure 3. Projected National Treasury borrowing requirements in 2009



Source: 2009 ABP

For the short term, the strategy should detail all securities to be issued to finance the public debt. In this regard, an initial exercise includes presenting several alternative financing strategies that contain possible actions for public debt management as well as constraints and trade-offs. The strategies explore different

[13] See Box on *Gerir* in Part II, Chapter 1.

financing rationales, some that emphasize reducing risk and others that reduce costs, taking into account the borrowing requirements and public debt management guidelines.

After several simulations that combine scenarios and strategies, results are consolidated and submitted to debate within the debt office as well as with decision-making authorities. Table 1 provides a summary (with hypothetical data) that compares projections of the main FPD indicators resulting from three alternative strategies to define the indicative limits of the ABP.

Table 1. ABP strategy comparisons and targets

Statistics	Observed		2009 ABP strategies – Dec-09			2009 ABP limits	
	Dec-07	Dec-08	Basic	Optimistic	Conservative	Lower	Upper
Outstanding FPD (R$ billion)	1,333.8	1,397.3	1,525.0	1,598.0	1,456.0	1,450	1,600
Composition of FPD (%)							
Fixed rate	35.1%	29.9%	27.5%	31.0%	24.5%	24%	31%
Inflation	24.1%	26.6%	29.0%	27.0%	26.5%	26%4	30%
Floating rate	30.7%	32.4%	34.5%0	32.5%	37.5%	25%	30%
FX-rate	8.2%	9.7%	8.0%	7.5%	10.5%	7%	11%
Others	1.9%	1.4%	1.0%	1.0%	1.0%	1%	2%
Concentration of FPD							
Average maturity (years)	3.3	3.5	3.5	3.7	3.4	3.4	3.7
% due in 12 months	28.2%	25.4%	27.0%	29.0%	25.5%	25%	29%

Source: 2009 ABP and 2009 ABP strategy columns – December 2009 (using hypothetical data)

A risk assessment associated with each strategy is also performed, based on the simulations. The main risks include (a) market risks,[14] assessed mainly by the FPD profile, since each type of National Treasury security reacts to particular variations in indexing factors, and (b) refinancing risks,[15] expressed in terms of concentration of short-term maturities, average maturity of outstanding debt and cash flow variations (see Graph 1).[16]

Finally, it is important to note the close relation between this and the first step, where debt management goals are defined. Although many strategies are developed, they must all be consistent with the long-term objective and desired optimal structure. In practice, the main difference between the alternate plans involves the speed at which the current debt structure converges to that of the optimal structure. These time frames must take into account market financing conditions presented by the scenarios analyzed to avoid pressures on the debt market when a strategy is implemented and excessive costs during the transition to the long-term.

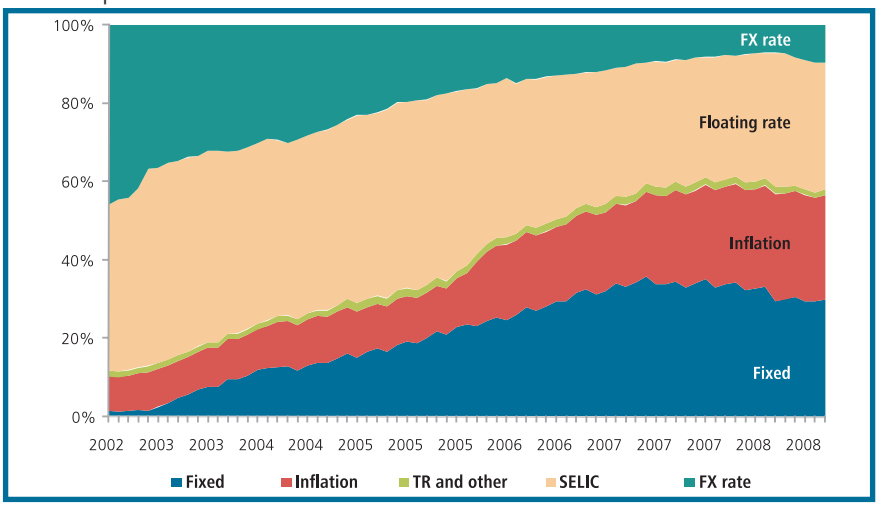
[14] The market risk is associated with variations in the costs of financing public securities due to changes in short-term interest rates, exchange rates, inflation, and the term structure of interest rates.

[15] The refinancing risk is associated with the possibility that the Treasury will have high refinancing costs or ultimately be unable to raise the funds required.

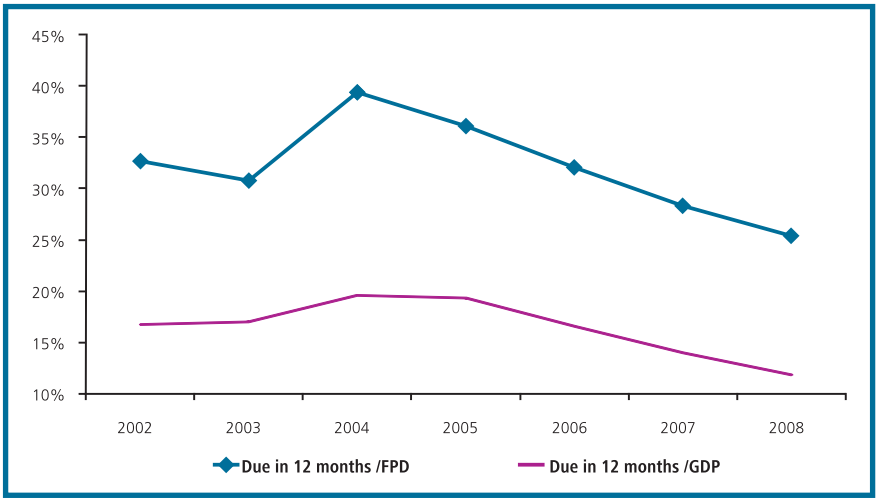
[16] A discussion of monitored risks and tools used by the Treasury will be presented in Part II, Chapter 3.

Graph 1. Risk assessment: evolution in the Federal Public Debt profile

FPD Composition



Proportion of short-term maturities



Source: Economic Research Institute Foundation (Fipe)

Step 5. Expected results

At this stage, governance procedures are key, since discussions move to a higher level; in Brazil, these discussions include, among others, the Treasury Secretary and Finance Minister. The process involves a convergence with step 4, and is complete when one-year targets for indebtedness are defined. These targets are published in the Annual Borrowing Plan (ABP) as indicative limits for the debt profile (see Table 2) and, over the year, become the main references for monitoring debt managers' performance.

Step 6. The transition strategy (medium and long term)

Together with the ABP, which addresses the short-term (one year) strategy, and the definition of the optimal long-term profile (benchmark), the strategic planning of FPD involves the process of developing a transition strategy to establish links between the short and long term.

Table 2. 2009 ABP: results of Federal Public Debt (FPD)

Indicators	2008	Limit for 2009	
		Minimum	Maximum
Outstanding (R$ billion)	1,397.3	1,450.0	1,600.0
Composition (%)			
Fixed rate	29.9%	24.0%	31.0%
Inflation	26.6%	26.0%	30.0%
Floating rates	32.4%	32.0%	38.0%
FX-rate	9.7%	7.0%	11.0%
Others	1.4%	1.0%	2.0%
Maturity profile			
Average maturity (years)	3.5	3.4	3.7
Due in 12 months	25.4%	25.0%	29.0%

Source: 2009 ABP

In addition to reviewing financing alternatives available to the National Treasury for the medium and long term, this process seeks to devise a convergence trajectory and determine the optimal speed for changing the current debt profile to what is desired in the future - with regard to initial conditions (i.e. the current debt composition and its maturity profile) and short- and medium-term constraints.

The design of the transition strategy is preceded by a phase of developing macroeconomic scenarios, which involves debates about their qualitative and, subsequently, quantitative aspects with respect to the main variables that affect the strategy as well as for FPD costs and risks.

Based on these scenarios, borrowing requirements for the planning horizon are explored that analyze the current FPD profile and quantify alternative financing strategies. Once these are developed, different strategies for each are examined, with variations in their convergence speeds towards the long-term benchmark. Results for relevant FPD costs, risks, composition and maturity profile indicators are simulated.

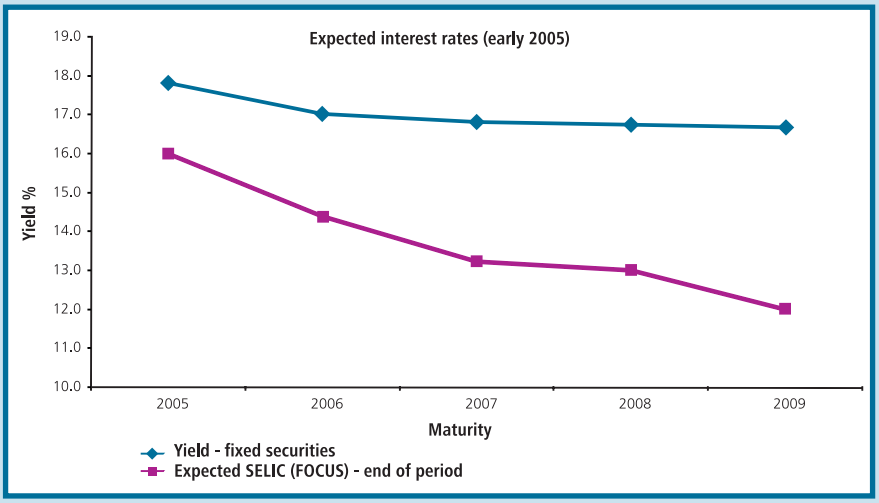
The medium- and long-term strategies should explore various actions and reflect the constraints and trade-offs in FPD management; e.g. one can include a larger proportion of fixed-rate securities (in public debt financing) while another might give greater weight to inflation-linked securities. The object of this process is to show the effects a given action could have on debt indicators. Thus, FPD managers must include these findings as inputs in the debate on costs, risks and constraints, along with evaluating the speed of convergence, towards the benchmark debt structure.

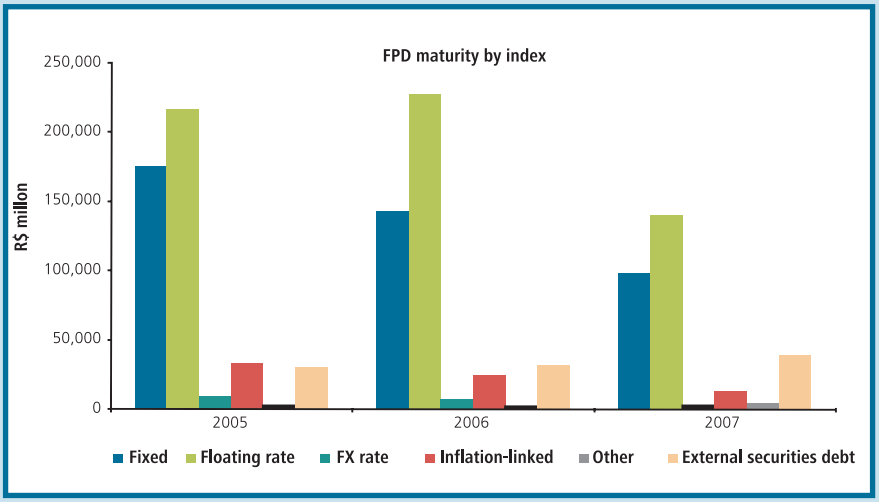
The next step involves defining the guidelines for conducting public debt financing policy. This includes: (a) setting preliminary limits for FPD indicators; (b) defining a preliminary public security issuance profile, with indicators such as indexing factors, average issuance maturities, and their limits, and the percentage due in 12 months; and (c) presenting the definitions to the public debt planning committee.

Box 5. Analysis of future opportunities and challenges

The design of a transition strategy includes analyses of opportunities and challenges for the coming years: The figures listed below are applied in a context of declining interest rates (expected early in 2005) and the concentration of floating debt maturities in the following years. Debt managers in Brazil evaluated this table as a benign scenario with the aim of reducing its exposure to floating rates and issuing more debt at fixed rates to replace earlier securities.

Graph 2. Expected interest rates and maturity structure of public debt





Following a diagnosis of these opportunities and challenges, alternative financing strategies for public debt management as well as existing constraints and trade-offs should be evaluated.

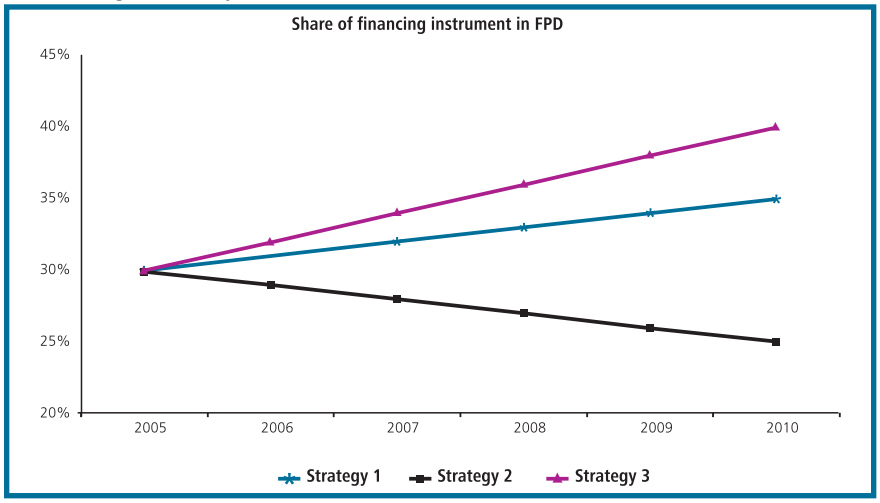
The following stage involves a cycle of debates on long-term planning for public debt including representatives of the front, middle and back offices. Alternative long-term financing strategies and projected results are presented, with an emphasis on their qualitative aspects, so as to explain the trade-offs debt managers must consider. Participants review the bottlenecks that could impede accelerated changes to the public debt profile,

ways to overcome short-term constraints and the actions that should be implemented to respond to the challenges identified.

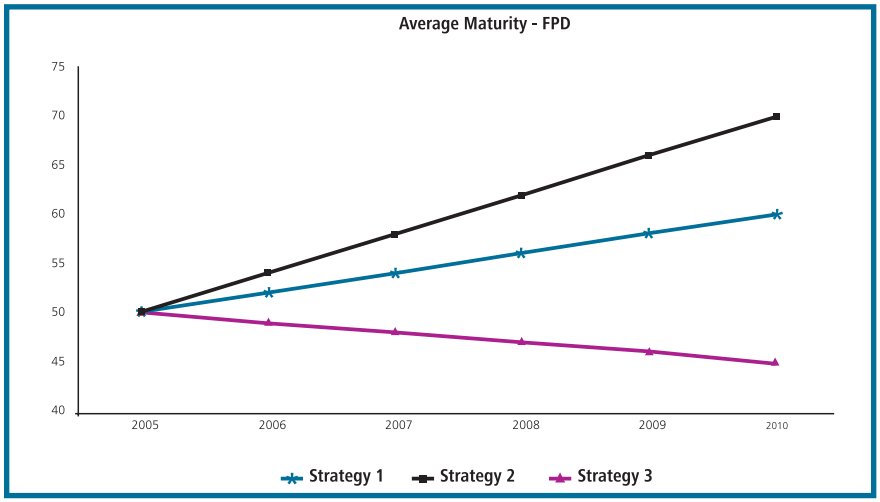
For example, the demand for certain public securities at a given point in time is often focused on short- term maturities, as is the case of fixed-rate securities in the Brazilian market. Thus, a strategy that rapidly increases the weight of these securities in the funding program may reduce the average maturity of the debt, showing the clear conflict between refinancing and market risks (strategy 2, as opposed to strategy 3 in Graph 3). However, the debate over medium- and long-term alternatives could also spark actions to overcome factors that constrain the demand for longer-term, fixed-rate securities and gradually increase fixed-rate securities, insofar as it is possible to lengthen their issuance terms (strategy 1). This point illustrates the type of debate debt managers should engage in before deciding on issues with conflicting guidelines.

Graph 3. Strategy comparisons: market *versus* refinancing risks

FPD Average Maturity



Share of financing instrument A in FPD



Note: Hypothetical data

Finally, some studies integrate the processes of simulating the optimal long-term debt profile and defining the optimal convergence speed within the same framework. Currently, the benchmark model works with just one optimal debt structure (when the economy has reached the steady state) without considering the nature of the transition between the two (the current situation and the steady state). As discussed earlier in this section, the transition is within an operational framework that differs from the one used in the benchmark model. Therefore, this study needs to be expanded to consider how the convergence from the current scenario to the long-term scenario (stationary state) would occur, as well as to explore what the speed should be in the change from the current FPD profile to the one desired in the long term.

In summary, the entire process of strategic planning for public debt management involves studying the optimal profile of this debt in a scenario of equilibrium in steady state, followed by simulations of transition strategies that evaluate the costs and risks of different speeds of convergence with respect to the desired profile in the long run. Together, definitions of the benchmark and transition strategy provide inputs for the National Treasury to validate FPD guidelines for short-term planning (ABP) and the tactical decisions of the monthly FPD committee.

Step 7. Tactical debt planning, execution and monitoring

After the ABP is published and the transition strategy developed, the next step involves tactical planning of the debt and its execution. This stage is included as part of the overall process, as it must be closely coordinated with the others.

Tactical planning focuses on very short term periods (one month) and addresses specific issues that could affect the strategy at a particular point in time, without compromising the commitment to the long-term strategy. This planning is discussed in detail during the monthly meetings of the Debt Management Committee (see Section 2 of this chapter) and covers the characteristics of the securities that will be offered in the next month's auctions, the Treasury's cash position, and the issuance schedule for the following period.

It should be noted that the Treasury conducts the tactical debt strategy in coordination with other institutions like the Central Bank and the Ministry of Planning, insofar as the monetary policy and budget execution could affect, or be affected by, debt management.

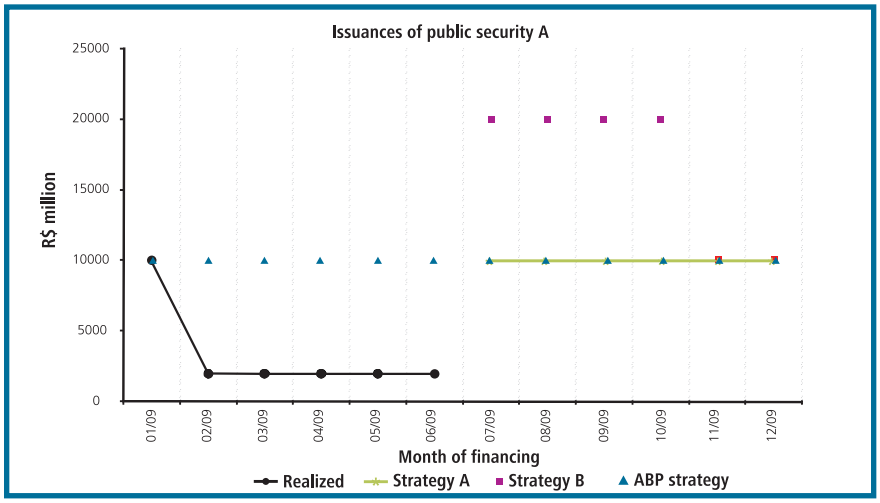
Another important element to be addressed in the strategic planning, especially as it pertains to the previous step and to identify opportunities, is the continuous monitoring of the transition strategy and assessing the risks of not meeting the ABP targets, which make up the core of a debt manager's responsibilities: Such monitoring allows debt managers to adopt corrective actions when necessary, to assure movement towards established targets. In some cases, it may not be possible to meet predefined targets; but, identifying the problem in advance could give the debt managers credibility and help them make the targets more realistic.

In Brazil, such monitoring is common: Each month, the Debt Management Committee reviews the strategy and the results achieved for the main debt indicators are analyzed in light of events in the public security market in previous months. Also, the review attempts to identify any gaps in fulfilling the indicative limits of the ABP vis-à-vis the strategies initially designed.

Also, debt indicators are projected for the end of the year and such projections evaluate whether the ABP targets will not be met. Even more important than this direct analysis is the debate over the feasibility of the strategy underlying this exercise: It serves to determine if projections are credible, having been based on a feasible plan. If they are not, this could delay the decisions needed to meet targets.

Graph 4 illustrates this point, monitoring the volume issued by type of financing instrument. Analysis of graphs such as this helps identify the main deviations between the planned issuance strategies and what actually occurs. For example, suppose that the ABP objective implies issuing R$120 billion using public security A with R$10 billion in each month of the year (strategy ABP), and at the end of June, one identifies the planned issuance could only be met in the first month (issuing only R$2 billion a month from February to June) due to the low demand for this type of security. Then, for future months, a plan in the graph is designed to maintain what was initially planned in the ABP (strategy A), regardless of the frustration of the first semester. Another plan (strategy B) is to increase the volume of issuances planned to R$ 20 billion a month from July to October, so as to secure the total issuance planned for the year (R$ 120 billion).

Graph 4. Monitoring of National Treasury issuance plans



Note: Hypothetical data

The first plan could result in the targets (for some FPD profile indicators) not being met, if no other measure is taken to offset the lower issuance of this security. However, it could be argued that the R$10 billion a month issued in the second semester could be feasible, in view of the last months' issuances. The results projected, based on strategy B, which presupposes a strong resumption in demand for security A, could also be debated.

Obviously, the analysis of the security market as well as macroeconomic conditions for the second semester could lead decision makers to conclude that the issuance volume being considered is not only feasible but also could work with strategy B. Such debate validates any type of projection and comparisons to the targets established for the debt profile. It also serves as the basis for choosing between strategies A and B, or devising a new strategy.

The rescheduling of planned issuances (see Graph 4), net issuances and roll-over percentages (issuances/redemptions) should be reviewed by type of financing instrument. These indicators are useful to evaluate the speed of change in the debt profile according to its risk factors with respect to the benchmark. A review of the difference between planned and observed values is also useful for maturity concentration indicators; the analysis would include the average maturities and the volume of short-term securities issued within the overall financing.

Based on the monitoring of the initial ABP strategy and possible rescheduling, and the analyses of scenarios for the following months, the next step is to analyze the projected indicators. If any are beyond the indicative limits of the ABP, measures to adjust the debt profile to the proposed target are explored.

The continuous follow-up of financing strategies is critical, especially in times of great volatility and financial market uncertainties, as in 2002 and 2008, which require actions to ensure the public security market will operate smoothly. In some cases, as in 2008, the Treasury may review some short-term targets. However, this does not change the long-term benchmark for the debt profile. Rather, monitoring allows for timely action according to market conditions, which is an important element to reduce indebtedness costs and to ensure the long-term strategy is feasible.

6 Conclusion

The process of designing a debt management strategy in Brazil was recently strengthened: Changes involved building the Treasury's analytical capacity, and improving governance mechanisms and the institutional framework. This chapter described each step Brazilian authorities followed to develop, execute and monitor a successful strategy.

For the planning process to be effective, the country's debt market needs to be reviewed. In particular, this means studying measures on both the supply and demand sides, as well as the market/intermediation infrastructure that can increase the likelihood that debt management objectives will be achieved.

On the supply side, measures include those whose implementation is usually under the debt manager's control. Some examples are the types of securities offered, the creation of benchmark issuances and the definition of an auction calendar – actions the National Treasury has successfully implemented in recent years.

On the demand side, measures relate to the investor base and its capacity (and willingness) to carry the type of debt the government wants to sell: Most of the measures aim to eliminate possible distortions that could affect the demand for government securities and are not under the debt manager's exclusive control. This process generally needs the support of institutions like the Central Bank, Securities and Exchange Commission (CVM), and Federal Revenue Secretariat, among others.

In Brazil, as in many emerging markets, demand side measures involve great challenges. After a period of significant improvements in the supply side (issuance techniques, strategy design, risk management, etc.), debt management in Brazil has switched the focus to the demand side and to market/intermediation infrastructure measures: For example, active liability management operations exist that involve buybacks and switches of medium- and long-term maturity bonds, which are generally inflation-linked, as an instrument to foster liquidity in the secondary market of these securities. Also, there are measures to encourage long-term savings so as to reduce taxes according to the duration of the investment.

Often, debt managers need to propose diversifying the investor base on the demand side. Contributing factors would include actions to open the capital market to foreign capital, such as CVM Resolution No. 2,689 of 2000, which eliminated most distinctions between institutional investors and other non-resident investors, and Law No. 11,312 of 2006, which exempts non-residents from income tax on investments in public securities.

Brazil's approach for the design and implementation of its debt strategy has been instrumental in providing a sustainable path for the improvement of the government debt profile. Robust strategic planning procedures guided authorities in launching consistent issuance policies and tackling key demand side bottlenecks for the development of domestic debt markets. As a result, the National Treasury is better able to execute its long-term strategy, with more efficient equilibrium between public debt costs and risks. Brazil's experience highlights the relevance of strengthening strategic planning functions in debt management as a way to efficiently meet debt management objectives and reinforce macroeconomic stability.

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Part II
Chapter 3

Federal Public Debt risk management

by Anderson Caputo Silva
Rodrigo Cabral
William Baghdassarian

1 Introduction

Risk management has long been established as an essential activity in financial markets. However, its relevance and sophistication have increased substantially in recent years, mainly due to the expansion of the derivatives market, the greater availability of user-friendly risk management tools, stricter prudential rules like capital requirements and Value at Risk limits, and risk monitoring activities imposed by capital market regulators and central banks.

Efforts to introduce modern risk management practices have also been priorities for Public Debt (PD) managers.[1] Following a series of crises in debt markets in the late 1990s, a growing number of countries explicitly incorporated risk management into their formal debt management objectives, which many define as "minimizing long-term financing costs subject to prudent risk levels".[2]

As a result, many Debt Management Offices (DMOs)[3] in the world have made significant changes to meet the demand for improved human and technological capital.[4] In this regard, the most noted change has involved strengthening middle-office capacities, specifically within the risk management and long-term planning areas.[5] Thus, managing public debt risk has become a fundamental role among DMO functions.

Following this trend, in 2001 Brazil's National Treasury started a program with the World Bank to build technical capacity and risk management tools and systems.[6] Two years later, that framework was considered adequate by experts from different countries and international organizations.[7]

Since then, several studies have been produced by the National Treasury risk management team, presented in academic and professional seminars and published[8] in different milieus. These studies are key to the ongoing

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[1] In this chapter, we will use the terms public debt risk manager and risk managers to represent public debt managers responsible for risk management.

[2] See *Guidelines for public debt management* (2001).

[3] The generic term DMO (debt management office), already consolidated in the literature, is used to designate the government area/unit in charge of this function.

[4] Some examples are the UK, France, Germany, Brazil and more recently Mexico.

[5] See Organisation for Economic Co-operation and Development (OECD) *Studies in risk management* (2006).

[6] International experts from academia and financial markets, as well as a firm specialized in developing IT systems for financial markets were hired to help build Brazil's risk management framework.

[7] The workshop on Public Debt Management in Brazil was held in Rio de Janeiro at the Getulio Vargas Foundation (FGV) in March 2003. Participants included senior public debt management experts from nine countries – Brazil, Denmark, Spain, the US, UK, France, Italy, Portugal, and Czech Republic, as well as representatives of the OECD and World Bank.

[8] References to more technical studies are cited throughout the chapter.

effort to improve risk management practices in Brazil. However, the highly technical character of the subject may create problems to understanding each aspect and how it fits with the others to form the complete set of public debt risk managers' responsibilities.

This chapter describes the scope of activities and challenges in managing public debt risks. In addition to providing an overview of how the National Treasury addresses risk management, it also intends (ambitiously) to meet or minimize recurring demands from researchers and countries at the initial stage of capacity building for a consistent set of tools and responsibilities. Further, a thorough view of the tools that need to be developed and the skills required could be a useful guide for those interested in improving their risk management practices.

The chapter is organized as follows. Following this Introduction, Section 2 offers an overview of the scope of PD risk managers' activities, dividing their duties into Public Debt Risk Management (PDM) peripheral and main functions. Section 3 features the main risk indicators used by a DMO. Section 4 highlights the important role of risk managers in providing, based on qualitative analyses, a long-term benchmark to guide short and medium-term debt strategies as well as their role in designing and monitoring debt strategies, followed by a brief discussion about assets and liabilities management (ALM). Section 5 discusses the peripheral duties of public debt managers and Section 6 offers some conclusions.

2 Scope and main challenges in public debt risk management

This section describes the wide array of tasks risk managers must perform, as well as the major challenges they face when meeting the demands of different clients (typically government authorities or senior technical staff) and counterparts (debt managers). Most of the challenges are related to adjusting risk management tools already used by scholars, investors and market analysts to the specific needs of a public entity holding a net liability portfolio.

The list of a risk manager's duties is long and open to debate - as to which functions should be included. Nonetheless, they can be grouped in two categories: debt management main and peripheral functions.

Main functions include identifying long-term benchmarks (optimal debt composition), developing and regularly assessing risk indicators (to measure several types of risks) and designing, monitoring and analyzing trade-offs across different refinancing strategies that can be implemented by the DMO.

The most common tasks with respect to peripheral functions, which are not the exclusive domain of public debt risk managers, include debt dynamics' exercises and sustainability assessments. Debt dynamics and sustainability tests are conducted by an array of interested parties such as financial analysts, scholars and fiscal policy makers. However, due to their access to private knowledge of the government refinancing strategy, risk managers are in a privileged position to conduct debt dynamics and sustainability exercises. That information allows them to produce a more precise debt dynamics forecast with a better evaluation of the risks involved (see Section 5 for more details).

Risk managers are also responsible for providing relevant inputs for prudent debt management - which include general guidelines for the optimal composition of debt and a broad set of risk indicators - as well as elaborating, supervising and assessing the trade-offs of different refinancing strategies.

A fundamental question for PD managers is "what debt profile and structure should the government pursue?" In other words, "what is the optimal long-term debt structure?" The public debt risk manager plays an important role in addressing this question by pointing out the trade-offs regarding costs and risks of different long-term debt strategies.

Debt management theory sheds some light on the general characteristics of the debt portfolio. However, in order to provide specific, quantitative guidelines, several debt specialists have engaged in a debate about the ways in which benchmarks are determined that has gained increased attention in DMOs around the world.

Another important function of PD risk managers is their active participation in the design, monitoring and analysis of trade-offs across different refinancing strategies that can be implemented by DMOs. The process of designing a debt strategy - which was explored in the previous chapter - is in many ways a shared responsibility with other DMO areas, such as the front-offices.

Risk managers identify possible risks for carrying out the debt strategy and refine the estimates (targets) for the future debt structure and profile (typically one year, as is common in annual borrowing plans). They also monitor the implementation of a debt strategy to validate and suggest corrective measures where needed, with respect to the issuance strategy.

Section 4 explores the optimal structure for the Brazilian debt, presents the analytical model currently used by the National Treasury, and describes the role of risk managers in developing and monitoring short and medium-term strategies.

One of the debt managers' central functions is to develop and monitor a comprehensive set of risk indicators, which do not necessarily need to be sophisticated. In practice, a set of simple indicators such as profile, average maturity, refixing duration and maturity structure (measured as a percentage of debt maturing in the short-term, for example), can provide useful information on the refinancing and interest-rate risks of the debt.

More sophisticated risk measures, which usually involve stochastic simulations, are increasingly used in DMOs to complement traditional measures. These are mainly adaptations of indicators that have already been developed and are known to investors (such as the Value at Risk - VaR). Thus, the main challenge is to adjust these indicators to the debtor's point of view, especially that of the PD managers. Commonly used indicators are the Cash-Flow-at-Risk (CFaR), the Cost-at-Risk (CaR) (or Stock-at-Risk - SaR) and the Budget-at-Risk (BaR).

Stochastic analyses are also frequently used by risk managers to provide inputs for decisions involving specific transactions. Typical examples are debt exchanges and other liability management operations that require trade-off assessments in terms of cost and risk.

The set of risk indicators also needs to include measures from the demand side. That is, PD managers need to monitor possible sources of discontinuity or failures in the planned debt issuance strategy. These measures are particularly important in emerging markets, where the amount of risk (notably interest-rate risk) that the investor base can bear represents a significant constraint to the smooth implementation of a debt strategy.

Just as market participants measure their interest-rate exposure through indicators such as the Present Value of a Basis Point (PVBP) and VaR, risk managers should perform this task in order to identify the pace and amount of risk transferred from the government to the private sector that a given refinancing strategy entails. In some circumstances, for example, abnormal VaR levels caused by macroeconomic volatility may significantly reduce the demand for fixed-rate securities, forcing debt managers to pay higher costs or even make sudden changes in the profile of their issues. Traditional and stochastic risk indicators, in addition to risk measures on the demand side, are discussed in Section 3.

Finally, in order for DMOs to cope with all these functions, they must invest significantly in human and technological capacity. The development of risk management systems that compare trade-offs in terms of cost and risk across different potential refinancing strategies is an essential step that can substantially improve a DMO's [9] decision-making process.

[9] The National Treasury developed a public debt refinancing and risk management system - the GERIR system. It provides the foundations to front- and middle-office work in the formulation and analysis of debt strategies. Through GERIR, debt analysts simulate

3 Public debt risk indicators

Public debt risk has many dimensions; this section illustrates the main indicators commonly used by PD risk managers. Most use rather simple computations and can be called *traditional indicators*. Others use stochastic simulations and usually belong to the so-called *risk family* indicators or *at-Risk*. Although they are not overly complex, they represent adaptations of measures frequently used by the private sector such as the Value at Risk (VaR), from the debtor's standpoint.

It should be noted that, despite the simplicity of the traditional indicators, many countries do not compute them and there appears to be no international methodological consensus among those that do. The first problem stems from the fact that many DMOs lack back-office systems that can compute in an aggregate and accurate fashion even the simplest debt indicator (i.e., the outstanding debt). The lack of consensus also has important consequences as it makes cross-country comparisons of risk indicators a complex task.

To illustrate this point, Table 1 shows the average maturity of Brazil's public debt using two different methodologies; these generate meaningful differences in the statistics produced, to the extent that not only debt managers, but also a whole range of investors and rating agencies use these indicators for international comparisons.

Table 1. Differences between average maturity and average life

December 2008	Average maturity (traditional methodology)	Average life (alternative methodology)
Federal Public Debt (FPD)	3.5	5.6
Domestic Debt (DFPD)	3.3	4.9
External Debt (EFPD)	5.6	12.3

Source: National Treasury

The traditional methodology (average maturity)[10] used by the National Treasury takes into account all disbursement flows (including coupon payments) when calculating the average public debt term. However, the methodology used by most countries is limited to the flow of principal payments. Although there is no internationally unified nomenclature in this area, these two forms of computing are usually referred to as average term and average life respectively. The first puts greater emphasis on the debt refinancing risk but - being more conservative - makes it difficult to draw international comparisons. For this reason, the National Treasury publishes the statistics according to both methodologies.

With the traditional methodology, the average term of domestic debt was 3.3 years at the end of 2008 while for international comparison purposes, the average life was 4.9 years. This average life exceeded, for example, that of the debts of many countries with credit risk ratings better than Brazil's. Moreover, while most countries use nominal flow values, Brazil computes the present value of each.[11] In a debt with a significant number of long-term securities and coupons, these differences are even more striking.

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several refinancing strategies for the Brazilian public debt and compare their results, as measured by a set of relevant indicators. The system was developed after an in-depth investigation of international experiences and was evaluated by risk specialists from several countries (see Annex 1 for more details about the system).

[10] The subject, which is also explored in Section I, Chapter 1, is discussed in detail in Annex IV.

[11] As more exploited in Annex IV, the methodology considers all flows (interest and principal) and bring them to present value using the original issuance rate of the Bond (not market values).

The risk measures are presented in the following subsections, grouped by the most relevant types of risks[12] to which the debt is exposed - namely, market risk,[13] refinancing risk, budget risk and demand-side risk.

3.1 Market risk

Market risk can be defined as the uncertainty related to changes in the expected costs arising from the volatility of market variables (interest rates, exchange rates, inflation, etc.). Although in financial markets this type of risk is associated with the volatility of asset prices, in the case of public debt, this type of risk refers to changes in the value of the portfolio (outstanding debt). And, while this is an apparently simple concept, there is a relatively broad discussion involving the methodology used to compute market risk due to differences on the relevant outstanding debt measure, which is the basic element for a market risk measurement. Some frequent questions (to be considered by DMOs) are (a) should the debt value be assessed in terms of mark-to-market, the way banks deal with financial assets, for example, or mark-to-curve, i.e., based on the yield at which each security was originally sold? Also, (b) should the outstanding volume be expressed in nominal or in real values?[14]

Many countries do compute market risk measures. In the category of traditional indicators, profile, duration, refixing duration and convexity are the most common, while the so-called Cost-at-Risk stems from the stochastic group of indicators. Stress tests are commonly used as complementary in market risk analysis to measure the consequences of severe shocks, most often in the interest and exchange-rates.

The concepts of duration and convexity are well established in the financial literature and there are generally no significant methodological differences between the way to compute them from an investor's or a risk manager's standpoint.[15] Duration targets are in fact used by many countries, such as Denmark and Sweden. For these reasons, they are not described at length, here.[16]

Refixing duration is a less frequently applied concept. It measures the average time it takes for the whole debt to be affected by a change in interest rates. For fixed-rate bonds, this is equivalent to duration. However, for floating-rate bonds, it represents the time span between changes in relevant interest rates (in the Libor, for example). Since the outstanding debt in most countries usually consists of a mix of nominal and indexed instruments (most often, floating-rate, inflation-linked, or exchange-rate linked), the use of this indicator has become increasingly common.

$$Duration_{refixing} = \frac{1}{PV} x \sum_{i-1}^{n} PV_i x T_i \qquad (1)$$

[12] There are other types of risks not covered here, such as credit risk and operational risk, which are discussed at the end of the section.

[13] Although the text describes it as *market risk*, a more precise expression would be *value* at risk, since the outstanding debt or debt value in Brazil is not evaluated in terms of mark-to-market value, but in terms of the present value of the flows and uses the issuance rate of each security for discount purposes.

[14] These and other discussions about the outstanding debt are explored in Baghdassarian (2003) and Bonomo et al. (2002).

[15] In many cases, investors use Mark-to-Market values, while debt managers use Mark-to-Curve.

[16] There is a debate about the use of duration as a target. Care must be taken in following these targets as it may entail odd policy conclusions from a debtor point of view - such as an increase in interest rates that causes a reduction in duration. To follow the target, the DM would be induced to issue longer-term debt, but this is exactly the time that interest-rates are higher!

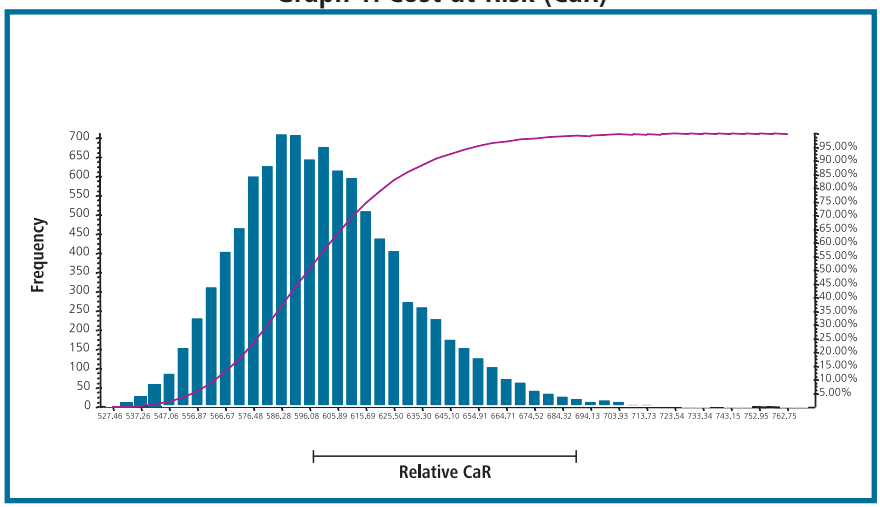
where:

PV	– Present flow value
$T_i = 0.03$ (one day)	– For floating rate securities
$0 < T_i < 1$	– For TR securities
$0 < T_i < 3/6$	– For Libor 3/6 months
$T_i = t_i$	– For others

The Cost-at-Risk-CaR[17] represents the maximum expected value the outstanding debt can reach over a given period, considering a given level of significance. While the market-risk indicators refer to the sensitivity of the debt to sudden changes in market variables - especially in interest rates - the CaR provides a measure of uncertainty about the expected value of the outstanding debt in the future (say, over one, five and 10 years). This indicator also has the advantage of incorporating the effects of a broad range of risk factors that can affect the outstanding debt such as changes in interest rates, inflation, exchange rates and Gross Domestic Product (GDP) (when appropriate), as well as the possible correlation among them.

Both the absolute and relative CaR can be calculated. Absolute CaR is the difference between the future outstanding debt, in view of a given level of significance and its initial value; relative CaR measures the difference between this same maximum value of outstanding debt at a given significance level and the average distribution of future outstanding debt (see Graph 1).

Graph 1. Cost-at-Risk (CaR)



The use of CaR is also related to the role risk managers play in debt sustainability assessments:[18] It is an instrument that aggregates uncertainty as well as hypotheses on refinancing the debt.

Moreover, despite their similarities, there are relevant differences between CaR and the well-known VaR: e.g. the CaR is an adaptation of VaR that takes into account the issuer's specific needs, which involve the value

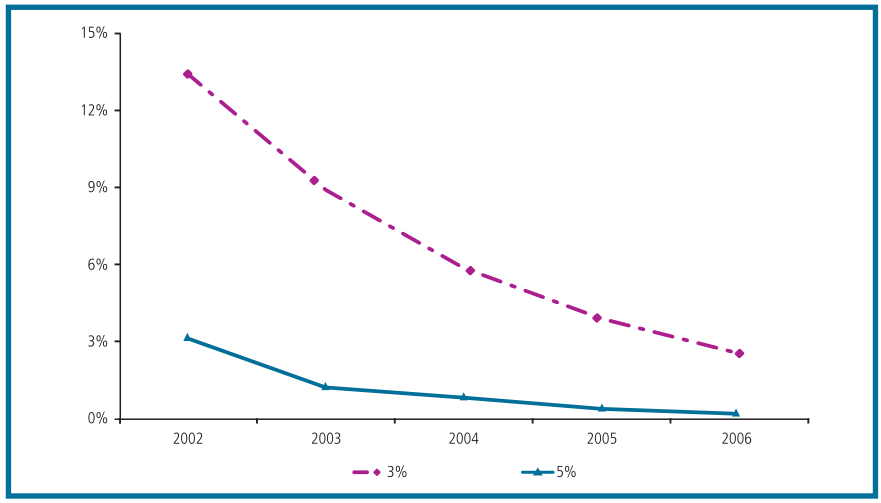
[17] Baghdassarian (2003) presents the methodologies for *CaR*, *CFaR* and *BaR*.
[18] This discussion is explored in Section 5.

of its outstanding debt (often based on mark-to-curve as opposed to mark-to-market in VaR) over a much longer time than the usual for VaR (e.g. one day). These subtle differences, including the importance of considering the refinancing strategy, translate into significant challenges when modeling this tool, especially with regard to pricing the different instruments to be issued in the future (strategy) and their relative risk premia.[19]

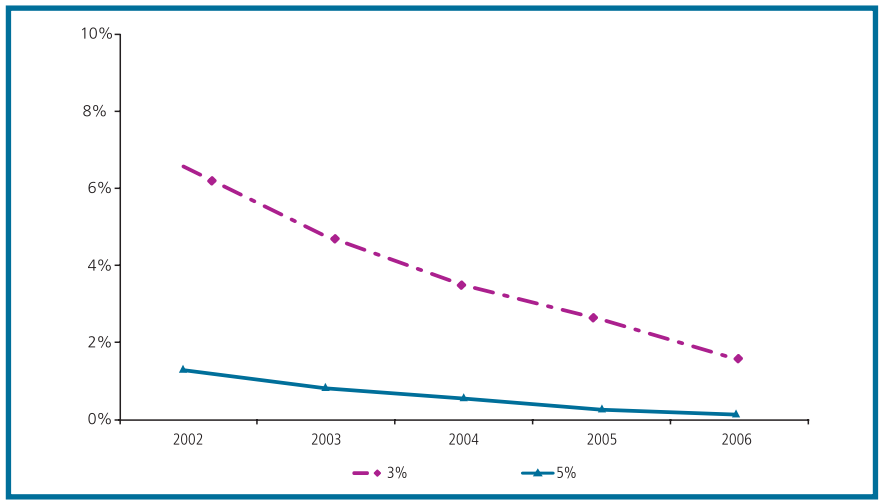
Finally, as a complement to the measures above, risk managers generally conduct stress tests, in several ways. A common approach is to apply shocks to key variables, such as interest and exchange rates, in terms of standard deviations, based on the distribution of their historical values over a period of time. Measuring the sensitivity of these shocks is now common practice in Brazil, either to determine how they behaved in the past or measure the future consequences of the debt strategy being implemented/analyzed. Rating agencies and financial analysts[20] have also used the stress tests. Graph 2 provides an example of a stress test performed for the Brazilian debt and included in the 2006 Annual Borrowing Plan.[21]

Graph 2. Probability of 3% and 5% increases in relation to GDP in outstanding debt as a result of shocks in interest and exchange rates

FPD



DFPD



3.2 Refinancing risk

Public debt refinancing risk is defined as the risk of sudden changes in the debt payment structure upon its refinancing. In extreme cases, governments would be unable to roll over part or all debt falling due at a given time.

As with market-risk, refinancing risk indicators can also be divided into traditional ones and probabilistic measures (at-Risk). The National Treasury uses three traditional indicators to assess this type of risk: average maturity, debt maturity structure (especially the debt percentage maturing in the short term) and the Cash-Flow-at-Risk (CFaR). As will be shown below, each indicator measures the refinancing risk from a different perspective and their joint use is recommended.

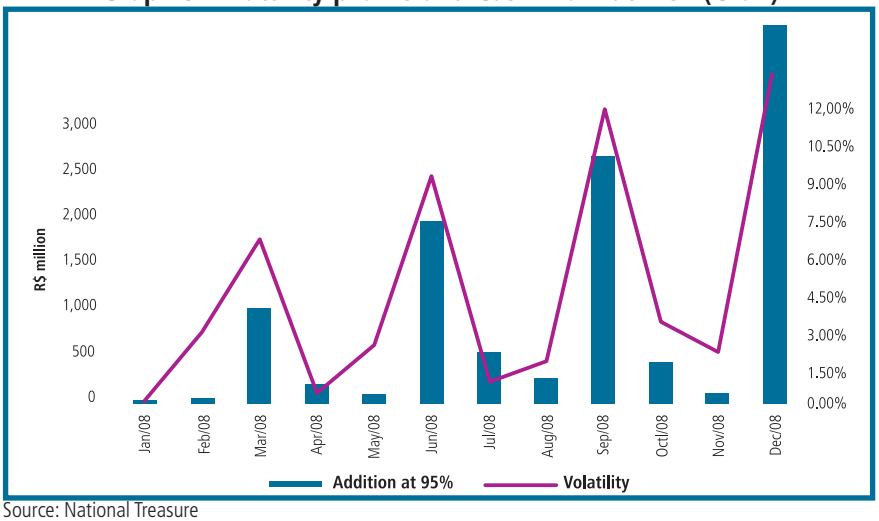
Average maturity measures an equilibrium point of all debt maturities. Since it is an average, it is important to follow the indicator over time, since this might prevent a systematic debt shortening, an undesirable outcome for debt management policies.

The second indicator is the percentage of the debt maturing in 12 months, a complementary measure to the average maturity, and focuses on the short term. While the latter measures systematic reductions in debt flow payments, the former is more focused on cash requirements to pay the debt in that time frame. In other words, it is related to the liquidity risk. A natural generalization is full maturity following, for example, the percentage maturing in one, two or three years, up to five,10, etc.

The last indicator is the Cash-Flow-at-Risk (CFaR), which measures the uncertainty associated with future cash-flows. CFaR determines, with some level of significance, the maximum expected cash-flow (payments) at specific future dates or periods. (A fixed-rate bond denominated in local currency does not entail this type of risk, since there is no risk factor associated with its cash-flow)[22]. However, it is hard to determine ex-ante what the cash-flow of a foreign exchange security expressed in local currency will be. The same rationale applies to other types of instruments, such as floating-rate or inflation-linked securities.

The graphs below show how the National Treasury uses this indicator by illustrating the trade-offs across different instruments in terms of cash-flow.[23]

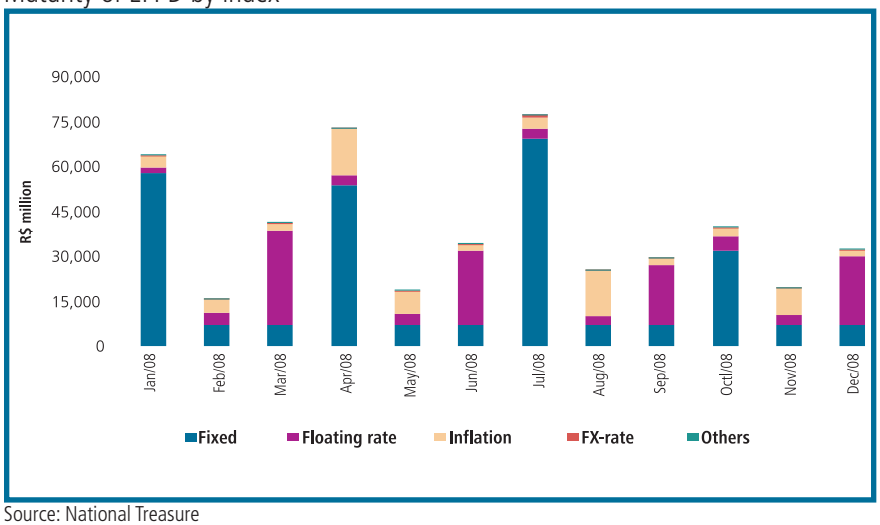
Graph 3. Maturity profile and Cash-Flow-at-Risk (CFaR)



Source: National Treasure

[19] For further discussions on these complexities, see Bonomo, Costa, Rocque and Silva (2003) and Cabral (2004).
[20] Rating agencies, such as Fitch, Moody's and Standard & Poor's, have used this type of analysis.
[21] For a more detailed discussion see the Annual Borrowing Plan (2006).

Maturity of EFPD by index



Source: National Treasure

As noted, the indicators discussed in this section are more complements than substitutes to measuring refinancing risk. While the average maturity and percentage of the debt maturing in the short term are more focused on the time distribution of debt payments, the CFaR focuses on the volume - and its sensitivity to shocks - of payments that the debt manager will have to honor on specific future dates.

3.3 Budget risk

The concept of Budget-at-Risk (BaR) as used in Brazil relates to the risk that the debt service within a fiscal year will exceed the amount originally approved by Congress.

Since debt service in the budget is measured in monetary terms (cash flow), the BaR is very similar to the CFaR in that both measure the uncertainty of cash-flows. The major difference is that while the BaR focuses on the fixed one-year period (fiscal year), the CfaR is more flexible and can be computed for any specific date or period. Moreover, the BaR has an exogenous reference value which is approved by Congress and thus involves the probability that that value might be exceeded. Conversely, the CFaR provides, for a given level of significance (risk), the maximum expected value for the cash-flow on a given date or period.

The close monitoring of budget risk in Brazil, and in other countries in general, is an important task of the PD risk manager. By noting the probability of exceeding the budget, debt managers can anticipate or avoid the potentially hard and time-consuming mission of submitting to Congress a proposal for a supplementary budget to pay the debt. Although one would expect that the request would not be denied, exposing the sovereign debt to such a process could be a sensitive issue that calls for appropriate monitoring.

3.4 Demand-side risk

Demand-side risk is defined as the risk of sudden changes in the demand for government bonds. Although this may occur due to several factors, the most common are interest rates. Investors, due to stricter prudential

[22] There is an interesting discussion, but one that will not be explored here, regarding the cash-flow risk- free bond. Most countries consider the fixed bond as such. However, others more concerned with real variables could argue that inflation-linked securities would be the ones that should be considered as risk-free.

[23] For more details on the CFaR computing methodology, see the *Annual Debt Report* (2004).

regulations or domestic investment policies, have increasingly resorted to measures of interest-rate exposure to monitor their loss risks. In fixed-income markets, two of the most common are the Present Value of a Basis Point (PVBP) and the Value-at-Risk (VaR).

The PVBP[24] expresses how much the portfolio value would change given a one basis point (0.01%) variation in interest rates. It is similar to the concept of duration, with the advantage of also being a function of the portfolio's total volume.

$$PVBP = P(i) - P(i + 0{,}01\%) \tag{2}$$

where:

i – Return rate (yield)

$P(i)$ – Security price

The Value-at-Risk (VaR) complements the PVBP by incorporating asset price volatility. While the PVBP measures absolute sensitivity to changes in interest rates, the VaR enhances the information set by including the probability of such changes occurring.[25]

$$\sigma_p^2 = w' \sum w \tag{3}$$

where:

σ_p^2 – Return rate (yield)

w – Vector of weights for different securities in the portfolio

$\sum$ – Variance/covariance matrix of R returns on securities in the portfolio

$$VaR = P_0 . \sigma_p . 1{,}95 \tag{4}$$

where:

P_0 – Initial price

1.95 – Equivalent to a 95% confidence level

A significant share of the demand for government securities, especially in Brazil, is subject to limits concerning exposure to interest-rate risks. This constrains debt managers, who then need to transfer interest-

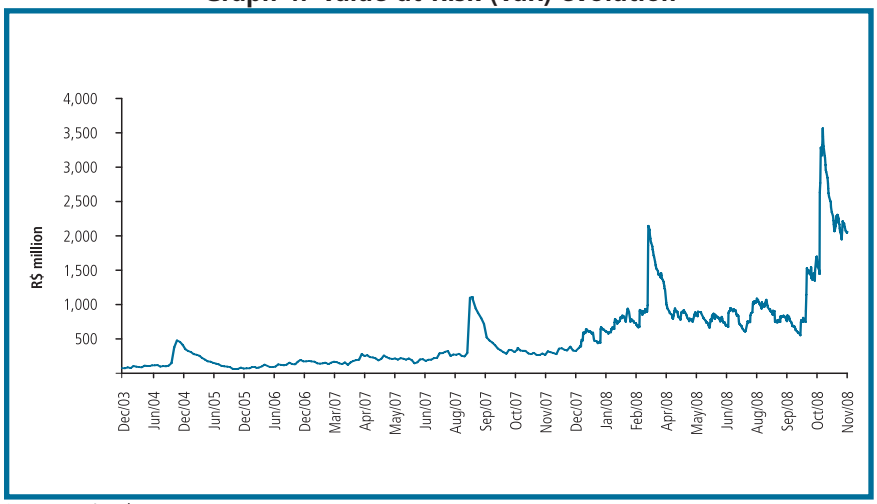
[24] Also known as Dollar Value of 1 Basis Point – DV01.

[25] It is possible in an economy experiencing a stabilization process, for example, to have an increase in the PVBP, due either to the increased volume or duration of fixed securities (or both) and, at the same time, a decrease in VaR (as a result of a sharper decline in volatility).

rate risk to the market. Worse, in times of volatility, the VaR can reach high levels and lead to investors' stop-loss operations.

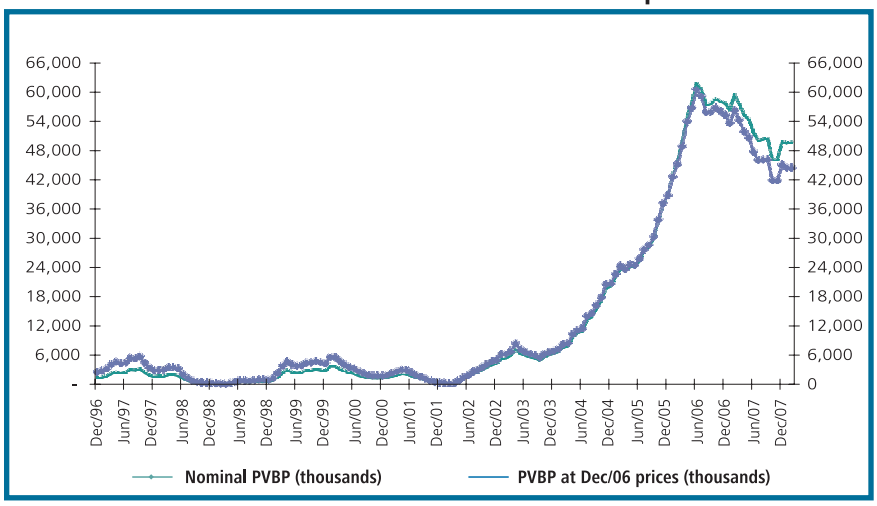
The effect of these changes on demand can be disastrous to a debt strategy. Thus, the risk manager must monitor this risk - not only the risk of the current portfolio, but also the implicit pace of risk transfer that a given debt strategy entails for the future. This follow-up is particularly relevant in countries that are lengthening the maturity of their bonds and increasing the share of fixed-rate instruments. Brazil fits this profile and the National Treasury monitors both indicators, as shown in Graphs 4 and 5.

Graph 4. Value-at-Risk (VaR) evolution



Source: National Treasure

Graph 5. PVBP evolution
PVBP - Nominal and at December 2006 prices



Source: National Treasure

4 The optimal long-term profile (benchmark)

This section highlights one of the PD risk manager's fundamental tasks - i.e. establishing long-term targets to guide the short and medium-term debt strategies.

As a first principle of PDM and according to Ricardian Equivalence assumptions, as defined in Barro (1974), such management would be irrelevant.[26] Although the theoretical investigation of the Ricardian Equivalence is undoubtedly useful, there is solid evidence and broad consensus that the strong assumptions behind it do not hold, in practice. These assumptions are: (a) agents have infinite planning horizons (complete information); (b) markets are complete; (c) taxes are non-distorting.

The reasonable relaxation of these assumptions makes risk management relevant. Tax smoothing, market completion, public policy signaling, among others, are some countries' public debt objectives.[27]

However, once PD management is recognized as a relevant subject, identifying the desirable debt structure in the long term becomes a key question that needs to be answered so as to guide short and medium-term debt operations.

In order to better understand the role of this long-term reference for debt managers, one can draw an analogy to the situation of an adventurer in a forest carrying a compass to know what direction to follow; this may be the only way to be certain the next steps will lead to the desired location. For debt managers, the long-term profile (benchmark) represents the direction they want to follow and the tool (as with the compass) they use to develop and monitor their strategy.

Literature on Debt Management (DM) provides some guidelines on the general characteristics of the debt portfolio. However, in order to provide more specific, quantitative guidelines, several specialists have raised issues that have gained increased attention in DMOs everywhere. Indeed, the search for appropriate methodologies to develop a benchmark has become an important topic on the research agenda of debt managers in several countries, including Brazil, Canada, Denmark, Portugal and Sweden.

The contribution of institutions such as the World Bank and the IMF to this debate has been important. In their joint publication "Guidelines for Public Debt Management" (2001)," they define the benchmark as a powerful tool to represent the debt structure a government wants to achieve, based on its risk and expected cost preferences.

Usually, the benchmark is represented by a set of relevant debt indicators, such as profile, duration, debt structure, etc. The idea is that it should be a long-term goal, representing social preferences. In mathematical terms, it can be seen as an optimization problem, where a government wants to maximize its utility function in view of some constraints.[28]

Some countries may decide on their optimal debt structure (benchmark) based on very simple analysis and ad-hoc assumptions. Debt managers could conclude, for example, based on their beliefs about the benefits of diversification, that the ideal debt structure would be a mix of nominal and inflation-linked securities. The rationale would be that a portfolio with such assets can generate a debt-servicing structure more resistant to recurring demand and supply shocks.

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[26] When discussing long- term goals and debt strategies, it is important to point out that they make sense from a theoretical standpoint.

[27] The literature about the relevance of debt management is not restricted to the flexibility of Ricardian Equivalence assumptions. Here, it suffices to justify its relevance. Lopes (2003) and Bonomo et. al. (2003) offer brief summaries of the literature.

[28] As most countries define their main DM objective to be minimizing long-term costs subject to prudent risk levels (see IMF and World Bank, 2001), identifying the objective function and constraints is straightforward.

Others could follow the (desired) path of calculating relevant risk indicators for some different (hypothetical) debt profiles and investigating the trade-offs they produce. This would be an efficient way to assess the pros and cons of different portfolios.

Finally, an even more analytical framework could be used that builds a model from which the optimal portfolio would emerge endogenously. However, it is difficult to imagine a supra-rational model capable of considering all the objectives and constraints of public debt management and, by itself, giving the answer to this optimum profile question.

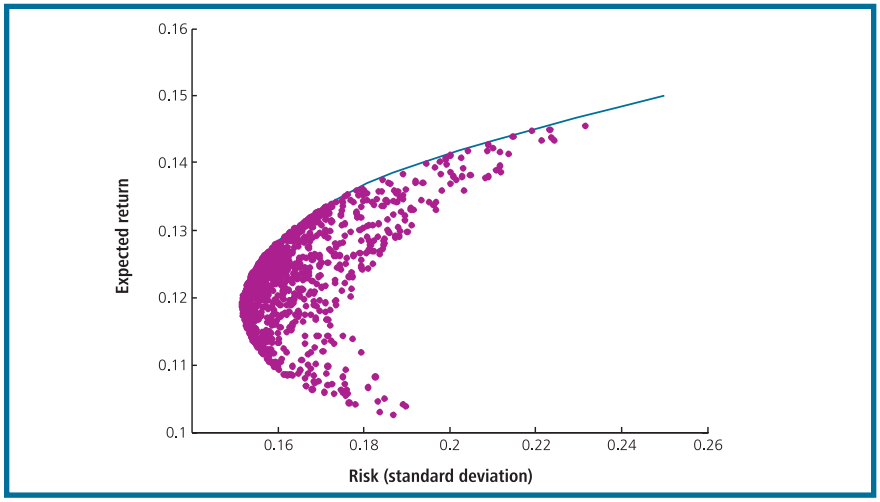
As mentioned before, Canada, Denmark, Portugal, Sweden and Brazil are countries that use more analytical frameworks for benchmarking. Cabral (2004) describes briefly how they address this subject.[29]

Portugal was one of the first countries to develop such a methodology. Granger (1999) and Matos (2001) illustrate how their model works: Basically, it is a cash-flow simulation model, having as inputs stochastic simulations of interest rates, different financing strategies and deterministic scenarios for other economic variables, resulting in some "efficient" portfolios.

The Swedish model is also based on cash flows, with auto-regressive processes for inflation, GDP, long-term interest rates and exchange rates, as well as a Taylor rule for short-term interest rates. With some assumptions about borrowing requirements, a number of portfolios are evaluated, with nominal and real cost measures. Bergstrom and Holmlung (2000) describe the model in detail.

The Brazilian approach, as described in Cabral and Lopes (2004) is basically an efficient frontier analysis, where costs and risks are measured in terms of debt/GDP ratios. Steady-state compositions are simulated through a number of different periods based on stochastic scenarios and assumptions about the pricing of assets. With some portfolios evaluated in terms of cost and risk, as well as the correlation matrix, it is possible to draw an efficient frontier.[30] Then, having observed it, debt managers would choose, based on their attitude towards risk, the point (portfolio) to represent the benchmark.

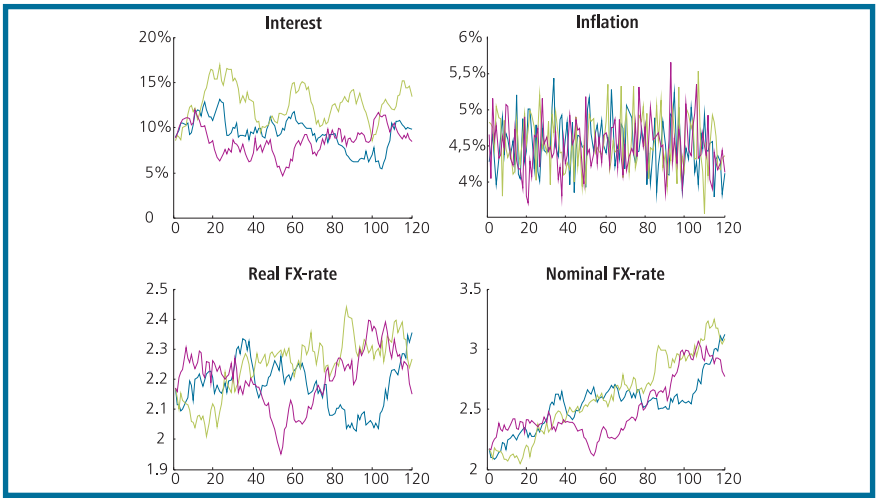
Graph 6. Efficient frontier



[29] Other useful references for international experience are Guidelines for Public Debt Management (2001) and Nars (1997).
[30] It is important to note that this is an efficient frontier from the issuer point of view, quite different from the one designed by an investor.

In the Brazilian model, the stochastic scenarios can be generated by two different and somewhat complementary ways. In the first, some financial stochastic models are used, namely a Cox, Ingersoll and Ross (CIR) model for domestic and external interest rates, a Brownian process for inflation and a Chan, Karolyi, Longstaff and Sanders (CKLS) model for real exchange rates. Residuals are correlated using a Cholesky decomposition. The second methodology uses a macro-structural model to describe the evolution of the main economic variables (an IS and Phillips curve, a Taylor rule and equations for exchange rates and risk Premium behavior).[31]

Graph 7. Stochastic simulations



With the above models, it is possible to run Monte Carlo simulations and obtain a distribution of debt/GDP ratios over a specific time horizon for each portfolio (debt profile) considered. The mean and standard deviation are taken from the distributions and used as cost and risk measures and correlations are calculated based on simulation of portfolios with single and mixed assets, which leads to the design of an efficient frontier.

Other issues deserve attention in the process of conducting these exercises. First, a benchmark model should ideally be independent from current market conditions. Although this may seem odd at first, it should be remembered that it is precisely the separation of long-term objectives from circumstantial and tactical constraints that makes the use of the benchmark unique.

Further, benchmark modeling should incorporate, to the extent possible, constraints on the demand side, i.e., if optimum composition is based solely on supply side objectives, and the potential demand for that portfolio is not examined, this is a myopic decision that has a reduced chance of succeeding.

With respect to more general aspects, benchmark formalization is also fundamental. In fact, if a benchmark is established but not formalized,[32] it may be useless.[33] Besides, a formalized benchmark affords transparency for risk managers as well as a degree of continuity across different governments. Establishing a well-defined governance process is yet another crucial step, although this matter is outside the scope of this chapter.

[31] Annex III provides a brief description of the model currently used by the National Treasury. Cabral (2004), Cabral and Lopes (2005) and Costa, Silva and Bagdassarian (2003) contain examples of the model implementation.

[32] Formalization is approval by the minister or Congress, which could delegate to the DMO the power and duty to pursue those objectives.

[33] Obviously, the same argument applies to the medium and long-term strategies.

Another critical issue involves the design of a transition (medium and long-term) strategy to the optimal profile (benchmark). This is not an easy task, particularly in less developed countries with debt portfolios that are far from optimal. This transition would involve a complex problem in the attempt to find the strategy that optimizes the path between current conditions and long-term goals. Also, in these countries, it might just happen that the existence of various market constraints would eliminate many potential strategies that might make the optimization process easier.

As noted earlier, it would be somewhat naïve to believe that reality could be replicated by very sophisticated analytical models capable of incorporating all the objectives and constraints of PD management. However, the use of analytical models can be very useful in at least two aspects. First, they avoid the risk of relying exclusively on intuition (science has long demonstrated how intuition can be misleading).Second, the process of developing and discussing models can be an efficient capacity-building process since relevant concepts and trade-offs are part of the debate. Instead of being considered as conflicting, the analytical modeling and subjective expertise of debt managers should be seen as complementary.

Besides being an important strategic planning tool, the benchmark can also provide risk managers with a way to measure performance, comparing the current portfolio with the "optimal" (desirable) one. If they differ greatly, intermediate benchmark portfolios can be chosen for comparison purposes. It is important to note that day-to-day financing strategies-- typically designed by the front-office for short-tem tactical actions—should be pursued in a climate with some degree of flexibility, since market conditions may well differ from the scenarios used to devise the medium-term strategy

4.1 Integrated Asset and Liability Management (ALM)

Generally, benchmarks are developed within an Assets and Liabilities Management (ALM) framework. It is perfectly sensible for a government, when assessing its risks, to manage its liabilities in a way that also considers its financial assets. These may vary significantly across countries, but they generally have something in common: The ability or the right to collect taxes. Thus, the characteristics of future primary surpluses become a key-factor in determining optimal debt structure, i.e., the benchmark.

In fact, there is no consensus in the literature on how to conduct an ALM in PD risk management, which is linked to the significant differences in the balances of each government. However, the argument - that it makes no sense to manage liabilities without taking into account the assets of the entity - is sound. Thus, each risk analysis discussed above as well as the development of the benchmark could be based on a portfolio of assets and liabilities. There are some important debates, which go beyond the scope of this chapter, about which sovereign assets should be included in such an analysis. Further, the scope of the analysis is also controversial. As a result, issues such as whether or not to include the monetary and natural reserve bases, for example, and the most relevant level - central government, general government or public among others, remain open for discussion. There seems to be no single answer to apply to all countries, with their widely diverse conditions. More likely, each country will need to customize the ALM approach.

For some years, the National Treasury's risk and public debt management has applied the ALM analysis. The government's main financial assets are taken into account in the development, follow-up and projection of risk indicators based on government outstanding debts and financial flows. Similarly, the benchmark analytical model now used considers the government's main financial assets and their characteristics in the simulation of different portfolios and their implications in terms of cost and risk

4.2 The risk manager and the strategy planning design

As noted in the previous chapter, another important responsibility of the risk manager is to participate in strategic debt planning, which involves designing, monitoring and analyzing the trade-offs among different refinancing strategies that can be implemented by the DMO (in which the front- and middle-offices are also both involved in their design).

One of these responsibilities is to identify possible risks in implementing the debt strategy and define desirable targets for indicators such as outstanding debt, average maturity and others. Usually, these targets are set for the end of the year[34] (short-term planning) and for future years (long-term planning). Another responsibility is to monitor the strategy's implementation in order to validate it and, where necessary, propose corrective measures. Occasionally, inconsistencies arise between planning and implementing strategies, mainly due to significant but unforeseeable variations in market conditions; modifications in scenarios usually affect costs and risks of different potential strategies, and may render the original strategy sub-optimal.

Earlier in this chapter, ways were presented to determine long-term public debt objectives (benchmarks). What follows here is a summary of ways to achieve them,[35] addressing the transitional debt strategy design and its monitoring.

As noted earlier, such a strategy should consider not only long-term objectives, but also short-term constraints. Silva (2005) divides the process of design, implementation and monitoring into eight stages.

1. Definition of long-term objectives and guidelines;
2. Development of macroeconomic scenarios;
3. Preliminary discussions about scenarios and constraints;
4. Transitional strategy design and preliminary risk assessment;
5. Definition of targets: expected results;
6. Analysis of opportunities and challenges in future years;
7. Tactical debt planning and execution (short term);
8. Monitoring/implementation of the transitional strategy (Annual Borrowing Plan - ABP).

Although risk managers participate in all eight stages, their role is especially important in three: (a) defining the long-term objectives (benchmark), (b) designing the transitional strategy (including the definition of targets for debt indicators), and (c) monitoring the strategy implementation. All these activities were discussed in the previous chapter, but will be detailed further, here

5 Peripheral functions of a public debt risk manager

This section discusses the important role that PD risk managers play in providing more accurate debt dynamics and sustainability exercises. More specifically, it illustrates through a simple example how their risk

[34] The National Treasury publishes its Annual Borrowing Plan with the current debt composition and desirable targets for the end of the year.

[35] Here, the content of this section is limited to the discussion on strategic planning explored in the previous chapter. For more details see Silva (2005) and Baghdassarian (2003).

analysis and privileged access to information on the debt refinancing strategy can add value to commonly developed debt sustainability analysis.

Debt sustainability has long been a topic of great relevance to policy makers, investors and scholars. Although the main variables that impact the debt trajectory are well known, conventional debt sustainability analyses, typically based on deterministic forecasts, have been limited in scope: Mainly, they have failed to incorporate uncertainty into the model, leading to expected debt indicators that lack a measure of potential dispersion (error).

In recent years, efforts have been made to develop more sophisticated modeling techniques.[36] Partly, this is due to the concern about risks associated with macroeconomic shocks and to the growing use of sustainability analysis by economic policy makers to define fiscal targets to control the level of public indebtedness.

PD risk managers can add value to this debate by improving the models for debt sustainability exercises: The means by which they measure other types of risks (such as the *cost-at-risk*) can, with some adaptations, be used to generate stochastic debt dynamics' trajectories. As a result, average expected debt ratios originated from deterministic scenarios can be complemented with a complete probability distribution of such ratios.

Adding uncertainty to debt sustainability analyses may enhance the conclusions drawn from this type of exercise, but may not be a sufficient condition to ensure more precise forecasts. Such assessments usually cover several time frames (generally 5-10 years); during these periods, debt profiles and structures can change substantially as can their sensitivity to different scenarios and types of macroeconomic shocks.

Thus, it is relevant to use assumptions on the refinancing strategy when conducting such analyses. In this regard, risk managers are in a privileged position: Since they actively participate in designing and monitoring the debt strategy, they can perform sustainability tests, including those that consider refinancing strategies. Indeed, it is even more important to include them in countries which have unstable debt structures (that change significantly) or where a large share of the debt will mature in the short term.

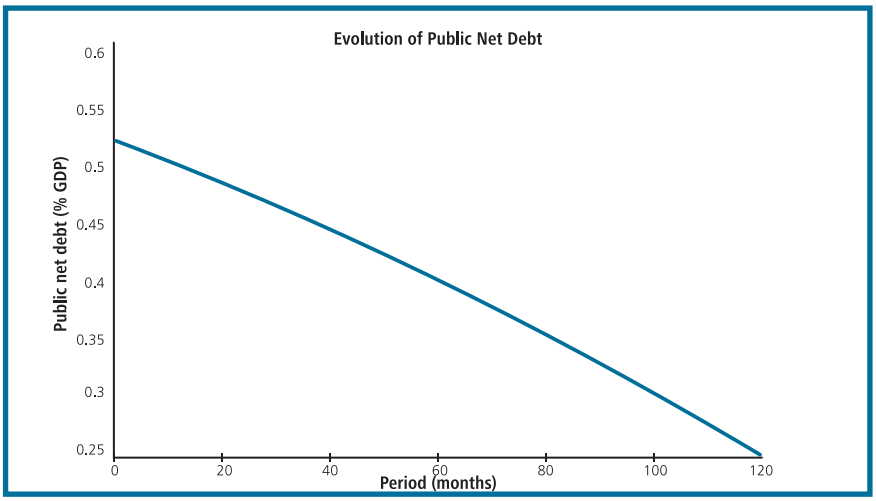
To illustrate the advantages of including uncertainty and the refinancing strategy in debt sustainability analysis, a simple exercise using hypothetical data is applied: Its analytical simplicity provides a way to abstract from the implicit methodological complexities and focus on the potential benefits for policy formulation that the aggregation of these two factors can produce.

5.1 How to improve debt sustainability analyses - adding uncertainty and the refinancing strategy

The analysis applies basic assumptions for the main determinants of debt dynamics for a 10-year period: nominal interest rates, inflation, GDP growth and primary surplus. [37] Starting from a debt/GDP ratio of 51.70% made up entirely of floating-rate instruments, the trajectory of this debt/GDP ratio over the 10 next years can be determined. This deterministic scenario allows for the simplest, though most usual, debt sustainability test. Graph 8 shows the expected trajectory of the debt/GDP ratio.

[36] See Barnhill (2003), Xu and Guezzi (2002), Costa, Silva and Baghdassarian (2004).
[37] See Annex 2 for details.

Graph 8. Expected trajectory of the debt/GDP ratio



This analysis is then supplemented by the generation of stochastic trajectories for all variables, generating a distribution of debt/GDP ratios across the different horizons foreseen in the tests.

Graph 9. Distribution of debt/GDP ratios across different horizons

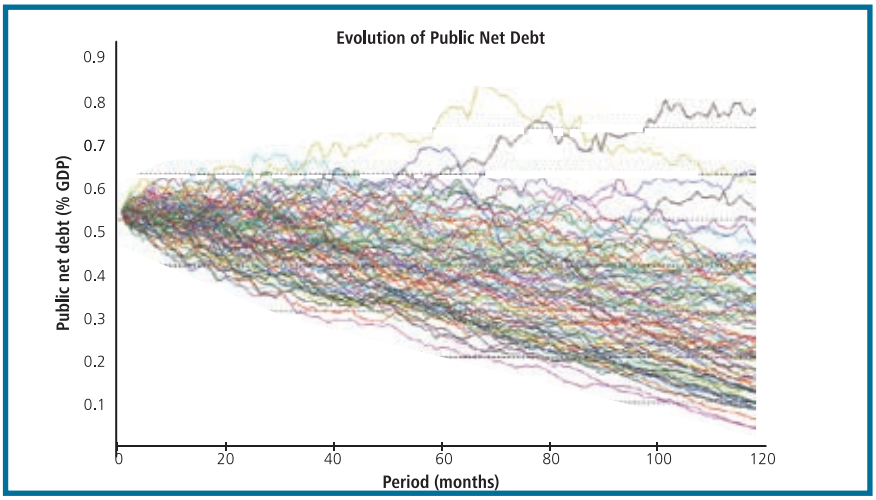


Table 2. Deterministic vs. stochastic simulation results (100% floating rate debt)

Period	Average DL (determ.)	Average DL (stoch.)	Volat	Relat. Volat
0	51.70%	51.70%	0.00%	0.00%
1	49.94%	49.93%	4.25%	8.50%
2	48.19%	48.09%	6.10%	12.69%
3	46.04%	46.00%	7.68%	16.69%
4	43.87%	43.78%	8.86%	20.25%

Period	Average DL* (determ.)	Average DL* (stoch.)	Volat	Relat. Volat
5	41.53%	41.46%	9.90%	23.89%
6	39.17%	39.16%	11.03%	28.18%
7	36.91%	36.85%	12.21%	33.12%
8	34.35%	34.26%	13.24%	38.65%
9	31.68%	31.65%	14.23%	44.97%
10	28.68%	28.39%	14.74%	51.91%

* DL = Debt/GDP.

It should be noted that the models can be calibrated to reflect the values expected from a basic scenario. Both analyses lead to similar expected debt ratios (average), as shown in Table 1, but the information available to economic policy makers becomes broader with the incorporation of stochastic scenarios. For example, those who set fiscal targets can better understand the potential margin of error these targets entail in terms of debt dynamics. In other words, by setting a primary surplus of 4.25% of GDP based solely on the deterministic scenario, they would expect the debt/GDP ratio to fall to 41.53% in 5 years and to 28.68% in 10 years. But, when applied with the stochastic models, the risk these ratios could deviate from their expected values can be assessed. This exercise informs policy makers, for instance, that there is a 95% probability that the debt/GDP ratio will not exceed 57.86% in 10 years.

As mentioned before, another important dimension in sustainability exercises is including "assumptions" about the debt refinancing strategy; and, having easy access to the actual debt strategy the managers intend to implement is an important comparative advantage. The graphs below illustrate the results of debt sustainability tests using the same scenarios and stochastic simulations from the previous exercises, but including the refinancing strategy focused on increasing the share of long-term fixed-rate debt.

Table 3. Deterministic vs. stochastic simulation results (with the refinancing strategy)

Period	Average DL* (determ.)	Average DL* (stoch.)	Volat	Relat. Volat
0	51.70%	51.70%	0.00%	0.00%
1	50.06%	50.11%	1.49%	2.98%
2	48.18%	48.22%	2.13%	4.42%
3	46.39%	46.43%	2.69%	5.80%
4	44.53%	44.58%	3.14%	7.03%
5	42.66%	42.70%	3.52%	8.23%
6	40.51%	40.55%	3.91%	9.64%
7	38.48%	38.52%	4.33%	11.23%
8	36.36%	36.40%	4.69%	12.89%
9	34.34%	34.37%	5.06%	14.73%
10	32.41%	32.44%	5.51%	16.99%

* DL = Debt/GDP.

Graph 10. Expected trajectory of the debt/GDP ratio including a refinancing strategy towards long-term fixed-rate debt

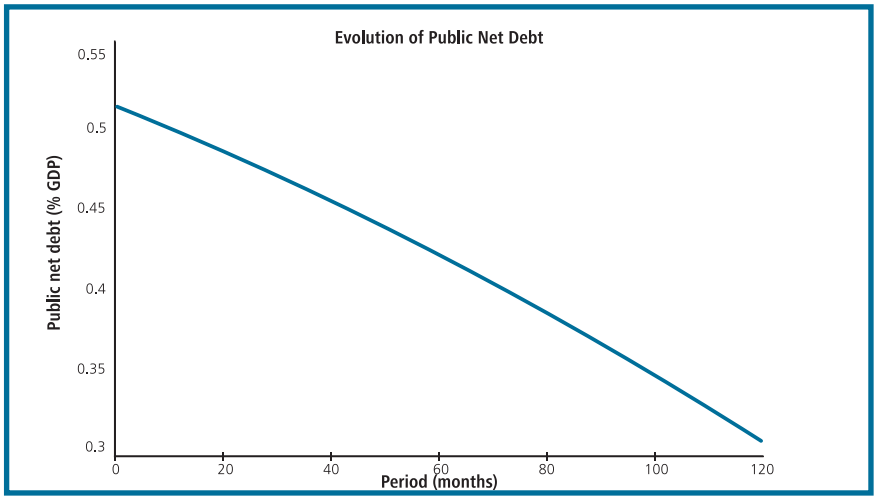


Table 4. Refinancing vs. no-refinancing strategy simulation (deterministic approach)

Period	Without strategy	With strategy	Difference
0	51.70%	51.70%	0.00%
1	49,94%	50.06%	-0.11%
2	48.19%	48.18%	0.02%
3	46.04%	46.39%	-0.35%
4	43.87%	44.53%	-0.66%
5	41.53%	42.66%	-1.13%
6	39.17%	40.51%	-1.34%
7	36.91%	38.48%	-1.58%
8	34.35%	36.36%	-2.01%
9	31.68%	34.34%	-2.66%
10	28.68%	32.41%	-3.72%

In this exercise, floating-rate instruments (with monthly changes in interest rates) comprise 100% of the original debt. The refinancing strategy with 10-year fixed-rate instruments[38] yields a higher cost from the interest rate risk premium charged by debt holders in exchange for a lower debt vulnerability to interest rate movements.

The results above reflect the trade-offs in terms of the costs and risks involved in the strategy. By including the refinancing strategy in the analysis, the (average) expected debt/GDP ratio in 10 years increases from 28.68% to 32.41%. Conversely, the distribution of expected debt/GDP ratios is much less dispersed, reflecting reduced exposure to shocks (risk). The introduction of fixed-rate instruments led the relative dispersion (the ratio between one standard deviation and the mean) to fall from 51.91% to 16.99%.

Graph 11. Distribution of debt/GDP ratios across different horizons including refinancing strategy towards long-term fixed-rate debt

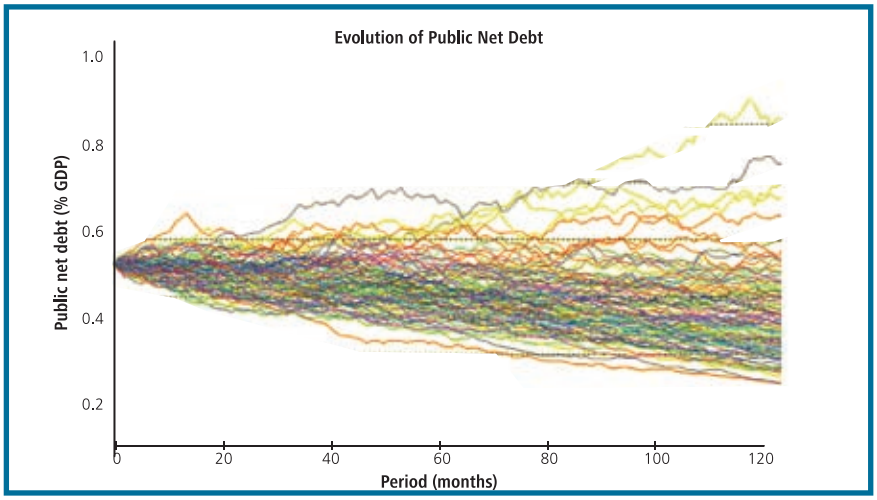


Table 5. Refinancing vs. no-refinancing strategy simulation (stochastic approach)

Period	Without strategy	With strategy	Difference
0	51.70%	51.70%	0.00%
1	49,93%	50.11%	-0.18%
2	48.09%	48.22%	-0.13%
3	46.00%	46.43%	-0.44%
4	43.78%	44.58%	-0.80%
5	41.46%	42.70%	-1.24%
6	39.16%	40.55%	-1.40%
7	36.85%	38.52%	-1.67%
8	34.26%	36.40%	-2.13%
9	31.65%	34.37%	-2.72%
10	28.39%	32.44%	-4.05%

It could be argued that the use of stochastic models to complement simpler exercises based on deterministic scenarios could lead to conclusions that are harder to understand or interpret and depend too greatly on model calibration; also, that the use of alternative deterministic scenarios could lead to a more intuitive analysis of debt sensitivity to changes in macroeconomic variables.

While the relevance of simpler types of analysis should not be minimized, this exercise sheds light on how PD risk managers can complement and enhance the information available to policy makers. Despite the

[38] According to the refinancing strategy, 1% of the floating-rate share falls due and is exchanged monthly into ten-year fixed-rate instruments. At the end of this period, 100% of the debt is in fixed instruments.

relative complexity in the design of risk management models, presenting their results in a user friendly way to decision makers is an easy task that has already become widespread, particularly within the financial sector.

6 Concluding remarks

This section described the main responsibilities and contributions of risk managers; in so doing, it offered an overview rather than covering one topic or another in detail, such as risk modeling techniques.

Obviously, the task of describing all the responsibilities of risk managers is not only ambitious but also subject to gaps and criticism. Indeed, some relevant topics, such as the risk of contingent liabilities or credit, were not covered.[39]

Despite these limitations, the chapter can serve both as a useful guide to those who seek a greater understanding of PD risk management and to illustrate how it is addressed by the National Treasury. Further, in an environment where DMOs around the world are attempting to modernize their risk management practices, the chapter can serve as a starting point, as it provides an overview of the main activities involved. Finally, it can help decision makers involved with issues related to public debt to better explore the skills and analyses PD risk managers can offer.

[39] The contingent claims approach as explored by the IMF, see Gapen & Gray (2005) and Barnhill (2003), is an interesting methodology to be explored.

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Annex 1. The Gerir system

The Gerir system is an important tool in Brazilian PD management, as it allows managers to compare different strategies and understand their trade-offs. Also, it provides sophisticated tools for debt analysis in a probabilistic environment (CaR, CFaR, BaR and VaR).

It is a very flexible system in terms of simulating strategy (issuances, buy-backs, exchanges, etc.), as well as very powerful with regard to generating management indicators (outstanding debt, average maturity of outstanding debt, average maturity of new issuances, maturity structure, duration, profile, etc.).

The system was first developed in 2001 and completed in 2003, when it became a critical part of the process to design strategy. After this, it was improved in order to be more accessible to end users and expand its functions. The figures below are meant to illustrate its flexibility and use.

Figure 1. Gerir system – opening screen

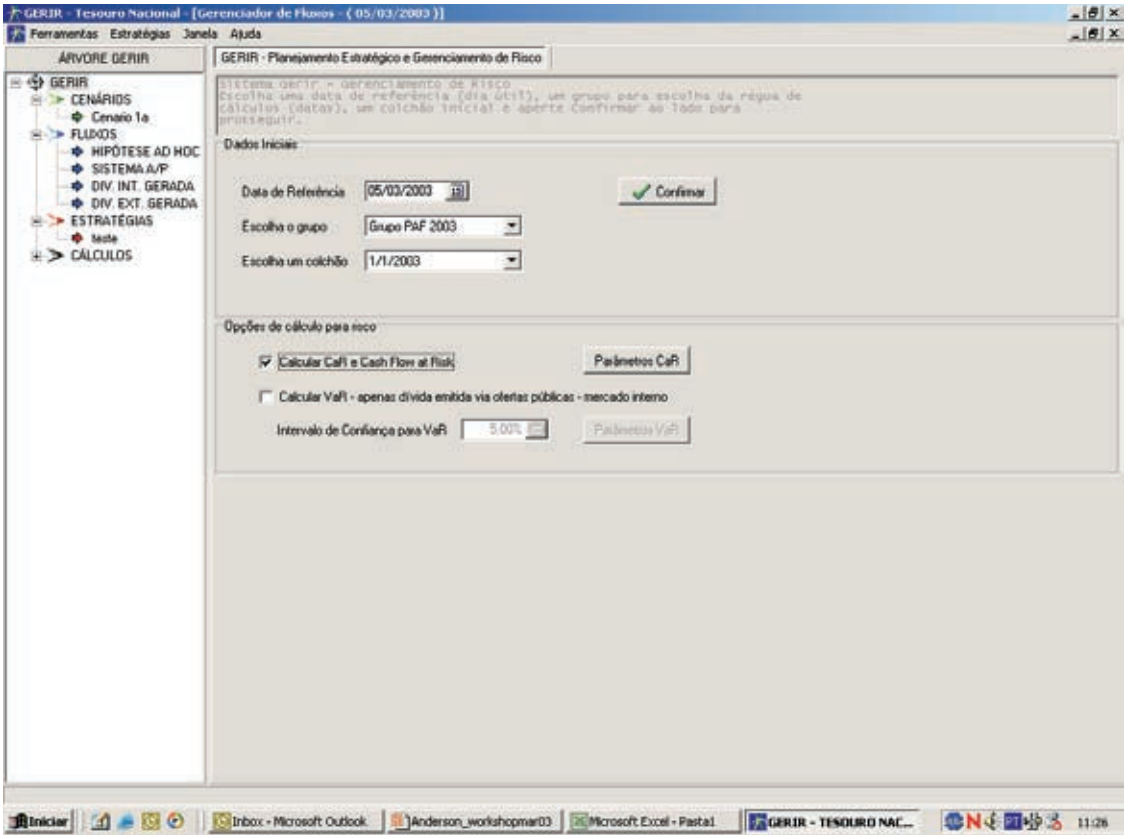


Figure 2. Gerir system – scenario input

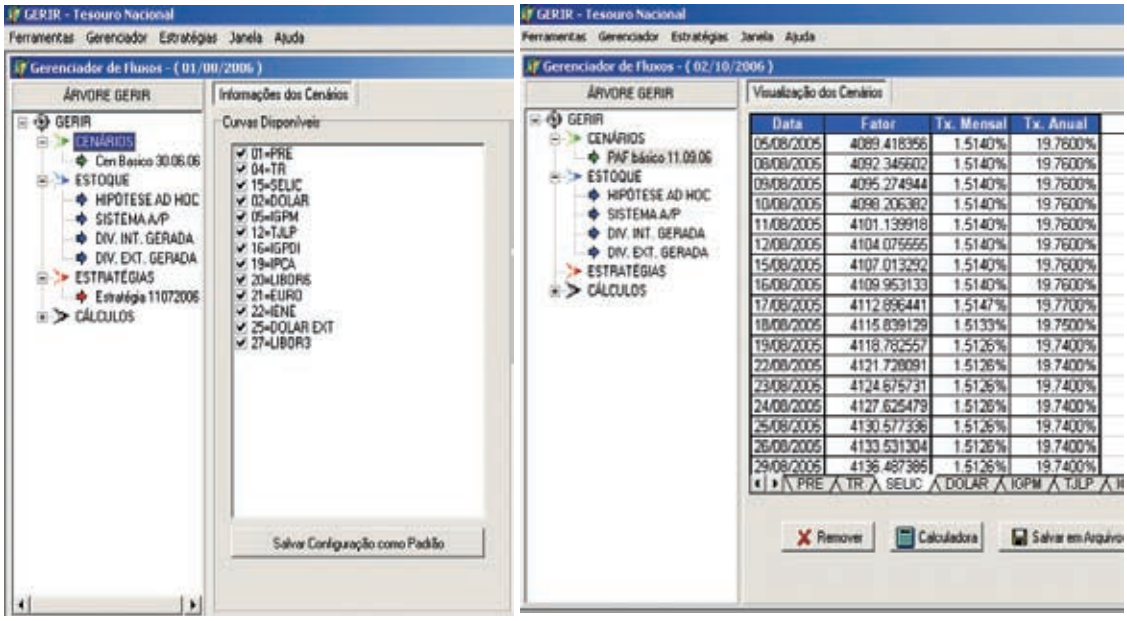


Figure 3. Gerir system – portfolio selection

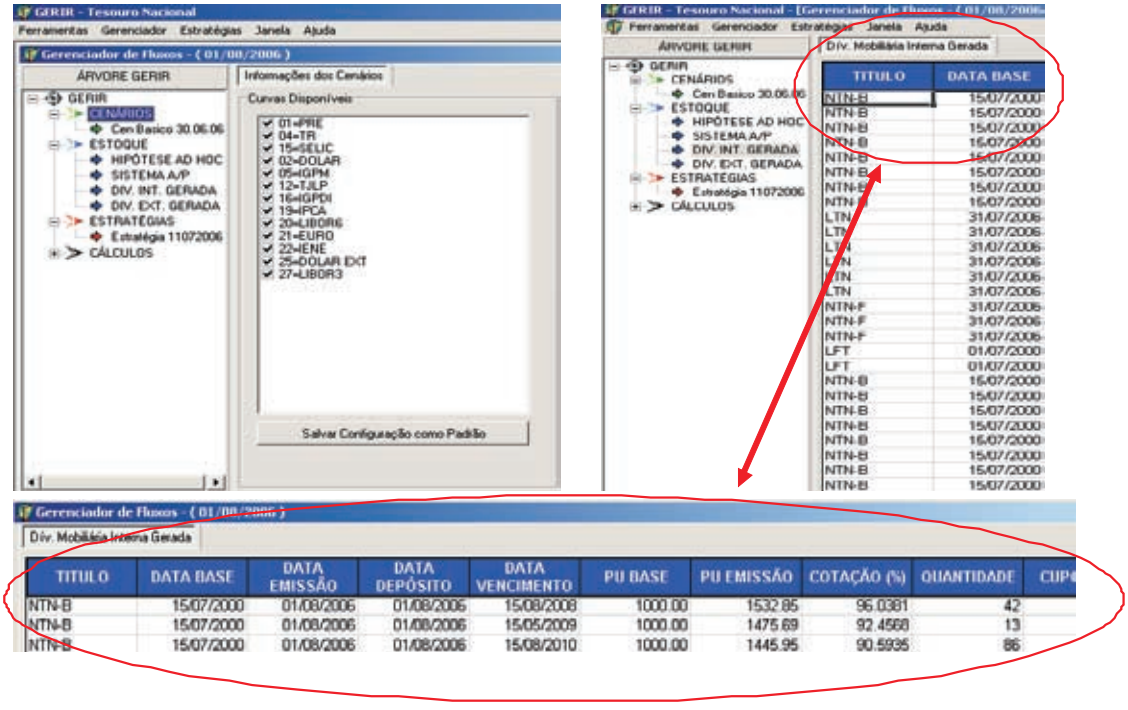


Figure 4. Gerir system – issuance strategies

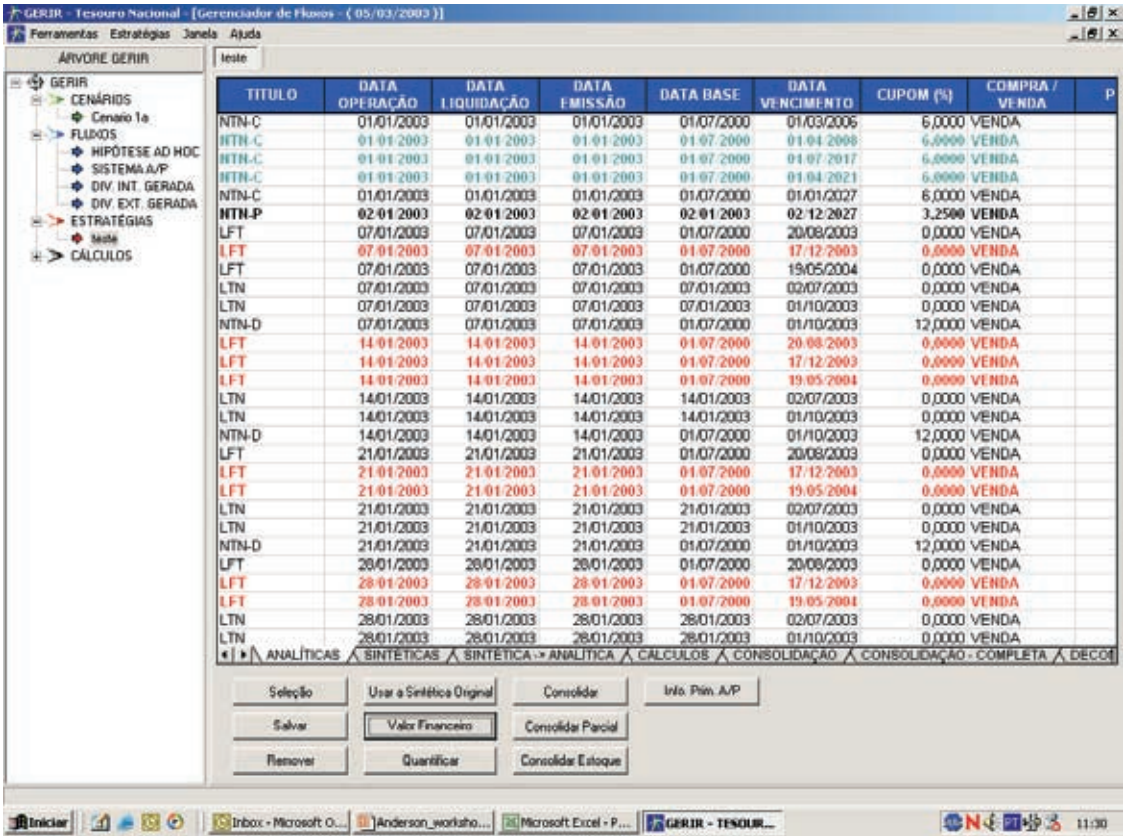


Figure 5. Gerir system – products

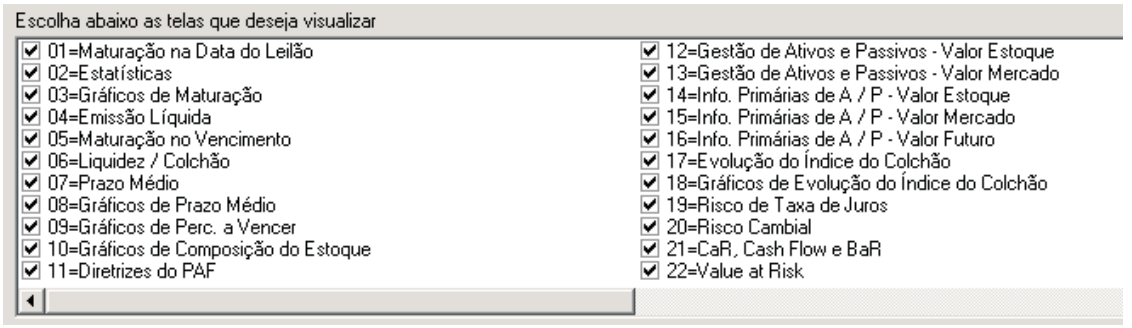


Figure 6. Gerir system – maturity structure

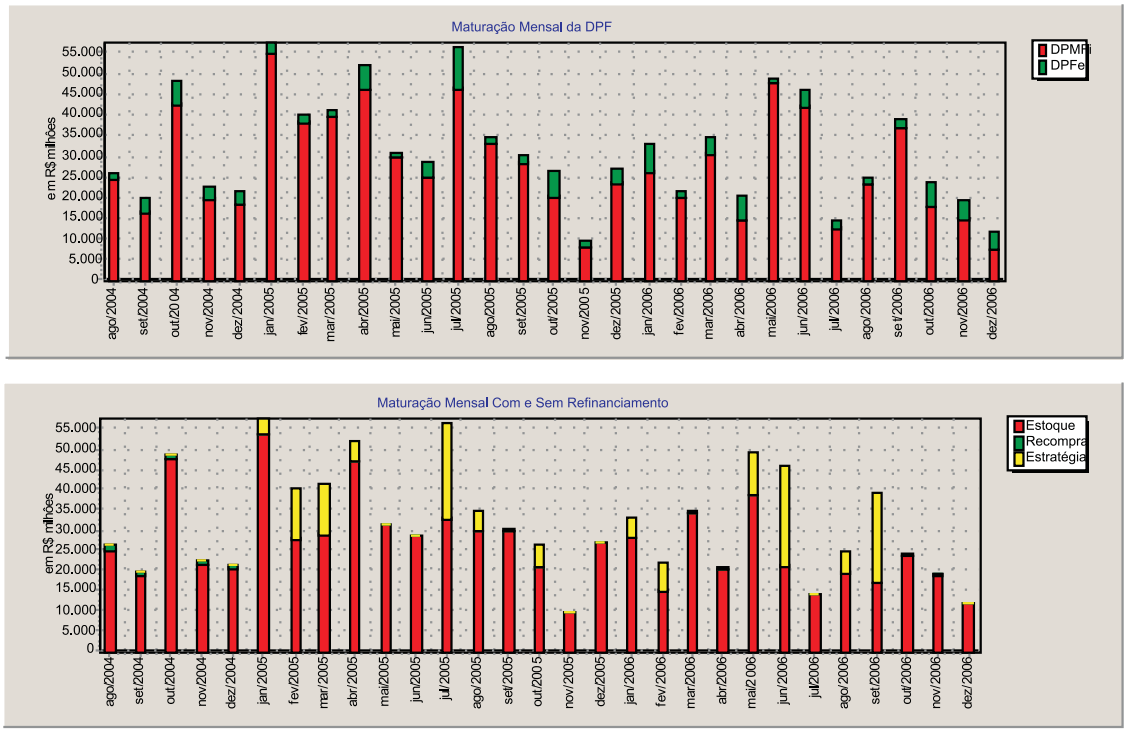
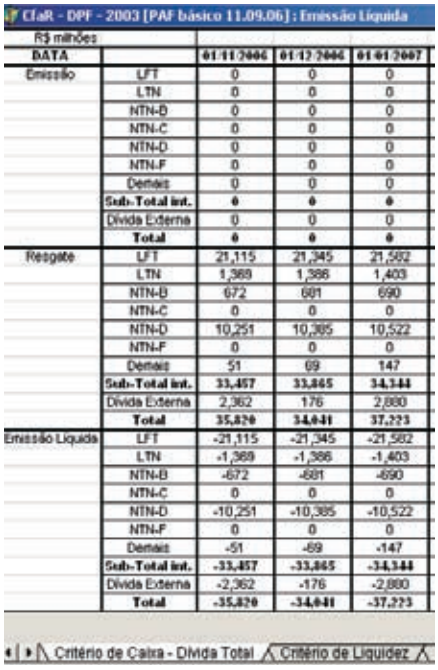


Figure 7. Gerir system – liquidity, average maturity and sensitivity to interest rates

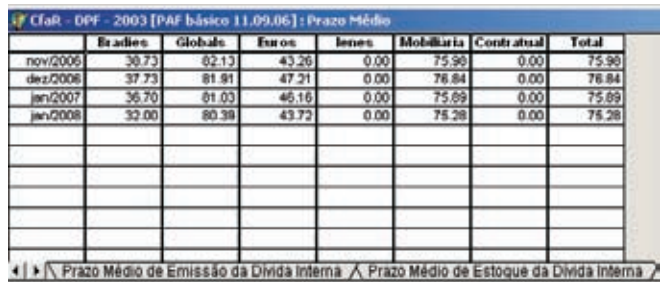


CfaR - DPF - 2003 [PAF básico 11.09.06] : Emissão Líquida

R$ milhões

DATA		01/11/2006	01/12/2006	01/01/2007
Emissão	LFT	0	0	0
	LTN	0	0	0
	NTN-B	0	0	0
	NTN-C	0	0	0
	NTN-D	0	0	0
	NTN-F	0	0	0
	Demais	0	0	0
	Sub-Total Int.	**0**	**0**	**0**
	Dívida Externa	0	0	0
	Total	**0**	**0**	**0**
Resgate	LFT	21,115	21,345	21,582
	LTN	1,369	1,386	1,403
	NTN-B	672	681	690
	NTN-C	0	0	0
	NTN-D	10,251	10,395	10,522
	NTN-F	0	0	0
	Demais	51	69	147
	Sub-Total Int.	**33,457**	**33,865**	**34,344**
	Dívida Externa	2,362	176	2,880
	Total	**35,820**	**34,041**	**37,223**
Emissão Líquida	LFT	-21,115	-21,345	-21,582
	LTN	-1,369	-1,386	-1,403
	NTN-B	-672	-681	-690
	NTN-C	0	0	0
	NTN-D	-10,251	-10,395	-10,522
	NTN-F	0	0	0
	Demais	-51	-69	-147
	Sub-Total Int.	**-33,457**	**-33,865**	**-34,344**
	Dívida Externa	-2,362	-176	-2,880
	Total	**-35,820**	**-34,041**	**-37,223**

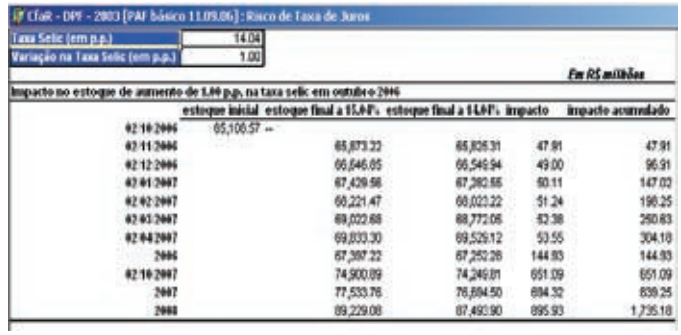
Critério de Caixa - Dívida Total | Critério de Liquidez



CfaR - DPF - 2003 [PAF básico 11.09.06] : Prazo Médio

	Bradies	Globais	Euros	Ienes	Mobiliária Contratual	Total
nov/2006	30.73	62.13	43.26	0.00	75.98	0.00	75.98
dez/2006	37.73	61.91	47.21	0.00	76.84	0.00	76.84
jan/2007	36.70	61.03	46.16	0.00	75.89	0.00	75.89
jan/2008	32.00	60.39	43.72	0.00	75.28	0.00	75.28

Prazo Médio de Emissão da Dívida Interna | Prazo Médio de Estoque da Dívida Interna



CfaR - DPF - 2003 [PAF básico 11.09.06] : Risco de Taxa de Juros

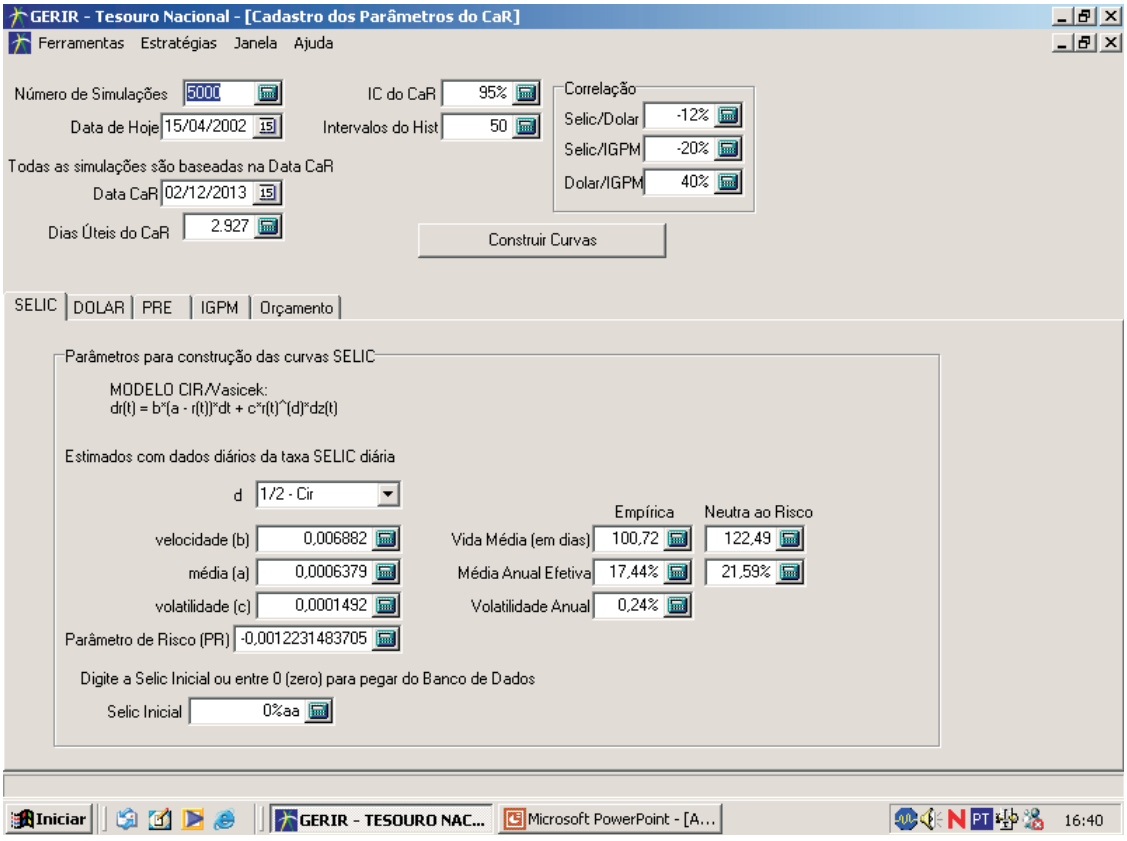
Taxa Selic (em p.p.)	14.04
Variação na Taxa Selic (em p.p.)	1.00

Em R$ milhões

Impacto no estoque de aumento de 1.00 p.p. na taxa selic em outubro 2006

	estoque inicial	estoque final a 14.04%	estoque final a 15.04%	impacto	impacto acumulado
02/10/2006	65,106.57	--			
02/11/2006		65,873.22	65,826.31	47.91	47.91
02/12/2006		66,646.65	66,546.94	49.00	96.91
02/01/2007		67,429.66	67,282.55	50.11	147.02
02/02/2007		68,221.47	68,023.22	51.24	198.25
02/03/2007		69,022.68	68,772.05	52.38	250.63
02/04/2007		69,833.30	69,529.12	53.55	304.18
2006		67,397.22	67,252.28	144.93	144.93
02/10/2007		74,900.89	74,249.81	651.09	651.09
2007		77,533.76	76,894.50	694.32	839.25
2008		89,229.08	87,493.90	895.93	1,735.18

Figure 8. Gerir system – stochastic models



Annex 2. Public debt simulations: methodology for the empirical exercise presented in section 5 of this chapter

Usually, sustainability exercises consider deterministic macroeconomic scenarios as well as hypotheses about the level of the primary surplus and the seignorage. However, there are at least two other aspects that should be considered to obtain more accurate estimates. The first regards the uncertainty related to the scenarios and the second, the public debt profile.

Although a brief discussion about these topics was presented in Section 3, this annex includes a methodological discussion about the model, which presents the hypothesis and parameters used in Section 5.

First, four simulations are produced. The first can be considered a benchmark scenario since it involves no uncertainty or refinancing strategy. The second exercise includes uncertainty, although no refinancing strategy. The third uses a deterministic scenario to assess the impact of a refinancing strategy. Finally, the fourth considers not only the refinancing strategy but uncertainty, as well.

It is important to present the general framework applied to include uncertainty in the simulations; this is the Monte Carlo simulation, which generates thousands of macroeconomic scenarios. Also, the CIR (Cox-Ingersoll-Ross) model was used to generate interest rate scenarios and the geometric Brownian motion[40] was applied for GDP and inflation.

Besides these models, the traditional Blanchard model is used to simulate debt evolution, as shown by the equation below:

$$d_t = \left(\frac{1+r}{1+n}\right).d_{t-1} - (t_t - g_t) - \frac{M_t - M_{t-1}}{p_t * PIB} \qquad (9)$$

where:

d_t – Net debt in t as a proportion of GDP

r – Real interest rate

n – Real GDP growth rate

t_t – Taxes as a proportion of GDP

g_t – Expenditures as a proportion of GDP

M_t – Monetary base in $\boldsymbol{t}$

p_t – Current price level

PIB – Gross domestic product

All models have been calibrated to reflect long-term expectations rather than current levels. If the latter had been adopted, other peripheral discussions would probably have emerged.

[40] See Baghdassarian (2006) for more details about these models.

The first exercise considers a deterministic approach to generate scenarios and maintains 100% of the debt profile in floating rate securities. This is based on a primary surplus of 4.25% of GDP, annual inflation about 3%, nominal interest rates around 11% a year, and initial net debt of 51.7% of GDP. From these parameters, the evolution of the net debt for the next 10 years was calculated. An important hypothesis is that all floating rate debt falling due is also refinanced with the same instrument.

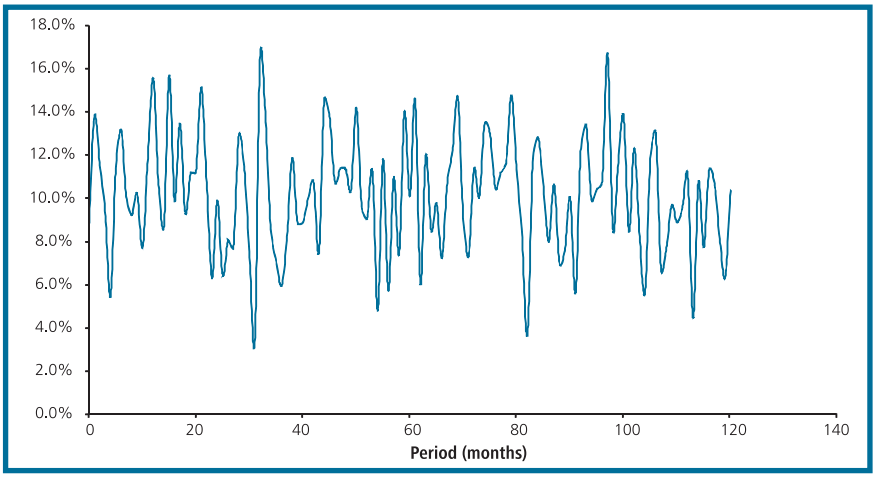
The second exercise is similar to the first, but instead of a deterministic scenario, a thousand different scenarios are used to analyze uncertainty around the conclusions of the first exercise. Following table presents the evolution of the net debt, both in the determinist approach and in the stochastic cases. In the latter, the mean and the standard deviation are used to express the results.

Table 6. Deterministic *versus* stochastic scenarios generation (without refinancing strategy)

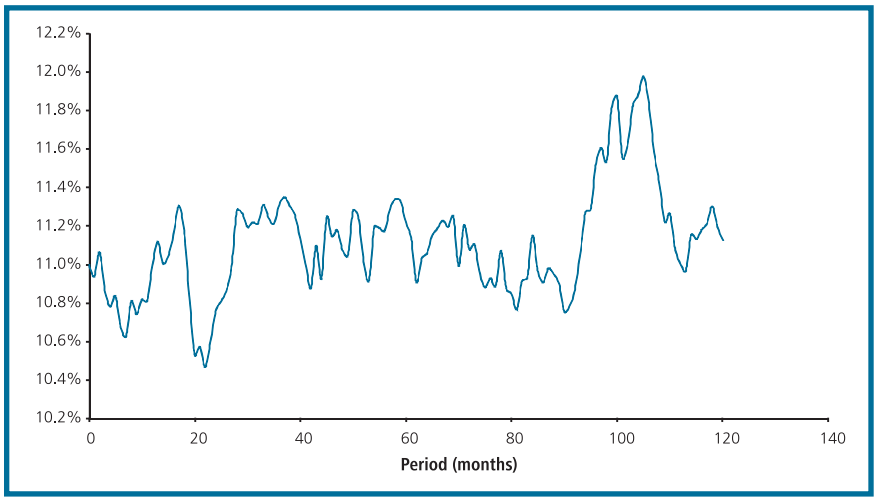
Period	Average DL (determ.)	Average DL (stoch.)	Volat	Relat. Volat
0	51.70%	51.70%	0.00%	0.00%
1	49.94%	49.93%	4.25%	8.50%
2	48.19%	48.09%	6.10%	12.69%
3	46.04%	46.00%	7.68%	16.69%
4	43.87%	43.78%	8.86%	20.25%
5	41.53%	41.46%	9.90%	23.89%
6	39.17%	39.16%	11.03%	28.18%
7	36.91%	36.85%	12.21%	33.12%
8	34.35%	34.26%	13.24%	38.65%
9	31.68%	31.65%	14.23%	44.97%
10	28.68%	28.39%	14.74%	51.91%

The following graphs show the monthly evolution of nominal GDP growth and nominal interest rates in the stochastic environment (in mean terms).

Graph 12. Nominal GDP growth



Graph 13. Nominal interest rate evolution



In the third and the fourth exercises, instead of using a fixed portfolio (100% floating debt), the effect of refinancing on net debt evolution is considered. Again, results can be evaluated using either a deterministic or a stochastic approach.

Here, the same macroeconomic hypothesis is used as in the first exercise, but it adopts a strategy of change in the debt profile, with an increase in the fixed share of 1% a month. Table 7 shows the evolution of the net debt in this simulation.

Table 7. Generation of deterministic vs. stochastic scenarios (with a refinancing strategy)

Period	Average DL (determ.)	Average DL (stoch.)	Volat	Relat. Volat
0	51.70%	51.70%	0.00%	0.00%
1	50.06%	50.11%	1.49%	2.98%
2	48.18%	48.22%	2.13%	4.42%
3	46.39%	46.43%	2.69%	5.80%
4	44.53%	44.58%	3.14%	7.03%
5	42.66%	42.70%	3.52%	8.23%
6	40.51%	40.55%	3.91%	9.64%
7	38.48%	38.52%	4.33%	11.23%
8	36.36%	36.40%	4.69%	12.89%
9	34.34%	34.37%	5.06%	14.73%
10	34.34%	32.44%	5.51%	16.99%

As expected, the floating rate strategy is less costly than that of the fixed-rate. If it includes two standard deviations, while the fixed-rate strategy could take the debt to values around 43.5% of GDP, the floating-rate strategy could take them to 57.9%. Therefore, depending of the degree of risk aversion, 2.8% is not expensive because it protects the debt against a potential increase of nearly 14% of GDP.

Annex 3. The long-term benchmark

In recent years, the National Treasury has worked on an ALM analytical framework in order to analyze and identify the desired public debt profile in the long-term (the benchmark). As mentioned before, this topic has received growing attention from governments, multilateral organizations and scholars. However, there is no consensus in the literature regarding the appropriate methodology.

The National Treasury recently developed a state-of-the art risk management framework as well as analytical models that help define a benchmark for public debt. These models become important tools for decision-makers as they allow them to determine the debt structure the government wants, based on its cost and risk preferences.

In summary, the benchmark is an optimal long-term structure used to guide short- and medium-term financing strategies, and is an important risk management and strategic planning tool. In a steady state, it illustrates the trade-off between cost and risk for efficient debt profiles. Based on the information generated by the model, debt managers can also evaluate the performance of financing operations, including both new issuances and those exclusively aimed at risk management.

1 Methodological notes

The most popular indicator among analysts and investors is the Public Sector Net Debt-to-GDP (PSND/GDP) ratio because of its broader scope when compared to the Federal Public Debt, which only includes Central Government liabilities. For that reason, the Brazilian benchmark model considers the PSND/GDP ratio a relevant debt measure, even if its scope is bigger than the debt for which the Government is responsible. In an inter-temporal analysis of the Government's budget constraints, all of its assets and liabilities should be considered when evaluating the country's fiscal situation. The model is therefore inserted in an ALM context.[41]

Finally, the benchmark model assumes the economy has already reached a steady state, which means that all relevant variables are at their long-term equilibrium values. This seems to be consistent with the search for an optimal long-term profile. The stationary scenario has the following characteristics: a stable economic environment reduced fiscal vulnerability, sovereign bonds with a credit rating compatible to the investment grade rating, domestic interest rates compatible with international levels, inflation under control, and sustainable economic growth. This scenario is expected to be fully attained in the following years, so the analysis would move from this point onwards

2 The stochastic model

2.1 Scenarios

The cost of carrying the debt is determined by the evolution of its indicators, i.e., the different interest, exchange and inflation rates. In the stochastic financial approach, each relevant variable is determined by specific stochastic processes (described next).

[41] In fact, most economic analysts and market participants, as well as international organizations and rating agencies, consider the PSND/GDP ratio as the most relevant debt sustainability indicator.

A CIR[42] model is used for the short-term interest rate (Selic) and belongs to the class of one-factor equilibrium models. In other words, the interest rate process (risk neutral) can be described as:

$$dJ_t = \alpha (J^* - J_t)dt + \sigma_1 \sqrt{J_t} dz_t^1 \quad (1)$$

Where:

J_t – Interest rate (Selic) at t

α – Parameter of speed of return to the average

J^* – Average long-term interest rate

σ_1 – Interest rate volatility

d_t^I – Wiener process

The price index follows a geometric Brownian motion:

$$dI_t = \mu I_t dt + \sigma_3 I_t dz_t^3 \quad (2)$$

Where:

I_t – Price index at t

μ – Average price index growth rate

σ_3 – Price index volatility

dz_t^3 – Wiener process

For the real exchange rate, a CKLS[43] model is used with the exchange rate exponent in the volatility term equal to one (γ=1). This process is described as follows:

$$dC_t = \beta (C^* - C_t)dt + \sigma_2 C_t^\gamma dz_t^2 \quad (3)$$

Where:

C_t – real exchange rate in t

β – speed of return to the average

C_t^γ – long term average of the real exchange rate

σ_2 – real exchange rate volatility

dz_t^2 – Wiener process

[42] Cox, Ingersoll and Ross model. See Hull (1998).

[43] The CKLS model (Chan, Karolyi, Longstaff and Sanders) is a generalization of the CIR model.

However, the carrying cost of the exchange debt depends not on the real rate but rather on the nominal exchange rate. Nonetheless, the nominal rate of the real rate can be obtained if domestic and external price indices are available. The former is available, while for the latter, the following deterministic process is applied:

$$dI_t^e = \mu^e I_t^e dt \tag{4}$$

Where:

$'I_t^e$ – External price index at t

μ – Interest rate (Selic) at t

The nominal exchange rate can be calculated, by definition, as:

$$N_t = \frac{I_t}{I_t^e} C_t \tag{5}$$

Using Ito's Lemma in this last equation and the real exchange rate diffusion process as well as the domestic and external price indices, the nominal exchange rate is computed. Each of the three primitive processes (for interest rates, real exchange rates and inflation) has a stochastic term characterized by a Wiener process. However, in practice, these variables are correlated.

Economic relations among these variables would make it difficult, for example, to imagine a situation where all have their values simultaneously increased over time. As a result, with the aim of adding some macroeconomic consistency to the model, it is reasonable to postulate some correlation structure among them, for which the Cholesky decomposition model is used to create random (pseudo) correlated numbers.

2.2 Security prices

The debt-carrying cost depends on the issuance cost of each security. For example, according to their remuneration characteristics, four types of instruments currently used by the National Treasury include: (a) the fixed issuance rate, for LTNs and NTN-Fs; (b) the interest coupon added to inflation, for the NTN-Bs; (c) the Selic rate, for LFTs (floating rate); and (d) the interest coupon added to the exchange rate variation for external securities.

LFTs pay exactly the compounded overnight interest rate in the security period; and, it can be assumed it is always sold at par, i.e., at a price equal to its face value. Therefore, its ex-post cost will be the compounded interest rate in the period.

Since LTNs/NTN-Fs are fixed securities, their carrying cost will obviously be the rate at which the securities were issued. The price of the fixed security is calculated according to the CIR analytical solution and uses the formula of equation 6 below:

$$P(t,T) = A(t,T)e^{-B(t,T)J} \tag{6}$$

Where:

$$B(t,T) = \frac{2(e^{\gamma(T-t)} - 1)}{(\gamma + a + \lambda)(e^{\gamma(T-t)} - 1) + 2\gamma}$$

$$A(t,T) = \left[\frac{2\gamma e^{(a+\gamma+\lambda)(T-t)/2}}{(\gamma + a + \lambda)(e^{\gamma(T-t)} - 1) + 2\gamma} \right]^{2\alpha J^*_1 / \sigma_1^2}$$

$$\gamma = \sqrt{(a+\lambda)^2 + 2\sigma^2}$$

$$R(t,T) = -\frac{1}{T-t} \ln A(t,T) + \frac{1}{T-t} B(t,T) r(t)$$

λ is known as the risk premium parameter and its function in this case is to adjust the interest curve in the model to that of the steady state. In theory, this parameter is essential for risk-neutral pricing.

The prices of inflation-linked and exchange rate linked securities depend on fixed-rate securities of equivalent maturity. The coupon of the domestic issuance of an inflation-linked security ($C_{inflation}$) corresponds to the rate of a fixed security of equivalent maturity, adjusted to discount the expected inflation, as shown in the ratio below:

$$C_{\text{inflation}}(t, T) = \frac{R(t,T)}{(1 + \mu)} \tag{7}$$

In a similar way, the coupon of a Foreign Exchange (FX)-rate-linked security (C_{FX}) corresponds to the rate of a security of similar maturity adjusted by the expected exchange rate variation (Δ):

$$C_{FX}(t, T) = \frac{R(t,T)}{(1 + \Delta)} \tag{8}$$

Aside from the expected inflation or the expected exchange rate variation, the price of these securities is also adjusted by a risk premium. This premium represents how much lower the rate of an inflation-linked or FX-linked security should be, relative to a fixed security of equivalent maturity. In other words, each premium represents the reduction applied to the rate fixed in *reais* to obtain the fixed rate of an external issuance or, alternatively, the coupon of an inflation-linked issuance, excluding the expected inflation and exchange rate variations.

These premiums are included in the model using the Nelson-Siegel procedure, which associates a premium (P) to the term (T) in view of parameters b_0, b_1, b_2 and k, as seen in the formula below:

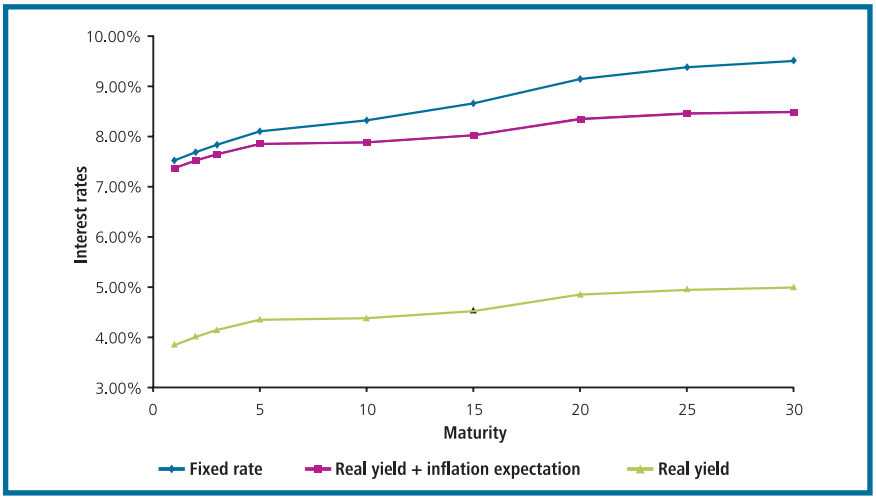
$$P = \beta_0 + (\beta_1 + \beta_2 \cdot T) \cdot e^{-kT} \tag{9}$$

With inflation-linked securities, it makes sense to consider that fixed-rate securities present a risk premium to compensate investors for the uncertainty regarding inflation. For external securities, it is also reasonable

to conceive a theoretical positive premium of real-fixed securities vis-à-vis those fixed in dollars or euros, as investors will be protected against the volatility of fluctuations in the price in *reais*.

The use of the Nelson-Siegel procedure is better understood when analyzing the external interest curves resulting from the fixed domestic curve minus the Nelson-Siegel premiums and the expected FX-rate variations. Likewise, the inflation coupon curve is computed as the fixed curve minus the expected inflation and the Nelson-Siegel premium.

Graph 14. Nelson-Siegel premiums



Thus the model generates the dynamics for the main macroeconomic variables (interest, inflation and exchange rates), as well as the issuance price of each type of security.

Now, it is possible to derive the debt dynamics and calculate the carrying cost for any given debt.

2.3 Debt-carrying costs

As the hypothesis assumes that LFTs are sold at par, their carrying cost is simply the Selic rate in the period:

$$R_t^{LFT} = J_t \tag{10}$$

The carrying cost of LTNs/NTN-Fs in each period is a weighted average of the issuance costs of all fixed securities in the outstanding debt. It is computed as:

$$R_t^{LTN} = \sum_{s=0}^{n} \omega_{t-s} r_{t-s} \tag{11}$$

where ω_{t-s} is the percentage in t of fixed debt issued in $(t-s)$ and r_{t-s} is the issuance cost of the fixed security in $(t-s)$.[44]

For FX-linked securities, the carrying cost is formed by the evolution of the nominal exchange rate and the weighted rate of the coupon of those securities in the outstanding debt. This coupon average R_t^C is calculated in a similar way:

$$R_t^C = \sum_{s=0}^{n} \omega_{t-s}^c r_{t-s}^c \tag{12}$$

where ω_{t-s} is the percentage in t of the FX-rate debt issued in $(t-s)$ and r_{t-s}^c is the rate of the security coupon issued in $(t-s)$.

As a result, the carrying cost of FX-rate-linked securities is given by:

$$R_t^{FX} = \left(1 + \frac{dN_t}{N_t}\right)(1 + R_t^C) - 1 \tag{13}$$

The case of inflation-linked securities (NTN-B) is very similar to that of FX-rate-linked securities. The interest coupon in each period, R_t^I, is also calculated as a weighted average of the rates of outstanding coupons

$$R_t^I = \sum_{s=0}^{n} \omega_{t-s}^i r_{t-s}^i \tag{14}$$

where ω_{t-s}^i represents the percentage in t of the inflation-linked debt issued in (t – s) and is the rate of the security coupon issued in (t – s).

The carrying cost of NTN-Bs is given by:

$$R_t^{NTN-B} = \left(1 + \frac{dI_t}{I_t}\right)\left(1 + R_t^I\right) - 1 \tag{15}$$

Therefore, for a given debt profile, its carrying cost is determined by the weighted average of the carrying cost of each type of security, as previously derived. In other words:

$$R_t^D = \lambda_{LFT} R^{LFT} + \lambda_{LTN} R^{LTN} + \lambda_{FX} R^{FX} + \lambda_{NTN-B} R^{NTN-B} \tag{16}$$

where R_t^D is the carrying cost of the debt portfolio and λ_{LFT}, λ_{LTN}, λ_{FX}, λ_{NTN-B} represent the share of each type of security in the given debt profile.[45]

[44] Each month, 1/12 of the initial outstanding volume of fixed securities matures and is replaced by a new issuance. As a result, the typical weight of the issuance of a one-year fixed security is 1/12. For a five-year security, the weight will be 1/60.

[45] Obviously, the sum of the shares should total one.

3 Debt dynamics

Given the debt-carrying cost expressed by equation (16) - R_t^D, the current outstanding Federal Public debt (FPD), the monetary base variation (ΔM_t) and the primary surplus (ps_t), it is possible to derive an equation for the public debt dynamics:

$$FPD_{t+1} = (FPD_t - \Delta M_t - ps_t)(1 + R_t^D) \quad (17)$$

However, although the National Treasury has direct control only over the Federal Public Debt, the relevant sustainability indicator to be monitored is the PSND/GDP ratio.

When equation (17) is manipulated, equation (18) is obtained.

$$NPSD_t = FPD_t + M_t + SelicLiab_t + USDLiab_t - Reserves_t - GDPAssets_t - SelicAssets_t + Other_t \quad (18)$$

The different assets and liabilities that make up the PSND can be groups in the following categories: FPD, monetary base (M), floating rate public sector liabilities (SelicLiab), dollar-indexed public sector liabilities (USDLiab), international reserves (*Reserves*), public sector assets correlated to GDP (GDP Assets), floating rate public sector assets (SelicAssets), and other assets and liabilities.

GDP follows a geometric Brownian motion similar to the domestic price index process (equation 2). The monetary base increases at the same rate as nominal GDP, as in a quantitative theory framework. The evolution of reserves depends on the Central Bank's purchase/sale projections. Other variables depend on the evolution of the dollar, the Selic rate or GDP; these represent residual liabilities that depend on other forms of indexation.

4 How to use the model

The general idea of the model is relatively simple, as seen in Figure 6. Monte Carlo simulations are used to derive an efficient cost and risk frontier for the public debt. As usual, a debt profile is efficient when its associated cost is the lowest possible in view of the risk chosen. The set of all efficient profiles defines the efficient frontier and reflects the trade-off between cost and risk that debt managers face.

Several stochastic scenarios are generated to describe how the main macroeconomic variables (interest, exchange and inflation rates) and the price of securities evolve over time. Although stochastic (pseudo), as mentioned before, the model equations are correlated so as to ensure macroeconomic consistency.

Once many trajectories for the main macroeconomic variables in the selected period are achieved, a given debt portfolio is fixed, based on a debt composition representing the FPD, which differs in terms of its return and maturity characteristics. Assuming this portfolio is kept constant over time,[46] different stochastic trajectories are simulated for the Public Sector Net Debt-to-GDP ratio in a steady state

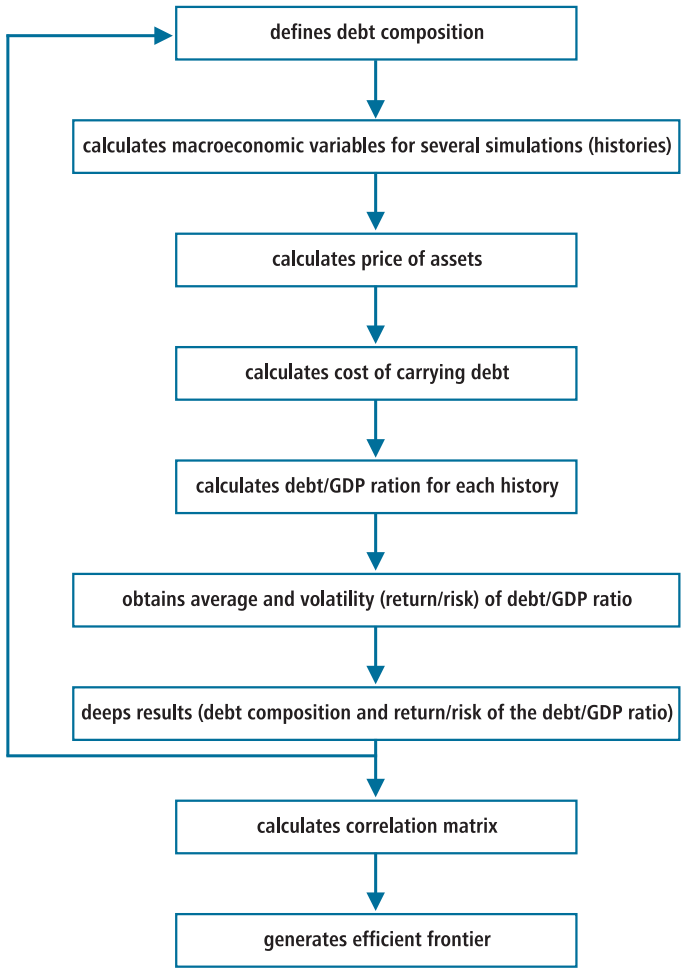
In Brazil, a debt portfolio can include four types of instruments, according to their return characteristics: fixed securities, floating rate securities (linked to the overnight rate), inflation-linked securities, and FX-rate-linked securities. Each instrument can have different maturities in order to create a set of representative short-, medium- and long-term securities. In the model, the debt instruments considered are:

[46] This objective is achieved by a maturing structure that is constant over time.

- Fixed securities (1, 2, 5 and 10 years);
- Floating rate securities (5 years);
- Inflation-linked securities (10, 20 and 30 years);
- FX-rate-indexed securities (dollar: 10 and 30 years; euro: 15 years).

Each simulated trajectory generates different carrying prices and costs for each security. As a result, a different carrying cost is derived for each trajectory. Thus, a large number of PSND/GDP ratios can be computed to obtain a probability distribution associated with each possible debt profile. The analysis focuses on this distribution at the end of the simulation period (10 years), from which the cost and risk measures are taken.[47]

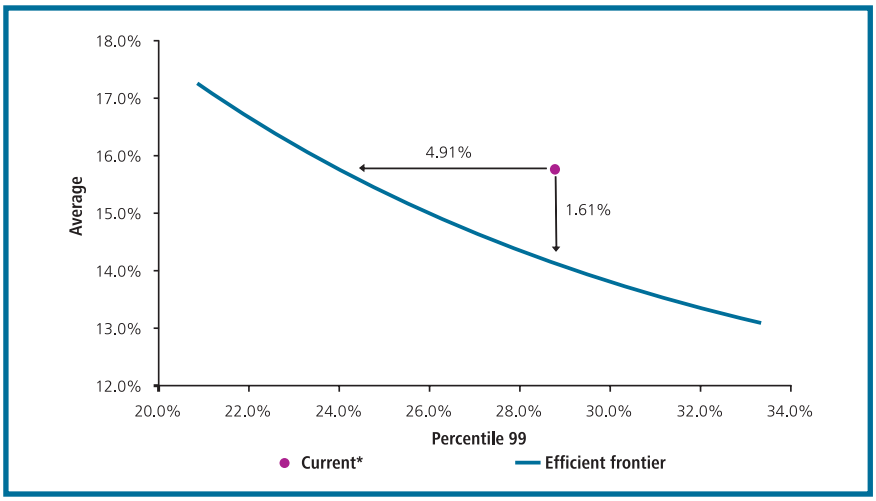
Figure 9. Schematic summary of the model dynamics



[47] The average of the PSND/GDP ratio is considered to be the cost indicator and the 99th percentile as the risk measure. It is important to highlight that FPD profiles are used in order to generate cost and risk measures of the PSND/GDP ratio. As mentioned before, this is justified by the fact that this last indicator is the one most seen as a proxy for sustainability, although the Treasury only has control over the FPD.

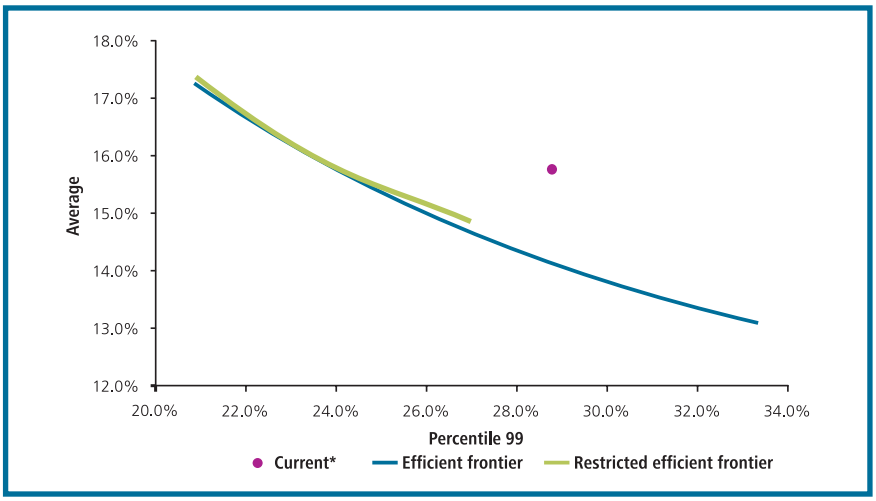
The dot above the curve on the right indicates the current PSND/GDP position in terms of cost and risk, in view of the current FDP profile. The model therefore suggests that, under steady state conditions, it would be possible to take 1.61% off the costs by keeping the risk level constant or reduce the risk by 4.91% by keeping the cost unchanged.

Graph 15. The efficient cost and risk frontier



Finally, the Government's behavior towards risk allows for choosing an optimal specific profile of the efficient frontier known as the benchmark. The efficient frontier allows us not only to compare the situation of any profile relative to the frontier, but also provides decision-makers with a complete menu of possible efficient choices. Evidently, the choice of a particular portfolio as the public debt benchmark implies choosing the risk level the Government (and consequently society) is willing to bear. In view of a desired risk level, the corresponding portfolio can be taken from the frontier.

Graph 16. The efficient cost and risk frontier under profile constraints



* Under steady state conditions

The model is interesting because it also allows for imposing constraints on efficient profiles, as seen in Figure 8. This adds it considerable flexibility, since there are important risk dimensions that are not directly captured by the frontier but which can be included as constraints: For example, it is possible to introduce constraints as regards the average maturity of the maximum debt percentage falling due in 12 months.

Graph 16 shows the frontier resulting from the addition of the following constraints: maximum of 20% of external debt (exchange), 30% LFT ceiling, and maximum of 30% of debt maturing in 12 months.

5 Concluding remarks

In line with best international practices, the National Treasury develops and submits the results of benchmark (efficient portfolio) studies to the fiscal policy manager (the Minister of Finance or Executive Committee), who is responsible for choosing the acceptable risk level for the Government. Topics related to debt sustainability are also considered, when defining maximum acceptable cost levels.

As mentioned before, although good management of the trade-off between cost and risk suggests the use of traditional financial tools, there are some factors peculiar to governments that impede the indiscriminate use of the financial theory in public debt analyses. Like most countries, Brazil's stated debt management objective is to minimize long-term costs and keep prudent risk levels. Other objectives involve developing the secondary market, expanding the investor base, and building a yield curve, which is a benchmark for pricing public and private assets.

Further, it is worth mentioning that the National Treasury has developed an alternative benchmark model as well, now at an initial stage, which is also based on efficient portfolios, using the framework of a macro-structural model to describe the evolution of the economy. This model could complement the one described here. Recently, the National Treasury improved the two approaches. A special challenge lies in achieving a good specification of a macro-model, particularly for emerging economies. However, the use of different analytical models could translate into important gains in terms of complementarity and understanding of the theme.

Annex 4. Methodological differences between average life and average maturity

There is a consensus in debt management in Brazil that the correct way to calculate the average maturity—to reflect as accurately as possible the refinancing risk—is to use a formula similar to the Macaulay duration and the refixing duration. However, a few years ago, the National Treasury had to incorporate the concept of average life so as to make Brazilian debt internationally comparable.

Equation (19) expresses the methodology the Treasury applied to calculate the average maturity of the public debt. The most important differences are the interest rate used to discount cash flows (Macaulay duration) and the weight factor - Ti (refixing duration).

$$AL = \frac{1}{PV} x \sum_{i-1}^{n} PV_i x T_i \tag{19}$$

For the National Treasury, the original security issuance rates are used to discount their cash flows; and, the variable Ti always measures the time lag between now and each of the cash flows (coupons and principal).

The average life, in turn, as shown below, considers only principal payments for each security. As a result, this methodology indicates a value that is higher than the average maturity. However, as already mentioned, since this methodology does not consider intermediate coupon payments, it is not suitable for measuring the refinancing risk and should be applied only when comparing the Brazilian indicator to that of other countries.

$$AM = \frac{1}{PV} x \sum_{i-1}^{n} PV_i x M_i \tag{20}$$

where, M_i corresponds to the time between now and the bond maturity

Part II
Chapter 4

The Federal Public Debt budget

by Antônio de Pádua Ferreira Passos
Priscila de Souza Cavalcante Castro

1 Introduction

The public budget is a tool that reflects the government's expenditure allocation strategy, as well as its expectations about revenues, which allow it to meet its commitments. Both must be consistent with the planning for each fiscal year. A modern budget system must meet three basic requirements. It should:

- Control the management of public resources, transparently;
- Maintain economic stability by means of fiscal adjustments;
- Ensure the quality of public spending associated with government priorities and short and medium-term planning.

With regard to the Federal Public Debt (FPD), besides submitting the annual budget to Congress at the beginning of the second quarter of the previous year (which must be approved by December), the Federal government also produces an Annual Borrowing Plan (ABP) in January. The ABP publicizes the goals, guidelines, strategies and targets for FPD management in a structured and public manner, increasing the transparency of debt management.

Hence, the budget's execution is followed closely during the fiscal year to ensure it is consistent with the FPD strategic plan. This analysis allows the government to review the revenue generated from bond issues, taking into account strategic variables, such as total FPD expenditures for each month and the share of fiscal revenues earmarked for paying the debt. Further, the analysis of the net borrowing requirements based on a review of expenditures and revenues, and the short and medium-term public debt strategy, as presented in the ABP, helps determine the amount of bonds to be issued each month.

Thus, the overall framework includes the budget-making process, the institutions that comprise the system, and the rules that guide the budget and financial execution.

This chapter will help readers better understand the Brazilian budget as an essential tool for the financial management of public resources and, more specifically, the FPD. Besides this introduction, there are three sections. Section 2 introduces the main concepts associated with the public budget, as well as the processes and entities involved in producing it. Section 3 presents the institutional structure of Brazilian financial and budgetary administration. Section 4 reviews the budget from the FPD perspective and describes the ways it is affected by the legal controls over public indebtedness and transparency. Also, it describes the flexibility required to efficiently manage such debt and minimize budgetary risks. Section 5 provides a few closing remarks.

2 Budget

Public budgeting is an ongoing, dynamic planning process used by the Federal government to demonstrate its work plans and programs for a certain period. Hence, the budget "expresses, in both financial and technical terms, the political decisions involved in the allocation of public resources, establishing the actions and priority programs for meeting society's demands, in addition to allowing for the control of public finances, thus avoiding that unforeseen expenditures be incurred."

The expression of a public entity's budget (whether Federal, state or municipal), is a law issued by the Executive branch, valid for one year, which estimates the revenues and establishes the expenditures of the public administration. The budget proposal is drafted during a fiscal year and executed in the next, after being approved by the Legislature. The following principles govern its contents:

- *Unity*: The set of expenditures and revenues must be presented in a single document. Each level of government (Federal, state and municipal) must have only one budget, based on a single budgetary policy and structured in a uniform manner.
- *Universality*: This is the principle according to which the budget law must adhere, with respect to the values for all revenues and expenditures.
- *Balance*: Estimated revenues for a fiscal year must equal expenditures.
- *Specification*: Every allotment must have a destination and be associated with a particular action.

The government estimates budget revenues for the following fiscal year using forecasts for overall economic indicators, such as the Gross National Product (GNP) and inflation, taxes and contributions. Expenditures of the executive, legislative and judicial branches are based on expected revenues.

Table 1. Revenues and expenditures of the fiscal and social security budgets, by economic category, for the 2009 budget: principle of balance (R$ million)

Revenues		Expenditures	
Specification	**Amount**	**Specification**	**Amount**
Current revenues	**839,902**	**Current expenditures**	**834,264**
Tax revenues	289,839	Personnel & social security	168,798
Revenues from contributions	431,990	Interests and debt charges	124,711
Equity revenues	51,636	Other current expenditures	540,756
Agricultural revenues	23		
Industrial revenues	654		
Service revenues	33,661		
Current transfers	305		
Other current revenues	31,794		
Intra-budgetary revenues	**12,349**		
Revenues from dues / intra-budgetary	12,167		
Equity revenues / intra-budgetary	2		
Industrial revenues / intra-budgetary	135		
Service revenues / intra-budgetary	43		
Other revenues – intra-budgetary operations	3	**Current budget surplus**	17,988
Total	**852,252**	**Total**	**852,252**
Current budget surplus	**17,988**		

Revenues		Expenditures	
Capital revenues	**729,195**	**Capital expenditures**	**721,254**
Credit operations	644,611	Investments	47,617
Alienation of assets	5,070	Financial inversions	41,960
Amortization and loans	22,262	Debt amortization	631,678
Capital transfers	150		
Other capital revenues	57,102		
		Reserves	**25,929**
		Contingency	8,423
		Others	17,506
Total	**747,183**	**Total**	**747,183**
Current revenues	839,902	Current expenditures	834,264
Capital revenues	729,195	Capital expenditures	721,254
Intra-budgetary revenues	12,349	Reserves	25,929
Total	1,581,447	**Total**	**1,581,447**

Source: *Annual Budgetary Law 2009*, v. I, Quadro 1C [1]

The Federal Constitution requires that budgets and their corresponding laws be elaborated by the Executive branch and submitted to the Legislative branch for approval. Once in the National Congress, the Joint[2] Budget and Plans Commission studies the proposed budget and amends the expenditures, investments and priorities. Congress must approve the budget by the end of the legislative year; once this is accomplished, it is approved by the President and becomes law. If, during the course of the next fiscal year, expenditures are greater than expressed in the budget, the Executive sends the Congress a bill for additional credit.[3]

The 1988 Federal Constitution established a budget model and created instruments to coordinate overall budget planning. It includes three sequential inter-related laws on the budget process: the Multi-Year Plan (PPA), the Budgetary Guidelines Law (LDO) and the Annual Budgetary Law (LOA).

The PPA sets government priorities for a four-year period and must contain "the guidelines, goals and targets of Federal Public Administration for capital expenditures[4] and other expenditures deriving thereof and for those related to ongoing programs." The Plan, which links long-term priorities to the LOA, is initiated by the Executive branch and coordinated by the Secretariat for Strategic Planning and Investments (SPI) of the Ministry of Planning, Budget and Management (MPOG). Approved during the first year of a presidential term, the PPA is activated in the second year and closes in the first year of the next presidential term.

The LDO sets priorities for PPA targets and drafts the guidelines for the Federal government budget which becomes effective the next year. LDO budget guidelines are drafted by the Executive branch and must be forwarded to the Congress no later than eight and a half months before the end of the fiscal year. The law must be approved by the Congress and subsequently, by the President, before the end of the first legislative period, in July.

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[1] Law nº 11,897, of 30 December 2008.

[2] It includes members of both the House of Representatives and Federal Senate.

[3] Additional credit: This is a budgetary adjustment tool used to correct distortions, by authorizing expenditures that were not foreseen while the LOA was prepared. Increases may also be needed if the original amount allotted was insufficient. Additional credits are classified as supplementary, special and extraordinary, each having a financial cap and time frame, procedural rules and different approval processes.

[4] Capital expenditures: These are used to procure machinery and equipment, execute works, acquire corporate equity shares and real estate, and grant loans for investment. A capital expenditure usually contributes to creating a capital good, as well as to expanding a public entity's activities.

Once Congress approves the LDO, the Secretariat of the Federal Budget (SOF) of the Ministry of Planning, Budget and Management (MPOG) drafts the budget proposal for the following year, considering, among other inputs, the expenditure proposals sent by all the ministries and budget units of the legislative and judicial branches. Sectoral bodies[5] (such as the Ministries of Education, Health and Agriculture) identify their funding needs for each of their agencies or offices (managing units[6]), according to LDO guidelines and submit their proposals to the SOF, which must balance government expenditures with expected revenues.

After the SOF consolidates the budget proposal, the MPOG submits it to the President for approval; it is accompanied by an Exposition of Reasons, which diagnoses the country's economic conditions/perspectives. According to the Constitution, the Federal government must forward the proposed budget to the Congress no later than four months before the end of the fiscal year.

At the Congress, representatives and senators discuss the proposed budget at the Joint Commission for Budgets and Plans,[7] amend what they think is necessary and vote on the bill. It should be noted that the Federal Constitution establishes several rules for submitting parliamentary amendments. These include the following:

- Amendments may not increase the budget's overall expenditures, unless omissions or mistakes in revenues were identified and proved;
- Increases in budget allotments will only be allowed if amendments indicate which allotments will be cancelled, so that resources are re-allocated, rather than raised;
- Expenditures for certain items, such as personnel, social security charges, interest, constitutional transfers and public debt amortizations, may not be cancelled;
- Amendments submitted must be compatible with both the PPA and LDO.

The Constitution states that the budget must be submitted for a vote and approved no later than the end of each legislative year, i.e., in December. Once passed, it is approved by the President and becomes law. It should be noted that, after the President's approval, the executive branch - by means of a presidential decree - has to establish within 30 days a financial program and monthly disbursement schedule for each body, complying with fiscal targets created under the Budgetary Guidelines Law (LDO).

The budget model was amended in 2000, with Congressional approval of the Fiscal Responsibility Law (LRF), a complementary law[8] that is a landmark in Brazilian public finance: It established an institutional commitment to best practices in fiscal management as well as the equilibrium of public accounts.

The Law's main goal was to provide rules for accountability with respect to fiscal management, based on the principles of planning and transparency. As a result, public expenditures are viewed with a new perspective that involves both the analysis of financial and budgetary aspects, and a demonstration that expenditures

[5] Sectoral body: Any agency responsible for coordinating activities between the central body and the executing bodies of a system, in its sphere of action.

[6] Managing unit: Budgetary or administrative units that manage budgetary and financial resources, either their own or those that were decentralized.

[7] The PPA, LDO and LOA bills are submitted jointly to the two Congressional bodies (the Senate and House of Representatives), and it is the responsibility of the Mixed Commission for Plans, Public Budgets and Inspection (CMO) to examine and issue an opinion about the bills, which must then be presented at a joint session of both houses.

[8] Complementary law is a law for regulating a constitutional precept, which is not self-applicable.

will benefit society. One of its main features is that any change in the budget will require a much more rigid process than previously.[9] The law applies to all national and sub-national entities.

The LRF added two annexes to the LDO, which guide both government and society on the conduct of fiscal policy. The first is the Fiscal Targets Annex, which establishes, among other aspects, the primary surplus expected for each of the next three fiscal years. The second is the Fiscal Risks Annex, which lists the so-called contingent liabilities, i.e., debts that are not yet accounted for but which, due to a legal or judicial decision, may create future fiscal risks.

3 Institutional framework

Brazil's financial and budgetary administration is decentralized into four major systems. These are supported by legal instruments that establish a transparent and organized budgetary and financial process that links planning and budgeting through the management of public resources. The four include the following:

The *Federal Planning and Budgeting System*, managed by the Ministry of Planning, Budget and Management (MPOG), supervises the preparation of the Budgetary Guidelines Law and of the Federal Government Budgetary Draft Law (which include the Social Security Fiscal Budget). The central body is the Secretariat of the Federal Budget (SOF).

The *Federal System of Financial Administration*, managed by the National Treasury Secretariat (STN), ensures that the Federal government balances its public revenues and expenditures. It is responsible for (a) programming all financial activities, (b) managing the National Treasury's assets, guarantees and obligations and (c) providing technical-normative guidance on budget/financial issues.

The *Federal Accounting System*, administered by the STN, records the government's budgetary, financial and net wealth status. Also, it drafts guidelines that include norms and procedures which ensure that information produced by the management units is standardized.

The *Federal System of Internal Control*, administered by the Federal government's Office of the Comptroller General (CGU), (a) evaluates compliance with the Multi-Year Plan (PPA) goals, (b) executes government programs and budgets, and (c) monitors Federal public managers. Also, it controls the government's credit operations, guarantees, rights and assets. In addition to CGU (the internal audit office that reports directly to the President) the government is audited by an external office, the Federal Court of Audit (TCU) which reports to the Congress.

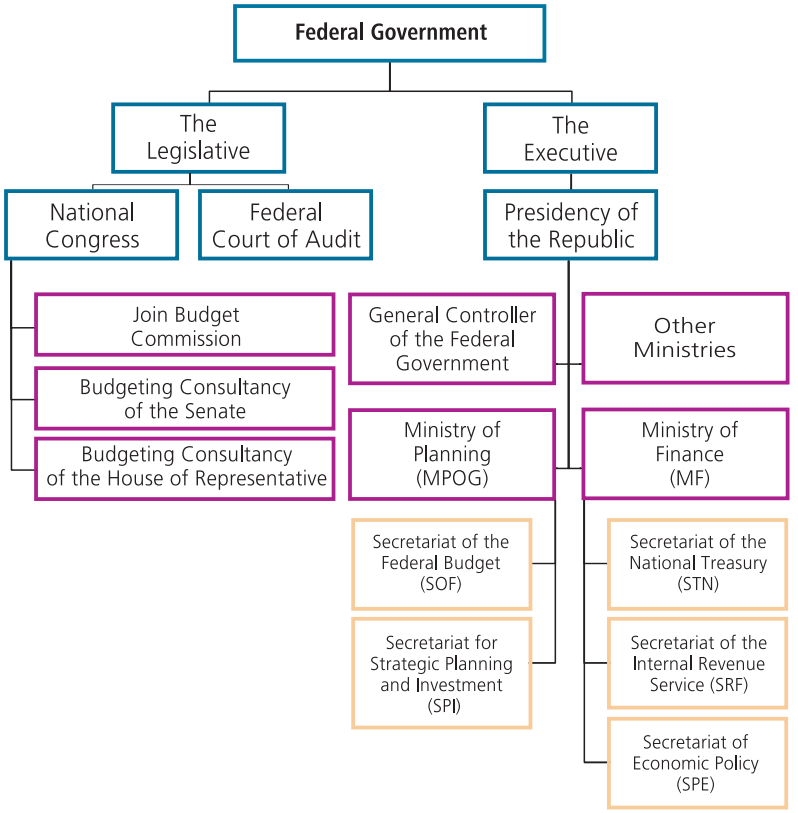
The financial and budget administration model is complex, characterized by decentralized management of public resources. It includes several units, coordinated by sectoral bodies and the central financial and budget programming entities. The Secretariat of Federal Budgeting (of the Ministry of Planning), is the main budget entity, responsible for the Integrated System of Budget Data (SIDOR). The Secretary of the National Treasury (of the Ministry of Finance) is the main entity for financial programming, managing the government's Unified Account and the Integrated System of Financial and Budgetary Administration (SIAFI).

In order that budget and financial activities and the registration of assets be integrated, and meet the objectives of control, transparency and accountability, a common budget classification was defined for

[9] To be approved or altered, a complementary law must be passed by an absolute majority of the House (50% plus one of all parliamentarians) in each legislative branch, in a two-phased vote. An ordinary law only requires a simple majority (50% plus one of the parliamentarians attending the session).

both systems (SIDOR and SIAFI). The budget and financial execution is centralized at SIAFI, the main tool for recording, following-up and controlling the Federal budget, financial and equity activities. SIAFI is also used by the Executive branch to apply internal controls and provide information to all levels of the administration. It is an online system that can be accessed throughout the country and used by all administrative bodies of the three branches of government.

Figure 1. Organization of entities involved in the federal budget process



It is the National Treasury's responsibility to set guidelines for drafting monthly and annual financial programs, and adopting procedures to execute them. In turn, sectoral bodies consolidate the financial programs proposed by their affiliated units and decentralize financial resources received from the central body. Management units are responsible for public expenditures in all three stages:[10] These are known as pledges, settlements and payments.

Budget and financial activities occur simultaneously, as they are directly linked: If there are budgets but no financial resources, there can be no expenditures. Similarly, if there are financial resources, but no budgets, then resources cannot be allocated.

[10] Expenditure stages include the following:
Pledges are administrative actions that create obligations for the government, whose task is to reserve part of the current fiscal year budget to cover specific expenditures and not commit amounts greater than the annual allotment.
Settlements acknowledge the government's obligations to creditors, based on documents that provide evidence for the credit, and arrange for the delivery of the goods/services, according to contract specifications.
Payments are acts through which authorities approve, by means of documents submitted to the accounting department, the expenditures.

The Federal government has a single unified account at the Central Bank to manage all entries and disbursements from its cash flow. Each disbursement is registered, as well as its destination and the name of the public servant that processed it. The account is a powerful tool for executing, following-up and controlling government resources.

4 The public debt budget

The current budget structure is flexible; it does not impose obstacles or risks for managing the public debt, while establishing rules and limits for indebtedness. The tools described earlier will now be addressed from the perspective of FPD management.

4.1 The Fiscal Responsibility Law

The Fiscal Responsibility Law (LRF) established several rules that affect PDM at all levels of government. It created basic concepts, limits for indebtedness and credit operations, rules for returning the debt to its limits and criteria for credit operations, including those performed by the Central Bank.

The LRF defines various concepts related to debt. They include:

a) *Consolidated or funded public debt*, which refers to the total financial obligations assumed by national or sub-national entities by means of laws, contracts, agreements or treaties and through credit operations to be paid in a term longer than 12 months. It also includes credit operations for terms under 12 months, when the corresponding revenues have been listed in the budget.

b) *Bonded public debt*, which represents bonds issued by the Federal government (including those issued to the Central Bank), states and municipalities.

c) *Credit operations*, which refer to financial commitments assumed through an opening of credit, issuance and acceptance of bonds, financed acquisition of goods, anticipated funds from the sale of goods/services, mercantile leases and similar operations, including financial derivatives.

d) *Granting of guarantees*, which is a commitment to pay a financial or contract obligation assumed by a government entity or affiliate.

e) *Bonded public debt refinancing*, which (as stated in the LRF) means that all expenditures and revenues associated with public debt must be included in the Annual Budgetary Law.[11]

Prior to the Law, the budget did not distinguish between bond issuances that increased the FPD stock (such as those to pay interest or finance other expenditures) and those used exclusively to refinance the principal of maturing debts (which do not alter the nominal FPD stock). As a result, the amount in the budget earmarked for debt repayment was often misinterpreted, particularly due to the high amounts involved, compared to other budget expenditures.

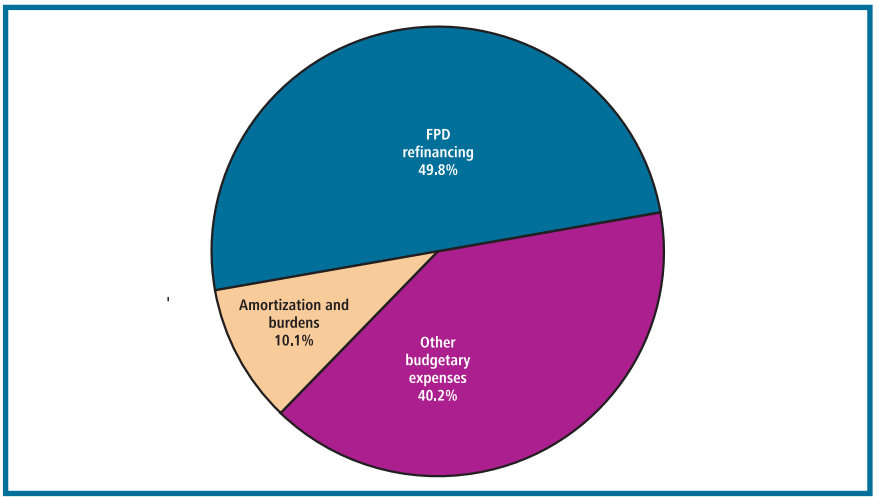
The LRF was innovative as it required the budget to separate the amount of the FPD principal to be refinanced from other expenditures covered through bond issuances. Such measures made public accounts more transparent and improved the quality of the debate over the true weight of the debt with regard to the fiscal

[11] As noted in Article nº 5, § 1 of the LRF: "All expenditures associated with public debt, regarding either bonds or contracts, and the revenues to pay them, will be stated in the Annual Budgetary Act."

budget. Since the Law was passed, consolidated LOA charts have separated all FPD expenditures, listing them under "debt amortization," which indicates the authorized amount of expenditures for the FPD principal.

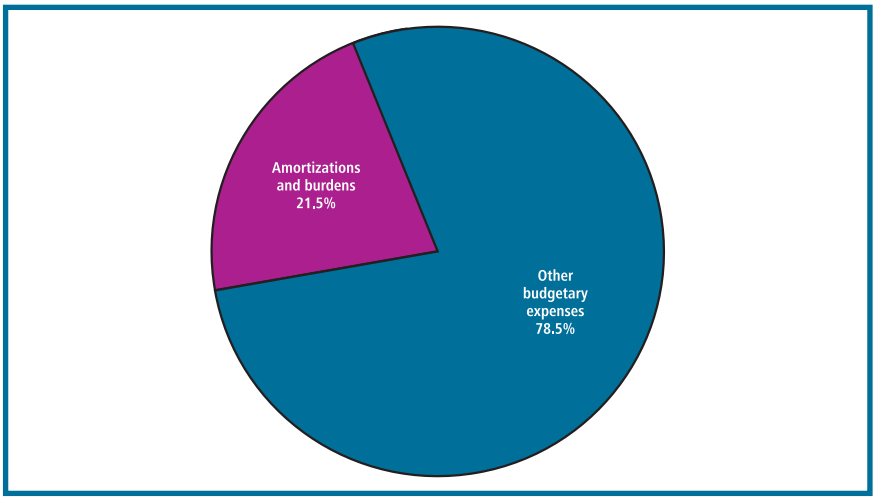
As can be seen in the graphs below, prior to the LRF, there were huge distortions in the budget numbers, creating misunderstandings among analysts and Congressional representatives. When refinancing expenditures were not separated from those related to interest and other expenses, almost 60% of total budget expenditures were used to repay the FPD (Graph 1). Currently, the amount of refinancing is separated, which eliminates the errors related to the effects of bonds issued to roll over the debt principal, thereby lowering the total earmarked for debt payments to about 22% (Graph 2).

Graph 1. Percentage of expenses in the overall budget of the federal government accounting for the refinancing of Federal Public Debt



Source: Brazilian National Treasury

Graph 2. Percentage of expenses in the overall budget of the federal government, excluding the refinancing of Federal Public Debt



Source: Brazilian National Treasury

4.1.1 Limits of indebtedness

The limits of indebtedness were established by the Federal Constitution and the Fiscal Responsibility Law. They include the following:

a) *Golden rule*. In Article 167, the Constitution prohibits credit operations greater than the amount of capital expenditures, thus safeguarding the debt authorized through supplementary or special credits with a specific purpose and approved by the Legislature by an absolute majority. The aim of the golden rule is to avoid paying current expenditures[12] with resources acquired from issuing or contracting new debt.

b) *Public debt and credit operation caps*. In Article 52, the Constitution states that the Senate must define the limits of indebtedness and conditions for credit operations. Further, the LRF states that proposed global limits for consolidated debt (for all three levels of government) should be submitted by the President to the Senate. The overall limit established for the consolidated net debt[13] (DCL) is a percentage of net annual current revenues (RCL). Calculation of the DCL/RCL ratio is checked on a quarterly basis and presented in the Fiscal Management Report. If an entity exceeds its limit at the end of a quarter, it must return to it by the end of the three next quarters, reducing the excess by at least 25% in the first quarter. The upper limits of the DCL/RCL ratio (proposed by the Executive to the Senate, through draft resolutions), were 3.5 times for the Federal government, 2.0 times for the states and 1.2 times for municipalities.[14] Although the limit for the Federal government seems to be high when compared to the others, it incorporates the Treasury bonds held by the Central Bank for executing monetary policy, which corresponds roughly to 1.0 times the Federal government annual RCL. Also, over the past decade, the Federal government has assumed debt from the states and municipalities that exceed its own annual RCL.

In December 2007, the Senate[15] established an overall limit of 60% of RCL for the Federal government's external and domestic annual credit operations. To avoid refinancing risks that could be created by the new rule and acknowledging indebtedness limits, the Senate added the principle that bonds issued to refinance the debt principal would not be included in the overall limit for credit operations.

The LRF also created several norms with respect to the Central Bank. For example, its expenditures for personnel and social security contributions, administrative costs and investments would be integrated with the LOA. Further, the Central Bank's positive balances would be considered Treasury revenue used exclusively to pay FPD; the negative balances would represent a Treasury obligation and would be applied under a specific budget allotment[16] for future payments through bonds issued to the Central Bank. The LRF also prohibited the

[12] Current expenditures are the costs related to public sector entities and activities, such as for personnel, debt interest, procurement of raw materials and consumer goods, as well as third-party services.

[13] Consolidated net debt refers to securities and contracted public debt, after available cash, financial applications and other assets are deducted. So as not to impose obstacles for executing foreign exchange or monetary policy, the net consolidated debt concept with respect to the Federal government includes the Treasury securities' debt held by the Central Bank, which may buy and sell such bonds in the market, without restrictions.

[14] Senate Resolution nº 40 established limits for states and municipalities and was approved in December 2001. It maintains the text proposed by the Executive and gives each state or municipality 15 years to adjust to the limits. A resolution establishing limits for the Federal government, although submitted to all commissions of the Federal Senate, had not been approved by the plenary as of October 2009.

[15] Senate Resolution nº 48, of December 2007.

[16] Budget allotment is a detailed record of an expenditure included in the public budget, linked to a work program in a budgetary unit, and earmarked to fulfill a certain purpose.

Central Bank from issuing public bonds beginning in May 2002,[17] or to exchange, even temporarily (through a financial institution or other entity) any debt bond issued by a state or municipality for FPD bonds

4.2 The Budgetary Guidelines Law

As with the LRF, the Budgetary Guidelines Law (LDO) includes a separate chapter on FPD. It defines the expenditures covered by revenues from public bonds which include those attached to refinancing the principal, interest, and other domestic and foreign debt burdens under the Treasury's direct or indirect responsibility, or that may become the responsibility of the Federal government. They also include expenditures related to capital increases of companies in which the Federal government directly or indirectly holds the majority of voting rights and that have not been included in the privatization program.[18] Further, the LDO allows expenditures to expand, if they are expressly defined in the law. Bonds may not be issued without having clearly specified objectives.

4.3 The Annual Budgetary Law

The FPD budget assumes a special place in the Annual Budget Law, particularly the amount earmarked for refinancing. As noted earlier, the Fiscal Responsibility Law (LRF) separated the refinancing of the FPD, assigning it to a specific budgetary unit. To do so, a "budget source"[19] was established that was linked to an equally specific principal expenditure: Thus, Source 143 was created to record the resources derived from bonds issued to pay the FPD principal, regardless of whether they are associated with securities or contractual debt. Source 144 records all resources from bonds that are issued for other purposes.

When consolidating the budget, the Secretariat of the Federal Budget releases revenues from specific "sources" to pay the FPD service. While some of the sources are stated in laws that determine their exclusive use, others depend on the amounts allocated. Traditionally, revenues available to cover public debt service are from taxes and dividends paid to the Government by its state-owned-companies, from the remuneration of the National Treasury single account at the Central Bank, from the refinancing of states' and municipalities' debt, and from the Central Bank balance sheet surpluses.[20]

If the budget allotment (to repay the debt) must be raised, the LOA authorizes the Executive branch to do this through additional credits[21] from allotments that have not been used, as well as financial[22] and tax surpluses,[23] among others. Such changes are compatible with the primary surplus goal established in the Fiscal Targets Annex of the Budgetary Guidelines Law.

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[17] This occurred two years after the LRF was approved, in May 2000.

[18] See the 2008 LDO (Law nº 11.514, of 13 August 2007, Chapter IV – Provisions Related to the Federal Public Debt).

[19] Federal government revenues are deposited in a single account at the Central Bank. However, to better manage the origins and destinations of distinct budget revenues, the government organized them by "source," assigning each a specific number. Taxes and contributions and traditional current revenues, for example, are registered in "Source 100" and the single account remuneration, a capital revenue, in "Source 188."

[20] For details about traditional revenues used for debt service, see section 4.6.2 of this chapter.

[21] These are adjustment tools to correct distortions during the budget execution (for expenditure authorizations not registered or those insufficiently funded in the Budget Act). They are classified as complementary, special or extraordinary:

• Complementary credits provide new funds to increase a budget allotment. These must be authorized by law and initiated by a decree from the Executive branch. Such authorizations may be stated in the Annual Budget Act.

• Special credits provide new funds for expenditures for which there was no specific budget allotment; they must also be authorized by law and initiated by a decree from the Executive branch.

To increase the flexibility of budget resources, Provisionary Measure nº 450 was approved in 2008 which allows the National Treasury to use those derived from excess revenues (e.g. taxes collected and financial surpluses saved in each fiscal year) for FPD payments. Thus, the Treasury is allowed to use them to pay the debt as long as no legal provision exists that ties the surpluses or excess taxes to other expenditures.

Complementary credits of up to 20% of the amount needed to refinance the FDP are already authorized in the Budgetary Law; only special cases must be resubmitted to the National Congress for approval. Such flexibility allows for more budget transparency and control without creating restrictions that would prevent the public debt from being efficiently managed.

4.4 Drafting the public debt budget proposal

The proposal for the FPD is drafted in two phases. The first is in April and May, and the second in August, when the budget bill must be submitted to the National Congress.

The first phase involves domestic and foreign debt already contracted. The Federal Budget Secretariat (SOF) consolidates the Federal government's total expenditures to comply with the principle of balance (estimated revenues equal defined expenditures). Next, it calculates the value of the revenues available to pay the FPD, including revenues that are, by law, set aside for this purpose as well as resources from other sources.

As the debt service is greater than the revenues earmarked for paying it, the Treasury moves to a second phase, in which, for the next budget year, it raises revenues by issuing bonds in the financial market (from Sources 143 and 144) to cover the difference between the debt service and previously stipulated budget resources - and thus balance the budget: This involves drafting the budget proposal for the Domestic Federal Public Debt (DFPD).

The following data are used to calculate the FPD service and determine the maturity dates[24] for the following fiscal year. These include:

- The 2010 outstanding debt forecast for December 31 of the current year;
- Estimated issuance, based on specific operations, established by law;
- New debt service for the next fiscal year covered through new Federal public bonds;
- The list of National Treasury bonds scheduled to be auctioned each month, including their terms and amounts; the bonds issued for the Central Bank's portfolio are separated from those earmarked for public auction.

4.5 Budget classification of expenditures

The budget classification of expenditures provides transparency by presenting expenditures from different perspectives and defining (a) which entity is responsible for the programming (classification by

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• Extraordinary credits are new funds authorized to meet urgent, unforeseen expenditures, such as war, domestic unrest or disasters, and approved through provisionary measures. They may also be tapped in the next fiscal year, depending on the balance remaining in the budget and if they were authorized in the last four months of that fiscal year.

[22] Financial surplus is a fund drawn from revenues not used during the fiscal year in which they were collected. The resources, applied in the next fiscal year, would not be related to the original objectives authorized by the budget law.

[23] Tax collection surplus refers to a positive balance that represents the difference between current taxes collected and the amounts anticipated.

[24] Maturity dates are classified into principal, interest and other obligations, based on the indexes and profitability of each of the categories that make up the DFPD.

institution); (b) to which category resources are allocated (classification by program), (c) in which government area expenditures will be made (classification by function); and (d) what will be obtained and its economic effect (economic classification).

4.5.1 Institutional classification

Institutional classification identifies the administrative units responsible for executing budget allotments authorized by the Legislative branch under the Annual Budgetary Law. The Brazilian budget is unusual in this respect, since it sometimes lists groups of expenditures or burdens that are not related to specific administrative units; this is true for "Official Credit Operations," "Transfers to States, the Federal District and Municipalities" and "Contingency Reserves." Because large amounts of resources are allocated to these groups, they are presented individually and identified under institutional classifications, to increase transparency.

With regard to the FPD, debt service expenditures due to loan and financing operations that support sectored programs are allotted under the budgets of each of the ministries involved. All other expenditures related to the FPD are included under the groups known as "Refinancing the Domestic Federal Public Debt," which covers outstanding FPD, and "Federal Government Financial Burdens (EFU)," which covers interest and other debt expenses. Both are supervised by the Ministry of Finance, with the National Treasury executing the expenditures.

Table 2. Expenditures of the fiscal and social security budgets, per budget body (R$ million)

Budget bodies	Total
House of Representatives	3,532.8
Federal Senate	2,743.0
Federal Court of Audit	1,283.4
Supreme Court of Brazil	576.7
Federal Court of Appeals	869.4
Federal Courts	11,373.5
Federal Military Courts	314.3
Electoral Courts	4,171.3
Labor Courts	12,012.6
Courts of the Federal District and Territories	1,395.4
Presidency of the Republic	6,738.0
Ministry of Agriculture, Livestock and Supply	7,639.0
Ministry of Science and Technology	5,978.7
Ministry of Finance	19,359.2
Ministry of Education	40,524.6
Ministry of Development, Industry and Foreign Trade	1,595.8
Ministry of Justice	9,237.0
Ministry of Mines and Energy	7,107.2
Ministry of Social Security	239,909.1
Federal Attorney Office (*Ministério Público da União*)	3,341.3
Ministry of Foreign Affairs	1,892.0
Ministry of Health	59,519.5
Ministry of Labor and Employment	31,214.6
Ministry of Transportation	12,787.8
Ministry of Communication	6,266.1
Ministry of Culture	1,361.0
Ministry of Environment	3,532.6
Ministry of Planning, Budget and Management	11,461.5
Ministry of Agrarian Development	4,691.8

Budget bodies	Total
Ministry of Sports	1,400.5
Ministry of Defense	51,381.9
Ministry of National Integration	5,533.7
Ministry of Tourism	3,028.2
Ministry of Social Development and Fight Against Hunger	32,698.9
Ministry of Cities	10,151.4
Financial burdens of the federal government	233,352.4
Transfers to states, the Federal District and municipalities	37,648.3
Contingency reserve	8,423.1
Subtotal	**896,047.5**
Transfers to states, Federal District and municipalities	117,605.0
Subtotal	**1,013,652.6**
Ministry of National Integration	7,427.9
Ministry of Labor and Employment	10,817.7
Ministry of Transportation	185.6
Official credit operations	26,768.3
Subtotal	**1,058,852.2**
Refinancing of the Federal Public Debt	**522,595.5**
Total	**1,581,447.7**

Source: *Annual Budgetary Law 2009*, vol. I, Annex II[25]

4.5.2 Functional classification

Functional classification identifies the sectors in which expenditures are made (e.g. education, health, transportation, etc.). Composed of a set of pre-established functions and sub-functions, this classification is applied to aggregate public costs according to the area of governmental action and clarifies national goals. The budget is innovative in this respect, as it creates a function entitled "Special Charges", which combines expenditures not directly associated with goods or services obtained, such as, for example, debts and reimbursements.

Table 3. Revenues and expenditures of the fiscal and social security budgets, by function (R$ million)

Function	Fiscal	Social Security	Total
01 Legislative	5,581.6	131.0	5,712.6
02 Judicial	20,422.3	311.5	20,733.8
03 Essential to the Courts	4,959.4	27.4	4,986.8
04 Administration	21,508.1	139.5	21,647.6
05 National Defense	24,722.7	1,189.7	25,912.4
06 Public Safety	6,561.3	26.1	6,587.4
07 Foreign Affairs	1,627.0	49.1	1,676.0
08 Social Assistance	0.0	32,683.7	32,683.7
09 Social Security	0.0	293,030.0	293,030.0
10 Health	0.0	54,739.9	54,739.9
11 Labor	1,345.8	25,307.5	26,653.3
12 Education	32,261.1	4,222.2	36,483.3
13 Culture	1,262.5	7.3	1,269.8
14 Citizenship Rights	1,457.1	144.2	1,601.3
15 Urbanism	8,098.8	10.0	8,108.8

[25] Law no 11,897, of December 2008.

Function	Fiscal	Social security	Total
16 Housing	1,433.7	0.0	1,433.7
17 Sanitation	0.0	2,204.2	2,204.2
18 Environmental Manag't	4,043.8	100.9	4,144.7
19 Science & Technology	5,509.5	23.6	5,533.1
20 Agriculture	17,615.7	76.5	17,692.2
21 Agrarian Organization	5,629.9	19.0	5,648.9
22 Industry	3,139.3	11.0	3,150.3
23 Commerce and Services	5,430.5	0.3	5,430.8
24 Communication	606.2	34.2	640.4
25 Energy	828.7	3.2	831.9
26 Transportation	14,940.9	32.4	14,973.3
27 Sports and Leisure	1,397.4	0.3	1,397.7
28 Special Burdens	943,608.1	8,296.8	951,904.9
99 Contingency Reserve	23,107.4	1,527.7	24,635.1
Total	**1,157,098.6**	**424,349.2**	**1,581,447.7**

Source: *Annual Budgetary Law 2009*, vol. I, Chart 8A[26]

Table 4. Revenues and expenditures of the fiscal and social security budgets, by sub-function (R$ million)

Function/sub-function	Fiscal	Social security	Total
28 Special Charges	**943,608**	**8,297**	**951,905**
212 International Cooperation	171		171
334 Promotion of Labor	10,818		10,818
601 Promotion of Vegetal Production	311		311
607 Irrigation	3		3
694 Financial Services	46		46
841 Refinancing of Domestic Debt	511,274		511,274
842 Refinancing of External Debt	11,321		11,321
843 Domestic Debt Service	191,672	1	191,673
844 External Debt Service	17,738	81	17,820
845 Transfers	122,929	1,144	124,072
846 Other Special Burdens	47,295	7,071	54,366
847 Transfers for Basic Education	30,029	1	30,029

Source: *Annual Budgetary Law 2009*, vol. I, Chart 8A[27]

4.5.3 Program classification

This classification describes government actions and demonstrates their social achievements (the products), integrating the budget and planning, as represented by the Multi-Year Plan. The four areas are as follows:

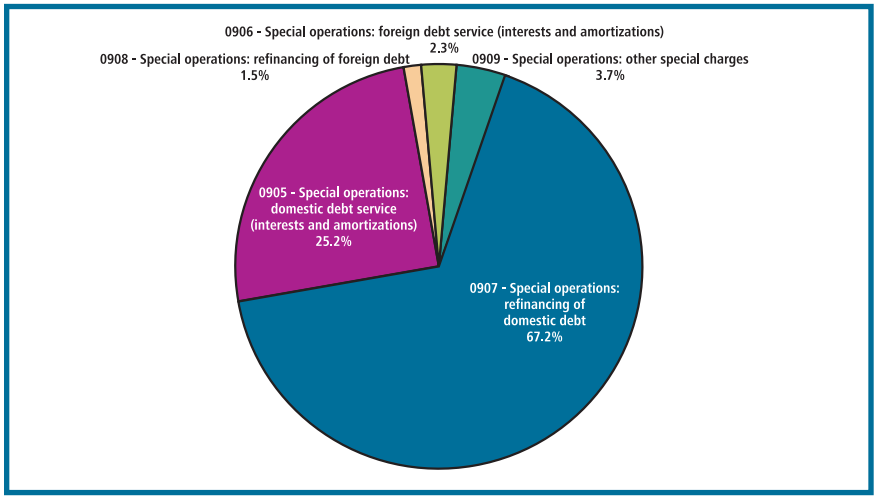
- The *program* is the tool adopted to achieve the medium and long-term goals, measured by indicators established in the Multi-Year Plan.
- The *project* is the tool used to achieve a program's objective; it involves a set of time-bound operations that generate a product that helps to expand or improve a government action.
- The *activity* is also devised to achieve a program's objective; it involves a set of operations performed on an ongoing basis to generate a product that is essential to maintain the government's daily functions.

[26] Law nº 11,451, of February 2007.
[27] Law nº 11,451, of February 2007.

- *Special operations* reflect expenditures that do not maintain the government's daily functions, generating neither products nor goods/services.

FPD programs are classified as special operations, sub-divided into actions: A four-digit code identifies where the budget resources will be applied, clarifying the amount earmarked to pay, for example, the FPD or Proes,[28] offering transparency about resource allocations.

Graph 3. Percentage distribution of the expenditures of the budget per program, as used in the administration of the Federal Public Debt



Source: *Annual Budgetary Law 2009*.[29]

4.5.4 Classification by nature

The classification according to the nature of expenditures (the economic classification) includes the (a) economic category, (b) type of expenditure group, (c) application modality and (d) item of expenditure. The economic category defines whether it is a capital or current account expense: If the former, it states whether it involves amortization, refinancing, financial inversion or investment; if the latter, it states whether it refers to payment of interest or personnel. The application modality indicates if the resources are used by entities from the same branch of government; if used by a different branch, the information eliminates duplicate accounting of transferred or decentralized resources. Finally, the expenditure item identifies its immediate object, detailed in the account plan.

The payment of interest and other FPD charges is classified as a Current Expenditure; the payment of the principal (debt amortization) is listed under Capital Expenditures.

[28] Proes is a support program to (a) handle the states' fiscal adjustments and (b) reduce the presence of the state-level public sector in financial banking activities.
[29] Law nº 11,451, of February 2007.

Table 5. Summary of expenditures of the fiscal and social security budget, by economic category and nature of expenditure group (resources from all sources , R$ million)

Economic category	Group of expenditure	Total
Current expenditures		**834,265**
	Personnel and social security contributions	168,798
	Interests and debt charges	124,711
	Other current expenditures	540,756
Capital expenditures		**721,254**
	Investments	47,617
	Financial inversions	41,960
	Debt amortization	631,678
Reserves		**25,929**
	Contingency	8,423
	Others	17,506
Total		**1,581,448**

Source: *Annual Budgetary Law 2009*, vol. I, Chart 6[30]

4.6 Budgetary classification of revenues

4.6.1 Classification by nature

A classification according to the nature of the revenue is useful as it identifies the origin of resources. With the FPD, revenues from credit operations (bond issues or loan and financing contracts) are classified as capital revenues and, as with expenditures, are described in detail.

Table 6. Summary of all revenues of the fiscal and social security budget, by economic category (resources from all sources , R$ million)

Code	Economic category	Total
1.0.0.0.00.00	**Current Revenues**	**839,902**
1.1.0.0.00.00	Tax revenues	289,839
1.2.0.0.00.00	Revenues from contributions	431,990
1.3.0.0.00.00	Equity revenues	51,636
1.4.0.0.00.00	Agriculture revenues	23
1.5.0.0.00.00	Industrial revenues	654
1.6.0.0.00.00	Service revenues	33,661
1.7.0.0.00.00	Current transfers	305
1.9.0.0.00.00	Other current revenues	31,794
2.0.0.0.00.00	**Capital revenues**	**729,195**
2.1.0.0.00.00	Credit operations	644,612
2.2.0.0.00.00	Disposal of assets	5,070
2.3.0.0.00.00	Loan amortization	22,262
2.4.0.0.00.00	Capital transfers	150
2.5.0.0.00.00	Other capital revenues	57,102
7.0.0.0.00.00	**Intra-budgetary revenues**	**12,350**
7.2.0.0.00.00	Revenues from intra-budgetary contributions	12,167
7.3.0.0.00.00	Intra-budgetary equity revenues	2
7.5.0.0.00.00	Intra-budgetary industrial revenues	135
7.6.0.0.00.00	Intra-budgetary service revenues	43
7.9.0.0.00.00	Other revenues – intra-budgetary operations	3
Total		**1,581,448**

Source: *Annual Budgetary Law 2009*, vol. I, Chart 3[31]

4.6.2 Classification by revenue source

This classification indicates the way budget expenditures are funded, based on a law that specifies their destination. Revenue source is a key category since it tracks expenditures earmarked for certain purposes, as well as those allocated for new budget proposals.

Revenues are also classified as primary (P), when their value is included in determining the Primary Surplus, in the so called above-the-line concept, and Non-Primary or Financial (F) when not included in this calculation. Primary revenues are derived from taxes, contributions, assets, agriculture, industry and services. Financial revenues are derived from credit operations, financial applications and interest, as per the IMF 1986 *Manual on Government Finance Statistics*.

Table 7. Sources of funds traditionally set aside for payment of the Federal Public Debt[32]

Sources of funds set aside for payment of the Federal Public Debt
100 – Ordinary resources *
129 – Resources from concessions *
152 – Positive balance of the Central Bank **
159 – Return of refinancing of middle and long term debt ***
162 – Public assets reform – alienation of assets ****
173 – Return on the refinancing of debt of states and municipalities *****
188 – Remuneration of the single account
197 – Dividends of state-owned Companies * and resources from the debt amortization fund ******

* Resources that integrate the calculation of the Federal government's primary surplus.

** Determined every quarter by means of an asset balance, and transferred once approved by the National Monetary Fund.

*** Payment from states, municipalities and companies or former state-owned companies to the Federal government, due to their debt assumed by Federal government within the scope of renegotiation of foreign public debt.

**** Resources from the sale of shares or quotas of public companies, when privatized (transferred shareholders control).

***** Payment by the states and municipalities to the Federal government, resulting from debt incurred through the renegotiation of their domestic debt in 1997.

****** Resources from the sale of shares or quotas of public companies, without transfer of shareholder control.

5 Conclusion

This chapter described Brazil's budget structure, including all aspects associated with the management of the FPD. Information about the debt-related budget has improved in recent years and has thus provided society with a better understanding of the ways in which public funds are managed. The following list of recent changes is not complete, since the process is ongoing:

a) Actions were consolidated according to their purpose. This identifies the amounts attached to debt securitization, sovereign bond issuances, loans and financing, among others;

b) Detaching (in the budget) the resources earmarked for refinancing the FPD;

c) Distinguishing (in the DFPD budget) bonds issued to refinance public debt in the market from those in the Central Bank portfolio, thus enhancing the transparency of public accounts and improving consistency with the Annual Borrowing Plan.[33]

[30] Law nº 11,897, of December 2008.

[31] Law nº 11,897, of December 2008.

[32] The list does not include those from Source 143 (resources generated by issuing bonds to pay the FPD principal) and Source 144 (those generated by issuing bonds to pay FPD interests and charges).

Such improvements are partly due to the dynamic process within public administration, which adopts new laws or changes existing ones. If such changes affect the management of public resources and, particularly the FPD, either by generating new information or devising new concepts, the process associated with the budget structure must also be improved to be accountable and make debt management more transparent.

6 Budgetary legislation

1988 Federal Constitution, Section II, Budgets, articles 165-169 (http://www.planalto.gov.br/ccivil_03/Constituicao/Constituiçao.htm).

6.1 Complementary laws

a) Complementary Law nº. 101, May 4, 2000 (http://www.planalto.gov.br/ccivil_03/Leis/LCP/Lcp101.htm)

b) Fiscal Responsibility Law, which establishes rules for public finances, to promote responsibility for fiscal management

c) Law nº 4,320, March 17, 1964 (http://www.planalto.gov.br/ccivil_03/Leis/L4320.htm).
It creates general financial rules for drafting and controlling budgets and balances of the Federal government, states, municipalities and the Federal District.

6.2 Ordinary laws

a) Law nº 11,768, August 14, 2008 (2009 LDO) (https://www.portalsof.planejamento.gov.br/sof/2009/ldo2009/Lei_11768_1_de_140808.pdf).
It establishes guidelines for preparing the 2009 Budgetary Law and sets forth other provisions.

b) LOA – Law no11,897, December 30, 2008 (2009 LOA).
It estimates the revenues and establishes the expenditures of the Federal government for fiscal 2009.

c) PPA – Law nº 11,653, April 7, 2008 (2008-2011 Multi-Annual Plan) (http://www.planejamento.gov.br/secretarias/upload/Arquivos/spi/plano_plurianual/PPA/081015_PPA_2008_leiTxt.pdf).
It established guidelines for the 2008-2011 Multi-Annual Plan

[33] The ABP presents the objectives, guidelines, strategies and targets for managing the FPD, considering only the debt held by the public (excluding the public debt bonds held by the Central Bank), since this debt is the one that must be considered for monitoring the fiscal policy costs and risks.

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Part II
Chapter 5

Regulatory frameworks and government auditing of public debt

by Laércio M. Vieira

1 Introduction

This chapter provides an overview of the regulatory framework and auditing process with respect to Brazil's public debt. These two areas are critical to efficient public debt management (PDM), which relies on consistent procedures and strong institutions. The chapter will describe the country's institutional structure, with the regulatory framework that sets responsibilities for all agents involved, its enforcement mechanisms and its rules with regard to fiscal transparency. The systems are consistent with best international practices, as expressed by organizations such as the World Bank, International Monetary Fund (IMF) and the International Organization of Supreme Audit Institutions (INTOSAI).

Following the Introduction, Section 2 examines the regulatory frameworks, the legal system with respect to indebtedness, public debt conceptual frameworks and the role of the agents involved. Section 3 analyzes the process for auditing the public debt, the concepts on which the audits are based, the institutions that perform them, and the mandate to carry out this function. Section 4 reviews the main points in the chapter.

2 Public debt regulatory frameworks

2.1 Structure of Brazil's legal system

The study of the regulatory framework involves its conceptual underpinnings, the role of public agents, and the rules on public sector indebtedness. Brazil's legal system is based on civil law (or public law) derived from European legal codes that distinguish between public and private governance, as opposed to common law, based on Anglo-Saxon systems.

The legal system involves a Constitution and its amendments, complementary laws, ordinary laws, provisional measures and resolutions. The Constitution and its amendments, written in 1988, supersede other laws (see the diagram below).

Complementary laws,ordinary laws, provisional measures and resolutions are not hierarchical; rather, they are linked to the areas they regulate, with their own unique provisions.

Complementary laws[1] cover areas that legislators decided should not be regulated by the Constitution; had they been included in that document, it would be extremely difficult to introduce changes. At the same time, they recognized the laws should not be too easily altered, through ordinary legislative processes. These

[1] According to Moraes (2004).

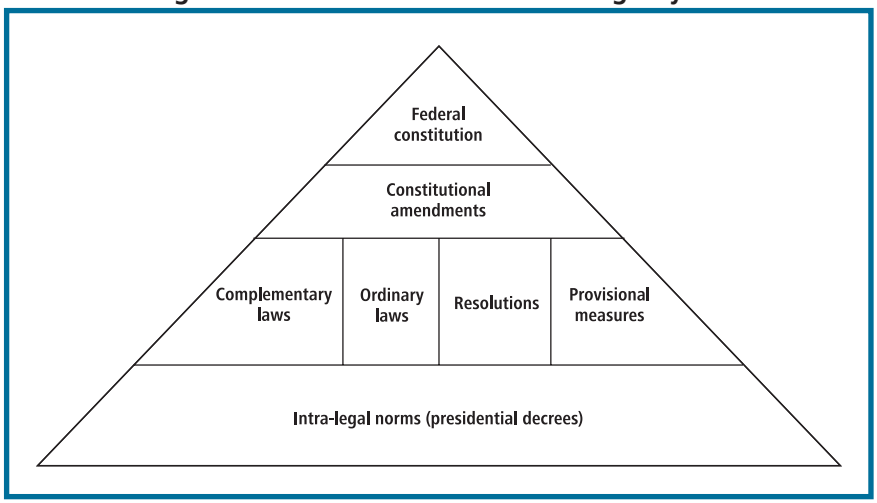
laws differ from ordinary laws in two ways. First, only matters explicitly provided in the Constitution may be subject to complementary laws. Second, they must be approved by an absolute majority, which prevents the complementary law from being routinely altered and provides a greater degree of stability.

Provisional measures (called *medidas provisórias*). Included in the 1988 Constitution to replace *decree-laws*,[2] these are sent by the head of the executive branch (the President) to the Congress, and are characterized as exceptional normative acts that can respond quickly to emergency situations. They differ from *decree-laws* in that the areas they cover are more restrictive and they apply for just 60 days; after this time, the Congress must vote to approve or reject them.

Resolutions are acts of Congress (the House of Representatives or the Senate) which regulate matters constitutionally directed to be ruled by them.

Decrees are issued by the President, which do not have the force of a law (with respect to enforcement). In fact, their objective is to rule a law, detailing its main points, without modifying it. The President may also issue other normative acts such as administrative rules and instructions.

Diagram 1. Structure of the Brazilian legal system



It should be noted that Brazil is composed of autonomous, independent members - the states, Federal District and municipalities - as provided in Article 1 of the Constitution. For each, the Constitution establishes a set of legislative rights and responsibilities related to expenditures and revenues. Also, each has the right to govern, legislate, organize and administer according to its prerogatives. Thus, the legal system with the normative acts described above is reproduced at the sub-national levels.[3]

The Constitution stipulates that the federal government will be funded by taxes, contributions and public debt, and in principle will not receive government transfers from the other members; also, that taxes and contributions will allocated among the members. Besides these sources, sub-national members can also

[2] The 1988 Constitution inserted some of these decree-laws into the new legal system because, although the new constitutional order was incompatible with the previous one, some of the decree-laws issued before 1988 remained. These include, for example, Decree-law nº 201 of 1967 which sets forth the responsibilities of mayors and council members with respect to PDM and Decree-law nº 2.848 of 1940, known as the Penal Code.

[3] In this case, the top of the pyramid (occupied by the federal Constitution) is replaced by state constitutions and municipal organic laws. Presidential decrees at the federal level are replaced by state governors' executive orders and mayors' decrees.

be funded by debt and transfers of resources from the federal government or from states to municipalities. The Constitution guarantees that their expenditures will be funded by various revenues.

Because the members of the federation are independent, they must prepare and execute their own budgetary laws which must list revenues and expenditures, including those related to their debt.

The Constitution delegated to the federal government the right to establish general rules on public finance.[4] Thus it enacted the Complementary Law nº 101 of 2000, known as the Fiscal Responsibility Law (LRF), which presents several rules regarding public debt, applied to all members of the Federation. Together with the federal Law nº 4,320 of 1964, they provide the "structural regulation of the public debt" since they lay the foundation for the country's public finances and debt management.[5]

In addition, the Budgetary Guidelines Law (LDO), which guides the Annual Budgetary Law (LOA), may contain provisions related to the public debt. These laws provide for "periodic" regulation of the public debt, because they are only in force for the fiscal year to which they apply.

The main characteristics of these laws are presented below.

2.1.1 Federal law nº 4,320 of 1964

This law establishes general financial standards for budgets and balance sheets of the federal government, states, municipalities and the Federal District. Although it was originally created as an *ordinary* law, it has the status of a *complementary* law since it was included as such in the 1988 federal Constitution (Article 165). In general, it establishes the following:

a) Budget, financial, public asset and accounting procedures for public sector entities;

b) Structural provisions for the budget laws;

c) Rules related to management's accountability and the publicizing of accounting reports.

Also, it contains rules for preparing, executing, accounting for and publicizing the budgets at each level of government. The International Monetary Fund (IMF), in its "Fiscal Transparency Manual" (FTM) of 2007, considers these rules as best practices with respect to fiscal transparency.

Regulated at the federal level by presidential decree no 93.872 of 1986, the law unifies the National Treasury's cash resources: All revenues and expenditures must pass through the "Single Account". Both the law and decree present concepts and rules on public debt (see Sections 2.2 and 2.4).

2.1.2 Complementary Law nº 101 of 2000

Known as Fiscal Responsibility Law (LRF), this law established rules to ensure responsible fiscal management. It is supported by the federal Constitution (Article 163) and applies to all levels of government (Article 1). It did not replace federal Law no 4,320 but changed some aspects, such as the concept of

[4] Article 24, I and II, and paragraph 1.

[5] These laws on the public debt regulatory framework apply to all entities of the Federation. However, there are specific laws at the federal level: Law no 10.179 of 2001, which addresses public debt securities under the National Treasury, and the Decree no 1.312 of 1974, which provides the legal framework for federal external bond issuances.

consolidated debt (see Section 2.2). It includes an entire chapter on the debt, including rules and penalties of a fiscal nature (see Section2.4).

Federal law no 10,028 of 2000, called the Law of Fiscal Crimes, changed features of three previous laws: (a) the Criminal Code[6], including a chapter called "Crimes against Public Finances;" (b) the Law no 1,079 of 1950, which defined the crimes for which the President and governors are responsible; and (c) the Decree Law no 201 of 1967, which defined the responsibility of mayors, incorporating a set of penalties (criminal punishments) for non-compliance with the LRF provisions, particularly those related to public sector indebtedness.

In general, the penalties are as follows:

Table 1. Penalties related to public debt management

Fiscal penalties	Criminal penalties	Political penalties
Source: LRF	Source: Law no 10,028 of 2000	Source: Federal Constitution
Suspension of voluntary transfers*. Prohibition against entering credit operation contracts. Attainment of fiscal targets.	Detention, loss of mandate and job, prohibition from holding public office for up to five years. Monetary penalties for administrative violations (30% of annual salary).	Federal intervention in a state or state intervention in a municipality.

* Except for those allocated for health, education and social assistance.

Sub-section 2.4 presents the violations associated with these penalties. Beyond them, public debt managers may be ineligible for any political post or be constrained by administrative penalties and ethical admonitions (see Section 2.3.2).

2.1.3 Federal Budgetary Guidelines Laws (LDOs) and Annual Budgetary Laws (LOAs)

The LDOs and the LOAs are ordinary laws, written on an annual basis, that apply to each member of the Federation. According to the Federal Constitution, the LDOs provide targets and priorities for the federal public administration and elaborate the Annual Budgetary Law.

The LDOs, which set rules for creating and executing the budget, and the LOAs, which contain the annual budget, are constitutionally supported by Article 165; they coordinate the functions and timing of macroeconomic decision-making and microeconomic allocations. Such coordination is crucial if the allocation system is to be integrated with fiscal targets and public debt management.

The LRF incorporated new aspects to the LDOs, particularly provisions related to planning and fiscal transparency (see Section 2.4.2.1).

2.2 Conceptual frameworks for public debt

The conceptual frameworks for public debt, provided in the above laws, can be divided into three categories pertain to: (a) stock concepts (public debt); (b) flow concepts (credit operations); and (c) potential debt-generating acts (granting of guarantees).

[6] Decree law no 2,848 of 1940.

2.2.1 Legal concept of public debt

According to the Presidential Decree no 93,872 of 1986, which regulates Law no 4,320 of 1964, the public debt includes floating (unfunded) debt and funded/consolidated debt (Article 115). Law no 4.320, along with the LRF, presents the concepts of floating and funded debt.

Floating debt can have two main sources:

Table 2. Floating debt

Obligations derived from expenditures in the annual budget	
Outstanding commitments (generally with public debt suppliers)	Outstanding debt services (interest and amortization)
Obligations derived from revenues not pertaining to the public sector*	
Deposits	Cash flow (Treasury) debt

*The money base is also classified as floating debt and is subject to provisions set forth by the National Monetary Council, according to norms established by Law no 4,595 of 1964, on regulating the national financial system.

Outstanding commitments are financial obligations related to budget expenditures and debt service already settled, but not paid by December 31 of each financial year,[7] along with interest and amortization on the public debt (Article 67).

Deposits are financial obligations related to amounts received by the public sector (including the judicial branch), as well as pledges in cash that, in principle, must be returned, after the occurrence of the contingent event.

Treasury debt involves financial obligations related to credit operations that anticipate budgetary revenues, called ARO. It should be noted that the LRF established rules for outstanding commitments and treasury debt, as part of the floating debt (see Section 2.4).

Funded debts are liabilities whose payment depends on appropriations in the Annual Budgetary Law. The original concept was in federal law no 4,320, which established that this debt included securities with maturities of over 12 months, which were assumed in order to address budget or financial imbalances related to public works and services (Article 98).

However, the LRF also began to include in this category credit operations with amortization in less than 12 months, whose revenues were included in the budget. Thus, the concept of public consolidated or funded debt became much broader, not only with regard to its component elements, but also maturities, which may be short or long term.

Table 3. Consolidated or funded debt (LRF, Article 29)

This refers to the total amount, determined without double accounting, of financial liabilities assumed by a member of the federation, according to laws, contracts, agreements or treaties, generated by credit operations and scheduled for amortization over a 12-month period.
It also includes credit operations with amortization in less than 12 months, whose revenue is included in the budget.

[7] Outstanding commitments are legally pledged expenditures, not eliminated and not paid in the same fiscal year, which must be covered during the following year. The increase in such commitments compromises future revenues and creates difficulties for financial management in the following year.

Funded or consolidated debt can be external or domestic and, according to the LRF, is subject to rules and limits defined by the Federal Senate (see Section 2.4).

Presidential Decree no 93,872 of 1986 (Article 115) stipulated that funded debt can be (a) contractual debt - financial liabilities assumed through contracts, treaties or similar instruments, and (b) securities debt - obligations assumed through public bonds issuances. In the latter case, the LRF (Article 29) presents the concept of public securities debt as that represented by securities issued by the federal government (including the Central Bank) and all other public entities.

2.2.2 Legal concept of credit operations

The LRF[8] broadened the concept of credit operations to include financial obligations resulting from mutual loans, credit concessions, bond issues, financing for acquisition of goods, anticipated revenue from the sale of goods and services, leasing and similar operations, including the use of financial derivatives. Other operations that imply financing of the public sector, even if not expressly stated here, can also be included in the category of credit operations. Article 29 also establishes that "debt assumption or acknowledgement by the member of the Federation will be equivalent to a credit operation."

According to the Law nº 4,320 of 1964, all credit operations must be specified in the annual budget[9] and contained in demonstrative statements.[10] The Law also sets rules and limits for contracting credit operations.[11] An important credit operation is the "refinancing of public security debt," which consists of bonds issued to pay the debt principal, subject to specific rules and limits.[12]

2.2.3 concept of concession of guarantee

According to LRF,[13] the concession of a guarantee is a commitment to fully honor a financial or contractual obligation assumed by a member of the Federation or its related bodies, being also subject to rules and limits.[14] Although it constitutes a public sector contingent liability, a conceded guarantee is not yet a liquid debt.

2.3 Responsibilities of public agents

The Federal Constitution defines the responsibilities of the Executive, Legislative and Judiciary branches at all levels of government with respect to fiscal issues and the public debt; these are consistent with the IMF's provisions on fiscal transparency, based on an evaluation it conducted in Brazil (IMF, 2001). The ethical standards for civil servants, particularly those referring to Federal Public Debt managers, are public and transparent, as required by the IMF in its Fiscal Transparency Manual (FTM), 2007 (item 4.2.1), and based on its 2001 evaluation.

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[8] Article 29.
[9] As provided in Law no 4,320 of 1964.
[10] According to LRF. For more details, see subsection 2.4.2.
[11] See subsection 2.4.1.
[12] See Section 2.4.
[13] Article 29.
[14] See Section 2.4.

Finally, according to the World Bank,[15] good governance requires that laws should identify the authorities that may contract or issue new debt, as well as the process of public debt management. Based on the evaluations, Brazil has adopted the management and governance best practices that are promoted by the international organizations.

2.3.1 The legislative branch

The following box lists the Senate's responsibilities in public debt matters, according to Article 52 of the Federal Constitution:

Table 4. Roles of the Federal Senate

Public debt	Credit operations	Guarantees
Funded debt To set global limits for the amount of funded debt, as proposed by the President, for all levels of government.	**Domestic and external credit operations** To set global limits/conditions for external and domestic credit operations for all levels of government	**Concessions of guarantees** To set limits/conditions for guarantees offered in external and domestic credit operations for the federal government
Public security debt To set global limits/conditions for the amount of the security debt for states, the Federal District and municipalities	**External credit operations** To authorize external financial operations for all levels of government	

The Federal Senate approved Resolutions no 40 and no 43 of 2001, which set global limits for the amount of funded public debt and public security debt of the Federal District, states and municipalities, as well for domestic and external credit operations and guarantees to be conceded by the members of the Federation.

These provisions are reproduced in state constitutions and municipal organic laws (constitutions), and allow the legislative branches of the various government levels to determine such matters.

The Federal Court of Accounts,[16] which is part of the Legislative branch, performs external audits of public administration, and is constitutionally mandated to audit public debt operations (see Section 3).

2.3.2 The executive branch

At the federal level, Law no 10,683 of 2003, provides for the organization of the Presidency and the ministries:[17] It is responsibility of the Ministry of Finance (MF) to manage the federal Government's domestic and external public debts. Moreover, the LRF states that the MF must verify compliance with the limits/conditions related to credit operations carried out by each Federation member.

[15] "Managing Public Debt: From Diagnostics to Reform Implementation".
[16] The Federal Court of Audit (TCU) is Brazil's supreme audit institution (SAI).
[17] This law deals with the organization of president Lula da Silva's administration, while earlier laws already regulated the role of

Law 10,683 was regulated by federal decree no 6,102 of 2007, which approved the internal structure of the MF, stipulating that the National Treasury Secretariat (STN)[18] would manage the public domestic and external debt, directly or indirectly under the federal government, as well verify aspects related to credit operations.

The MF Administrative Act no 183 of 2003 stipulates that the National Treasury will handle securities' operations and the STN Administrative Act no 410 of 2003 defines the rules for public security auctions.

The STN/MF has a key role in managing the domestic and External Federal Public Debt (EFPD), although for many years the role was shared with the Central Bank (CB). Until 2004, the CB was the National Treasury's agent for issuing bonds abroad, but the task was transferred to the Treasury in January 2005, when the latter began to centralize all actions with respect to the federal external debt. With regard to domestic debt, the STN (since it was created in 1986) has been issuing securities for fiscal policy purposes, while the CB remained responsible for issuing securities to conduct monetary policy. However, Article 34 of the LRF prohibited the CB from issuing its own securities; instead, it must use the Treasury securities in its portfolio to carry out its tasks. The law also provided for the transfer of the positive six-monthly balance from the CB to the Treasury, as well as its payment, when negative, by issuing securities for the monetary authority.

Managers of the federal executive branch are bound by the Code of Public Ethics[19] that penalizes wrongdoings by admonitions or dismissals, as well as with specific penalties for failing to comply with the LRF provisions (see Section 2.4) Also, top managers (ministers or secretaries) are bound by the Code of Conduct of the High Federal Administration, which provides for admonition and ethical censorship depending on the gravity of the violation.

The STN also issued a Code of Professional Conduct Ethics and Standards for its staff,[20] which provides restrictions for acquiring and selling stocks, securities or other financial products issued by federal state-owned companies or Federal Public Debt securities. These restrictions include the following: Staff must sell their assets in time frames of not less than 12 months from the date they were bought, make purchases up until the fifth working day of each month and buy only one purchase per asset per month. Failure to comply with the restrictions can lead to legal sanctions.

Besides these penalties, public servants who are convicted criminally as a last judicial resort, for crimes against the economy, public administration and public assets, and whose accounts related to the exercise of public positions or offices have been rejected by the Courts of Audit for irreparable irregularities, will not be eligible for elected positions.[21]

Finally, the Constitution requires there be an internal control agency in the executive branch (a kind of internal audit) to oversee credit operations, endorsements and guarantees, as well as the rights and assets of the federal government, thereby offering another level of enforcement. Federal Law no 10,180 of 2001

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the MF (with regard to public debt management). In each administration, a similar law provides for the form of organization of the federal executive branch. In the previous administration of president Fernando Henrique Cardoso, this provision was regulated by federal law no 9,649 of 1998.

[18] The National Treasury Secretariat (STN) was created by federal decree no 92,452 of 1986. Its responsibilities for managing the domestic public security debt and external debt were assigned by federal decree no 1,745 of 1995; these provisions were maintained in subsequent decrees. Currently, decree no 6,764 of October 2009 regulates the STN.

[19] Law no 8,027 of 1990.

[20] Approved in STN administrative act nº 27 of 2008. The *Code of Ethics for National Treasury staff* who work in the public debt department was originally approved in STN administrative act no 44 of 2001. This was replaced by STN administrative act no 602 of 2005, which imposed even stricter standards of conduct. The current instrument (STN administrative order no 27 of 2008) reinforces the requirements and extends the code to all Secretariat staff.

[21] Complementary law n. 64 of 1990.

assigned these functions to the Office of the Comptroller General (CGU). Government audits of the public debt are described in Section 3.

2.4 Rules for public sector indebtedness

According to the World Bank,[22] rules for indebtedness constitute good management practices. In this regard, the IMF's 2001 evaluation of the central government's finances found the rules, etc. to be detailed, comprehensive and readily available, as required by FTM 2007.[23]

2.4.1 Conditions, prohibitions, limits and penalties

The rules on conditions, prohibitions, limits and penalties can be divided into those for stock formation (public debt), contracting of credit operations (flows) and concessions of guarantees.

2.4.1.1 Rules for stock formation

The laws contain rules for floating debt (outstanding commitments) and funded/consolidated debt which are presented in the LRF and in Senate Resolutions no 40 and no 43 of 2001.

Regarding the floating debt, the LRF prevents the so-called "fiscal legacy," which is the transfer of debt with public service suppliers from one administration to the next. Under LRF, the limit of this debt is the cash available at the Executive branch or Legislative and Judicial branch agencies of each member of the Federation.

Table 5. Limit of floating debt (to all levels of government and their branches)

Rule (LRF)
Government entities are prohibited from entering into contractual obligations (expenditures) during the last eight months of their terms that cannot be fully paid within the term or have installments to be paid in the following fiscal period without enough cash available.
Verification of compliance (LRF)
Compliance with the limit will be verified at the end of the last fiscal year of the term of office.
Verification of compliance (LRF)
Crimes include (a) registering non-pledged expenditures as floating debt (authorizing expenditures that exceed the legal limit) and (b) failing to cancel such debt registered above the legal limit.

Floating debts need to be regulated to prevent them from being converted into funded or consolidated debts, as occurred with those associated with service providers to the National Social Security Institute (INSS), and required the government to issue public securities (by means of Law no 11,051 of 2004).

The LRF stipulated that 90 days after its publication, the President should send to the Senate a proposal limiting the consolidated debt of the three levels of government and to the National Congress a bill limiting the Federal Public Debt. The proposals refer to debt as a percentage of net current revenues (RCL)[24] and have become the cap for indebtedness. Until now, only the proposals sent to the Federal Senate have been passed.[25]

[22] "Managing Public Debt: From Diagnostics to Implementing Reforms," (Chapter 5).
[23] Items 3.1 and 3.2.

Table 6. Limits for net funded or consolidated debt (Federal Senate resolution nº 40, of 2001)

Federal government	States/DF*	Municipalities*
Debt may not exceed 350% of the RCL.	At the end of 15 years (2002-2017), debt may not exceed 200% of the RCL.	At the end of 15 years (2002-2017), debt may not exceed 120% of RCL.

*For the states and municipalities, the difference between the percentage in 2002 and the limit must be reduced at the ratio of 1/15 per year. If the limit is reached before the established deadline, it must be followed.

Compliance with the limits[26] must be verified at the end of each four-month period, although municipalities with populations under 50,000 may verify the numbers every six months. If the Federation members do not comply, the legal system pursues enforcement mechanisms that include the following:

Table 7. Mechanisms for enforcing limits for net funded/consolidated debt (to all levels of government)

Rule of debt reduction to the established limits (LRF and Senate Resolution no 40 of 2001)
If the consolidated debt exceeds the limit at the end of a 4-month period, it must comply by the end of the next three periods, with a minimum of 25% reduction in the first period.
Penalties
I - Fiscal penalties (LRF and Resolution no 40) Once the excess is verified, the member that violates the limit is: **a)** prohibited from contracting internal or external credit operations, including ARO, except to refinance the debt principal and **b)** required to obtain the balance needed to reduce the debt to the limit, restricting funding commitments, among other measures. These restrictions apply immediately if the amount of debt exceeds the limit during the first four-month period of the President's last year. Once the period for reducing the debt has ended, and if the excess persists, the member will also be prohibited from receiving voluntary transfers from the federal government or the states.
II - Criminal penalties or administrative infringements (federal law no 10,028 of 2000) The offense is considered a crime when the member has not ordered the excess debt to be reduced within the time set by the Federal Senate. The penalty is detention of three months to three years (for mayors) and/or loss of public office for up to five years (for mayors, governors and the President). These penalties do not exclude the possibility of trial and conviction for common crime. The offense is considered an infringement when the member does not meet the primary balance needed to reduce the debt to the established limit. The penalty is a fine of 30% of the annual income for the agent responsible. The infringement is determined by the Court of Accounts responsible for enforcement.

[24] The net current revenue (RCL) is the sum of revenues from taxes, contributions, assets, the industrial, farming and service sectors, current transfers and other current revenues, minus the amounts of funds transferred to other entities of the Federation (by constitutional or legal enforcement) and to civil servants' social security funds.

[25] Senate resolutions no 40 and no 43 of 2001.

[26] According to the LRF and senate resolution no 40 of 2001.

III - Political punishments (Federal Constitution, Articles 34 and 35) The federal government intervenes in the state or Federal District to reorganize the finances if either suspends payment of the funded debt for two consecutive years, except in case of force majeure. The states intervene in municipalities that suspend payment of the funded debt for two consecutive years, except in case of force majeure.
Social controls (LRF, Article 31)
The Ministry of Finance must disclose each month the list of members that exceed the limits of consolidated and public debt.

The LRF also allows the President to ask the Federal Senate or National Congress to review the limits when economic conditions change, either due to instability or changes in monetary or exchange rate policies.

2.4.1.2 Rules on flow: credit operations and refinancing the public debt

The rules for credit operations are based on legal and Constitutional requirements; the LRF sets the conditions for contracting them. These include: (a) authorization in the Annual Budgetary Law; (b) provisions in the Federal Senate's Resolutions no 40 and no 43 of 2001; (c) specific authorization from the Federal Senate (for external operations); and (d) compliance with the limit imposed by the *golden rule*.

The *golden rule*, as defined in the Federal Constitution, prohibits credit operations that exceed the sum of capital expenditures in the fiscal year.[27] The LRF enforces this by establishing that all resources obtained through credit operations and capital expenditures executed during the fiscal year must be considered. Also, Article 30 of the LRF states that the Federal Senate should set yearly limits for credit operations[28] (flows) for all levels of government.

Table 8. Limits for credit operations (Federal Senate resolutions nº 43, of 2001, and nº 48, of 2007)

Federal government	States, Federal District and municipalities
I - Credit operations	
60% of the RCL for contracting credit operations* per fiscal year.	16% of the RCL for contracting credit operations* per year; 11.5% of the RCL for servicing the debt (interest and amortization) per year.
II - Credit operations for anticipated budget revenues– ARO	
Still not regulated.	The outstanding debt may not exceed 7% of the RCL in the fiscal period.

* Except credit operations carried out to amortize the public debt that matures in the fiscal year.

[27] Except those authorized by the Legislature by absolute majority, and with a precise purpose.

[28] The concept of credit operations for compliance with the "golden rule" is not the same as that which applies to the new limit for (gross and net) debt to net current revenue - RCL, created by the LRF. While the former is restricted to operations that generate revenues, the latter adds to them the financial obligations connected to mutual loans, credit concessions, bond issuances, financing for acquisition of goods, anticipated revenues from the forward sale of goods and services, leasing and similar operations, including the use of financial derivatives (Article 29 of the LRF).

Compliance with limits must be verified at the end of each four-month period. Municipalities with a population of less than 50,000 may verify compliance every six months.

Credit operations through anticipated budget revenues (AROs) are conducted to meet cash shortfalls during the fiscal year and must comply with the limits. These operations may only be conducted from the tenth day of the following year and must be settled, including the payment of interest and other charges, by December 10 of the same year. Also, new operations may not be carried out until previous ones of the same nature are fully paid, as well as in the last year of the term of office of the President, governor or mayor (LRF, Article 38).

Credit operations are also bound by the following prohibitions:

Table 9. Prohibition of credit operations

Between members of the federation (LRF)**,* state financial institutions and their controllers** (LRF)* **and federation members and the Central Bank** (Federal Constitution and LRF)
Article 164 of the Constitution: a) The Central Bank may not grant loans (directly or indirectly) to the National Treasury and any agency or organization that is not a financial institution; b) The Central Bank may buy and sell National Treasury securities to regulate the money supply or the interest rate. **LRF, Articles 35 and 39:** a) Credit operations between the Central Bank and federal government are forbidden; b) The Central Bank may not issue public debt securities; c) The Central Bank may only buy federal government securities to refinance upcoming federal security debt maturing in its portfolio; d) The federal government (through the National Treasury) may not acquire federal debt instruments in the Central Bank's portfolio unless the operation aims to reduce the securities' debt.
Operations with suppliers (LRF)
The Federation member may not assume direct commitments, confession of indebtedness or similar operations with a supplier of goods, merchandise or services, by issuing, accepting or endorsing credit instruments, or without budgetary authorization for payment in the future.

* However, states and municipalities may acquire federal debt securities for investment purposes, and state financial institutions may acquire public debt securities to meet their clients' investment needs (LRF, Articles 35 and 36)

If federation members do not comply with these conditions, the legal system has a set of enforcement mechanisms, including:

Table 10. Penalties with regard to credit operations and refinancing of the public debt (for all levels of government)

I - Fiscal penalties (LRF and Resolution no 40 of 2001)
Federation members that do not comply with the limits (a) may not conduct internal or external credit operations, including ARO, except to refinance the principal of the public debt and (b) must obtain the primary balance required to scale down the debt to the limit, restricting funding commitments, among other measures.

II - Criminal penalties (federal law no 10,028 of 2000)
II.1 - Credit operations a) If mayors, governors or the President order, authorize or conduct credit operations prohibited by the LRF and Senate resolutions, they may be subject to prison sentences of one to two years and/or loss of office and being banned from public office for up to five years. These penalties do not exclude the possibility of trial and conviction on criminal charges. b) If mayors, governors and the President order or authorize the allocation of resources by issuing securities for a purpose other than those stipulated by law, they may be detained from three months to three years, may lose their political office and may be banned from public office for up to five years. These penalties do not exclude the possibility of trial and conviction on criminal charges. c) If public servants order, authorize or promote tender offers or place public debt securities in the financial market not allowed by law or without their registration in the central system of clearance and settlement, the penalty is a prison sentence of one to four years. II.2 - Credit operations by ARO If mayors contract or redeem ARO that are not legally permitted, they may be detained from three months to three years and/or lose their political positions and eligibility for public office for up to five years. These penalties do not exclude the possibility of trial and conviction on criminal charges.

2.4.1.3 Concessions of guarantees

A member of the Federation may concede guarantees in internal or external credit operations carried out by other members. The guarantee is conditioned by the provision of a counter-guarantee by the beneficiary member of the credit operation in an amount equal to or higher than the guarantee provided, as well as by the absence of overdue obligations from the requesting member to the guarantor and its controlled companies.

According to Senate resolution no 43, the concession of new guarantees requires the member of the federation to observe the limit of 22% of its RCL for the global balance of its conceded guarantees. Any guarantee above that limit will be considered null.[29] Moreover, the member whose debt was paid by the federal government or a state as a result of a guaranteed credit operation may not have access to new credit or financing until the debt is fully liquidated.

Finally, providing guarantees for credit operations without a counter-guarantee in an amount equal to or higher than the original one granted could result in detention of three months to one year.[30]

2.4.2 Planning and fiscal transparency

The LRF defines which documents are needed to ensure transparent fiscal management, which should be widely publicized, including online. These documents include (a) plans, budgets and budgetary guideline laws; (b) rendering of accounts and respective previous reports; (c) a summary budget execution report; and (d) a fiscal management report.

The law seeks greater transparency by encouraging popular participation. This is achieved by the federation member holding public hearings while the plans, Budgetary Guidelines Law and budgets are being devised.

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[29] LRF, article 40.
[30] Federal law no 10,028 of 2000.

2.4.2.1 Budgetary Guideline Laws (LDOs) and Annual Budgetary Laws (LOAs)

According to the LRF, the LDOs must set forth provisions on: (a) the balance between revenues and expenditures; and (b) criteria to limit pledges[31] to be used when the targets for the primary balance are at risk or when the consolidated debt exceeds the legal limit.

The LDOs must also contain appendices on: (a) fiscal targets; (b) fiscal risks; and (c) monetary, credit and exchange-rate policies.

Table 11. LDO appendices (LRF, Article 4)

Fiscal targets
These include: a) annual targets, in current and constant values, for revenues, expenditures, nominal and primary balances and the amount of the public debt for the fiscal year and the next two years; b) evaluations of the degree to which targets were achieved in the previous year; and c) reports detailing the methods used to calculate the results of the annual targets defined in (a), comparing them with those established in the three previous fiscal periods, as well as demonstrating their consistency with the assumptions and goals of the economic policy.
Fiscal risks
These involve an evaluation of contingent liabilities and other risks that can affect public accounts, and describe the steps to be taken, if the risks arise.
Monetary policy
This appendix describes the goals of monetary, credit and exchange rate policies, with their parameters and projections, for the subsequent fiscal period.

If a public servant proposes an LDO without an Appendix of Fiscal Targets, this constitutes a punishable administrative infringement, pursuant to Federal Law no 10,028 of 2000, with a fine of up to 30% of that person's annual income.

Article 3 of federal law no 4,320 of 1964 states that the Annual Budgetary Law (LOA) should list all revenues, including those from credit operations authorized by specific law. To this end, the LRF stipulates that all expenditures related to the public debt, whether public securities or contractual debt, and corresponding revenues, must also be included and that public debt refinancing operations must be listed (LRF, Article 5).

To calculate limits, the debt service must be separated into interest and updated principal. To this end, the LRF stipulates that the updating must not exceed the price index variation defined in the LDO or specific laws.

In addition to these provisions, the draft of the LOA must be consistent with the Multi-Year Plan (PPA), the Budgetary Guidelines Law (LDO) and the LRF provisions, and must include a statement that the budget program is consistent with the objectives/targets in the Fiscal Targets Appendix of the LDO. The draft law must also present a reserve to meet contingent liabilities and other fiscal risks and unforeseen events; its amount will be defined as a percentage of the net current revenue and its form of use will be determined in the LDO.

[31] First phase of a public expenditure. For more details, see Part II, Chapter 4.

After the year has begun, at the end of every two-month period, the government re-estimates revenues and expenditures for the whole year. If it is thought that revenues may not be sufficient to ensure compliance with the primary or nominal balance targets set in the Fiscal Target Appendix, the federal government must, within the next 30 days, take measures to restrict commitments and financial operations in the required amounts, according to the criteria in the LDO.

Federal budget laws and documents are widely publicized. Information on the federal budget instruments (PPA, LDO and LOA) is available at the Ministry of Planning, Budget and Management website. This was in keeping with best practices for fiscal transparency, as defined by the IMF in FTM 2007, and evaluated by that institution in 2001.

2.4.2.2 Public hearings

As mentioned earlier, the LRF seeks greater transparency by holding public hearings; this is another *best practice* as defined by the IMF in MTF 2007, which recommends public scrutiny of fiscal information. The public hearings include the following:

Table 12. Public hearings, according to LRF (Article 9)

Fiscal targets	Monetary, credit and exchange rate targets
Purpose	
Evaluation of compliance with fiscal targets.	Evaluation of compliance with the objectives and targets of monetary, credit and currency policies (demonstrating the fiscal impact and cost of operations and the results in the balance sheets).
When	
Every four months, at the end of May, September and February (of the following year).	Every semester, 90 days after the close of each semester.
Who is responsible	
Minister of Finance or Secretary of the National Treasury, at the federal level.*	President of the Central Bank.
For whom	
The National Congress Joint Budget Commission.*	Commissions of the National Congress.

* Or similar actors in the states, Federal District and municipalities.

2.4.2.3 Accounting, rendering of accounts and fiscal reports

The LRF ensures transparency by publishing accounts and fiscal reports. Under federal law no 4.320 of 1964, floating and funded debt must be recorded, and the latter must be done in a manner that allows the loan positions, amortization and interest to be verified at any time.

Also, the LRF states that, besides conforming with general public accounting standards, public accounts must record credit operations, outstanding commitments and other forms of financing with third parties in a way that demonstrates the amount and variation of the public debt in the period, detailing, at the least, the nature and type of creditor.

The bookkeeping accounting standards apply to all Federation members and refer to the consolidation and presentation of their accounts electronically. Standards will be issued by the Fiscal Management Council, a body recommended by the LRF, but not yet implemented. Until this occurs, pursuant to Article 50 of the LRF, the National Treasury (the central agency of the Federal Accounting System) may assume these tasks. Regarding this issue, in March 2009, the STN approved the First Edition of the Plan of Accounts Applied to the Public Sector, to be used by all levels of government.

The Ministry of Finance[32] determined that the STN should make Brazil's public accounting methods consistent with those of the International Accounting Standards published by the International Federation of Accountants (IFAC) and the Brazilian Accounting Standards applied to the Public Sector, edited by the Federal Accounting Board (CFC), based on Brazilian law.

Similarly, an Inter-Ministerial Administrative Act[33] re-instituted the working group created by a previous law[34] to evaluate and implement a new public finance statistics methodology, under the framework of the Government Finance Statistics Manual-2001 (GT GFSM-2001).

The bookkeeping standards draw on the balance sheets and other accounting statements used by all levels of government. The President's accounts must be sent to the National Congress within 60 days after the opening of the legislative session (until April 2 of each year), then forwarded to the Federal Court of Accounts for issuance of a opinion on its regularity, and then returned to the Congress for approval or rejection. This process is considered another best practice of fiscal transparency, as defined by the IMF.

Based on bookkeeping accounting standards, a summarized budget execution report and fiscal management report are issued by the executive of each level of government.

Table 13. Fiscal reports with information on public debt management

Summarized budget execution report (LRF, Articles 52 and 53)	**Fiscal management report** (LRF, Articles 54 and 55)
Composition	
This will include statements on: a) Revenues from credit operations and expenditures associated with debt payment which show the amounts related to refinancing of securities; b) Nominal and primary balances; c) Outstanding commitments; d) Compliance with the golden rule.	The report will include comparisons on: a) Consolidated and securities debt, with their limits; b) Stock of guarantees conceded with their limits; c) Credit operations, with their limits; d) Outstanding commitments with cash availability to pay them.
Publication	
Bi-monthly.	Every four months, at the end of May, September and January (of the following year*).
Who is responsible	
Minister of Finance or Secretary of the National Treasury.**	President of the Republic, Minister of Finance or Secretary of the National Treasury and the Federal General Comptroller.**

[32] By MF administrative act no 184 of 2008.

[33] Act no 263 of 2008, signed by the representatives of the Ministry of Finance, Ministry of Planning and the Central Bank.

[34] Inter-ministerial administrative act no 90, of 2007.

Penalties
I - Fiscal penalties: Failure to comply with the deadlines will prevent the Federation member from receiving voluntary transfers and conducting credit operations, except those intended to refinance the updated principal of the securities debt,*** until the situation is corrected.
II - Criminal penalty: none.
III - Administrative penalty: If the public servant does not publicize or send the fiscal management report to the Court of Audit within the deadlines and conditions established in law, the penalty is a fine equal to 30% of the annual income for the agent responsible.

* Municipalities with a population of less 50,000 may verify compliance once every six months.
** Or similar ones in the states, Federal District and municipalities.
*** Except for the federal government.

Beyond these actions, the Ministry of Finance will centralize and update the records of the domestic and external public debt, ensuring public access to the information, including: (a) charges and conditions of the contracts and (b) updated balances and limits related to the consolidated and securities debt, credit operations and concessions of guarantees.

Based on these provisions, the IMF determined that Brazil acquired a high degree of fiscal transparency, coupled with significant advances in the management of its public finances (IMF, 2001). The IMF also considers that, as a fiscal transparency requirement, public finances must be scrutinized by a national audit agency independent of the Executive. The following section reviews government audits in Brazil's regulatory system.

3 Government audits of the public debt

Government audits are critical to the regulatory system as they detect non-compliance with standards and violations of norms, thereby contributing significantly to enforcing the laws.

This section includes (a) the conceptual aspects of government audits and (b) an analysis of the institutions that perform them, focusing on aspects associated with their independence and objectivity, as well as their mandate to audit the public debt.

3.1 Conceptual aspects of government audits

Although most of the concepts adopted in government audits also apply to the private sector, their use within government involves some unique aspects. Three organizations issue standards for public sector audits: the International Organization of Supreme Audit Institutions (INTOSAI), the Institute of Internal Auditors (IIA), which issues International Standards for the Professional Practice of Internal Auditing), and the IFAC (International Federation of Accountants), which issues the International Standards on Auditing (ISA).

General auditing standards describe the qualifications that auditors and their institutions need to perform their work and present their conclusions in an efficient manner.

A standard common to all auditors and government Supreme Audit Institutions (SAI) is that they must be independent and experienced. INTOSAI published and distributed the document *The Lima Declaration of Guidelines on Auditing Precepts*, which states that:

> The concept and establishment of an audit is inherent in public financial administration as the management of public funds represents a trust. An audit is not an end in itself but an indispensable part of a regulatory system whose aim is to reveal deviations from accepted standards and violations of the principles of legality, efficiency, effectiveness and economy of financial management early enough to make it possible to take corrective action in individual cases, to make those accountable accept responsibility, to obtain compensation, or to take steps to prevent - or at least render more difficult - such breaches.

The same declaration distinguishes between internal and external auditing services:

> Internal audit services are established within government departments and institutions, whereas external audit services are not part of the organizational structure of the institutions to be audited. Supreme Audit Institutions are external audit services.
>
> Internal audit services necessarily are subordinate to the head of the department within which they have been established. Nevertheless, they shall be functionally and organizationally independent as far as possible within their respective constitutional framework.
>
> As the external auditor, the Supreme Audit Institution (SAI) has the task of examining the effectiveness of internal audits. If these are judged to be effective, efforts shall be made, without prejudice to the right of the Supreme Audit Institution, to carry out an overall audit, to achieve the most appropriate division or assignment of tasks and cooperation between the Supreme Audit Institution and internal audit.

The Lima Declaration, amended by the Mexico statement of 2007, explains the relationship between the audit institutions and each country's parliament, government and managers. It notes that the SAIs' autonomy must be assured in each country's constitution.[35]

With regard to the relationship between the government and its managers, the Declaration states that the SAIs audit the government, its administrative authorities and related organizations, but that the government is not hierarchically under the SAIs.

With regard to internal audits made by a department within a Federation unit that is subordinate to its highest authority, the Institute of Internal Auditors (IIA) - a US organization responsible for issuing professional standards for the audit area - declares that:

> Internal audit is a department, division, team of consultants or other practitioner(s) that provides independent, objective assurance and consulting services designed to add value and improve an organization's operations. The internal audit activity helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of governance, risk management and control of processes.

The evaluation and improvement of risk management, controls and governance processes constitute the framework described as "internal controls," as defined by the Committee of Sponsoring Organizations (COSO), a US non-profit organization dedicated to improving financial reports. COSO notes that internal control is a process developed to guarantee, with reasonable certainty, that the objectives of an organization will be achieved in the following categories:

a) **Performance or strategy** (operational efficiency and effectiveness). This category is related to the organization's basic aims;

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[35] This autonomy is required even when they act as agents of the Congress and conduct audits at its request, as in Brazil.

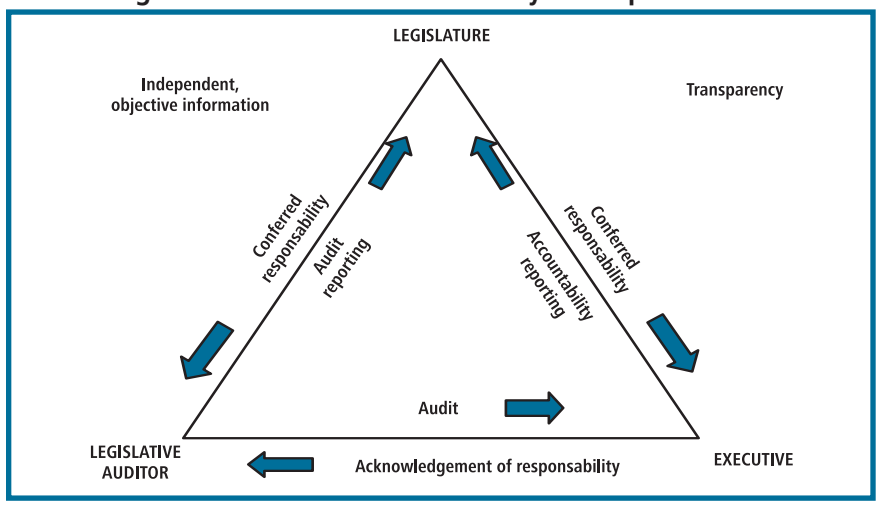
b) **Information** (confidence in the accounting/financial records). All transactions must be recorded and all records must reflect real transactions, classified by their correct values and categories;

c) **Compliance** with laws and instruments associated with the organization and its activities.

With regard to the government, auditors are independent actors in their relationship with the delegating party (e.g. National Congress, President or minister) and the public manager: The former delegates responsibility to the public manager to oversee public resources just as it delegates responsibility for the auditor to review the managers and produce reports or their efforts.

Thus, where dysfunction and deviations are observed, this should help managers and auditors in such a way that the former are alerted and helped to identify the problems, and when possible, resolve them, as well as to make the corrections and improvements needed to achieve the best results.

Diagram 2. Process of accountability in the public sector



Source: Ifac (2001)

3.2 Government audit institutions

3.2.1 Characteristics of Brazil's institutions

The Supreme Audit Institutions (SAIs) evolved to address two concerns: (a) the management of public resources and (b) limitations on the Executive.[36]

With respect to managing public resources, the task originates in the managerial units, which results in most SAIs being placed within the Executive branch (audit units). With regard to limitations on the Executive powers, the task originates in the Legislature, which results in the creation of specialized institutions (courts) for performing the oversight tasks.

Brazil's audit institutions include various organizations that perform at different levels in the federal context. They are:

[36] Bugarin et al., 2003; Vieira, 2005.

Table 14. Brazilian government audit institutions

	Federal government	State and Federal District	Municipalities
External control agencies	Federal Audit Courts (TCU)	Audit courts of these subdivisions	Audit Courts*
Internal control agencies	Federal Office of the Comptroller General (CGU) and sectoral agencies of the Executive, Legislative and Judicial branches	Internal control agencies of the Executive, Legislative and Judicial branches of the states or Federal District	Internal control agencies

* Only in the municipalities of São Paulo and Rio de Janeiro. In other municipalities, audits are performed by the state accounts' courts.

To comply with the IMF fiscal transparency requirements,[37] government finances and activities are audited internally. The Federal Office of the Comptroller General (CGU) carries out government audits with regard to the Federal Executive branch.

At the federal level, entities of the indirect administration (e.g. foundations and institutes)[38] have internal audit units. Public companies and public and private joint stock companies have fiscal councils and are audited by independent audit firms, beyond CGU and TCU.

External controls are efficient if the audit courts are independent from the audited agency, politically neutral and cannot be influenced by external sources. They must respond to the law rather than instructions from the entities audited, except to comply with decisions from higher courts (Portuguese Language Courts of Audit, 2007).

In Brazil, the 1988 Federal Constitution[39] expanded and consolidated the authority of the Federal Audit Court (TCU), giving it greater independence and expanding its scope of activities.[40] As the highest audit institution affiliated with INTOSAI, TCU is strong and independent and complies with international best practices.

3.2.2 Institutions and government audits

As mentioned earlier, the TCU has both a constitutional[41] and legal mandate[42] to audit the management of the Federal Public Debt, with a wide scope, as expanded by the LRF. These audits verify compliance (with norms and regulations) or performance (public debt managers' efficiency and effectiveness, and the attainment of targets). State and municipal audit courts also perform these functions with respect to the subdivisions' management of their public debt.

As noted earlier,[43] the TCU must audit the President's accounting statements annually, within 60 days of receiving them; these include information on public debt management (PDM). The assessments are then sent to the National Congress.

[37] Item 4.2.5 of FTM 2007.
[38] As the Social Security Institute.
[39] Articles 70 to 73.
[40] See Appendix I for a brief evaluation of the TCU.
[41] Federal Constitution, Article 71.
[42] Federal law no 8.443 of 1992.
[43] In subsection 2.4.2.3.

Also, other specific audits can be conducted. For example, from 2003 and 2007, they included the following:

Table 15. TCU evaluations of public debt management

2003	**Compliance audit** Evaluation of reliability and verification of above-the-line (revenues and expenditures flows) fiscal results.
2005	**Compliance audit** • Evaluation of reliability and verification of below-the-line (assets and liabilities, stock variations) fiscal results. • Evaluation of reliability and accuracy of contingent liabilities.
2005	**Performance audit** Evaluation of the National Treasury's management of assets and public debt
2005	**Performance audit** Evaluation of the transfer from the Central Bank to the National Treasury of the management of the external public debt.
2006	**Compliance audit** • Verification of the sums published as outstanding public debt in the fiscal management report/LRF. • Verification of the stock of conceded guarantees and credit operation flows, as recorded in the fiscal management report/LRF.
2007	**Compliance audit** Evaluation of the federal government's credit solvency risk with respect to the states of Minas Gerais, Rio Grande do Sul and São Paulo, due to debts that were renegotiated in the 1990s.

In addition to its constitutional and legal mandates, the LRF[44] establishes each branch's audit courts and internal control agencies' mission to enforce fiscal standards, particularly on: (a) achieving fiscal and monetary targets set in the Budgetary Guidelines Law (LDO); (b) monitoring the limits and conditions for credit operations as well as recording of outstanding commitments and (c) checking the steps taken to return consolidated and securities debt to their limits.

Also, the LRF[45] states that audit courts may warn the branches when they find that the consolidated and securities debt, credit operations and guarantees are over 90% of their limits. The audit courts can also prosecute public managers and impose penalties.[46] Government agents who violate the law are fined 30% of their annual income. Payment is the agents' personal responsibility.

The following are examples of violations associated with public debt management:

a) Failure to publicize or send the fiscal management reports to the legislature and audit courts within the time frames and conditions established by law;

[44] Article 59.
[45] Article 59.
[46] Federal Law no 10,028 of 2000.

b) Failure to include fiscal targets in the annual budgetary guidelines law (LDO);

c) Failure to set a limit for pledges as set by law.

The Federal Audit Court is also responsible for monitoring compliance with the LRF's ban on the Central Bank financing the National Treasury.

4 Conclusion

The chapter examined the regulatory framework for public debt and the government's audit processes. Based on the information released, Brazil's governance processes with respect to audits is consistent with best international practices, as described by organizations such as the World Bank, IMF and the International Organization of Supreme Audit Institutions (INTOSAI).

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Appendix 1

Table 16. Evaluation of the TCU with respect to the Lima Declaration of INTOSAI

I - Independence	
I.1 - The SAIs	
INTOSAI	The degree of their independence is determined by the Constitution; concrete aspects may be regulated by means of law. The SAIs need legal protection, guaranteed by a Supreme Court, to protect against interference with respect to carrying out their functions.
TCU	Its independence is mandated by the Federal Constitution, regulated by Federal Law no 8,433 of 1992 (Organic Law of the TCU), and protected by the Supreme Federal Court. The Constitution guarantees the independence of SAI members.
I.2 - Members and staff of the SAIs	
INTOSAI	The Constitution guarantees the independence of SAI members.
TCU	The Constitution guarantees independence to TCU members, which have the same prerogatives, prohibitions, income and advantages as Supreme Court members.
INTOSAI	SAI staff must be completely independent from the agencies they audit.
TCU	The Federal Constitution guarantees that the TCU maintains its own staff.
I.3 - Financial independence of the SAIs	
INTOSAI	The SAIs must maintain enough financial resources to develop their work.
TCU	The Constitution guarantees that resources will be transferred to the TCU on the 20th of each month.
II - Relation with the Congress, government and the administration	
II.1 - With Parliament	
INTOSAI	The Constitution regulates relations between the SAIs and Congress according to the circumstances and needs of each country.
TCU	The Constitution notes that the TCU may conduct audits at Congress's request. The TCU organic law regulates this possibility.
II.2 - With the government and administration	
INTOSAI	Government activities, its administrative authorities and other institutions are controlled by the SAIs.
TCU	The TCU, an external control agency, is under Brazil's Legislature.
II.3 - Reports to the Congress and society	
INTOSAI	As required by the Constitution, the SAIs must present annual reports to the Congress or state agencies on the results of their activities, and publish them for the public.
TCU	As required by the Constitution, the TCU must forward to the Congress annual and quarterly reports of its activities, and publish them on its website.

III - SAI functions	
III.1 - Basic functions	
INTOSAI	The basic SAIs' control functions are mandated in the Constitution and the details may be regulated by law.
TCU	The basic functions are mandated in the 1988 Constitution and others are in Federal Law no 8,443 of 1992 (Organic Law of the TCU).
III.2 - Control over government activity	
INTOSAI	All government activity is under the SAIs' control, regardless of whether it is included in the general budget.
TCU	The Constitution states that the TCU should control all public resources; the TCU's Organic Law provides for control of budgetary and non-budgetary resources.
IV - SAI powers	
IV.1 - Investigative tasks	
INTOSAI	The SAIs must have access to all documents related to the audited agencies' operations and may request any reports they consider necessary.
TCU	The Constitution guarantees the TCU access to all information, except that which is protected by fiscal or banking secrecy. The Organic Law of the TCU regulates this access, clarifying the information permitted and forbidden.
IV.2 - Execution of the SAIs' recommendations/determinations	
INTOSAI	Audited agencies must respond to the SAIs' findings within the time frames generally determined by law.
TCU	The TCU's Organic Law sets deadlines for responding to its requests; failure to respond may result in a fine.

Appendix 2

Table 17. Legal provisions for the public debt

Provision	Norm
I - Public debt	
1 - Components	Federal Law no 4,320 of 1964 (Articles 92 and 98), Federal Decree no 93.872 of 1986 (Article 115)
1.1 - Floating debt	
1.1.1 - Concept	Federal Law no 4,320 of 1964 (Article 92) and Federal Decree no 93,872 of 1986 (Article 115, paragraph 1º)
1.1.2 - Components	Federal Law no 4,320 of 1964 (Article 92), Federal Decree no 93,872 of 1986 (Article 115, paragraph 1)
1.1.2.1 - Outstanding commitments	
1.1.2.1.1 - Concept	Federal Decree no 93,872 of 1986 (Article 67)
1.1.2.1.2 - Rules and limits	LRF (Article 42)
1.1.2.1.3 - Criminal penalties	Law no 10,028 of 2000 (Decree-Law no 2,848 of 1940, Article 359)
1.1.2.2 - Credit operations through anticipation of budgetary revenues (ARO)	(see Section 1.4)
1.2 - Funded or consolidated debt	
1.2.1 - Concept	LRF (Article 29, I), Senate Resolution no 40 of 2001 (Article 1, paragraph 1, III)
1.2.2 - Components	Federal Decree no 93,872 of 1986 (Article 115, paragraph 2) and, indirectly, LRF (Article 29, I)
1.2.2.1 - Securities debt	
1.2.2.1.1 - Concept	LRF (Article 29, II)
1.2.3 - Rules and limits	Senate Resolution no 40 of 2001 (Article 3)
1.2.4 - Penalties	

Provision	Norm
1.2.4.1 - Fiscal	LRF (Article 51, paragraph 2) and Senate Resolution no 40 of 2001 (Article 5)
1.2.4.2 - Criminal	Law no 10,028 of 2000 (Law no 1,079 of 1950, Article 10, and Decree-Law no 201 of 1967, Articles 1 and 5)
1.2.4.3 - Political	Federal Constitution (Articles 34 and 35)
1.2.5 - Social control	LRF (Article 31, paragraph 4)
II - Credit operations	
1 - Concept	LRF (Article 29, III), Senate Resolution no 43 of 2001 (Article 3)
2 - Typology	
2.1 - Credit operation for refinancing of securities debt	
2.1.1 - Concept	LRF (Article 29, V)
2.2 - Credit operations through anticipation of budget revenues	Law no 4,320 of 1964 (Article 7)
2.2.1 - Rules and limits	LRF (Article 38) and Senate Resolution no 43 of 2001 (Articles 10 and 36)
3 - Criteria and conditions for contracting	LRF (Articles 32 and 33), Senate Resolution no 43 of 2001 (Articles 6 to 20)
3.1 - Golden rule	Federal Constitution (Article 167, III)
4 - Limits	Senate Resolution no 43 of 2001 (Articles 6 and 7)
5 - Vetoes	
5.1 - Operations between members of the Federation	LRF (Article 35)
5.2 - Operations between members of the Federation and the Central Bank	Federal Constitution (Article 164), LRF (Articles 34, 35 and 36) and Senate Resolution no 43 (Article 5)
5.3 - Operations with suppliers	LRF (Article 37)

Provision	Norm
6 - Penalties	
6.1 - Fiscal	LRF (Article 31)
6.2 - Criminal	Law no 10,028 of 2000 (Decree-Law no 2,848 of 1940, Articles 359-A and 359-H; Law no 1,079 of 1950, Article 10, and Decree-Law no 201 of 1967, Article 1)
III - Granting of guarantees	
1 - Concept	LRF (Article 29, IV)
2 - Rules and limits	LRF (Article 38) and Senate Resolution no 43 (Article 7, paragraph 2, Articles 9 and 10)
3 - Penalties	
3.1 - Criminal	Law no 10,028 of 2000 (Decree-Law no 2,848 of 1940, Article 359-E)
IV - Planning and fiscal transparency	
1 - Planning instruments	
1.1 - Budgetary Guidelines Law	Federal Constitution (Article 165)
1.1.1 - Fiscal targets appendix	LRF (Article 4)
1.1.1.1 - Penalty for not publishing	Law no 10,028 of 2000 (Decree-Law no 201 of 1967, Article 1)
1.1.2 - Fiscal risks appendix	LRF(Article 4)
1.1.3 - Monetary policy appendix	LRF (Article 4)
1.2 - Annual Budgetary Law	Federal Constitution (Article 165)
1.2.1 - Credit operations in the budget	Law no 4,320 of 1964 (Article 3) and LRF (Article 5)
2 - Fiscal transparency instruments	LRF (Article 48)
2.1 - Public hearings	LRF (Article 9)

Provision	Norm
2.2 - Accounting, producing accounts and fiscal reports	Law no 4,320 of 1964, LRF (Articles 49 and 50)
2.3 - Fiscal reports	LRF (Articles 52, 53, 54 and 55)
2.3.1 - Penalties	
2.3.1.1 - Fiscal	LRF (Article 51, paragraph 2)
2.3.1.2 - Criminal	Law no 10,28 of 2000 (Decree-Law no 201 of 1967, Article 1)
V - Government agents involved with public debt	
1 - Legislative	
1.1 - Functions	
1.1.1 - National Congress	Federal Constitution (Article 48)
1.1.2 - Federal Senate	Federal Constitution (Article 52)
2 - Executive	
2.1 - Functions	Federal Law no 10,683 of 2003
2.1.1 - Ministry of Finance	Federal Decree no 6,102 of 2007
2.1.1.1 - Delegated by the Ministry of Finance	Ministry of Finance Administrative Act no 183 of 2003
2.1.2 - Central Bank	LRF (Article 34)
2.1.3 - Federal Office of the General Comptroller	Federal Law no 10,683 of 2003
2.2 - Penalties	
2.2.1 - Criminal	
2.2.2 - Ethical	Federal Law no 8,027 of 1990 (Public Ethics Code), Code of Conduct of the High Federal Administration and Code of Ethics and Standards of Professional Conduct of the National Treasury Secretariat (STN Administrative Act no 602 of 2005)
2.2.3 - Ineligibility	Complementary Law no 64 of 1990

Provision	Norm
VI - Public debt audit	
1 - External control agencies (external audit)	
1.1 - Functions and mandate	Federal Constitution (Article 71) and Federal Law no 8,443 of 1992.
1.1.1 - Oversight of fiscal management	LRF (Article 59)
1.1.2 - Warnings related to public debt issues	LRF (Article 59)
1.1.3 - Enforcement of Penalties	Law no 10,028 of 2000 (Decree-Law no 201 of 1967, Article 5)
2 - External control agencies (internal audit)	
2.1 - Functions and mandate	Federal Constitution (Article 74) and Federal Law nº 10.180 of 2001

Part III

THE PUBLIC DEBT MARKET IN BRAZIL

Part III
Chapter 1

Recent evolution of the Federal Public Debt market

by Anderson Caputo Silva
Fernando Eurico de Paiva Garrido
Lena Oliveira de Carvalho

1 Introduction

In recent years, the subject of public debt markets has been widely discussed: Government bond markets that function well enhance the effectiveness of public sector policies, promote broad financial sector reforms, and support sustainable economic growth.

Indeed, the development of a government's security market yields a host of benefits for both macroeconomic and microeconomic policies.[1] With respect to the former, a developed debt market can support governments in achieving the following: (a) a stable, transparent and efficient venue for deficit financing under varying fiscal regimes (b) reduced government exposure to foreign currency movements and floating-rate debts; (c) a strong monetary policy that meets inflation targets; (d) enabling conditions for the implementation of sound counter-cyclical policies that can respond to economic shocks; and (e) reduced debt service costs in the medium and long term through a more liquid market.

With respect to microeconomic policies, a securities market can help: (a) increase financial stability and improve financial intermediation through expanded competition between banks and the development of related infrastructure, products and services; (b) reorient a financial system that primarily involves banks into one that is more diversified - where the capital market can complement bank financing; (c) introduce new financial products as the country's yield curve develops, including repos, derivatives and other products that can improve risk management and financial stability; and (d) create laws and institutions that benefit the financial system as a whole.

In this context, Brazil began to explicitly include the development of its debt market as a debt management objective since 2001, as noted in its Annual Borrowing Plans (ABP).[2] This has been a dynamic process in which macroeconomic and financial stability are essential if the market is to function efficiently.

To develop the market, certain prerequisites were crucial.[3] These included a stable and credible government, sound fiscal and monetary policies, an efficient legal, regulatory and tax framework, safe settlement

[1] See *Developing Government Bond Markets: A Handbook*. WB-IMF, 2001.

[2] Since 2001, the National Treasury's ABP has stated that the objective of Federal Public Debt (FPD) management is to "minimize long-term borrowing costs, with maintenance of prudent risk levels, and, at the same time, seek to contribute to the smooth operation of the public bond market" (ABP, 2008). In this regard, the main debt management guidelines include the following: (a) reducing the refinancing risk by lengthening average maturities and reducing the percentage of FPD maturing within 12 months; (b) reducing market risks by gradually replacing floating rate securities by fixed rate or inflation-linked securities; and (c) encouraging the development of the yield curve for federal public securities in domestic and external markets.

[3] The main prerequisites are listed in the World Bank and IMF's Handbook (2001).

and custody arrangements, and a financial system with competing intermediaries - all of which helped reduce government financing costs in the medium and long term, as the risk premiums required for government securities fell, due to greater investor confidence.

In this regard, Brazil adopted macroeconomic policies that contributed significantly to developing both domestic and external debt markets, and the financial system. This occurred mainly due to Brazil's improved economic foundations, which involved a combination of low inflation, fiscal responsibility, and advances in public debt management (PDM).

This chapter provides an overview of Brazil's debt market and highlights its recent advances against the backdrop of best practices reported by international organizations.[4] Because the domestic market is relatively more important, the chapter emphasizes its development. It also serves as an introduction to the other chapters in Part III, which describe the dimensions of the country's debt market.

This introduction is followed by Section 2, which examines Brazil's public debt, and Section 3, which describes the measures taken to develop the market, as well as its achievements, in light of best international practices.

2 The Brazilian debt market: an overview

PDM, against a background of more favorable macroeconomic conditions, has brought remarkable changes to the structure of Brazil's public debt, compared to previous periods. These changes can be seen through the evolution of its domestic and external markets with advances in the fixed-rate, inflation-linked bond markets and reduced exposure to foreign currencies, as well as through improved liquidity and price transparency.

2.1 Domestic and external markets

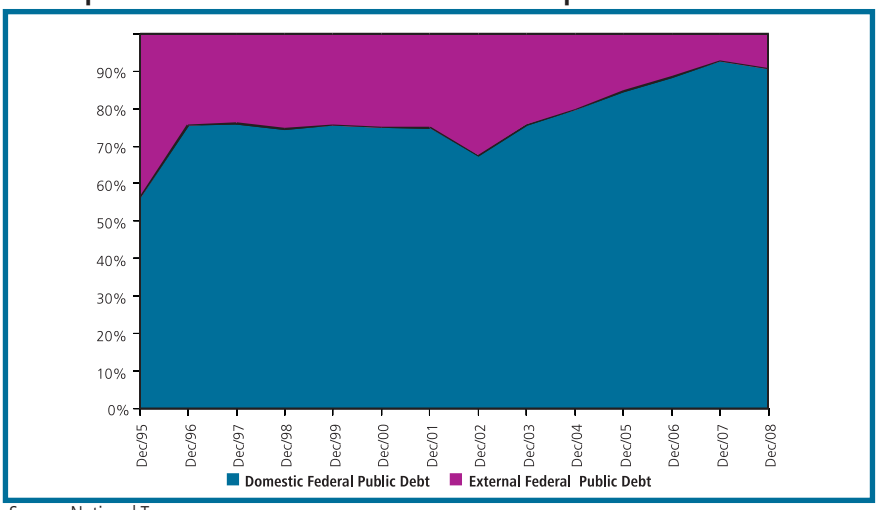
In December 2008, Federal Public Debt (FPD) represented R$1.4 trillion ($602.3 billion), with 91% in domestic debt and the rest in external debt. As noted above, this prevalence of domestic debt results from active debt management and a favorable macroeconomic policy that reduced external exposure as well as the risks associated with the debt profile. Graph 1 shows the increased share of domestic debt in FPD, mainly as of 2003.

Brazil's domestic bond market is one of the largest in the world.[5] Graph 2 shows the size of the bond market in several countries, including the most developed and a few emerging ones. Data from the Bank for International Settlements (BIS) show that Brazil ranks eighth among public bond markets in the world.

[4] In addition to the 2001 Handbook, see *Developing the Domestic Government Debt Market: From Diagnostics to Reform Implementation*, which describes the World Bank's pilot project in 12 countries to develop domestic public bond markets.

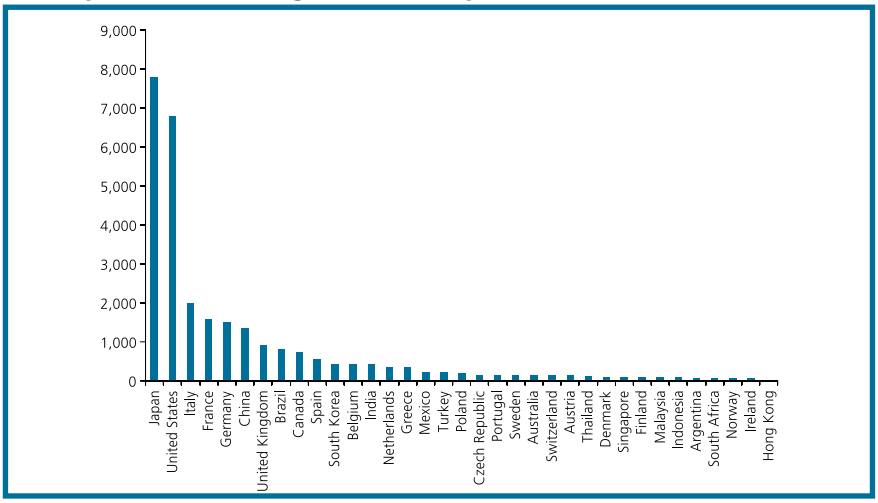
[5] The Brazilian domestic bond market is among the largest in the world, even when based on different countries' GDP. According to this criterion, Brazil ranks as ninth.

Graph 1. Shares of domestic and external public debt in the FPD



Source: National Treasury

Graph 2. Size of the government's public bond market – $ billion



Source: *BIS Quarterly Review*, December 2008

Market size is important because, as experts agree, there is a close relationship between the development of a market and its size: "International evidence indicates that developed bond markets are large. The large scale is important to support liquidity and market depth. It is also a key to attracting a broad base of sophisticated investors with the potential for building large positions".[6] Further, a government bond market may currently be more necessary in emerging markets, since they have few highly rated private firms that could issue bonds and serve as alternative yield curve benchmarks."[7]

The domestic market for Brazilian public bonds has become one of the most liquid among all emerging economies.[8] To this end, the government adopted a series of measures to develop the yield curve, improve market liquidity, and expand the investor base.

[6] Itau Corretora (2007).

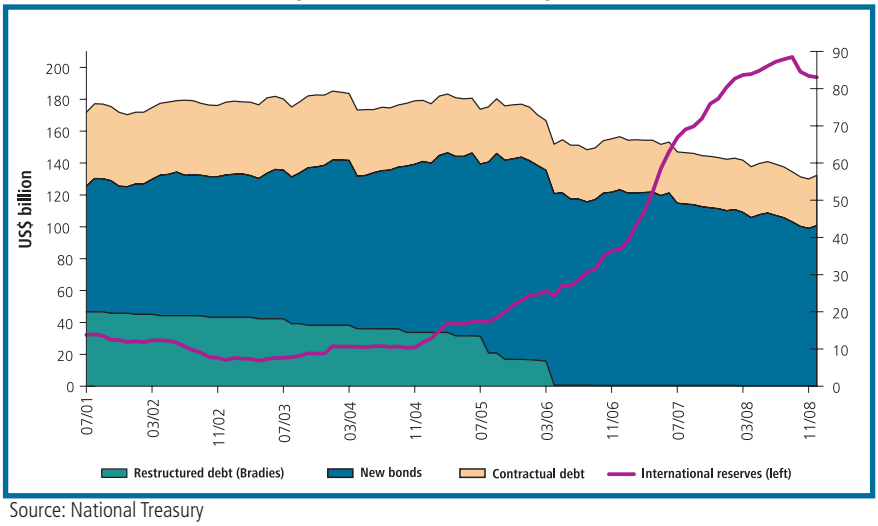
[7] See McCauley and Remlona (2000).

[8] See Chapter 6, Part 3, for details and statistics on the secondary market.

With respect to the external market, rather than focusing on raising large amounts of funds, the strategy has been to selectively issue securities denominated in foreign currencies at specific maturities in order to consolidate the yield curve. Despite its reduced share in outstanding FPD, Brazil's external securities debt is also one of the most liquid among all emerging economies.

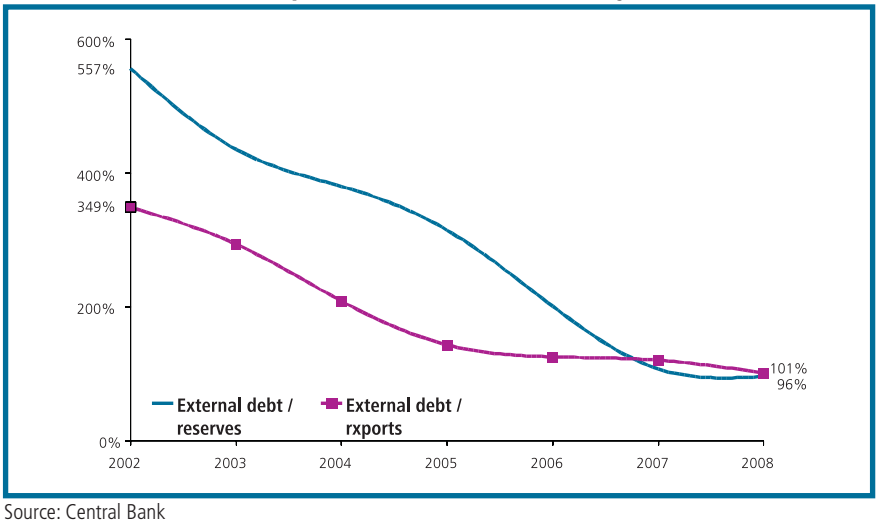
Along with improvements in the domestic FPD market, several measures adopted with respect to External Federal Public Debt (EFPD) management have reduced debt service costs, increased external debt predictability and provided a more favorable assessment of risk by investors. Some of these measures include the early redemption of debts with the IMF and Paris Club, creation of a permanent buyback program of EFPD securities, early redemption of Brady bonds (restructured debt) and the issuing of sovereign bonds in Brazilian *reais*. These operations improved the external debt profile and the county's vulnerability indicators - quite significantly - as seen in the graphs below.

Graph 3. External debt profile



Source: National Treasury

Graph 4. External vulnerability



Source: Central Bank

2.2 Market development and lengthening public debt maturities

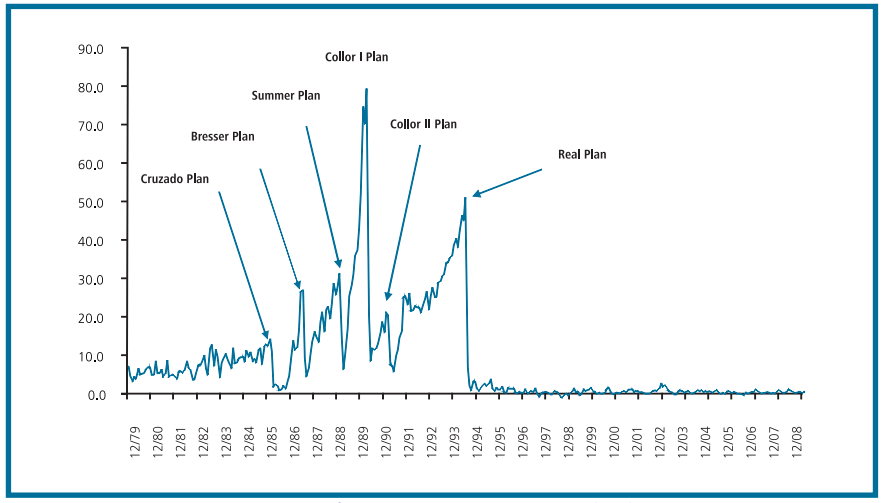
Until 1995, most of the domestic public debt was linked to floating rate securities - 79.1% in July 1995 - while fixed-rate securities, which had a very reduced issuance maturity of up to two months, accounted for just 8.5%. This structure was the result of high inflation that caused the government to issue securities in different denominations, maturities and indexations, mainly linked to inflation and interest rates: This was necessary because in uncertain times, there is great demand for floating-rate securities like the *Letras Financeiras do Tesour*o (LFTs),[9] which do not incur losses when interest rates fluctuate.[10]

However, a high volume of floating-rate securities has a negative effect on both debt management and the economy. First, they increase debt vulnerability and therefore the refinancing risk. Also, monetary policy is less effective since a larger volume of these securities partly obstructs the distribution channel through the "wealth effect".[11]

In order to reduce the share of floating-rate debt (and increase the share of fixed rate debt), both sound economic policies and efficient debt management are needed. Such a shift reduces the impact on the government's budget of exogenous shocks in interest rates and improves the efficacy of monetary policy.

In 1995, supported by increased economic stability, the Treasury began to de-index its public debt (see Graph 5), issuing a greater share of fixed-rate securities.

Graph 5. Inflation from 1979-2008 (monthly percent)



Source: Consumer Price Index – Institute of Economic Research Foundation (Fipe)

Better economic fundamentals, especially since 2000, such as significant fiscal performance, have positively affected PDM: The debt composition improved through the (a) growth of the fixed-rate and inflation-linked government securities markets, (b) reduced exposure to exchange-rate volatility, and (c) lengthening of public debt maturity.

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[9] Securities linked to interest rates calculated from one-day repo operations, with federal public securities as guarantees.

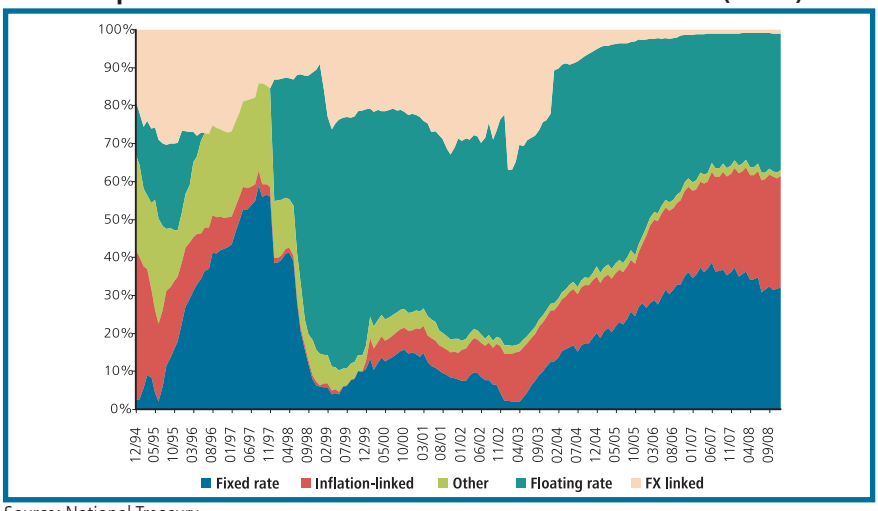
[10] Interest rate-linked debt reached nearly 100% of the overall securities debt around 1989. This process was characterized by a decline in average maturity and a consequent increase in refinancing risk. This complete indexation of the economy contributed to monetary expansion and high inflation rates.

[11] The "wealth effect" represents changes in aggregate demand caused by change in the value of assets such as stocks, bonds, gold

2.2.1 Advances in the fixed-rate bond market

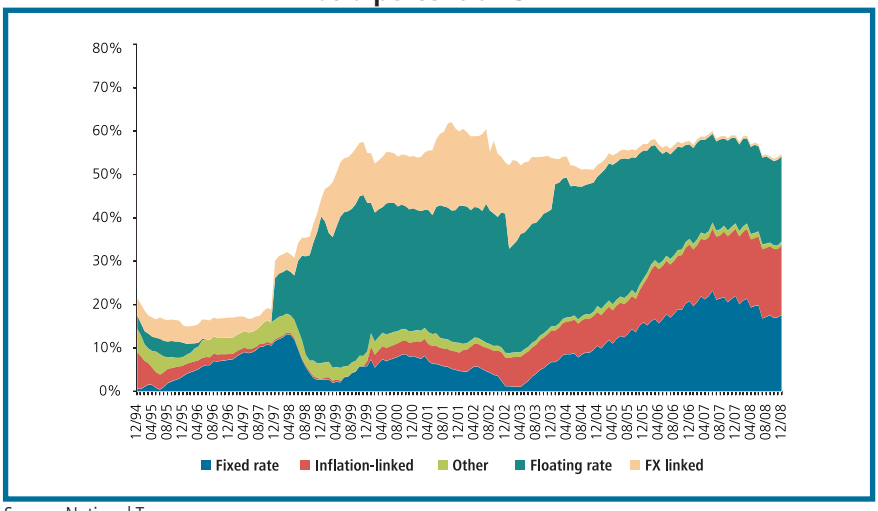
Against a background of greater economic stability, the de-indexation process allowed the share of fixed-rate bonds in domestic debt to climb to 58.95%[12] (in August 1997), while floating rate bonds were eliminated. This change in the debt profile continued for more than two years, from July 1995 to October 1997 (see Graph 6).

Graph 6. Profile of the Domestic Federal Public Debt (DFPD)



Source: National Treasury

Graph 7. Profile of the Domestic Federal Public Debt (DFPD), as a percent of GDP



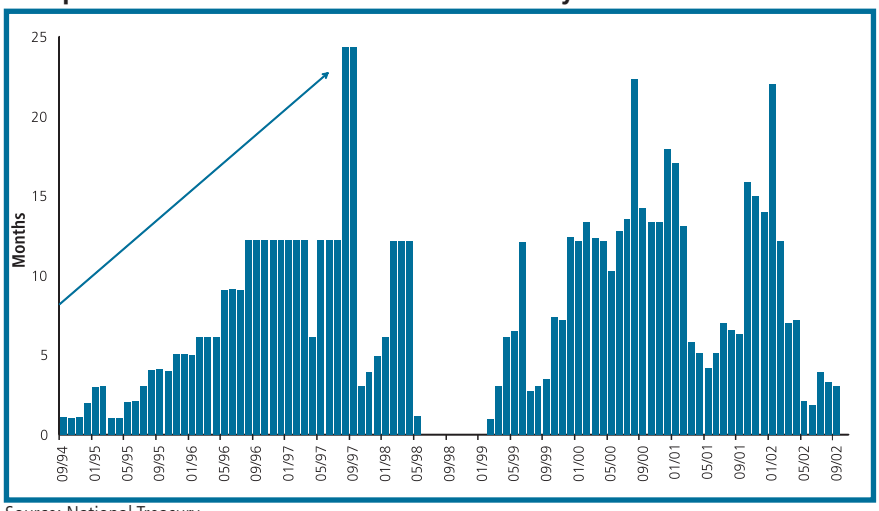
Source: National Treasury

and property (see www.businessdictionary.com). The value of floating-rate instruments is less sensitive to changes in interest rates, such as the base (monetary policy) rate, reducing the effectiveness of monetary policy.

[12] Although the average maturity of the debt was still reduced – to around 3.3 months – the Treasury was able to issue fixed-rate securities that would mature in 12 and 24 months.

In addition to de-indexation, the issuance term to maturity lengthened, mainly for fixed-rate securities, which rose from just two months in 1995 to 12 months in September 1996 and to 24 months in September 1997 (see Graph 8).

Graph 8. Maximum issuance term to maturity of fixed-rate securities

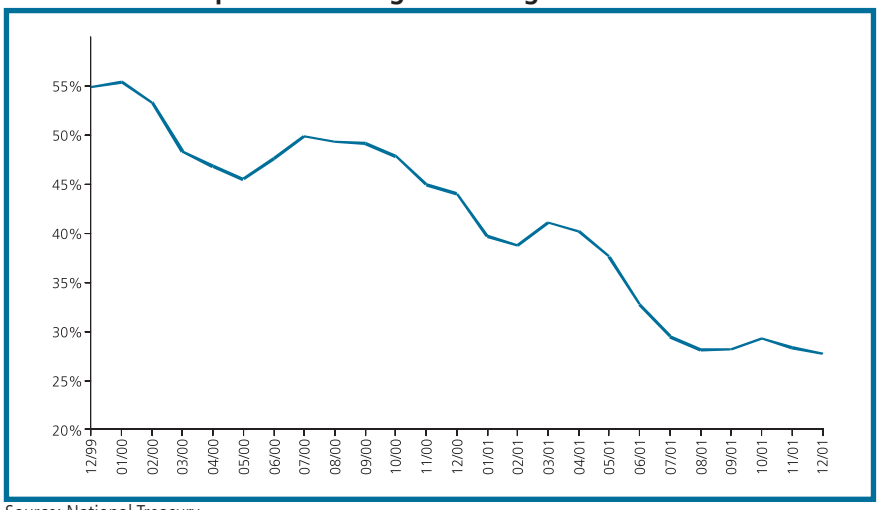


Source: National Treasury

Nevertheless, the crises that affected emerging markets - in Asian countries (October 1997), Russia (1998) and Brazil (1999) - along with the change in the exchange rate regime[13] negatively affected the PDM, slowing its structural re-configuration, as seen in the previous graphs. Because the Treasury faced (a) a much tougher market in which to sell fixed-rate securities and (b) a growing concentration of short-term debt, it again focused on reducing the refinancing risk by issuing longer-term floating-rate debt, which led to greater exposure to fluctuations in interest rates.

However, some indicators - especially those related to the refinancing risk - significantly improved over the next two years: For example, the percentage of debt maturing in 12 months fell from 54.9% in December 1999 to 27.7% in December 2001.[14]

Graph 9. Percentage maturing in 12 months



Source: National Treasury

The fiscal adjustment process that began in 1999, based on a consistent stabilization program, inflation targets and structural changes, such as the Fiscal Responsibility Law (LRF), resulted in consecutive primary surpluses that had a positive effect on fiscal accounts.

Since then, the measures applied to meet the main objectives of public debt - minimizing long-term costs and maintaining prudent risk levels - together with sound macroeconomic conditions, allowed the debt structure to achieve a qualitative profile that far exceeded any of the past and improved the debt market.

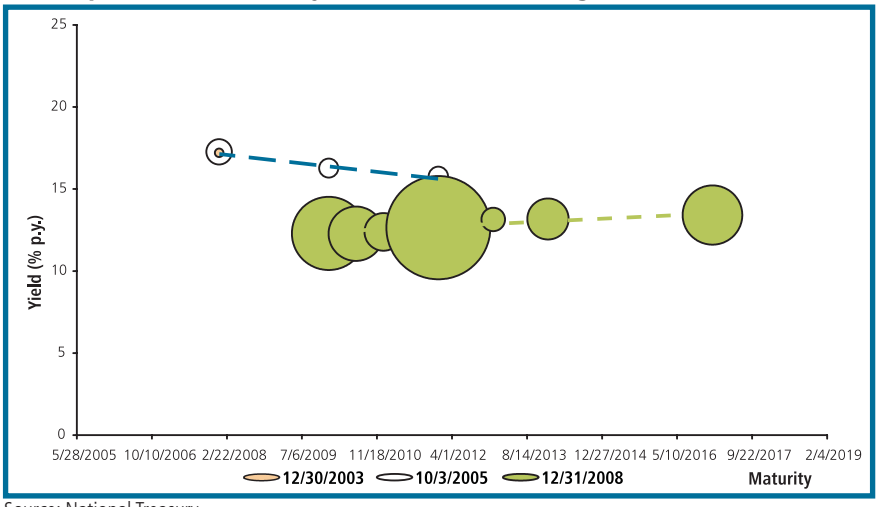
Several measures,[15] particularly after 2003, significantly improved this market. In this respect, a medium- and long-term fixed-rate yield curve was created after coupon bonds, *Notas do Tesouro Nacional*, F series (NTN-Fs), which matured in 2008, were issued: These securities had much longer maturities than other fixed-rate instruments. Immediately after, the maximum maturity for these securities was increased to 10 years, consolidating their position as a benchmark security in the medium section of the curve.

In 2007, maturities of fixed-rate bond issues were standardized to consolidate specific benchmarks, according to international practices. As a result, *Letras do Tesouro Nacional* (LTNs) issuances were set at 6, 12 and 24 months and NTN-Fs were set at 3, 5 and 10 years. Also, the Treasury adopted a buyback program for shorter fixed-rate securities (LTNs), so as to smooth the maturity profile and reduce the refinancing risk.

In addition, Brazilian *real* securities have been issued in international markets since 2005. By providing liquid benchmarks of long-term interest rates in *reais*, these issuances have helped shape the yield curve in the domestic market, diversify the investor base and reduce the share of dollar-linked public debt.

As illustrated in Graph 10, the country has succeeded in consolidating the fixed-rate yield curve with well-defined benchmarks and growing demand. The graph shows the curve at three different moments: December 2003, October 2005 - when securities in *reais* were launched in the international market - and December 2008. The size of the circles reflects the outstanding volume at each point of the curve. Besides lengthening the fixed-rate (NTN-Fs) curve, the yield curve is more developed, with higher concentrations and lower interest rates.

Graph 10. Maturities, yields and outstanding amounts of NTN-Fs



Source: National Treasury

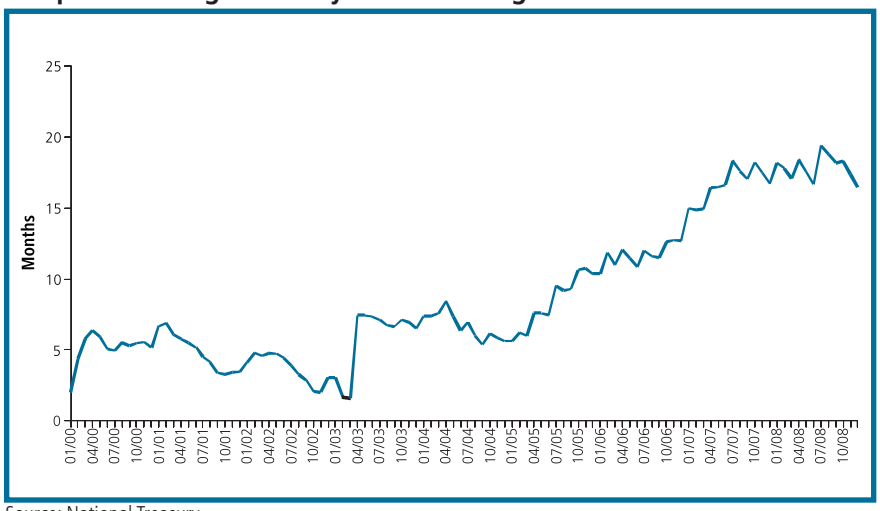
[13] In January 1999, given the speculative attack on Brazil's international reserves, the country had to switch from fixed to floating rates. Soon after, this generated a perception of high risk, in relation to the country's capacity to re-establish macroeconomic stability.

[14] This strategy proved to be important for the turbulent period that followed in 2002.

[15] These measures are detailed in Section 3 of this chapter.

As a result of the advance in the fixed rate bond market, the share of these bonds in the domestic debt increased significantly, having reached 32.2% in 2008. Besides, this trend has been followed by the lengthening of their average maturity, which on the same date stood at 16.5 months.

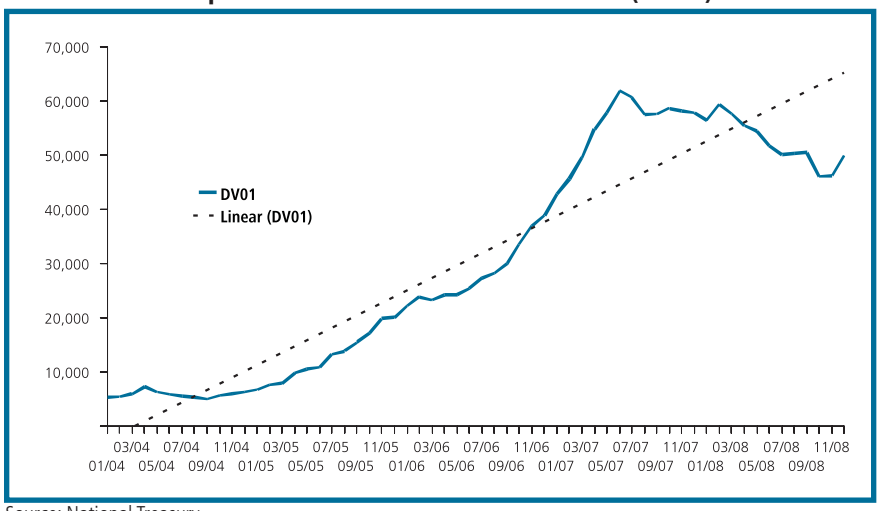
Graph 11. Average maturity of outstanding fixed-rate securities – DFPD



Source: National Treasury

The greater share of fixed-rate securities in outstanding DFPD also helped improve the risk indicators, such as the DV01 (Dollar Value of a Basis Point).[16] This indicator reached historically high levels, mainly due to their larger share (of the fixed-rate bonds) and their longer average maturity, which point to the transfer of a growing part of interest rate risk from the public sector to investors, as is seen in countries with more developed capital markets.

Graph 12. Dollar Value of a Basis Point (DVO1)

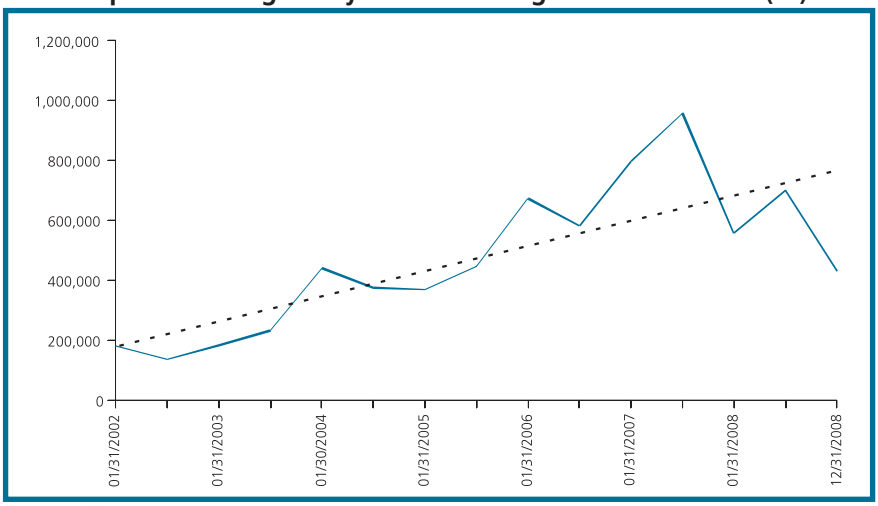


Source: National Treasury

[16] DVO1 measures the loss that can occur in the value of fixed rate security portfolio in the market, as a result of the increase of one basis point in the discount rate of those securities.

The increased capacity to issue fixed-rate securities is linked to the development of the derivatives market, which allows investors to better manage their exposure to interest-rate risk. The number of interest-rate futures (DI) contracts negotiated has been growing; and, to guarantee a perfect match between the maturities of these contracts and of government fixed-rate securities, the latter were issued to mature on the same dates as those of futures contracts (the first working day of January, April, July and October)[17].

Graph 13. Average daily number of negotiated contracts (DI)



Source: BM&F

2.2.2 Advances in the inflation-linked security market

A growing number of developed and developing countries are launching strategies to expand their inflation-linked securities; these bonds used to be issued by a few countries, but are now promoted by all G7 nations, as well as others. This is largely due to institutional investors' demand for assets that provide protection against inflation and the importance of these securities for the optimal debt profile.

Studies conducted by the Treasury[18] and confirmed by the literature indicate the growing importance of inflation-linked securities in outstanding public debt for an optimal public debt profile. According to Missale and Giavazzi:[19]

> [...] Price indexing provides a natural hedge against the impact of inflation both on primary surplus and in the net debt-to-GDP ratio. From the standpoint of the National Treasury's management of assets and liabilities, inflation-linked securities match not only future revenues but also the risks of inflation-linked assets in the government's portfolio. Since inflation-linked securities have a longer maturity, they also help reduce the government's risk of refinancing, thus representing an important factor of stability for public debt dynamics.

[17] Due to increased investors' confidence, the capital market as a whole has also experienced advances. Despite the slight setback in the second semester of 2008, due to the crisis that affected the global capital market, CVM data show that increasing volumes of stock issuances have been recorded in recent years and the number of Bovespa-listed companies, which accounted for 35.66% of GDP in 2000, reached 90.53% in 2007 and 80.99% in 2008.

[18] These involved the public debt optimal profile, as described in Part II, Chapters 2 and 3.

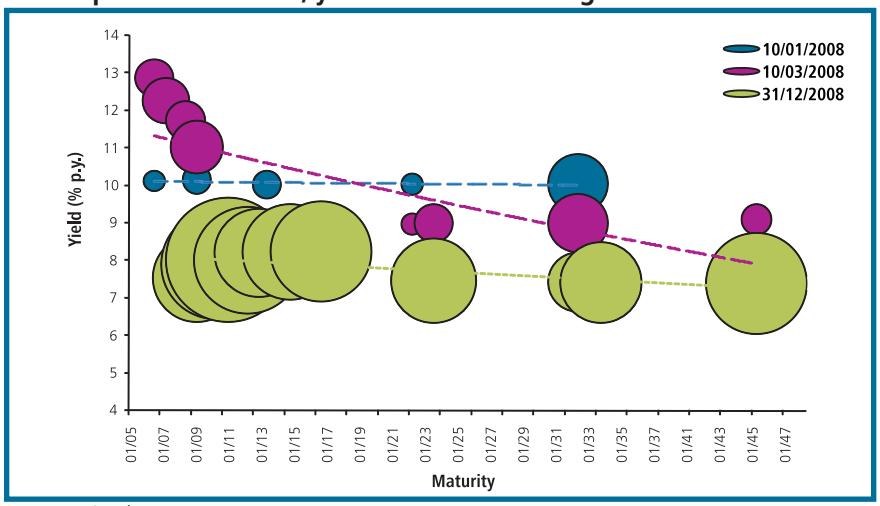
[19] Public debt management in Brazil. June 3, 2003.

As with its fixed-rate securities, Brazil has also made gains in the inflation-linked security market, focusing on IPCA-linked bonds.[20] In this regard, the Treasury has increased the share of securities linked to that indicator - the *Notas do Tesouro Nacional* - B series (NTN-Bs) - and gradually reduced the share of securities linked to the General Price Index - Market (IGP-M) - the *Notas do Tesouro Nacional* - C series (NTN-Cs).

The Treasury has also sought to establish benchmarks that form a longer-term yield curve in this indicator, with the longest NTN-Bs maturing in 2045. Following this strategy, the Treasury issued NTN-Bs in 2007 for which it maintained existing maturities (of 3, 5, 10, 20, 30 and 40 years). Further, it adopted a regular buyback program of a limited share of these securities to provide liquidity to investors that need to adjust their cash requirements - since these instruments typically serve to back the liabilities of defined-benefit pension funds, which are generally inflation-linked.

Progress in this market ensured growing liquidity and demand, which are reflected in the volume sold and the increased share of these securities in the overall FPD. Graph 14 shows the yields of securities issued in different years (2003, 2005 and 2008) for NTN-B maturities, along with the volume of benchmark securities, represented by the circles. As the graph illustrates, the path is similar to that of fixed-rate securities; besides the lengthening of maturities, yields fell and the volume issued for benchmark maturities increased.

Graph 14. Maturities, yields and outstanding amounts of NTN-B

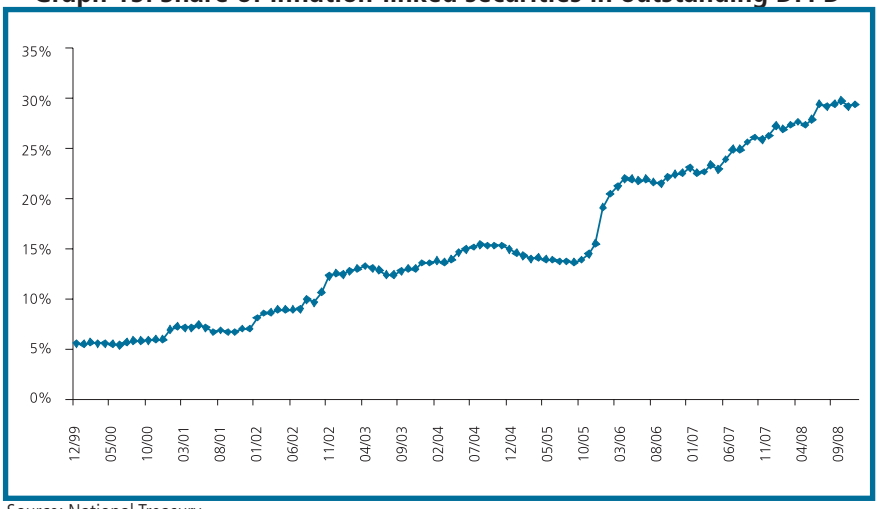


Source: National Treasury

Once the inflation-linked securities' curve developed, the share of these securities in outstanding domestic debt increased. Now, this market represents the fifth largest for such instruments in the world (see Graphs 15 and 16).

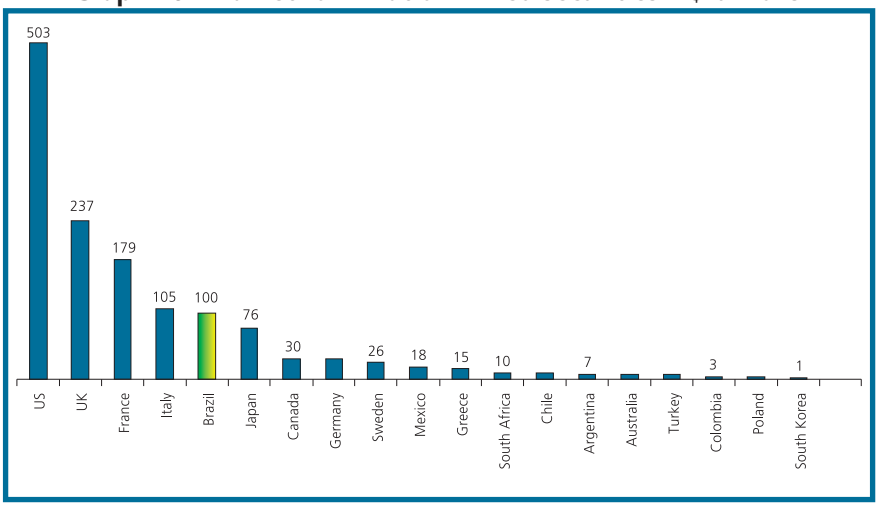
[20] The broad consumer price index is the federal government's official indicator to estimate and monitor inflation targets.

Graph 15. Share of inflation-linked securities in outstanding DFPD



Source: National Treasury

Graph 16. Market for inflation-linked securities – $ billions



Source: *Barclays World GILB index*, March 2009

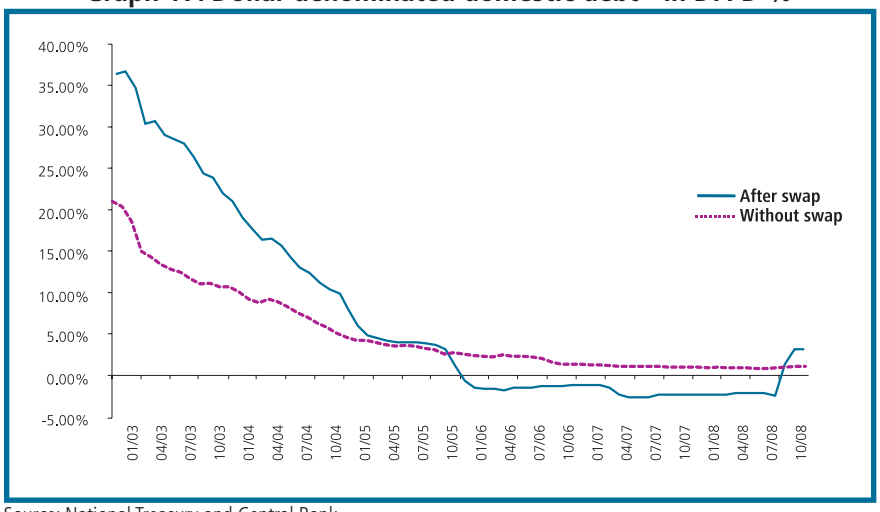
2.2.3 FX-linked and floating-rate bond market

Due to the Treasury's effort to significantly reduce the share of dollar-denominated and floating-rate (SELIC) domestic debt, the market for these instruments has been losing ground. The country stopped issuing FX-linked securities (NTN-D) in May 2002, eliminating the market for them, and has since focused on gradually replacing the floating-rate with fixed-rate securities.

The Treasury's and Central Bank's sharp reduction in FX exposure (which, besides the share of FX debt in FPD, includes FX swaps under Central Bank responsibility), led to a considerable decline in fiscal risk indicators. The improved FPD profile, associated with a greater accumulation of international reserves - whose stock far exceeded the overall External Federal Public Debt (EFPD) - caused the negative effect of an FX devaluation

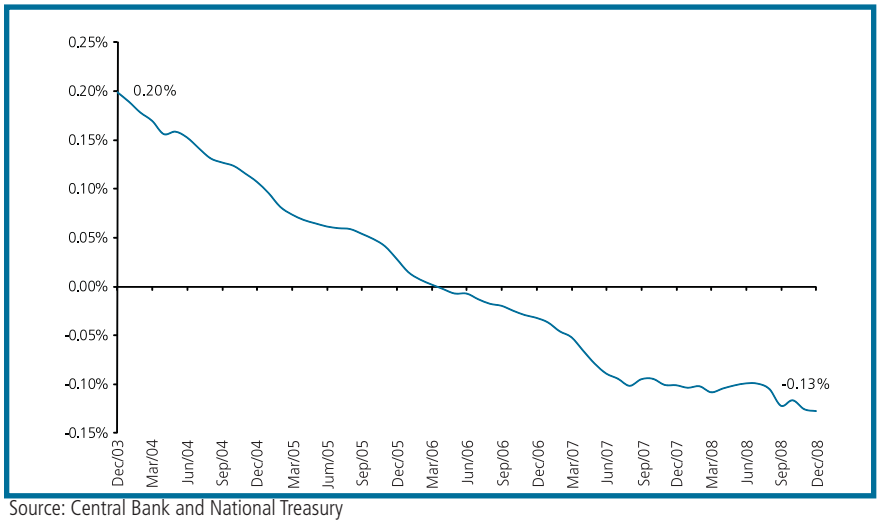
on the debt to drop substantially compared with 2002, to the extent of having its signal inverted (that is, to have a positive effect) from 2006 onwards (see Graph 18).

Graph 17. Dollar-denominated domestic debt - in DFPD %



Source: National Treasury and Central Bank

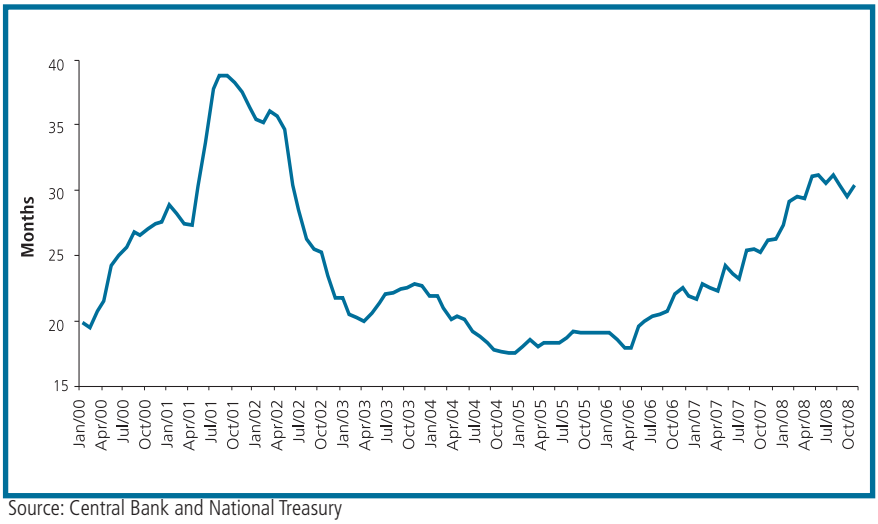
Graph 18. Impact on PSND of a 1% FX devaluation



Source: Central Bank and National Treasury

In the floating-rate bond market (where LFTs still accounted for 32.4% of FPD in December 2008), the strategy has been to establish benchmarks, with issues concentrated in longer maturities: The average was 30.5 months against 16.5 months for fixed-rate securities. Even if the Treasury's goal is to gradually reduce the share of these instruments, they still play an important role in terms of lengthening debt maturity.

Graph 19. Average maturity of outstanding floating rate securities – DFPD



Source: Central Bank and National Treasury

2.2.4 Diversification of the investor base

One of the Brazilian market's main strengths is its investor base.[21] Measures to expand and diversify it have been priorities, given its important role in mitigating funding-related risks, along with ensuring greater stability and liquidity to the bond market. Many observers have emphasized the role of a diversified investor base in promoting market liquidity because of its positive effect on market competition, innovation and sophistication.[22]

In this regard, the increased share of inflation-linked and fixed-rate securities in FPD resulted from the greater participation of private pension funds, foreigners and commercial banks in domestic debt security auctions.[23] However, as is true in most Latin American countries as well as other EMEs[24], banks in Brazil have a strong presence in financial intermediation.

The various banks' own-portfolios and investment funds hold 29% and 40% of DFPD,[25] respectively - from the perspective of registration (custody) criteria. In an attempt to identify the end holders of these bank-managed securities, an exercise presented in Part III, Chapter 5 produces the following profile.

This profile shows that the joint participation of institutional investors (complementary pension funds, insurance companies and open pension funds, among others) and non-residents reaches about 36%. Since these investors traditionally purchase longer-term securities and represent a solid investor base with characteristics that are consistent with PDM guidelines, the Treasury has encouraged their increased participation.

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[21] This occurred despite the strong pattern of indexation to short-term interest rates (see Part III, Chapter 6 - The Secondary Market of Federal Public Debt).

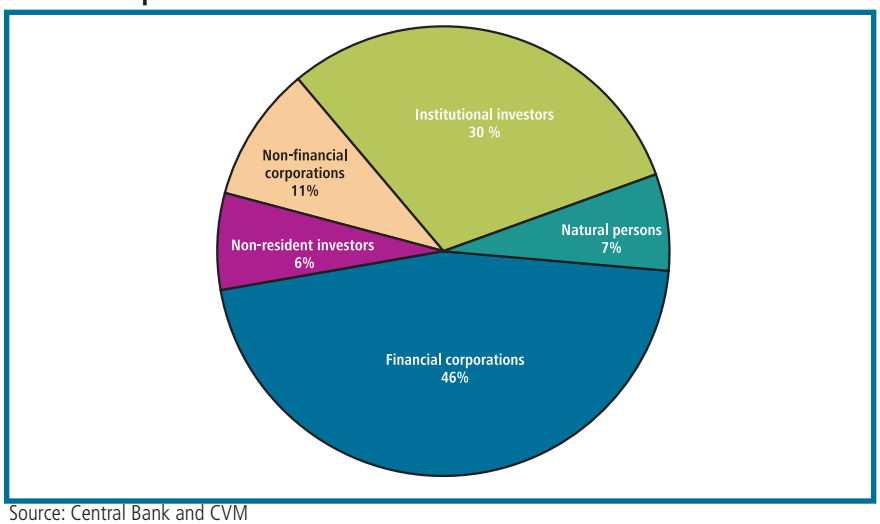
[22] *Financial Stability and Local Currency Bond Markets*, CGFS Papers, no 28, June 2007.

[23] For further details see Part III, Chapter 5 (FPD Investor Base in Brazil).

[24] According to the BIS (2007), "As regards domestic ownership, a major difference is that the share held by banks is much larger, and that of other financial institutions is much smaller in the EMEs than in the industrial countries […]"

[25] *Federal Public Debt Monthly Report*, National Treasury, December 2008.

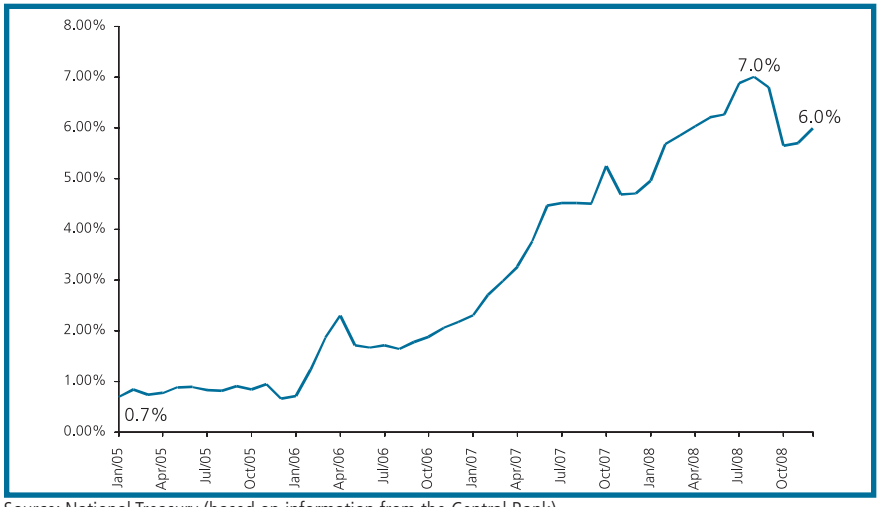
Graph 20. Profile of end DFPD holders– December 2008



Source: Central Bank and CVM

Among the actions designed to attract a more diversified investor base - besides frequent contacts at meetings and seminars - Brazil passed a law in 2006 (Law No 11,312) that exempted non-residents from paying income tax on gains from investments in domestic debt bonds. By this action, non-resident investors now enjoyed the same tax regimens as are offered in most emerging economies; the aim was to increase their participation since it was clear they prefer investing in longer-term instruments, notably fixed or inflation-linked securities.[26] The law had a substantial impact[27] although non-resident investors still participate less in the overall domestic debt than others.

Graph 21. Non-resident investor participation in DFPD



Source: National Treasury (based on information from the Central Bank)

[26] This was in keeping with the guidelines of the Annual Borrowing Plan (ABP) regarding both the increased participation of these securities and the lengthening of the FPD average maturity.

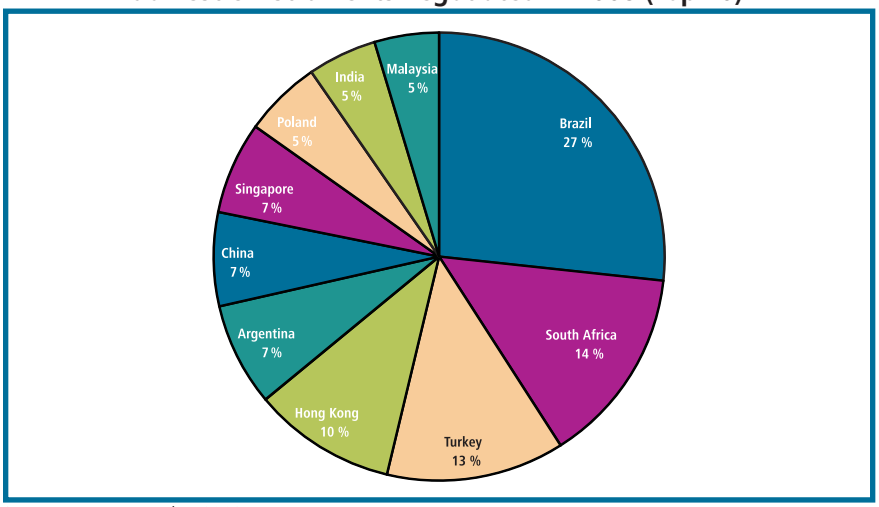
[27] Part III, Chapter 5 provides statistics on the contribution of non-resident investors.

2.3 Liquidity and pricing

As was noted in *Developing a Government Bond Market: A Handbook* (2001), "in assessing the choice of market structure with the goals of liquidity and efficiency, authorities should consider frequency of trading, transparency, and competition, all of which have an impact on liquidity and efficiency."

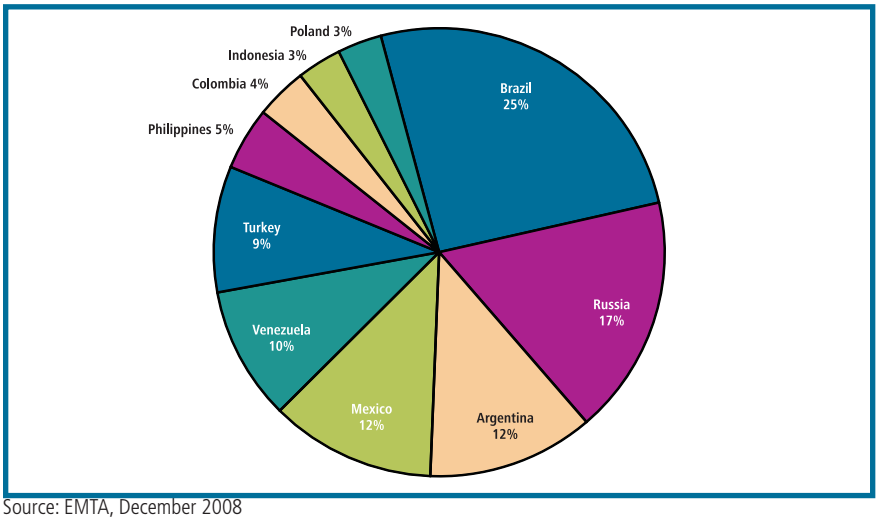
Improved liquidity ensures greater price transparency, which leads investors to demand a lower premium to purchase securities, and thus reduces the issuer's financing costs. In this regard, Brazil has developed its market, increasing the liquidity and transparency of federal public securities through both government measures and financial sector initiatives.

Graph 22. Participation of emerging countries in the volume of domestic instruments negotiated in 2008 (Top 10)



Source: EMTA, December 2008

Graph 23. Participation of emerging countries in the volume of external instruments negotiated in 2008 (Top 10)



Source: EMTA, December 2008

Based on data from the Trade Association for the Emerging Markets (EMTA), in 2008, Brazil was the first in terms of volumes negotiated of emerging countries' debt in both domestic and international markets; also, domestic instruments accounted for 68% of the overall volume negotiated of EM debt.

Although the total volume of securities negotiated is high when compared to other emerging countries, there is still room for improvement in terms of daily average turnover. In the US market, which is the most liquid in the world, turnover reaches 14% of the overall outstanding debt; in Mexico, it is 4%, while in Brazil, it is below 2% of total FPD.[28]

Brazil adopted a series of measures to increase the liquidity[29] of its securities since 1999, when a study group was established, with the cooperation of the Central Bank, to identify which types would boost the public debt market. Since then, the measures have significantly improved the liquidity of public securities. Also, those adopted to foster transparency in public debt markets have improved the pricing of government securities.

As is noted in the chapter on secondary markets,[30] the measures can be divided into two sets: Those that foster conditions that will improve negotiations among market participants and others that allow for greater transparency, such as the regular publication of a public bond issuance strategy that promotes better planning and reduces uncertainty. These measures created the necessary conditions for greater liquidity, given the increase in the investor base, as well as greater predictability in the pricing of negotiated assets and the lengthening of maturities.

In recent years, Brazil has also tried to increase the liquidity of several instruments in the external market by reopening 10-year and 30-year benchmark securities: Since 2005, the former were issued in February, June and November of that year, in November 2006 and April 2007, and 30-year securities were issued in January and March of 2006 and in January 2007.

With respect to pricing, besides the Treasury, other institutions such as the Central Bank and the National Association of Open Market Institutions (Andima), have promoted transparency through the (a) daily publication of indicative public security prices (76 maturities), (b) Electronic Federal Public Security Calculator (Confere), (c) development of some benchmark indices to encourage diversification of investors' portfolios (Imas), (d) publication of a system that compares rates (Compare), and (e) intra-day publication of public security prices before and after negotiations. These initiatives have produced results, as are described in Part III, Chapter 6.

3 Measures to develop the public debt market

The previous section described the representative nature of the Brazilian public security market and its steady development. Besides enabling macroeconomic conditions, this development is the result of a series of measures that will be reviewed in later chapters.

This section highlights some of the measures designed to develop the market and describes their connection to the themes addressed in the following chapters. One key feature is their simultaneous effect on different aspects of the security market: For example, measures that aim to improve clearing and settlement systems develop the market infrastructure; also, they help expand the investor base and primary market demand, and increase the volume of secondary market negotiations.

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[28] Amante, Araujo & Jeanneau (2007)

[29] For details about these measures, see Part III, Chapter 6.

[30] Part III, Chapter 6.

Launching a coordinated action plan to develop the domestic security market is a complex task that requires simultaneous actions - given their interdependence - and the involvement of different market players (issuers, regulators, financial intermediaries, investors, and class associations). Further, as the World Bank concluded in its 2007 pilot project on the design of action plans to develop domestic public security markets in 12 countries, "one-size does not fit all," i.e., no single recipe applies to all countries. Thus, countries should seek solutions based on their unique conditions, solid principles and good practices.

Table 1 presents a set of measures taken in Brazil to improve one or more aspects of the security market. The columns represent the aspects affected and cite the chapters where they will be detailed. The table also illustrates how an action plan to develop the market involves measures which, in turn, affect several other facets simultaneously and depends on many participants. Such an overview is considered essential.

The first three measures are key to developing more efficient primary and secondary markets, since they offer rules that are easily understood and based on models (generated by the market itself) that tend to attract a larger number of participants. Thus, they serve to expand the investor base and the volume of security negotiations. The measures also promote a more competitive primary market, a more liquid secondary market and, ultimately, create the conditions to reduce the cost of public debt. These principles are consistent with international best practices and their relevance in Brazil will be addressed in the following chapters (see Table 1).

Brazil's experience proves it is essential to standardize the instruments so as to reduce debt fragmentation and build more liquid benchmarks in several sections of the yield curve. This worked well in both the fixed-rate (LTN and NTN-F) and inflation-linked (NTN-B) security markets, as described earlier in this chapter. Likewise, clear pricing rules coupled with careful analyses and monitoring of the most suitable financing mechanisms (as discussed in Part III, Chapter 4, on primary markets) have created competition and help set government security prices. Together, they have positively affected the secondary market.

Besides the first three measures, a second group can be identified that also helped widen the investor base and made the primary and secondary markets more competitive and liquid. This group also has positive effects on the security market as a whole, and includes efficient settlement and custody systems, electronic negotiation systems and dealer systems.

Table 1. Evaluating the measures to develop the public debt market

Measure \ Impact	Pricing and instruments (Part 3, Chap. 2)	Financial market organization (Part 3, Chap. 3)	Primary market (Part 3, Chap. 4)	Investor base (Part 3, Chap. 5)	Secondary market (Part 3, Chap. 6)
Standardization of instruments	x		x	x	x
Clear pricing rules	x		x	x	x
Financing through non-coercive auctions and with market rules			x	x	x
Efficient custody and settlement systems		x	x	x	x
Electronic negotiation system		x	x	x	x
Adequate dealer systems		x	x	x	x
Clear definition of the entity responsible for issuing securities		x	x	x	x
Regular publication of plans for issuances and market data			x	x	x

Impact / Measure	Pricing and instruments (Part 3, Chap. 2)	Financial market organization (Part 3, Chap. 3)	Primary market (Part 3, Chap. 4)	Investor base (Part 3, Chap. 5)	Secondary market (Part 3, Chap. 6)
Establishment of benchmark securities			x	x	x
Incentives for the participation of institutional, non-resident and retail investors			x	x	x
Incentives for the derivatives market			x	x	x

A key condition for developing a fixed-income market is the existence of sound and safe systems for the custody, clearing and settlement of security transactions. To this end, the Central Bank introduced a new payment system in 2002 that improves the flexibility and safety in the processing of information on settlements involving fixed-income securities. Also, it minimizes financial risks by settling operations in real time, meeting delivery versus payment requirements (DVP).

Another innovation was the creation of the clearing house for public securities. This was integrated into an electronic trading environment, created by the Brazilian Mercantile and Futures Exchange (BM&F) in 2004, with government support. BM&F's *Câmara de Ativos* (Clearing House), which is integrated into Sisbex (the electronic negotiation system), allows transactions to be performed with counterpart risk mitigation, since the clearing house centralizes the process. Although the local market is mainly dominated by over-the-counter transactions, the electronic market tends to grow, as it is encouraged by government authorities who seek greater price transparency and consequently greater participation of agents who may have less information (see Part III, Chapter 6, on the secondary market).

The Treasury and Central Bank created a dealers' system in 2003 which specifies rights and duties, and thus contributed to a more competitive primary market, a more liquid secondary market and an environment where the flow of market information is more uniform. This system also improved the structure of the public security market and promoted other innovations: For example, in 2007, new requirements were devised that encouraged electronic negotiation and should contribute to its growth, relative to the traditional over-the-counter market.

Finally, a third group of measures was introduced that positively affected both the primary and secondary markets, and investor base. They (a) assign clear agency responsibility for issuing securities; (b) provide for regular dissemination of issuance plans and market data; (c) create benchmark securities and incentives to institutional, non-resident and retail investors to participate and (d) offer incentives to the derivatives market.

International best practices stress the importance of formally designating the agencies authorized to issue public securities as well as publishing issuance plans, auction calendars and market data,[31] since these activities increase debt management transparency and predictability - important requirements for developing a public securities market. If they are lacking, this generates uncertainties that invariably mean higher financing costs for the government. Brazil has a solid framework with regard to these functions: The Treasury was named the primary issuer of federal debt securities (as mandated by the Fiscal Responsibility Law - LRF); the Annual Borrowing Plan and Monthly Issuance Calendars project issuance targets; and the Debt Annual Report and Monthly Reports[32] regularly publish debt management statistics and analyses.

[31] As detailed in Part II, Chapter 1, Section 2.5 (Institutional Structure and Recent Developments in Federal Public Debt Management).
[32] For a detailed description of these reports, see Part I, Chapter 4 (Public Debt Concepts and Statistics).

Measures aimed at creating and sustaining benchmark securities also bear strong empirical and conceptual support. Benchmarks, which are usually represented by securities with significant volumes in different maturities, support their liquidity and contribute to the price formation of other public and private instruments. The previous section described Brazil's recent experience in this area, relative to the yield curves of fixed-rate securities (NTN-Fs), and inflation-linked securities (NTN-Bs).

With regard to investors, experience shows that a diversified base is vital to market development. Indeed, the gradual expansion and diversification of investors - particularly institutions other than commercial banks, which tend to invest in shorter-term securities to meet their liquidity needs - are needed to shift the composition of the debt and build a more liquid bond market.[33] In this respect, institutional investors such as pension funds, play a fundamental role in changing the debt profile to longer-term securities.

It is also recommended that retail clients participate: This involvement is promoted by the Treasury Direct program,[34] which sells securities over the Internet and through which the Treasury offers retail investors a set of securities identical to those offered to the market.[35]

Further, in the Brazilian case, fostering the participation of non-resident investors are an important niche for the domestic market development. Despite the legitimate concerns about the volatility that these investors can bring to the market, they played an important role in the demand for longer-term securities and the consolidation of the yield curve.

The last measure in Table 1 involves incentives to derivatives markets. The interest rate derivatives market at BM&F in Brazil is extremely liquid, and the Treasury's decision to match the maturity date of its fixed-rate instruments to the maturity dates of future contracts enhanced such liquidity. Investors in Brazil use these two markets to manage their exposure to interest rates. Also, the role of the derivatives market (in the development of the public securities market and vice-versa) is a theme of international focus. Several countries are interested in developing both markets, for which the Brazilian experience offers useful lessons. IPCA-linked derivatives' contracts were also launched in 2004, which allowed NTN-B holders to hedge their portfolios and eventually negotiate these instruments.

4 Conclusions

Supported by improved macroeconomic conditions, an active debt management program helped develop the federal government securities market. Although the process is ongoing and many challenges remain, the improved debt profile and the growth of the market have reduced the risks and exposures to adverse shocks that used to affect the country, such as those faced during the recent international crisis.

This chapter has shown that the path to the present was difficult, with setbacks caused mainly by the absence of prerequisites that could sustain the market development. As these prerequisites were met, the development process became more robust in face of occasional market turmoil. The maturity and volumes of fixed-rate and inflation-linked security issuances increased in the domestic market, and the country launched local-currency public securities in international markets.

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[33] For further details, see World Bank, 2007.

[34] See Part III, Chapter 7 (Treasury Direct).

[35] The exception is a long-term inflation-linked (IPCA) security, similar to the NTN-B, but with no half-yearly coupon payments, called Principal NTN-B. This security is ideal, for example, to establish individual retirement reserves, since it creates no problems related to the re-investment of coupons.

Although good economic fundamentals are critical to develop a sound securities market, the chapter also described another dimension - the relevance of a comprehensive action plan to reach well-functioning operations. The market development process is complex and involves different areas and actors. Fortunately, the high qualifications of debt managers both internationally and in Brazil, have improved their capacity to overcome the challenges.

Several measures linked to international best practices introduced in recent years contributed to making Brazil's public security market more liquid, safer and more sophisticated and, to some extent (as with its infrastructure), similar to those in more developed countries. Undoubtedly, there is still significant room for improvement and the government bond market will evolve further over time, particularly in the area of consolidating more liquid long-term benchmarks in the yield curve. These price references are critical for broader capital market development and economic growth.

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Part III
Chapter 2

Pricing federal public securities

by Márcia Fernanda Tapajós Tavares
Ronnie Gonzaga Tavares

1 Introduction

Pricing a security is not merely a matter of mathematical criteria and market conventions. Rather, the way it is priced affects its negotiation and can either stimulate or reduce its liquidity in the secondary market. Consequently, pricing a security affects its cost.

As the National Treasury is aware that prices strongly impact a bond offering's success, it, with the collaboration of market participants, has gradually moved to simplify its instruments. These measures include reducing their number, adjusting interest coupon payments to make them fungible, and standardizing the interest rate convention[1] so securities can be more easily compared with other investments.

This chapter describes the characteristics of the main public debt securities, methodologies by which they are priced, and the inputs needed to price them correctly.

Following this introduction, Section 2 reviews the characteristics of domestic and international debt securities such as interest rates, cash flows, indexes, and the day-counting convention. Section 3 discusses calculation formulas. Section 4 describes the way prices are formed and the inputs used as references (for pricing) in both local and international markets.

2 Instruments

While many instruments exist to finance the Federal public debt, the ones described here are the most important and account for more than 90% of the total.

2.1 Domestic Securities

Domestic public securities are detailed in Decree No. 3,859/2001,[2] which establishes the main characteristics of Domestic Federal Public Debt (DFPD). This chapter analyzes the main ones currently issued through public offerings (auctions) or those which, while no longer part of the Treasury financing strategy, were important in the recent past.[3]

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[1] Where securities are denominated in reais, they are expressed on the basis of business days/252; dollar-denominated securities follow the external 30/360 standard.

[2] For further detail see the decree summary table in Annex 5.

[3] NTN-Cs, for example.

Letras do Tesouro Nacional (LTNs) are the simplest securities in the domestic market in terms of pricing, since they pay no interest coupons and have a single principal flow on the date of maturity (zero-coupon bond or discount bond). The value of the principal to be paid is always R$1,000, regardless of the issuance or redemption date.

Notas do Tesouro Nacional, F series (NTN-Fs) are fixed-rate securities that pay semi-annual, compound interest coupons (10%/year) and have one principal flow on the date of maturity (plain-vanilla bond). Like LTNs, the amount of the principal to be paid on maturity is always R$1,000.

Notas do Tesouro Nacional, B and C series (NTN-Bs and NTN-Cs) are inflation-linked securities that pay semi-annual coupons and have one principal payment on the date of maturity, similar to NTN-Fs. However, cash flow (principal and interest coupons) amounts are updated from the reference date, according to the security's index, which is the IPCA (Brazilian Consumer Price Index - CPI) for NTN-Bs and IGP-M (Brazilian Wholesale Price Index) for NTN-Cs. On maturity, they pay R$1,000, adjusted according to the index from the reference to the redemption date.

Letras Financeiras do Tesouro (LFTs) are floating-rate securities whose structure is similar to that of LTNs, as they pay no interest coupons and have one principal flow on the date of maturity. However, the principal amount is adjusted according to the SELIC rate[4] accumulated in the period, i.e., the amount of R$1,000 is adjusted based on the index previously indicated, from the reference to the redemption date.

Table 1. Main DFPD securities

Security	Index	Issuance maturity (general rule)	Principal	Interest	Day counting convention[5]
LTN	Fixed rate	6, 12 and 24 months	At maturity	None	BD/252
NTN-F	Fixed rate	3, 5 and 10 years	At maturity	10%/year paid semi-annually	BD/252
NTN-B	IPCA	3, 5, 10, 20, 30 and 40 years	At maturity	6%/year paid semi-annually	BD/252
NTN-C	IGP-M	No longer issued	At maturity	6%/year paid semi-annually[6]	BD/252
LFT	Selic	3 and 5 years	At maturity	None	BD/252

As previously mentioned, this section presents only those securities that constitute National Treasury financing instruments, and does not cover all local debt instruments; these are described in Decree No. 3,859 of July 2001.

[4] This is the average weighted rate of one-day repo operations with public securities registered in the SELIC system.
[5] Details on the day-counting convention are in Annex 1.
[6] This applies, except for NTN-C 2031, whose coupon is 12%/year and paid semi-annually.

2.2 External debt securities

Brazil's external debt currently includes *global* bonds and *euro* bonds whose definition differs from that which characterizes private Brazilian bonds issued in the international market.

According to the classification, eurobonds are all securities issued in a market whose bond currency differs from that of the issuing market; global bonds are those that can be issued in any market and, unlike eurobonds, can be issued in the same currency as that of the country where they are offered. Thus, public debt securities denominated in reais but issued in international markets can be classified either as global bonds or eurobonds.

According to External Federal Public Debt (EFPD) security classifications, global bonds can only be traded in the US market. However, their currency is not necessarily the US dollar; since 2005, the Treasury has issued global bonds in reais. For their part, eurobonds (securities traded in the euromarket), are usually denominated in euros. The samurai market (Japanese market – bonds denominated in yens), which had been one of Brazil's financing alternatives, has not been accessed since 2001.

2.2.1 Global USD bonds and Global BRL bonds

Global US dollar bonds and Global BRL bonds are the Treasury's main external financing securities. The former are issued in the global market, i.e., they can be traded in different markets and have been an integral part of the Treasury's action strategy for many years. BRLs, which are fixed-rate securities in reais and also defined as global bonds, were issued for the first time in September 2005, with the BRL 2016. Since then, they have been issued routinely. With regard to interest payments, both securities pay semi-annual coupons and have a single principal flow at maturity, similar to NTN-Fs.

2.2.2 Eurobonds

Brazilian eurobonds are securities issued in euros that pay annual interest coupons and have a single principal flow at maturity. Since they are issued in euros, there is no nominal value adjustment. Securities issued more recently can also be traded in the global market, and are thus also global bonds. However, to simplify the definition, they are referred to as eurobonds, as are all other securities issued in euros.

2.2.3 A-Bond

When it was first issued, the A-Bond was Brazil's most liquid security, second only to the Global 2040. Unlike other securities, it is not a traditional financing instrument; rather, it was issued in an exchange operation,[7] in which it replaced the Brady C-Bond. The latter had an embedded *call* option, which gave the issuer (the Treasury) the right to repurchase it at par value, on or after October 15, 2005.[8] In order to reduce the large sum that would be disbursed when it exercised its option, the Treasury exchanged part of the C-Bonds for similar securities (the A-Bonds) which had longer maturities and no embedded call option. For the few investors that did not participate, the Treasury repurchased their C-Bonds on the date the option was exercised (April 15, 2006).

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[7] See Part III, Chapter 4 for more details on the exchange operation.

[8] The call option could only be exercised on two dates each year – April 15 and October 15 – and securities selected for the call

Table 2. The main external debt securities

Security	Index	Issuance maturity (general rule)	Principal	Interest	Day counting convention
Global	Dollar	10 and 30 years	At maturity	Varies according to maturity	30/360
BRL	Real	10, 15 and 20 years	At maturity	Varies according to maturity	30/360
Euro	Euro	10 years	At maturity	Varies according to maturity	Act/Act
A-bond	Dollar	Maturity in 2018	In 18 equal tranches	8%/year paid semi-annually	30/360

Besides these securities, the Treasury issued a single floating-rate security in the market in dollars (Global FRN 2009[9]), in June 2004. At present, no new ones are being considered; thus, this instrument was not described in this chapter.

3 Pricing

Pricing a bond involves more than discounting a cash flow at a given rate of return for a selected date. When discounted at a single rate, this is called Yield-to-Maturity (YTM) and represents the yield of an investment on that date.[10] However, a security with periodic interest coupons and/or amortization payments can also be priced by discounting each of the flows at a rate valid for that period. It should be noted that after calculating the price with this method, a reverse calculation can be made to determine the YTM equivalent to the price found: By calculating the security price at different rates or at the equivalent YTM, the price will always be the same.

Public security trading can vary according to where it is conducted, whether in Brazil or another country.[11] Negotiations in the domestic market involve YTMs, which are expressed on an annual basis and follow a day-counting convention (see Tables 1 and 2). In the international market, operations are made according to the clean price of securities.[12]

In the domestic market, the financial settlement of public securities normally occurs on T+1, i.e., the first business day after the Treasury's auctions or trade in the secondary market. In the international market, however, financial settlement occurs in T+3 (business days) for trades in the secondary market and T+5 (business days) for new issues.

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option had to be repurchased in full.

[9] For details on these and other public debt instruments, visit the Treasury's website at: http://www.tesouro.fazenda.gov.br/divida_publica/.

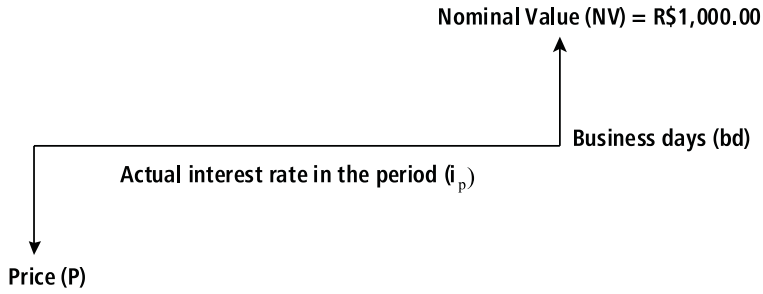
[10] The YTM has a limitation: If the security involves periodic interest and/or amortization payments, its use presupposes that the cash flows received are re-invested at precisely the same YTM rate.

[11] For each YTM of a specific security, there is a single equivalent price and vice-versa.

[12] Box 1 in this chapter explains the difference between a security's *clean* and *dirty* price.

3.1 Domestic Debt Securities[13]

Letras do Tesouro Nacional (LTNs) are called zero coupon or discount bonds. These are purchased in both the primary and secondary markets and their yield is directly linked to the negotiated discount. The LTN cash flow is shown below:



$$P = \frac{NV}{(1+i_p)} = \frac{1{,}000}{(1+i_p)}$$

where

i_p – effective rate in the period

Since negotiations are carried out based on the security's annual rates, the applicable formula is:

$$(1+i_p) = (1+i_a)^{\frac{bd}{252}}$$

where

i_a – effective annual rate

bd – business days in the period

Notas do Tesouro Nacional, F Series (NTN-Fs) are fixed-rate securities that pay semi-annual interest coupons. The date on which interest coupons are paid is calculated by counting back six months from a security's maturity or at the last determined interest coupon. The coupon value is fixed (even when the first payment is in fewer than six months), from the date on which the security was issued; this convention guarantees that all NTN-Fs with the same maturity are fungible.

NTN-Fs can be purchased with a premium or discount in the primary and secondary markets, depending on the interest coupon and the yield the investor wants. Since they have an interest flow, the securities can be priced at a single rate (YTM) or specific discount rates for each maturity. The result, as noted earlier, is the same regardless of the criterion. In general, this security is calculated on the basis of a market curve.

[13] All calculations presented here have a decimal place rounding and truncation rules. These rules, as well as examples of calculations are detailed in Annex 3.

Interest coupon values are calculated exponentially, i.e., the value of the coupon follows the formula below:

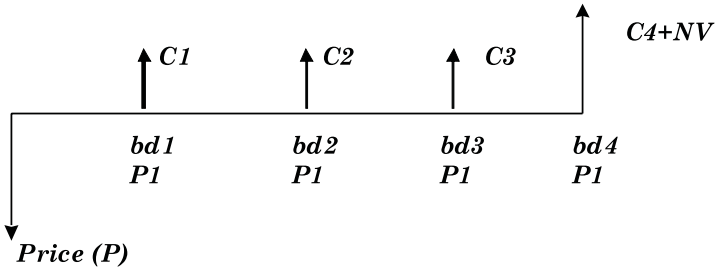
$$c_s = (1 + c_a)^{\frac{1}{2}} - 1$$

where:

c_s – semi-annual coupon

c_a – annual coupon

The NTN-F cash flow is shown below:



$$P = \frac{C1}{(1+i)^{t_1/252}} + \frac{C2}{(1+i)^{t_2/252}} + ... + \frac{Cn}{(1+i)^{t_n/252}} + \frac{NV}{(1+i)^{t_n/252}}$$

$$P = \sum_{t=1}^{n} \frac{C_t}{(1+i)^t} + \frac{NV}{(1+i)^t}$$

where:

C – interest coupon payment (semi-annual)

NV – R$1,000

i – effective annual rate (truncated at the 4th decimal place)

t_n – business days in the period

Notas do Tesouro Nacional, B and C series (NTN-Bs e NTN-Cs), like NTN-Fs, which are IPCA-linked and IGP-M-linked, respectively, have interest payment dates calculated retroactively every six months from the dates the bonds mature. Since they are subject to monetary adjustment, the interest value is fixed on a percentage basis of the adjusted nominal value.

NTN-B, NTN-C, NTN-D and LFT post-fixed securities cannot be calculated like the NTN-F, which is a fixed-rate security. Where securities are indexed, it is not possible to know the values of future interest coupons and the principal on the trading date. Thus, an intermediate calculation (with all cash flows in 100 basis points or percentage points) is required to determine the bond price, which is multiplied by the adjusted bond's nominal value.

Interest coupon values are calculated exponentially, i.e., the value of the coupon follows the formula below:

$$c_s = (1 + c_a)^{\frac{1}{2}} - 1$$

where

c_s – semi-annual coupon

c_a – annual coupon

Unlike the NTN-Fs, the pricing of NTN-Bs and NTN-Cs is generally not based on market rates, as no sufficient liquid yield curves exist in the IPCA or IGP-M for this purpose. However, pricing can follow the same method as with the NTN-F, by using the NTN-B[14] and C zero-curve.

The NTN-B/NTN-C cash flow is shown below:

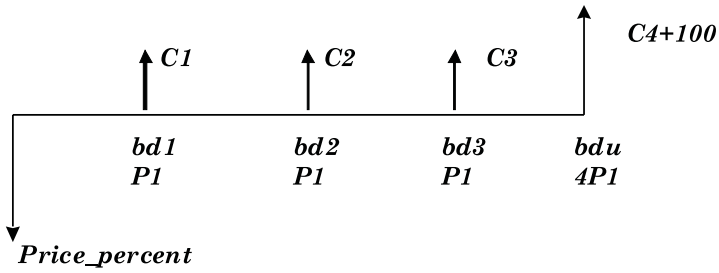
P – ANV x price percent

where

P – price

ANV – present nominal value

$Price_percent$ – price calculated in percentage points



$$\text{Price_percent} = \frac{C1}{(1+i)^{t_1/252}} + \frac{C2}{(1+i)^{t_2/252}} + ... + \frac{Cn}{(1+i)^{t_n/252}} + \frac{100}{(1+i)^{t_n/252}}$$

$$\text{Price_percent} = \sum_{t=1}^{n} \frac{C_t}{(1+i)^t} + \frac{100}{(1+i)^t}$$

where

C – interest coupon payment considering the bond price as 100% (semi-annual)

i – effective annual rate

t_n – business days in the period

[14] NTN-Bs 2015 and 2024 (principal), securities offered in the Treasury Direct (TD) Program, are priced by the NTN-B.

Letras Financeiras do Tesouro (LFTs) are also called zero coupon bonds or discount bonds, and can be purchased with a premium or discount, depending on the yield the investor wants to obtain. Although they have no interest flow, these securities are linked to an index (the SELIC rate), which means it is impossible to determine beforehand the value of the principal at maturity. Thus, pricing follows a formula similar to that used for NTNs but without the interest flow. The flow is calculated in 100 basis points or percentage points to generate an amount that will be multiplied by the adjusted nominal value of the security, to determine the price.

The LFT cash flow is shown below:

P – ANV x price percent

where

P – price

ANV – present nominal value

$Price_percent$ – price calculated in percentage points



$$\text{Price_percent} = \frac{100}{(1+i_P)}$$

where

i_p – effective rate in the period.

Since trades are based on the security's annual rates, the formula is:

$$(1+i_p) = (1+i_a)^{\frac{bd}{252}}$$

where

i_a – effective annual rate

bd – business days in the period

3.2 External Debt Securities

Some aspects of external debt security pricing include the following:

- Interest coupons are calculated on a linear basis. The discount, however, is calculated on an exponential basis;
- Operations in the secondary market are settled in T+3 business days while in the primary market, the standard is T+5;
- Present value is calculated according to the security day-counting criterion;[15]
- The *clean* price is used in trades, while the *dirty* price is used to settle negotiations (see Box 1 for details);
- The YTM determined for calculation purposes is expressed in a nominal annual rate [16] and should always be changed into an effective annual rate;
- The issuance price of an external debt security is normally close to par. Interest coupons are determined on the evening of an operation, based on the YTM projected for the security. This differs from what occurs in domestic issuances, where interest coupons are predetermined, allowing securities to be fungible, and the issuance price is seldom close to par.

Box 1. *Clean* and *dirty* prices

The dirty price of an operation is the calculation of a security's present value (price) multiplied by the adjusted nominal value (ANV). The clean price is based on the dirty price, minus the interest due between the last coupon payment and the settlement date of the operation. This is the value the security seller will be paid once the transaction is complete.

Although the screen price[17] is the one negotiated by market participants, it does not represent the price investors will pay or be paid in the operation. The rationale is that interest accrued through the settlement date belongs to the security seller – who held it until that moment – and not to the security buyer.

Following a diagnosis of these opportunities and challenges, alternative financing strategies for public debt management as well as existing constraints and trade-offs should be evaluated.

Clean price = dirty price – *pro rata* interest[18]

Another aspect to be considered when calculating the clean price is whether the security involves amortization or capitalization. If one or both apply, the principal of the security will change over its life. Thus, once the price is calculated, the result must be adjusted to indicate the percentage of the security value,[19] based on the formula below.

$$\textbf{Dirty PV adjusted} = \frac{Quotation}{\left(\frac{OB_{t-1}}{100}\right)}$$

where

OBt-1 – outstanding balance of the security in *t-1*.

3.2.1 Global US bonds and Global BRL bonds

The calculation of global US and BRL bond prices uses the 30/360 business days standard, i.e., each month has 30 days and each year 360 days (by convention). The values of interest coupons are calculated in a linear form as follows:

$$c_s = \frac{c_a}{2}$$

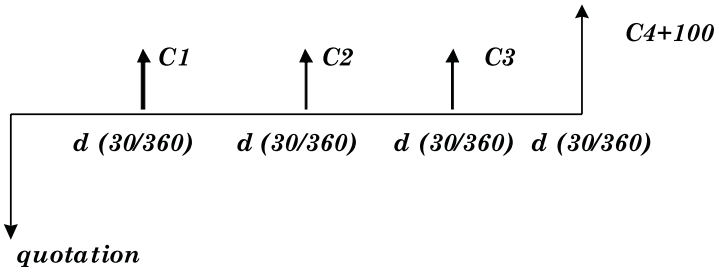
where

c_s – semi-annual coupon

c_a – annual coupon

The price of external debt securities can be based on many different discount rates. To that effect, a zero external curve in the currency of reference should be calculated (using the bootstrapping[20] method) and applied.

The global or BRL cash flow is shown below:



$$quotation = \frac{C1}{\left(1+\frac{i}{k}\right)^{k*\frac{t_1}{360}}} + \frac{C2}{\left(1+\frac{i}{k}\right)^{k*\frac{t_2}{360}}} + ... + \frac{Cn}{\left(1+\frac{i}{k}\right)^{k*\frac{t_n}{360}}} + \frac{100}{\left(1+\frac{i}{k}\right)^{k*\frac{t_n}{360}}}$$

$$P = \sum_{t=1}^{n} \frac{C_t}{\left(1+i/k\right)^{k*t_t/360}} + \frac{100}{\left(1+i/k\right)^{k*t_t/360}}$$

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[15] For details, see Annex 1 in this chapter.

[16] The nominal rate is simply a rate expression format. Therefore, any calculation requires determining the security capitalization criterion so the nominal rate can be converted into an effective rate. The exception is the eurobond, which has an annual interest flow (annual capitalization). The rate determined on the screens is also an annual rate and as such does not require adjustments.

[17] For historical reasons, the screen price of a security is often called the clean price. However, the screen price is nothing more than the security price minus the pro rata interest in the period (in 100 basis points or percentage points). In traditional securities, whose principal is a bullet (total payment at maturity date), the nominal value is equal to $1,000 (dollars, euros or yens). As a result, the security's clean price is the screen price (in percentage points) multiplied by 1,000.

[18] Interest accrued from the last interest payment to the date the operation was settled.

[19] This adjustment will be shown in the calculation of the A-bond, a security with amortization.

[20] The bootstrapping technique determines the flow of a security as several single flows separately, i.e., each coupon payment is treated as if it were a zero-coupon bond.

where

C – interest payment considering the security price at 100%

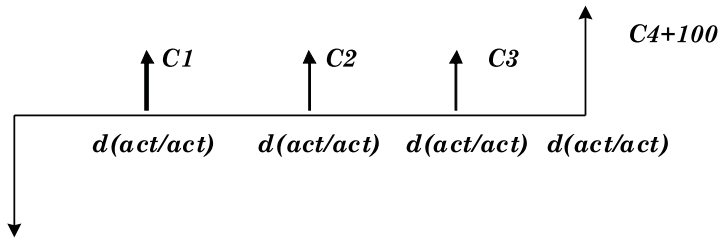
i – nominal annual rate

k – payment frequency of the security coupon each year (as this security pays semi-annual coupons, k = 2, i.e., two interest coupons are paid each)

t – number of days in the 30/360 standard

With regard to eurobonds, the convention used to calculate the price differs from that applied to global bonds. Day counting is expressed in actual/actual terms and the value of coupons need not be calculated, since these are paid annually.

The euro cash flow is shown below:



$$quotation = \frac{C1}{\left(1+\frac{i}{k}\right)^{k*1}} + \frac{C2}{\left(1+\frac{i}{k}\right)^{k*2}} + ... + \frac{Cn}{\left(1+\frac{i}{k}\right)^{k*n}} + \frac{100}{\left(1+\frac{i}{k}\right)^{k*n}}$$

$$P = \sum_{t=1}^{n} \frac{C_t}{\left(1+i/k\right)^{k*t}} + \frac{100}{\left(1+i/k\right)^{k*t}}$$

where

C – interest payment considering the security price at 100% (annual)

i – nominal annual rate

k – payment frequency of the security coupon each year (as this security pays annual coupons, k = 1)

The A-bond, like other external securities, involves a simple capitalization of interest coupons and the 30/360-day counting standard. However, the A-bond has constant amortizations, which began on July 15, 2009. The table below shows the A-bond flow on December 31, 2008.

Table 3. A-Bond flow on December 31, 2008* (amounts in $ million)

Dates	Interest coupon	Amortization	Total cash flow (IC + A)	Outstanding balance
01/15/2009	4		4	100
07/14/2009	4	5.56	9.56	94.44
01/15/2010	3.78	5.56	9.33	88.89
07/15/2010	3.56	5.56	9.11	83.33
01/15/2011	3.33	5.56	8.89	77.78
07/15/2011	3.11	5.56	8.67	72.22
01/15/2012	2.89	5.56	8.44	66.67
07/15/2012	2.67	5.56	8.22	61.11
01/15/2013	2.44	5.56	8.00	55.56
15/07/2013	2.22	5.56	7.78	50.00
01/15/2014	2.00	5.56	7.56	44.44
07/15/2014	1.78	5.56	7.33	38.89
01/15/2015	1.56	5.56	7.11	33.33
07/15/2015	1.33	5.56	6.89	27.78
01/15/2016	1.11	5.56	6.67	22.22
07/15/2016	0.89	5.56	6.44	16.67
01/15/2017	0.67	5.56	6.22	11.11
07/15/2017	0.44	5.56	6.00	5.56
01/15/2018	0.22	5.56	5.78	0

* Maturity: 01/15/2018 Interest rate: 8%/year

Amortization: 18 equal tranches starting on July 15, 2009

The outstanding balance is constructed according the formula below:

$$Outstanding\ Balance_{1} = 100 - amortization$$

As already noted amortization payments began on July 15, 2009 and are based on the balance outstanding in the semester before they started. From the beginning of amortization to the security maturity date (January 15, 2018), 18 payments will be made. As a result, the amortization value is expressed by:

$$amortization = \frac{100}{18} = 5.56$$

The third column in the table represents the calculation of the A-bond coupon, expressed by the formula below:

$$Coupon = \frac{Interest}{2} * OB_{-1}$$

The fourth column represents the total cash flow the security pays periodically, expressed by the formula below:

$$TCF = amortization + coupon$$

4 Price formation

The pricing of bonds requires several inputs and calculations because local and external debt securities differ. While the general rule for domestic debt is that the value of public securities is based on domestic derivatives' market curves (DI future contracts), the curves of other sovereign issuers are usually the benchmark for Brazil's external debt.

4.1 Domestic debt

Yield rates of Brazilian domestic debt public securities are based on interest rate derivatives (DI future contracts), which is different from what occurs in most countries. In more developed markets, the yield curve of fixed-rate public securities is the benchmark for all other assets. In Brazil, however, this practice is only valid for comparing public bonds with private securities (such as debentures, for example).

In this sense, all nominal domestic rates are derived from the derivatives' markets, mainly DI future contracts, which are used to estimate LTN and NTN-F rates.

Trades of LTNs and NTN-Fs are normally calculated on "basis points" over DI future contracts (similar to SOT – spread over treasury for Global USD bonds). This occurs because of the following features: (a) The DI future contract is, in practice, a swap contract with a daily adjustment, i.e., investment in this asset requires no actual disbursement of resources. Also, no risk exists with the principal (notional value); rather, there is, only the mismatch of flows between the active and passive end of the contract; (b) the degree of liquidity, since contracts are negotiated at the BM&F (Brazilian Mercantile and Futures Exchange)[21] and their liquidity exceeds that of public securities; (c) the risk factor - as they are negotiated at the BM&F and the counterpart risk is minimized. Due to the guarantees allocated and daily adjustments, the risk is similar to that of a public security which, by definition, is lower than that of private assets.

Defining the premium[22] the investor expects is the starting point for calculating securities' yields. Investors know the premium they want to obtain on the DI future yield curve,[23] for example, and based on this estimate, the security rate is calculated and the equivalent price obtained. Market negotiations, however, occur at points over this benchmark asset (DI future). These points are determined by the difference between the yield rate calculated for the security and the DI future contract rate.

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[21] BM&F and the São Paulo Stock Exchange (Bovespa) have merged into BM&FBovespa.
[22] Premium calculations are presented in Annex 2.
[23] Currently, fixed rate securities are traded in the form of "points on the ID", as a spread on the swap curve.

On the other hand, inflation-linked securities do not have a reasonable equivalent instrument in the derivatives market. IPCA x DI and IGP-M x DI swap contracts have low liquidity and therefore cannot serve as references for National Treasury bonds. However, shorter-term inflation-linked securities are closely related to the nominal yield curve because of the *break-even inflation*. Since the market calculates inflation based on a non-arbitrage relation, it can be removed from the nominal yield curve (DI future yield curve) and the difference indicates the real rate of inflation-linked securities. However, no benchmark exists for long-term nominal bonds (longer than 10 years). As a result, the price formation of inflation-linked bonds has no relation to any other market instrument.

The rationale presented here, as already mentioned, also applies to NTN-Cs. However, since the Treasury no longer issues these securities, current liquidity is low and this can distort their pricing.

4.1.1 DI future contracts

The One-Day Future Contracts on Interbank Deposit Certificates (DI future contracts) calculated and published by the BM&F, are currently the main assets in the futures market in terms of volume.[24] These contracts use as a reference the average rates of one-day repurchase operations - without collaterals - traded among financial institutions and calculated by Cetip (Over the Counter - OTC Clearing House), known as *CDI Over*.

The object of negotiation (DI future contracts) is the effective interest rate of CDI over contracts, defined as the accumulation of average daily rates calculated by Cetip for the period between the date of the operation in the futures market (inclusive) and the date of the last negotiation (redemption date), exclusive.

The basic fixed-rate curve of the domestic financial market is calculated on DI future contracts (along all maturities), which are used as the main benchmark for pricing LTNs and NTN-Fs,[25] that have been traded with a premium on this curve.

4.2 External debt

External debt securities have as their benchmark the risk-free securities of the market where they are traded. As a result, the price of securities is based on two different pieces of information: The benchmark curve (risk-free)[26] of the market where the security was issued and the spread over benchmark, which represents the additional cost paid by Brazilian securities vis-à-vis the risk-free curve.

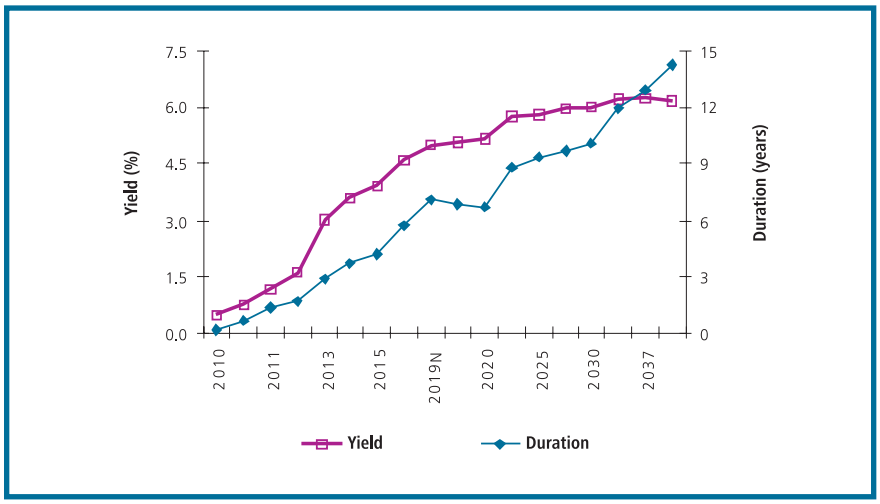
For these reasons, the different bond indicators (yield to maturity, duration, convexity, etc.) can be separated into these two factors, thus increasing the power to analyze the security, i.e., what derives from changes in the risk-free curve and what was caused by changes in the spread over benchmark.

The fact is that over time, the risk-free curve itself begins to include distortions that arise from more recent security placements (on-the-run), which increase liquidity at the respective points on the curve, to the detriment of older securities (off-the-run). The analysis should therefore consider this distortion and possible effects on the yield curve of Brazilian securities. It is very common, for example, to have a spread versus duration factor besides the yield versus duration factor, as shown below.

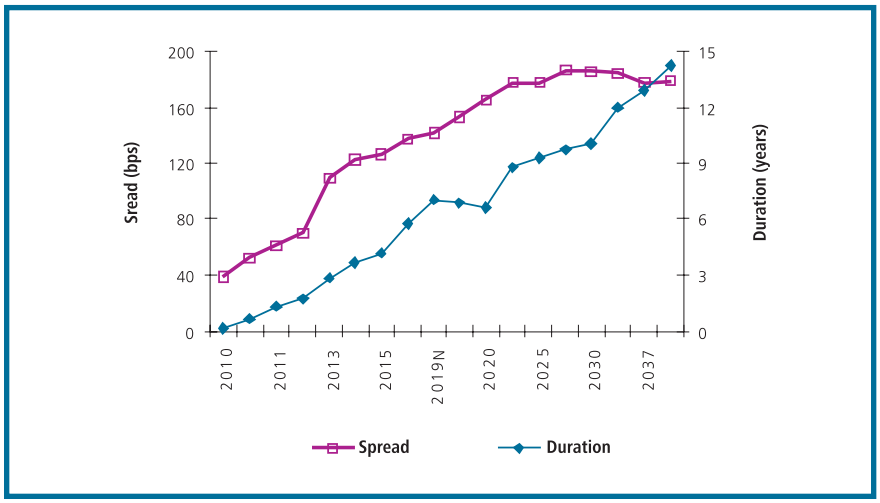
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[24] For details on the liquidity of ID contracts see Part III, Chapter 6.
[25] Indirectly, NTN-Bs and NTN-Cs also use DI future contracts as a parameter.
[26] Exceptions to this rationale are euro-denominated securities. The curves of the German and French treasuries served as bench-

Graph 1. Yield X Duration



Graph 2. Spread X Duration



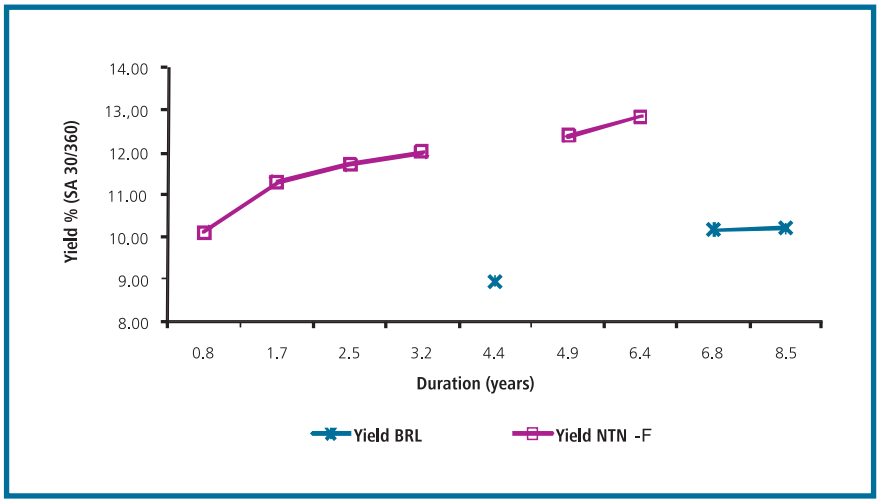
A Brazilian security can also be priced according to the benchmark zero curve, which is calculated using the bootstrapping method, or by applying another scheme. The bonds used to construct the curve are chosen from among the highest liquidity securities, thus eliminating possible distortions. Taking this curve into account, the spread over benchmark is added, thus allowing the Brazilian zero curve to be calculated. Another course is to calculate the Brazilian zero curve based on the most liquid Brazilian external debt securities in the market (and use the bootstrapping method or an alternate one), and then determine the spread over benchmark, based on the benchmark curve.

With regard to real-denominated securities (BRLs), it would appear that their yield should be related to the domestic fixed-rate curve, but until now, this has not occurred, partly due to the difference in the investor

marks for pricing. As time passed, the increasing liquidity of swap contracts in euros in the market turned this instrument into the benchmark for pricing sovereign bonds in that currency.

base: local investors can trade in both local and external markets in *reais* (BRL), while foreign investors may not. Although many already trade in the domestic market,[27] many others, for legal or regulatory issues or even due to transaction costs, do not have access to it. In this regard, a foreign investor willing to invest in Brazil's public securities might prefer to invest in BRL global bonds, aware that the yield is lower than that of Brazilian Treasury bonds issued in the domestic market.

Graph 3. BRL X NTN-F



4.2.1 Spread-Over-Treasury (SOT) of external securities

SOT represents the additional cost paid by Brazilian securities (or of any other country or company) relative to the cost of risk-free bonds. A benchmark curve exists for each of the main markets, represented by the securities of the country offering the lowest risk for that market. For example, with global bonds, the parameter is provided by US Treasury bonds. With those issued in euros, the parameter is based on German Treasury bonds (and, at times, the French Treasury). In the samurai market, Japanese government bonds are termed risk-free.

The SOT can be calculated in different ways. The three most often applied are by the maturity date, duration and zero curve. The most common way is to subtract the YTM from that of a benchmark security maturing on a date closest to that of the security in question. The advantage of this method is its simplicity. However, it is not the most effective, since securities maturing close to each other could have very different durations, due to the value of the coupons and the yield rated.

Example:

The *spread* of the global 2027 can be determined based on the 30-year security of the US Treasury, with the most recent issuance date (on the run), as shown below:

Global 2027 YTM = 6.54% /year
US Treasury 30y YTM = 5.20% /year
Spread Over Treasury (SOT) = (6.54% - 5.20%)*100 = 134 basis points (bps)

[27] In December 2008, while external debt securities accounted for 7.2% of the FPD, the participation of non-residents in domestic debt securities was 6.5%.

A more precise and not too complex way to calculate the spread is based on its duration. The first step is to find the value of the benchmark curve at the point corresponding to that duration and then subtract it from the bond yield.

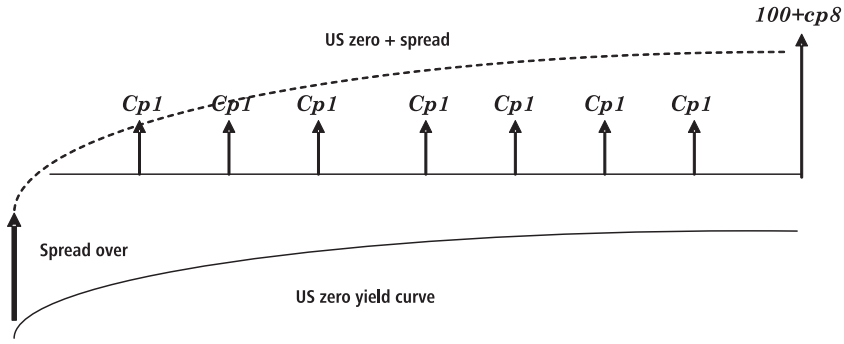
Table 4. The Global 2027 spread by duration

Maturity	Duration US Treasury bond (years)	US Treasury rate (% / year)
3 months	0.25	0.96
6 months	0.50	1.02
2 years	1.93	1.64
5 years	4.55	3.18
10 years	7.99	4.30
30 years	14.36	5.20

Duration of the global 2027 = 8.03 years.
Calculation of 10 year and 30 year treasuries: Result = 4.31% / year.
Spread = 6.54% - 4.31% = 223 bps.

The most precise, although more complex way to determine the spread of a security involves calculating each of its cash flows compared to the benchmark zero curve.

In this case, the spread corresponds to the parallel dislocation of the benchmark curve in such a way that the present value of the security (given by this dislocated curve) corresponds to its market value. As a result, each payment is brought to present value by the value of the benchmark zero curve for the corresponding maturity, plus the spread (which is the same for all points on the curve).



5 Conclusion

The chapter described the main instruments used by Federal Public Debt managers, offering details on pricing, characteristics and market conventions associated with these securities.

The methods by which to determine the spread were developed through a management process that sought to improve public debt performance by analyzing the impact that minor changes in calculation methods can have on the demand and liquidity of Treasury bonds. The Treasury, together with various market players, has improved both transparency and investors' safety. However, improvements are an ongoing process, and will continue to help the Treasury best meet its objectives.

Annex 1. Day-counting standards

1) The 30/360 standard considers 12-month years with 30-day months and applies to global bonds, BRLs and A-bonds.

$$d = (Y2 - Y1) \times 360 + (M2 - M1) \times 30 + (D2 - D1)$$

where

d	– number of days between date 1 and date 2
$D1$, $M1$ and $Y1$	– day, month and year relative to date 1
$D2$, $M2$ and $Y2$	– day, month and year relative to date 2

Where at least one of the two dates falls on the 31st of the month or in the last day of February, the following adjustment is made:

- Where D1 is on the 31st or the last day in February, its value will be 30;
- Where D2 is on the 31st and D1 the 31st, 30th or the last day in February, the D2 value will be 30;
- Where D2 is on the 31st and D1 is not on the 31st, 30th or the last day in February, the D2 value will be 1, M2 value will be that relative to the subsequent month and, if applicable, A2 that of the subsequent year;
- Where D2 is the last day in February, its value will be 30 if D1 is also the last day in February.

Example: Number of days between 07/04/2007-12/24/2007

$d = (2007-2007) * 360 + (12-7)*30 + (24-04)$

$d = 170$

$30/360 = 0.472$

2) The actual/actual standard also considers days and years by counting actual days. This method applies to euro bonds.

Example: number of days between 07/04/2007-12/24/2007

$07/04/2007\text{-}12/24/2007$	$= 173\ days$
$12/24/2007\text{-}12/24/2006$	$= 365\ days$
$actual/actual$	$= 0{,}474$

3) The actual/365 standard considers actual days and 365-day years. This method applies to samurai[28] bonds.

Example: Number of days between 07/04/2007-12/24/2007

07/04/2007-12/24/2007 = 173 days

actual/365 = 0.474

4) The actual/360 standard considers actual days and 360-day years. It applies to floating rate securities.[29]

Example: Number of days between 07/04/2007-12/24/2007

actual/360 = 0.481

5) Business days/252 (bd/252) considers business days to be 252 (excluding Brazil's holidays).

Example: Number of days between 07/04/2007-12/24/2007

07/04/2007-12/24/2007 = 119 business days

bd/252 = 0.472

In Excel, the number of business days can be obtained by using the *totalworkingdays* function, where the initial date is 07/04/2007 and the final date is 12/24/2007, minus one day. The calculation requires a list of holidays in the period.

[28] Leap years are not considered when calculating samurai bonds.

[29] Currently, Global 2009 is the only floating bond in the outstanding public debt.

Annex 2. Calculation of the public bond premium[30]

1) LTNs' premium

$$\text{premium} = \left\{ \frac{\left[(1+y)^{(1/252)}\right]-1}{\left[(1+i)^{(1/252)}\right]-1} \right\}$$

where

y – % rate / year of LTN maturing in n

i – % rate / year of future ID with the same maturity as the LTN

Example: What is the premium for the LTN maturing on 01/01/2009 and priced at 10.80% /year?

LTN (01/01/2009) = 10.80 % / year

DI (01/01/2009) = 10.75 % / year

$$\text{premium} = \left\{ \frac{\left[(1+0{,}1080)^{(1/252)}\right]-1}{\left[(1+0{,}1075)^{(1/252)}\right]-1} \right\}$$

premium = 100.44% of CDI

LTN market negotiation is given in points over the respective maturity of DI future contracts, in this case 5 basis points (equivalent to 10.80% – 10.75%).

2) NTN-Fs' premium

$$\text{premium} = \left\{ \frac{\left[(1+NTN-F_rate)^{(1/252)}\right]-1}{\left[(1+market_rate)^{(1/252)}\right]-1} \right\}$$

where

$NTN\text{-}F\ rate$ – NTN-F YTM based on the LTN yield curve

$market\ rate$ – NTN-F YTM based on the DI Future yield curve

$$price = \frac{C1}{1+i} + \frac{C2}{(1+i)^2} + ... + \frac{Cn}{(1+i)^n} + \frac{NV}{(1+i)^n}$$

$$price = \sum_{t=1}^{n} \frac{C_t}{(1+i)^t} + \frac{NV}{(1+i)^t}$$

[30] These data are hypothetical and do not reflect daily market rates.

where

C – interest coupon payment (semi-annual)

NV – R$1,000

i – effective annual rate

To calculate the bond price, the NTN-F rate is based on the LTN yield curve. The market price is obtained when the cash flow is discounted using the DI Future yield curve.

Example: What is the premium for the NTN-F maturing on 01/01/2008, with an interest rate of 10% a year, traded on 07/03/2007, for settlement on 07/04/2007, based on the table below?

Table 5. Interest-rate curves for NTN-F 01/01/2008 premium calculation

Maturity	LTN curve on 07/03/2007 (year)	ID curve on 07/03/2007 (year)	BD (in relation to 07/04/2007)
01/01/08	11.23%	11.20%	124
07/01/08	10.94%	10.89%	247
01/01/09	10.80%	10.76%	378
07/01/09	10.84%	10.78%	500
01/01/10	10.88%	10.78%	628

Based on the table below, these are the UPs:

$NTN\text{-}F\ price = 982{,}858400$

$Market\ \ price = 984{,}774676$

Once the prices are determined, it is possible to calculate the YTM:

$NTN\text{-}F\ rate = 10.881\%\ /\ year$

$Market\ rate = 10.786\%\ /\ year$

$$\text{premium} = \left\{ \frac{\left[(1+0.10881)^{(1/252)}\right]-1}{\left[(1+0.10786)^{(1/252)}\right]-1} \right\}$$

premium = $100.84\%\ of\ CDI$

NTN-F trades will be 9.5 basis points, resulting from the difference between 10.881% and 10.786%.

3) LFTs premiums

$$\text{premium} = \left\{ \frac{\left[(1+y)^{(1/252)} * (1+i)^{(1/252)}\right] - 1}{\left[(1+i)^{(1/252)}\right] - 1} \right\}$$

where

y – % rate / year of the LFT maturing in n

i – % rate / year of the DI future contracts interpolated to the same maturity date as the LFT.

Example: What is the premium for the LFT maturing on 06/07/2010 traded at 0.0006% / year?

LFT (06/07/2010) = - 0.0006% / year

DI (06/07/2010) = 10.80% / year

$$\text{premium} = \left\{ \frac{\left[(1-0.000006)^{(1/252)} * (1+0.1080)^{(1/252)}\right] - 1}{\left[(1+0.1080)^{(1/252)}\right] - 1} \right\}$$

$premium = 99.99\%$

Annex 3. Pricing examples

1) LTN

Maturity : 01/01/2009

YTM : 10.8036% (truncated at the 4th decimal place)

Date of trade : 07/03/2007

Business days between 01/01/2009 and 07/04/2007 : 378

$$Price = \frac{1{,}000}{(1+0.108036)^{\frac{378}{252}}} = \quad 857{,}371797 \text{ (truncated at the 6th decimal place)}$$

2) NTN-F

Maturity : 01/01/2010

Date of trade : 07/03/2007

Table 6. Interest-rate curve for NTN-F 01/01/2010 pricing calculation

LTN curve on 07/03/2007	Maturity	Rate (year)	BD (in relation to 07/04/2007)
LTN	01/01/2008	11.2300%	124
LTN	07/01/2008	10.9400%	247
LTN	01/01/2009	10.8000%	378
LTN	07/01/2009	10.8400%	500
LTN	01/01/2010	10.8800%	628

where

$$C = \underbrace{\left[(1+0.10)^{\frac{1}{2}}-1\right]}_{truncated_at_8th_decimal_place} * 1000 = \underbrace{48.808850}_{truncated_at_6th_decimal_place}$$

$$\text{Price} = \frac{48.808850}{\underbrace{(1+0.1123)^{\frac{124}{252}}}_{rounded_at_9th_decimal_place}} + \ldots\ldots\ldots + \frac{1{,}048.808850}{\underbrace{(1+0.1088)^{\frac{628}{252}}}_{rounded_at_9th_decimal_place}} = \underbrace{982.858400}_{truncated_at_6th_decimal_place}$$

Given the NTN-F price, it is possible to calculate the YTM of the bond:

$$982.858400 = \frac{48.808850}{(1+YTM)^{\frac{124}{252}}} + ... + \frac{1{,}048.808850}{(1+YTM)^{\frac{628}{252}}}$$

YTM: 10.936% / year

Note: Whether an NTN-F cash flow is discounted at different rates or at the equivalent YTM, the price will always be the same. In this case, the difference will be just the present value of each of the cash flows, but the total sum will be identical.

3) NTN-B[31]

Maturity : 01/05/2015

Interest : 6% /year

YTM : 6.5079% (truncated at the 6th decimal place)

Date of trade : 07/03/2007

Accumulated IPCA : 1.651293

$$\text{coupon} = \underbrace{\left[\underbrace{(1.06)^{0,5} - 1}_{rounded_at_8th_decimal_place}\right] * 100}_{rounded_at_6th_decimal_place}$$

$$\text{quotation} = \underbrace{\frac{2.956301}{(1+0.065079)^{\frac{du1}{252}}}}_{rounded_at_10th_decimal_place} + ... + \underbrace{\frac{102.956301}{(1+0.065079)^{\frac{dun}{252}}}}_{rounded_at_10th_decimal_place} = \underbrace{97.8793}_{truncated_at_4th_decimal_place}$$

$$ANV = 1{,}000 * \Delta IPCA = 1{,}651.293$$

$$\text{Price} = \underbrace{1.651{,}293}_{truncado_6^0\,decimal} * \underbrace{0{,}978793}_{truncado_6^0\,decimal} = \underbrace{1.616{,}275009}_{truncado_6^0\,decimal}$$

4) LFT

Maturity : 06/07/2010

YTM : -0.0006% (truncated at the 6th decimal place)

Date of trade : 07/03/2007

Business days between 06/07/2010 and 07/04/2007 : 763

Accumulated SELIC : 3.14455

[31] Truncation rules for NTN-Cs and NTN-Ds are identical.

$$quotation = \frac{100}{(1-0.000006)^{\frac{763}{252}}} \quad = 1.0002 \text{ (truncated at the 4th decimal place)}$$

$$ANV = 1{,}000 * \Delta selic \quad = 3{,}144.55$$

$$\text{Price} = \underbrace{3{,}144.55}_{truncated_at_6th_decimal_place} * \underbrace{\frac{1.0002}{100}}_{truncate_at_6th_decimal_place} \quad = 3{,}144.606695 \text{ (truncated at the 6th decimal place)}$$

5) BRL (global bonds follow the same calculation methodology)

Maturity : 01/05/2022

Interest coupon : 12.50%

YTM : 9.00%

Date of trade : 07/10/2007

Date of settlement (T+3)[32] : 07/13/2007

Date last coupon payment : 07/05/2007

where

$$quotation = \frac{6.25}{\left(1+\frac{0.09}{2}\right)^{2*t_1}} + ... + \frac{106.25}{\left(1+\frac{0.09}{2}\right)^{2*t_n}} \quad = 128.29\%$$

$$Dirty_price = ANV * price \quad = 1{,}282.89$$

Clean price = dirty price – *pro rata interest rate*[33]

$$pro_rata \text{ interest} = \left[\frac{\text{int}}{100} * \frac{date\ of\ \ settlement\ \ - date\ \ payment\ last\ \ coupon}{360}\right] * 1{,}000.00$$

$$pro_rata \text{ interest} = \left[\frac{12.5}{100} * \frac{07/13/07 - 07/05/07}{360}\right] * 1{,}000.00 \quad = 2.78$$

Clean price = 1,282.89 –2.78 = 1,280.11

[32] All calculations are based on the settlement date.

[33] Calculations for counting pro rata interest days should follow the bond's criteria. In the case of BRLs, the criterion is 30/360. As a result, in the pro rata formula described above, the difference should be calculated based on 30-day months.

6) Euro[34]

Maturity : 09/24/2012

Interest coupon : 8.50%

YTM : 8.00%

Data of trade : 07/04/2007

Data of settlement (T+3)[35]: 07/09/2007

Date of last coupon payment : 09/24/2006

$$quotation = \frac{8{,}5}{(1+0.08)^{1}} + \ldots\ldots\ldots + \frac{108.5}{(1+0.08)^{n}} = 108.7169\%$$

$$Dirty_price = ANV * price = 1{,}087.1686$$

$$pro-rata_coupon = \left[\frac{8.5}{100} * \frac{07/09/07 - 09/24/06}{07/09/07 - 07/09/06}\right] * 1{,}000.00 = 67.0685$$

$$Clean\ price = 1{,}086.7732 - 67.0685 = 1{,}020.1001$$

7) A-bond[36]

YTM : 7,00%

Date of trade : 07/04/2007

Data of settlement (D+3)[37]: 07/09/2007

Data payment last coupon : 01/15/2007

As mentioned, the A-bond has constant amortizations (18 tranches) starting on 07/15/2009. As a result, price[38] is calculated according to the formula below:

$$quotation = \frac{4}{\left(1+\frac{0.07}{2}\right)^{2*t_1}} + \frac{9.56}{\left(1+\frac{0.07}{2}\right)^{2*t_2}} + \ldots\ldots + \frac{5.78}{\left(1+\frac{0.07}{2}\right)^{2*t_n}} = 1{,}087.19$$

[34] Attention must be paid when calculating the *pro rata* interest. Euro bonds follow the actual/actual criterion.
[35] All calculations are based on the settlement date.
[36] Attention must be paid when calculating the *pro rata* interest. The A-bond follows the 30/360 rule.
[37] All calculations are based on the settlement date.
[38] The flows presented in Section 3 can be used to facilitate the calculation.

$$Dirty_price = ANVprice = 1{,}087.19$$

$$pro-rata_\text{interest} = \left[\frac{8}{100} * \frac{07/09/07 - 01/15/07}{360}\right] * 1{,}000.00 = 38.67$$

Clean price = 1,087.19 – 38.67 = 1,048.53

Annex 4. Summary of decree nº 3,859 of July 4, 2001

Table 7. Summary of decree nº 3,859 of July 4, 2001

Security	Maturity	Interest rate	Form of placement	Nominal value	Nominal value adjustment	Interest payment	Principal payment
LTN	Not specified	–	Auction or direct issuance	Multiple of R$1,000	–	–	At maturity
LFT	Not specified	–	Auction or direct issuance	Multiple of R$1,000	SELIC Reference date: 07/01/00	–	At maturity
LFT-A	Up to 15 years	–	Direct issuance	Multiple of R$1,000	SELIC + 0.0245%/month Reference date: 07/01/00	–	Up to 180 monthly tranches
LFT-B	Up to 15 years	–	Direct issuance	Multiple of R$1,000	SELIC Reference date: 07/01/00	–	At maturity
NTN-A1	Up to 16 years	6% / year	Direct (exchange into BIB)	Multiple of R$1,000	US dollar	Every 15th of April and October	Same as BIB
NTN-A3	Up to 27 years	6% / year	Direct (exchange into Par Bond)	Multiple of R$1,000	US dollar	Every 15th of April and October	Same as par bond
NTN-A4	Up to 27 years	Libor + 0.8125% / year.	Direct (exchange into Discount Bond)	Multiple of R$1,000	US dollar	Every 15th of April and October	Same as discount bond
NTN-A5	Up to 12 years	Libor + 0.8125% / year	Direct (exchange into Flirb)	Multiple of R$1,000	US dollar	Every 15th of April and October	Same as Flirb
NTN-A6	Up to 17 years	8% / year	Direct (exchange into C-Bond)	Multiple of R$1,000	US dollar	Every 15th of April and October	Same as C-bond
NTN-A7	Up to 15 years	Libor + 0.875% / year	Direct (exchange into DCB)	Multiple of R$1,000	US dollar	Every 15th of April and October	Same as DCB
NTN-A8	Up to 12 years	Libor + 0.875% / year	Direct (exchange into NMB)	Multiple of R$1,000	US dollar	Every 15th of April and October	Same as NMB
NTN-A9	Up to 9 years	Libor + 0.8125% / year	Direct (exchange into EI Bond)	Multiple of R$1,000	US dollar	Every 15th of April and October	Same as ei bond
NTN-A10	Up to 9 years	Libor + 0.8125% / year	Direct (exchange into MYDFA)	Multiple of R$1,000	US dollar	Every 15th of April and October	Same as MYDFA

Security	Maturity	Interest rate	Form of placement	Nominal value	Nominal value adjustment	Interest payment	Principal payment
NTN-B	Not specified	Not specified (usually 6%/year)	Auction or direct issuance	Multiple of R$1,000	IPCA (Brazilian CPI) Reference date: 07/01/00	Semi-annually	At maturity
NTN-C	Not specified	Not specified (usually 6%/year)*	Auction or direct issuance	Multiple of R$1,000	IGP-M (Brazilian Whose-Sale Price Index)	Semi-annually	At maturity
NTN-D	Not specified	Not specified	Auction or direct issuance	Multiple of R$1,000	Reference date: 07/01/00 US dollar Reference date: 07/01/00	Semi-annually	At maturity
NTN-F	Not specified	Not specified (usually 10%/year)	Auction or direct issuance	Multiple of R$1,000	_	Semi-annually	At maturity
NTN-H	Not specified	Not specified	Auction or direct issuance	Multiple of R$1,000	TR Reference date: 07/01/00	_	At maturity
NTN-I	Not specified	Not specified	Direct issuance (Proex)	Multiple of R$1,000	US dollar Reference date: 07/01/00	At maturity	At maturity
NTN-M	15 years	Libor + 8.75% / year	Direct (New Money bond)	Multiple of R$1,000	US dollar Reference date: 07/01/00	Semi-annually	17 semi-annual tranches
NTN-P	15 years minimum	6% / year	Direct issuance (Privatization Program)	Multiple of R$1,000	TR Reference date: 07/01/00	At maturity	At maturity
NTN-R2	10 years	12% / year	Direct (closed government sponsored social security)	Multiple of R$1,000	US dollar Reference date: 07/01/00	Monthly	10 annual tranches
CTN	20 years	_	Auction	Multiple of R$1,000	IGPM Reference date: 07/01/00	_	At maturity
CFT-A	Not specified	Not specified	Direct issuance	Multiple of R$1,000	IGP-DI	See table below	See table below
CFT-B	Not specified	Not specified	Direct issuance	Multiple of R$1,000	TR	See table below	See table below
CFT-C	Not specified	Not specified	Direct issuance	Multiple of R$1,000	SELIC	See table below	See table below
CFT-D	Not specified	Not specified	Direct issuance	Multiple of R$1,000	US dollar Reference date: 07/01/00	See table below	See table below
CFT-E	Not specified	Not specified	Direct issuance	Multiple of R$1,000	IGP-M	See table below	See table below
CFT-G	Not specified	Not specified	Direct issuance	Multiple of R$1,000	IPCA	See table below	See table below
CFT-H	Not specified	Not specified	Direct issuance	Multiple of R$1,000	TJLP	See table below	See table below
CDP	Not specified	Not specified	Auction	Multiple of R$1,000	TR	At maturity	At maturity

*except NTN-C 2031 - 12%/year.

CFTs can be issued in five different subseries, with the following general characteristics:

	CFT Subseries 1	CFT Subseries 2	CFT Subseries 3	CFT Subseries 4	CFT Subseries 5
Interest payment	At maturity	Annually	Semi-annually	Monthly	Periodically – on anniversary dates
Principal payment	At maturity	At maturity	At maturity	At maturity	Price table

Part III
Chapter 3

Organization of Brazil's financial market

by Guilherme Binato Villela Pedras
Helena Mulim Venceslau

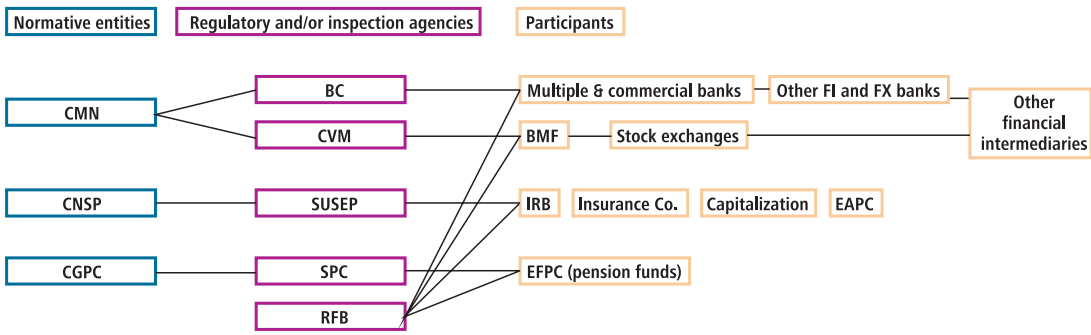
1 Introduction

This chapter will describe the role of private and public institutions in Brazil's public bond market. The rules that define their participation determine the ways that financial resources may and should be invested. In this regard, the efficient management of public debt is strongly correlated to a smoothly functioning domestic financial system.

Entities related to those institutions include, *inter alia*, the National Monetary Council (CMN), the National Private Insurance Council (CNSP) and the Complementary Social Security Management Council (CGPC), which set general guidelines for the regulatory agencies and evaluate/approve the standards they establish: For example, the CMN approves regulations proposed by the Central Bank (BC) and the Securities and Exchange Commission (CVM) regarding financial institutions' operations.

Each council is responsible for different agencies' operations. The CMN oversees financial institutions and other entities regulated by the Central Bank and the CVM. The CNSP governs private social security groups, insurance and re-insurance companies; and the CGPC regulates closed, complementary social security entities (pension funds).

Figure 1. Normative and inspection structure of the Brazilian financial system



IF: Financial institutions
BMF: Mercantile and Futures Exchange
IRB: Reinsurance Institute of Brazil
EAPC: Open complementary social security entities
EFPC: Closed complementary social security entities (pension funds)
SRF: Federal Revenue Secretariat

Source: Central Bank of Brazil website
Prepared by the authors

Regarding the primary market, federal public securities in auctions are sold mainly through a system managed by the Central Bank Within the secondary market, most securities are traded in the over-the-counter market and all participating institutions are subject to the rules established by the entities mentioned above. Primary and secondary market participants are important National Treasury partners in that they distribute bonds and set asset prices. So, in order to manage the debt optimally, there must be routine contact with financial market segments such as class associations, clearing and settlement houses and stock exchanges.

This Introduction describes the role of the main participants in the domestic financial market and their importance in developing the public security market. Section 2 examines the agencies responsible for regulating financial system participants. Section 3 covers the public security market participants that serve as intermediaries, as well as investors, i.e., the bondholders or end clients. Section 4 discusses the relevance and actions of class associations within the scope of market operations, examines the role of clearing and settlement houses as well as security trading systems, and also the relevance of assets traded through the stock exchange to public security price formation. Section 5 explores the issue of external debt, reviewing characteristics of the international market as well as the main agents involved in trading sovereign bonds.

2 Regulatory agencies

The role of these agencies is to regulate the norms issued by the councils and propose rules to improve the operations of institutions participating in the financial market. Since the National Treasury sells domestic public debt securities in the market where participants are regulated by different agencies, there must be good communication among them to guarantee that rules to develop and increase the safety of the financial market are consistent with the borrowing requirements of domestic public debt.

As mentioned above, the Central Bank (BC) and the Securities and Exchange Commission (CVM) regulate the entities that make up the domestic financial system, while the Complementary Social Security Secretariat (SPC) regulates the closed complementary social security entities (pension funds). The Private Insurance Superintendence (SUSEP) regulates insurance companies, open social security entities (private) and capitalization companies. The Secretariat for Social Security Policies (SPS) oversees actions related to both the General Social Security Regime and the one for civil servants at the Federal, state, Federal District and municipal levels. The Re-insurance Institute of Brazil (IRB) is responsible for standards in this area, and the Federal Revenue Secretariat (SRF), although not a regulatory agency of the financial system, issues tax rules that influence the decisions of economic agents in the financial market.

These agencies set the standards for the financial entities: By defining the investment framework for different types of assets in the financial market, they help determine which assets are in the greatest demand by those managing third party resources.

By regulating banks and establishing norms for the financial system,[1] Central Bank (BC) directly influences the amount of resources each financial institution can invest. Investment funds, where most domestic savings are invested, are regulated by the CVM, which determines the different types of funds and ceilings for the assets in which each can invest its resources. The SPC, SPS and SUSEP are charged with setting limits for (a) pension fund investments in general, (b) state and municipal civil servants' pension funds, and (c) insurance and private social security companies.

[1] The normative acts are associated to factors like adequate risk management, with regard to the Basle Accord, and the determination of VaR limits related to internal interest rates behavior.

The domestic financial market offers liquid assets in both the variable-income and fixed-income markets, with the latter including private and public securities. Since Federal public securities are defined by the BC as credit-risk-free assets, the rules for investing in them are less strict than for private assets.

The BC issues rules on the risk limits to which institutions must comply.[2] These include caps related to market risk and interest rate risk (Value at Risk - VaR), which directly affect the position of banks and other participants with respect to investments in fixed-rate assets. Federal public debt managers (PDMs) need to pay special attention to this aspect because, while the limits must be compatible with rules governing risk, they cannot be so restrictive that they will obstruct National Treasury sales of securities or be inconsistent with public debt medium- and long-term guidelines.

The tax rules set by the Federal Revenue Secretariat (SRF) affect financial market investments; and, joint National Treasury-RFB actions can change those rules to create a new culture in the public security market. For example, in 2006, a decrease in the tax rate on fixed-income securities gains (connected to the investments' maturities[3]) helped lengthen the term of the securities issued by the Treasury. Another important change related to public securities was exempting non-resident investors from income tax on capital gains: Since these investors have a longer-term investment profile and were taxed twice on their gains (in Brazil and in their countries), the exemption made Brazilian securities more attractive, lengthening the government debt and reducing its cost.

Table 1 shows the main acts/laws that directly affect the public security market and the form in which assets are invested.

Table 1. Main normative acts of the domestic financial system related to public securities

Type		Normative act	Subject	Impacts
Demand for securities	CVM	Normative Instruction (NI) no 409 of August, 2004, as amended by CVM instructions no 411/04, 413/04, 450/07, 456/07, 465/08	Information about investment funds	Defines the minimum investment percentage for each class of fund, with no limit for investment in Federal public securities
	CMN	Resolution no. 3,456 of June 2007	Guidelines for the investment of closed, pension funds	Defines the maximum investment percentages of the resources of closed pension funds, which can invest up to 100% in securities issued by the National Treasury
Improvement in debt structure (lengthening of average maturity)		Law no 11,033 of December 2004	Taxation in financial and capital markets	Decreases the income tax rate for longer-term investment terms; their respective rates are: up to 180 days: 27.5% 181-360 days: 20% 361-720 days: 17.5% above 720 days: 15%
	SRF	NI no 487 of December 2004, amended by NI 489/2005 and NI 822/2008	Income tax on gains from fixed-income and variable-income operations and investment funds	Defines long-term investment funds (for tax purposes), which have average maturities of over 365 days

[2] Regulatory acts are associated with factors such as adjustment of the entities' control risk regulations (within the scope of the Basel Agreement) and definition of VaR limits related to the behavior of domestic interest rates. For example, Resolution nº 3,464 of June 2007 provides for implementing a risk management framework.

[3] The rates used are as follows: Investments of up to 180 days: 22.5%; 181-360 days: 20%; 361-720 days: 17.5%; above 720 days: 15%.

Type		Normative act	Subject	Impacts
Improvement in debt structure (lengthening of average maturity)		Law no 11,312 of June 2006, which amends law no 9,311 of October 1996	Income tax for non-resident investors and provisional tax on financial transfers (CPMF)	Exempts non-resident investors from paying income tax on gains from investments in Federal public securities
Secondary market		Law no 10,892 of July 2004 amends Arts. 8 and 16 of Law no 9,311 of October 1996	Taxes on financial transfers (CPMF)	Creates the Investment Account, which allows investments to migrate between different financial instruments without paying CPMF*
	CGPC	Resolution no 21 of December 2006	Purchase and sale of securities and other financial assets in fixed income benefit plans	Requires closed pension funds to justify the purchase and sale prices of public securities, which are not traded through electronic systems

* CPMF was a tax on financial transfers in banking current accounts that was levied according to laws and constitutional amendments passed in 1996. The Executive Branch's last attempt to extend it was in December 2007, but the Federal Senate rejected the request and abolished it.
Source: Normative Acts
Prepared by the authors

3 Intermediaries and investors

The National Treasury sells Federal public securities in the primary market to institutions holding banking reserves as well as those authorized by the SELIC[4] to participate in auctions through banking reserve sub-accounts of financial institutions. Most often, these banks act as intermediaries for end clients. In the secondary market, the main institutions distributing public securities are responsible for providing prices and quotations and mediating operations.

3.1 Intermediaries

The main intermediaries of public securities between the National Treasury and end clients are banks and security broker-dealers/distributors[5] that participate in both the primary and secondary markets. Dealers[6] are classified in two groups: Those institutions that participate in primary acquisitions and those that perform in the secondary market.

Criteria to define and choose dealers are regulated by National Treasury and BC acts that stipulate their duties and rights. Primary dealers focus on the primary issuance of federal public securities[7] while specialist dealers focus on negotiating securities in the secondary market, publishing their prices and promoting liquidity. The National Treasury regularly consults with these dealers-institutions so as to better capture the demand for securities to be offered in auction. At least twice a day, both dealer groups provide the Treasury with

[4] The Special Clearing and Settlement Systems managed by the BC.
[5] Banks and broker-dealers/distributors also purchase securities for their own portfolios as well as for other purposes. However, this section will only address their roles as intermediaries.
[6] Banks and broker-dealers/distributors can be dealers. For more information, see the act regulating their participation in http://www.tesouro.fazenda.gov.br/legislacao/leg_divida.asp.
[7] For more details on security auctions and participants, see Part III, Chapter 4.

information on security rates in the secondary market, which are needed to monitor the market and set the price of securities offered in the Treasury Direct (TD) Program.[8]

Currently, Brazil has 156 banks, of which 136 are multiple banks[9] and 20 are either domestic commercial banks or branches of foreign banks; there are 107 securities broker-dealers and 133 securities distributors.[10]

Intermediaries are vital to distributing and pricing assets in the financial market. For investors, they identify the types of various instruments, yields and desired maturity, and provide them through the secondary market. They also inform the National Treasury about how a given instrument is perceived, as well as the demand for a type of security or maturity that is not yet being met - critical information for planning issuances.

In this regard, the banks and asset broker-dealers/distributors are seen also as National Treasury partners in promoting a well-operated Federal public security market.

3.2 Investors[11]

The main end clients of public securities in the domestic market are investment funds, banks,[12] pension funds, insurance companies and non-resident investors.

Investment funds (IF) are regulated by the CVM and classified as short-term, indexed, fixed-income, equity, exchange, external debt, and multi-market. They can be classified as long-term, meeting the conditions required to benefit from reduced taxes.

Public securities represent about 50% of the IFs' overall resources, distributed among different types of funds: They are the largest category of investors in Federal government securities, although the volume of bonds they negotiate in the secondary market is lower than that of the banks.

Banks differ significantly from the IFs,[13] as they are more dynamic, always watching market movements. Fixed-rate securities make up the largest share in their portfolios. They participate in the market as intermediaries between the National Treasury and other investors, alerting the Treasury about the demand for securities as well helping the Government to release its issuance strategy.

Pension funds, or EFPC (the Portuguese acronym), manage the complementary social security resources of public and private employees and state and municipal civil servants. The resources' minimum remuneration is determined by regulations provided in the entities' by-laws and the rules set by the SPCs and SPSs. Because of the characteristics of this type of liability, pension funds hold long-term public securities, particularly those linked to inflation rates.

Regarding the average maturity of investments, it is possible to separate pension funds into two groups: (a) those where contributors mainly withdraw their funds and (b) those where they begin their accumulation process. The latter are the main investors in long-term CPI-indexed securities, especially the NTN-B,[14] which mature in 2045.

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[8] This subject is explored in Part III, Chapter 7.
[9] Multiple banks are commercial banks authorized by the BC to perform multiple financial functions.
[10] Source: *Financial Stability Report*, November 2008, Central Bank of Brazil.
[11] This topic is discussed in Part III, Chapter 5.
[12] Banks are end clients when they purchase securities for their own portfolios.
[13] Except for Multimarket Funds, which have a more aggressive investment behavior.
[14] *Nota do Tesouro Nacional*, B series, CPI-indexed security with semi-annual interest coupon.

Insurance companies - part of the group of non-financial corporations authorized to participate in National Treasury auctions through the sub-custody account in the SELIC - also invest in public securities. Thus, they may manage their investment portfolios without intermediaries.

Non-resident investors are the main holders of long-term, fixed-rate securities. They participate mainly in auctions of NTN-Fs[15] and some NTN-B medium- to long-term maturities. Their presence helps lengthen debt maturity as they have a longer-term investment profile, which has helped change the culture of short-term investment.

4 Class associations

Class associations represent the main participants in the public security market and facilitate the debate among the National Treasury, intermediaries and clients. In this regard, they are important partners in disseminating public debt-related information and also contribute to changing the investors' culture. They also inform the Treasury about the difficulties investors face when trading public securities.

The main associations in the domestic market are the Brazilian Association of State and Municipal Social Security and Assistance Institutions (Abipem), Brazilian Association of Pension Funds (Abrapp), National Association of Investment Banks (Anbid), National Association of Financial Market Institutions (Andima), Brazilian Federation of Banks (Febraban), National Federation of Private Pension Funds and Life Insurance (Fenaprevi), and National Federation of Private Insurance and Capitalization Companies (Fenaseg).

Abipem, originally Abip, was created in 1980, when its only members were the state social security institutes. Later, when municipal institutes joined, it was renamed Abipem. It attracts member institutions by improving their technical-administrative knowledge, helping them share information, organizing national congresses and regional meetings, and discussing/disseminating the principles of the social security and welfare system. It communicates with government agencies, the National Treasury, and SPC, and also publishes information on the sector. In October 2008, the social security system included 369 pension funds.

Abrapp was founded in 1978 to represent pension funds. Its objectives are to:

> [...] collaborate with the public sector in all matters related to complementary social security, especially as regards its regulation and the implementation and enforcement of basic policies and guidelines for its activities, [...] organize, promote or carry out studies, analyses, research, courses, congresses, symposia, or other types of meetings on themes, problems and aspects related to complementary social security,[16] among others

At Abrapp's invitation, the National Treasury attends meetings and seminars where it presents the federal public security issuances and informs investors about the characteristics of securities offered in auction, attempting to change the large investors' preferences in Brazil's domestic securities market for CDIs.[17] The meetings also offer opportunities to discuss the aspects of the domestic market and role of pension funds within the Federal Public Debt.

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[15] *Nota do Tesouro Nacional*, F series, longer-term fixed-rate security (3, 5 and 10 years) with semi-annual interest coupons.

[16] Free translation of the Abrapp Bay-laws (in Portuguese). Excerpt from the document is available at http://www.abrapp.org.br.

[17] Interbank Deposit Certificates (CDI is the Portuguese acronym) are securities issued by financial institutions that back operations in the inter-bank market. Their trading is restricted to this market and their function is to transfer resources from one financial institution to another, improving the system's fluidity (among those with money to lend and those which do not).

Anbid was created in 1967 to represent investment banks. It has over 70 members, including multiple and investment banks, asset managers and financial consultant firms, which administer investment funds and other assets. In February 2009, there were 8,190 of these entities, with R$1,135.9 billion in net assets, all belonging to Anbid member institutions.

In 1999, Anbid issued its first code for public offers of securities, which launched its role as a self-regulating entity. It now has four more codes, for (a) investment funds, (b) capital market eligible services, (c) the continued certification program, and (d) private banking activity in the domestic market.

Anbid's aims include enhancing the capital market, strengthening the CVM as a capital market regulatory entity, adopting best practices among members, respecting investors' rights, and helping investors and market agents better understand the investment products available.[18]

The partnership between the National Treasury and Anbid serves to inform the latter's members about Treasury actions with respect to public debt management and issuance strategies, promoting measures that will lengthen the debt average maturity, reduce the risk and change the investment culture from CDI to longer-term investments.

Andima was created in 1971 to "strengthen the financial market, focusing on the fixed income market, establishing ethical and operational standards for participants and producing and disseminating technical information that contributes to its growth".[19]

It is the broadest among all the institutions, attracting banks, securities' broker-dealers and distributors, investment funds, and pension funds. It also provides services and offers technical/operational support to member institutions, fosters new markets and helps develop the domestic financial system. As a self-regulating entity, it has a Code of Ethics (CE) and a Market Operational Code (MOC), both adopted by Cetip, Sisbex and Abrapp.

Andima plays an important role by publishing daily prices for all securities issued by the National Treasury and held by the market, through the Price Consolidation, Dissemination and Monitoring Project, which improves market transparency. This makes Andima a vital institution for the entire market, which needs prices to correctly evaluate its portfolios.

In assembling all the prices, Andima meets statistical and classification criteria related to data frequency and dispersion regarding the sample, among others. Andima's activities focus on collecting and disseminating information, building price indicative intervals, and monitoring the prices negotiated.

Andima has several entities that review financial market operations, focusing on the fixed-income market of both public and private securities. Its most important committees include those that deal with Macroeconomic Follow-up, Monetary Policy, New Products, Operations/Ethics, Mixed Andima/Abrapp Operational and Ethics, Asset Pricing, and Securities. The Treasury participates in the committees' working groups, discussing the development of both the secondary and public bond markets.

Its Asset Pricing Committee is linked with the Benchmarks Commission, in which the National Treasury participates. The commission is responsible for publishing and following-up on studies that help improve Andima's fixed-income indices.

Each day, Andima develops and publishes the Fixed Income Market Index (IRFM) and the Andima Market Index (IMA).[20] The IRFM is composed of fixed-rate securities issued by the National Treasury, while the IMA is

[18] Free translation of the Anbid Bay-laws (in Portuguese). See htpp://www.anbid.com.br.

[19] Visit htpp://www.andima.com.br.

[20] To develop these indices, the National Treasury sends Andima a list of all outstanding securities each day.

composed of the (a) IMA-B, which includes CPI-indexed securities, (b) IMA-C by IGPM-linked federal public securities, and (c) IMA-S by floating-rate securities. The IMA-General is composed of all IMAs, including the IRFM. Inflation-linked IMAs (IMA-B and IMA-C) also include two intermediate classifications according to maturity: The IMA-5 group, which involves securities maturing in up to five years and the IMA 5+ group, for longer-term securities.

These indices are yet another step to providing a yield benchmark to investors other than the usual CDI. The aim is to give the lead investors public security-referenced indices so they can include different assets in their investment portfolios.

Established in 1967, Febraban, the official representative of Brazil's banks, helps communicate with these agents, besides submitting proposals to the authorities regarding market de-regulation and actions that could be adopted to modernize regulations. Its goal is to "represent its members at all levels - executive, legislative and judicial branches - to improve the legal system and reduce risk levels."[21] It is composed of 120 member banks out of the total of 156 that operate in Brazil.

The Code of Banking Ethics (CE) and the By-laws of the National Banking Ethics System elaborated by Febraban were adopted in January 1986. The first includes basic principles to guide banking activities while the latter enforces the CE principles, defends the markets where the banks operate and promotes the best market practices. Febraban has 25 technical commissions whose goal is to conduct studies and produce publications on topics related to banking activities carried out by the following commissions: the Economics Commission, Banking Services Commission, Banking Technology and Automation Commission, Risk Management Commission, and International Banking Affairs Commission.

Fenaprevi, created in 2007, is the successor to the National Complementary Social Security Association (Anapp)[22] and represents the Open complementary social security entities (EAPC). It provides services to its members, fosters new markets and helps develop complementary social security systems. Some Fenaprevi objectives are to:

> [...] defend the interests of the segments represented in the market, public authorities, civil society institutions and other class associations; develop and improve laws, rules and regulations that strengthen the efficiency of the economic segments it represents, by interacting and cooperating with authorities and civil society organizations [...].[23]

Fenaprevi member companies have a portfolio of R$139.34 billion and until the institution approves its own Code of Ethics, it still applies the one devised by the former Anapp. The entity has 11 technical-regulatory commissions whose objective is to coordinate activities related to legal, actuarial, financial, accounting and technological issues as well as to products in the social security and life insurance sector.

Fenaseg was founded in 1951 to develop the insurance and capitalization sector. It has 160 member companies of which 143 are insurance companies that account for 99.2% of the insurance market.[24] One of its many missions is "to cooperate with the government to develop rules that will improve the members' activities and solve problems related to the sector."[25] Fenaseg has six technical commissions and three working groups, one of which focuses on ethics and self-regulation.

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[21] Free translation of Febraban Bay-laws (in Portuguese). For more details, see htpp://www.febraban.org.br.

[22] Institution established in 1975.

[23] For more information, visit htpp://www.fenaprevi.org.br.

[24] In December 2008, it totaled R$67.8 billion. For more information, see http://www.susep.gov.br, Market Follow-up Report – August 2007.

[25] Free translation of Fenaseg Bay-laws (in Portuguese). For more information, see http://www.fenaseg.org.br.

All these institutions partner with public entities such as regulatory agencies and the National Treasury so as to develop and modernize Brazil's financial market, which, in turn, will improve the domestic federal debt profile.

5 Settlement infrastructure for operations with Federal public securities

Operations in the primary market

Figure 2. Operational cycle of public securities sold in the primary market

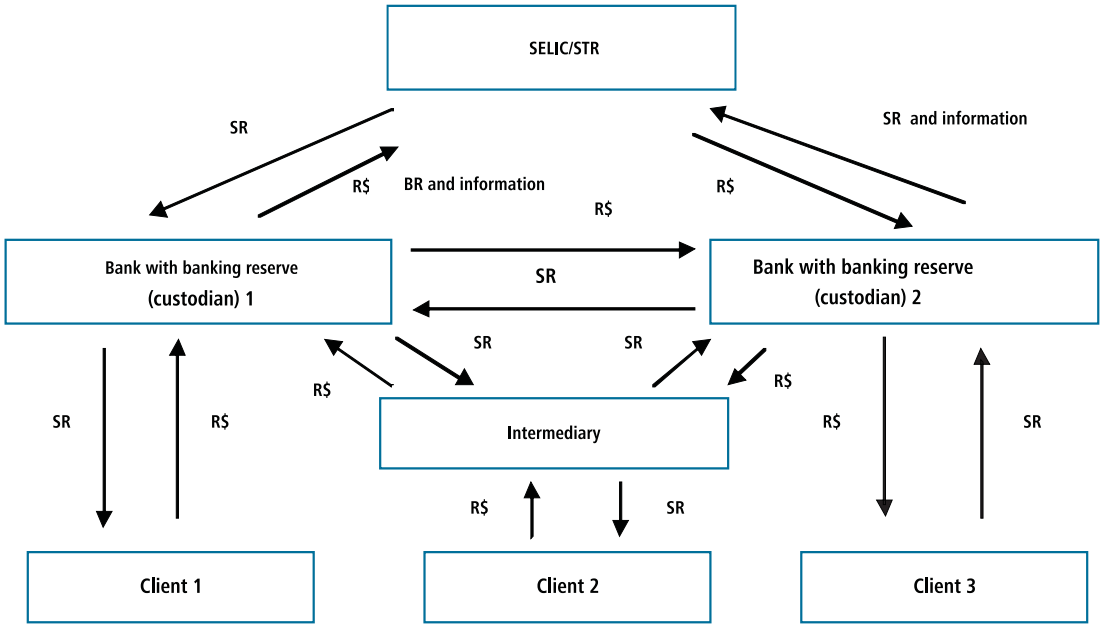


Source: Selic, Central Bank
Prepared by the authors

The National Treasury offers Federal public securities in the primary market through the SELIC system. Institutions holding banking reserves and contemplated in the auction will have, in the first day after the auction, their accounts debited for cash, being granted the certificate of bond ownership.

Operations in the secondary, over-the-counter market

Figure 3. Operational cycle of public securities traded in the secondary market



Source: Central Bank
Prepared by the authors

In the over-the-counter-market (conducted by telephone) with settlement and registration through Selic/STR, the custodian bank transfer reserve (BR) and has the security registered in its account (Security Register – SR). However, when the operation between two clients is performed by an intermediary, the custodian banks are notified so as to arrange the necessary transfers (of SR and BR) and inform the Central Bank (SELIC) of the change in the security holder position (information).

5.1 Custody and settlement systems

Four custody and settlement systems handle the operations involving public securities. These are the (a) Special Settlement and Custody System (SELIC), (b) CETIP Clearing and Settlement House, (c) BM&FBovespa Clearinghouse, and (d) Brazilian Settlement and Custody Company (CBLC).[26] BM&FBovespa has two other settlement systems for exchange and derivatives operations - the Foreign Exchange Clearinghouse and the Derivatives Clearinghouse, respectively.

SELIC. This entity, the first electronic securities registration system in Brazil, operates as the central depository for most Federal public securities issued by the National Treasury (96.3%[27] of the domestic debt in the market in December 2008). The system includes modules for Treasury primary auctions and for secondary market over-the-counter trades. This information can be found in the SELIC User's Manual (MUS).[28]

SELIC was established in 1979 through a partnership between Andima and the Central Bank to settle public securities' operations at the end of each day, based on the net result to the banks' reserves accounts. Since 1996, all procedures, including auctions,[29] have been processed electronically. In April 2002, with the new SPB (Brazilian Payments System), the settlement process was changed and carried out in real time gross settlement (LBTR), through several settlement windows that are open during the day. Under this process, the security seller's position is automatically registered and the account is debited at the purchasing end.[30]

This new process was introduced with the Reserve Transfer System (STR), which is linked to the SELIC. Besides the National Treasury, it includes commercial banks and clearinghouses that have special settlement accounts with the Central Bank. All resource transfers are settled and completed within the same day. Settlements in the SELIC or STR, when not honored by one of the parties, are cancelled.

In addition to the Treasury and Central Bank, other institutions in the SELIC system that serve as custody account holders include commercial and multiple banks, investment banks, savings banks, securities and financial assets distributors and broker-dealers, entities that offer clearing and settlement services, and several other institutions in the national financial system. Liquidators are participants that hold banking reserve accounts; non-liquidators are classified as autonomous or subordinate entities and settle their operations through liquidators.[31]

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[26] In December 2008, the BM&FBovespa and CBLC were merged.

[27] Source: *Relatório Mensal da Dívida Pública Federal*.

[28] Available at : http://www3.bcb.gov.br/selic/documentos/MusSpb.pdf.

[29] National Treasury auctions are carried out through the Electronic Formal Public Offer (Ofpub) module developed and managed by the Central Bank.

[30] The operation is held for 60 minutes or until 6.30 p.m., whichever occurs first. If, during this period, the balance is not sufficient to settle the operation, it will be rejected.

[31] Commercial banks, multiple banks with a commercial portfolio and savings banks must hold banking reserve accounts, while investment banks are not required to do so. Local security broker-dealers and distributors as well as entities responsible for clearing

Non-liquidators in the SELIC can hold individual accounts, which allow the Central Bank to identify some of the end clients of public securities.[32] The main holders of government bonds are the banks (treasury), the investment funds and the non-financial legal entities – PJNF[33]. In addition to non-financial companies, the PJNF account includes participants in the social security system (pension funds and open private social security funds), insurance companies, capitalization companies, and non-resident investors with securities registered in their own portfolios. However, debt distribution among investors according to the above description is not yet available to the public.

CETIP. This entity provides services in the areas of custody, electronic trades, business registrations, and financial settlements mainly for fixed-income securities. Created in 1984, also through a partnership between Andima and the Central Bank, CETIP's members include about 6,000 institutions such as leasing companies, investment funds and non-financial institutions (e.g. insurance companies and pension funds). Quota holders are restricted to settling their operations through financial institutions[34] while those without banking reserve accounts must settle through settlement institutions.

The few National Treasury securities not settled in the SELIC are registered and settled in CETIP, accounting for 3.7%[35] of domestic debt. The main ones include: CDP/INSS, CFT, CTN, FDS, TDA, JSTN, and securitized debts. These securities originated in National Treasury special operations;[36] most can be traded in the secondary market and some are accepted by the National Treasury in auctions in exchange for bonds registered in SELIC.[37]

Most private bonds and derivatives traded in the domestic market are also registered in CETIP,[38] such as certificates of bank deposits (CDs), debentures, fund quotas, derivatives (swaps and options) and agribusiness financing contracts and products.

CETIP offers four settlement options, depending on the type of transaction: (a) real time gross settlements in the STR, (b) real time net settlement transfers, (c) multilateral nettings and bilateral nettings. CETIP also offers trade facilities such as the CETIPNET electronic system, which is an electronic window for trading public and private securities and requesting quotes; this system also processes several types of fixed-income asset auctions.

The BM&F Asset Clearing System.[39] This entity, which was created in 2004 to develop electronic public securities' trades, settles operations contracted within the Sisbex system[40] as well as those in the over-

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and settlement systems are autonomous; investment funds, insurance companies, capitalization companies, open and closed entities of social security and re-insurance companies, are subordinates.

[32] The annex of the National Treasury's Federal Public Debt Monthly Report shows the main holders of domestic debt securities (Table 5.1). Also, it presents the status of the investors' portfolio positions in, inter alia, domestic and foreign banks (the latter are those that operate in Brazil but are headquartered overseas), domestic investment banks, and domestic and foreign broker-dealers/distributors (Table 5.2).

[33] Which can be public and private companies (including the ones from the insurance and capitalization sector), pension funds and open entities of complementary social security.

[34] These are commercial banks, multiple banks, savings banks, investment banks, development banks, asset broker-dealers, asset distributors, commodities and futures broker-dealers, leasing companies, insurance companies, stock exchanges, commodities and future contracts broker-dealers, institutional investors, non-financial corporations (including investment funds and private social security institutions), foreign investors, and other institutions authorized to operate in financial and capital markets.

[35] Source: Monthly Federal Public Debt Report, December 2008.

[36] For example, securities issued when rural land is expropriated within the agrarian reform program (TDA).

[37] Securities that can be traded are those that do not contain a non-negotiable clause. Securities accepted in exchange for floating rate securities (SELIC) are defined in the auctions' administrative rulings.

[38] For more information, see http://www.cetip.com.br.

[39] BM&F and Bovespa were merged in 2008, into BM&FBovespa (see Section 6 for details).

[40] This is the Electronic Negotiation and Registration System, originally developed at the Rio de Janeiro Stock Exchange (BVRJ), and

the-counter market; it serves as a central part of the operations. It also settles definitive (cash or forward operations) and repo operations, as well as short sales, with securities falling into the Security Loan Service (SET) or the SELIC securities loan program.

Public securities traded or registered in Sisbex are settled in the Delivery versus Payment System - DVP. The BM&FBovespa Asset Clearing System acts as the core counterpart of the operations. If a participant fails to make the payment, whether in cash or assets, the system uses the participant's guarantee to fulfill the settlement. In such cases, BM&FBovespa (a) lends the one in default the money to honor the operation; (b) offers equivalent assets to the participant that honored its part of the deal but did not receive the original asset; or (c) pays cash to the participant that fulfilled the operation delivering the asset.

Participants of the BM&F Asset Clearing System can settle operations through members (which, in general, are banks), or directly, when registered for this function: Besides banks, these include asset broker-dealers and distributors, investment funds, open and closed social security entities, and the insurance and re-insurance companies. All system liquidators deposit guarantees and are subject to the limits (set by the system).

This clearing system, which operates as the core feature of public security operations in the electronic system in Brazil's debt market, minimizes the risks associated with settlements; it is consistent with international best practices to reduce the risk that financial operations involving public securities will not be completed. Also, it allows for short-sale operations of the securities it offers, with the usual guarantees.[41]

CBLC.[42] This entity was originally responsible for the custody, clearance, settlement and management of the risks in Bovespa markets. When the Bovespa and BM&F stock exchanges merged, the CBLC was incorporated into the structure of BM&FBovespa. In January 2002, it established a partnership with the National Treasury to facilitate the sale of public securities to individuals over the internet (Treasury Direct Program[43]). In the current settlement structure, the system (which CBLC developed and operates) continues to work independent of the other two BM&FBovespa systems, although it is part of the new institutional structure. It is in this environment that Treasury Direct (TD) operations are settled.

5.2 Negotiation systems and environment

Public securities are negotiated in the stock exchange or in the over-the-counter market (by telephone), although the latter operations can also be made through an electronic system. This market allows liquidity for some securities, and price references are based on quotations. Despite the Treasury's efforts to promote the electronic system, the greatest number of secondary market trades is still made by telephone.

The electronic market, which, in Brazil, is still in its embryonic stage, has several advantages, particularly with respect to price transparency: Greater transparency leads to a larger number of quotations. This, in turn, increases the secondary market liquidity for securities, which translates into increased demand for Federal public securities in the primary market. For this reason, the National Treasury strongly supports its development. Two operational systems - Sisbex and CetipNet - can promote these negotiations.

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later acquired by BM&F. More details on Sisbex are provided later in this chapter.

[41] For details, see http://www.bmf.com.br/portal/pages/Clearing1/Ativos/documentos/.

[42] For details, see http://www.cblc.com.br/cblc/Default.asp.

[43] Part III, Chapter 7 describes the Treasury Direct (TD) program.

The Electronic Negotiation and Registration System (Sisbex) negotiates and settles operations. As mentioned earlier, it was originally developed by Rio de Janeiro Stock Exchange (BVRJ) and acquired in 2002 by BM&F, remaining intact when the two stock exchanges (BM&F and Bovespa) merged. Only Federal public securities settled in the SELIC and other assets expressly admitted for trade and registration can be negotiated in Sisbex.[44]

Sisbex involves two functions: (a) an order matching module, where participants can enter or accept quotes electronically, and (b) a registration module, where they report transactions performed in another area (e.g. over-the-counter). In this way, the asset clearing system processes the settlements and custody procedures. In the first, where transactions are performed according to price and time priorities, all participants act anonymously. In the latter, participants can enter information and the registration is completed once the other counterpart confirms the transaction. Non-confirmed operations are not registered.

CetipNet was introduced in April 2002 by CETIP. The system was originally available only for trading assets registered in that system. Now, it can be used to purchase and sell securities registered in the SELIC, with the restriction that CETIP cannot settle the operation. Although CetipNet does not present a clearing-house or settlement chamber for SELIC securities, it performs on-screen operations and settles them in the SELIC.

More recently, electronic quotes gained greater importance in the secondary market, mainly with regard to operations involving pension funds. SPC's latest rules required fund managers to demonstrate that securities in their portfolios were acquired at market prices. As a result, electronic price platforms became more attractive because buying electronically is the easiest way for pension funds to prove that the prices of the bonds they bought were the fairest possible.

Bloomberg and Reuters agencies developed screens on which financial institutions post the prices at which they are willing to complete purchases and sales. These initiatives are very useful, given the importance that regulatory agencies attach to transparency of fixed-income asset prices. Most institutions use the posted prices as indicative; thus, transactions are confirmed by telephone and settled in the SELIC. While the agencies' screens cannot be used to close deals, they promote price transparency and help develop the secondary securities market in Brazil's domestic market.

Electronic screen systems for trading public debt securities are a significant advance in the domestic market, as they increased transparency and reduced the risk of an operation defaulting to nearly zero. To promote this market's growth, the National Treasury created rules to favor electronic operations (regarding quotes and trades).

5.3 The new Brazilian payment system

A fundamental requirement of a good public debt market is an efficient payment system in which the transfer of resources and assets among market participants occurs smoothly. Two imperatives are (a) processing information safely and rapidly and (b) minimizing financial risks.

By 2002, Brazil's payment system was considered quite advanced with respect to the first requirement. However, the second feature needed to be substantially improved, since problems in settling a financial operation usually create a lack of confidence in the system and generate losses. In extreme cases, this can

[44] The Sisbex by-laws are available at: http://www.bmf.com.br/portal/pages/Clearing1/Ativos/pdf/Sisbex_Regulamento.pdf.

cause systemic risk, when coupled with other institutions' increasing losses. To eliminate this risk, the Central Bank (which regulates and monitors the payment system) reformed the system that year.

In one move, it established the Reserve Transfer System (STR), a mechanism for inter-bank transfers of funds with real-time gross settlements. Similarly, the banking reserve accounts began to be monitored in real time, with fund transfers among different accounts requiring a sufficient balance in the account of the one placing the order. Thus, the SELIC, where transactions of public securities are performed and which is based on a Delivery versus Payment - DVP model, started to settle operations in real time, reducing the systemic risk and increasing participants' confidence.

The launch of the new Brazilian Payment System (SPB) in 2002 represented an important improvement in the financial market in general and to public debt, in particular. Today, the market for Brazilian securities depends on a very advanced operational framework.

Table 2. Main characteristics of the settlement systems

	SELIC/STR	CETIP	SISBEX	BM&FBOVESPA*
Market	Primary, secondary, loans, electronic (for primary only) and over-the-counter	Primary, electronic	Secondary, loans, electronic, over-the-counter	Primary, Treasury Direct
Assets	LFTs, LTNs and NTNs (all series)	Securitized debt bonds	LFTs, LTNs, NTN-Bs, NTN-Cs and NTN-Fs	LFTs, LTNs, NTN-Bs, NTN-Cs and NTN-Fs
Type of transaction	Cash (D0), forward (D1)	Cash (D0), forward (D1)	Cash (D0), forward (1-23 days)	Forward (D2)
Type and cycle of settlement	Real time gross	Real time gross	Net position (multilateral netting)	Gross position
Risk management	If funds or assets are insufficient, the operation is cancelled. Delivery versus payment system (DVP).	If funds or assets are insufficient, the operation is cancelled. DVP system.	Participants deposit guarantees that can be used to settle transactions	Intermediaries (banks and broker-dealers / distributors) are responsible for debiting the buyer's account in the DVP system
Direct participants	Banks holding reserves	Banks holding reserves and over 5,000 institutions other than liquidators	Banks and broker-dealers /distributors	Individuals
Start of operations	1979	1984	2004	2002

* Refers only to Treasury Direct-related operations
Prepared by the authors

6 Stock exchanges

Until 2008, the country had two markets for trading financial assets: the Brazilian Mercantile and Futures Exchange (BM&F) and the São Paulo Stock Exchange (Bovespa). At the end of 2007, the two entities decided to launch their Initial Public Offer (IPO) and in 2008, they merged into BM&FBovespa. However, the assets negotiated in each still belong to the same negotiation groups. Thus, interest rate and commodities derivatives as well as contracts in US dollars are negotiated in the assets sector (originally in BM&F), while the Brazilian stock market and some fixed-income assets are still handled by Bovespa.

Interest rate futures, known as One-Day Inter-Financial Deposits (DI Futures), are negotiated in BM&FBovespa. DIs are important for public debt management because they are very liquid and used as benchmarks for pricing government fixed-rate bonds. BM&FBovespa actions with the DI, regarding futures' interest rates and inflation, are important and need to be monitored closely by the National Treasury.

In partnership with the CBLC, the former Bovespa introduced the Bovespa Fix, a system for negotiations, settlements and custody of private fixed-income securities in a stock exchange environment, and the Soma Fix, for organized over-the-counter market trades. This initiative complements the private fixed-income market; currently, debentures, promissory notes and the FIDC (the Portuguese acronym for Investment Funds in Credit Rights), can also be traded within BM&FBovespa.[45]

7 Entities in the external debt market

Federal public securities issued outside the country are not as frequent or large as domestic issuances. To price them correctly, the institutions involved in the transactions must have a good client base and capacity to maintain liquidity for securities in the secondary market. In the international market, such intermediaries play a fundamental role in distributing securities: These include banks with experience in negotiating securities from emerging economies and corporations. They submit issuance proposals to the National Treasury on a regular basis, proposing a coupon interest rate and maturity for particular types of securities. If the Treasury agrees, the institutions charge fees to handle the operations and provide the documents required for issuing the securities.

The issuing format, fees charged, relationship between the banks and National Treasury, among other factors, are evaluated in order to choose the institution that will handle the sales.[46] Once these are completed, securities are registered in the clearing and settlement systems indicated by the buyers and are then negotiated in the secondary market. The market for sovereign bonds most often performs over-the-counter operations. Brazilian Eurobonds can be traded on MTS, an important electronic market for securities in Europe.

Three custody and settlement systems function in the international market where Brazilian sovereign bonds can be registered and settled: the Depository Trust Company (DTC), the Euroclear and the Clearstream Luxembourg.

The DTC, established in 1973 to generate electronic registers for financial assets traded on paper (physically), became the electronic clearing and settlement system for US assets and later, for international assets as well. It is one of the six subsidiaries of the Depository Trust & Clearing Corporation (DTCC), with 2.8 million assets issued in the United States and in another 107 countries. DTCC participants are banks, brokers-dealers, mutual funds and other financial institutions. It is regulated and follows rules established by the US Securities and Exchange Commission (SEC).[47]

Euroclear was created in 1971 by J.P. Morgan & Co. This Brussels-based financial company settles domestic and international transactions involving securities, private fixed-income assets and investment funds. Since 2000, it has been operated by the Euroclear Bank S.A. The system has approximately 2,000 participants from over 80 countries. The main participants include banks, broker-dealers and other financial institutions.

[45] For more details, see http://www.bmfbovespa.com.br/portugues/home.asp.
[46] Part III, Chapter 4 (item 3.2) provides more details on securities issued in the international market.
[47] For more information, see http://www.dtcc.com.

Euroclear is supervised by the Belgian Banking and Finance Commission (BFC), and is inspected by the National Bank of Belgium (NBB).

Luxembourg-based Clearstream Banking S.A. was established in 2000 from the merger of Cedel International and Deutsche Börse Clearing, and fully integrated in 2002. This settlement and custody entity is the repository of over 300,000 securities, equities and investment funds traded in domestic and international markets, of which 62% are fixed-income assets and 38% variable-income assets (related to equities).[48] Over 2,500 clients in 110 different countries interact with this institution, which performs an average of 250,000 transactions daily.

Brazilian global bonds issued in the international market can be registered and settled in any of the three major custody systems listed here;[49] negotiations for these bonds are bound by the rules established by the regulatory agencies of each country where the securities are registered.

The Securities and Exchange Commission (SEC) is the US government agency that regulates the fixed-income assets industry and the stock market; it was created by the Securities Exchange Act of 1934. Its Market Regulation Division establishes the norms for market operations and regulates brokers-dealers, self-regulatory organizations, as well as agencies involved with settlements, transfers (those with data on asset holders), the processing of asset information, and ratings. Its Investment Management Division inspects and regulates the funds industry and creates the rules for investment institutions (including mutual funds) and consultants.

With respect to self-regulatory entities, the National Association of Securities Dealers (NASD), which regulates transactions involving fixed-income assets, private securities, futures and options, and the New York Stock Exchange (NYSE) Regulation, Inc., which regulates the stock market, merged into the Financial Industry Regulatory Authority in 2007. This private entity is the financial market self-regulator.

While external debt now accounts for less than 10% of Brazil's Federal Public Debt, its existence ensures the country's participation in the international market; the reduced interest rates and high liquidity of Brazil's external securities promote the country's image and enable it to obtain good ratings from rating agencies. It is for this reason that National Treasury actions related to external debt have performed well; the Treasury has repurchased old debt that carries high interest rates and issued new securities at lower interest rates and longer terms.

8 Conclusion

Brazil has a well organized market structure, with legal and regulatory institutions to monitor all entities that participate in the domestic financial system. The regulatory environment is transparent and the effort to improve the quality of information on asset prices also has increased liquidity in the secondary market. The interaction among the agencies and entities described in this chapter helps develop the domestic financial market and minimize the risks of financial loss for society.

Asset liquidity, price transparency and lower risks positively affect public debt management and long-term planning. In this regard, the National Treasury routinely participates in working groups and discussions on developing the secondary securities' market, securities loans and short sales. The Treasury believes that improving these modalities involving public securities is pivotal for increasing their liquidity.

[48] Position in August 2007. Source: http://www.clearstream.com/ci/dispatch/en/kir/ci_nav/home.
[49] Eurobonds cannot be registered in the DTC.

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Part III
Chapter 4

Primary market of the Federal Public Debt

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1 Introduction

Every year, significant funds are raised in the domestic and external public bond primary markets to meet government borrowing requirements.[1] To accomplish this, public debt managers search for efficient ways, analyzing the instruments, mechanisms for issuing the bonds, and procedures to communicate with investors. Each improvement helps reduce the government's financing costs[2] and develop the market.

This chapter examines Brazil's primary bond market, describing the ways bonds are issued in the domestic and international markets and the strategies adopted in each.

Section 2 reviews the National Treasury's actions and the ways they are consistent with international best practices with regard to transparency and predictability. Section 3 describes the instruments and strategies used to issue the bonds. Section 4 examines the characteristics of the buyers and Section 5 presents the ways the National Treasury manages liabilities' operations.

2 Transparency and Predictability

International best practices suggest that public debt operations in the primary market should be transparent and predictable[3] so as to maximize competition among investors and achieve the best outcomes for the government.

Transparency and predictability are promoted mainly by well-defined legal and institutional frameworks, timely information on the Treasury's performance (before and after its operations, with regard to meeting targets) and consistent financing policies. All these areas have improved in recent years.[4]

Regarding the legal framework, mandates for issuing Federal public bonds were defined and the task was placed exclusively within the National Treasury.[5] Next, the bonds' general characteristics were

* The authors would like to thank Anderson Caputo Silva for his major contributions to this chapter, whose comments enhanced the work immeasurably.

[1] In 2009, for example, the Treasury's borrowing requirements, according to its Annual Borrowing Plan, were R$ 309.2 billion.

[2] Silva, Dieguez and Carvalho (2003) demonstrate the importance of re-opening fixed rate bonds. They analyzed a sample of 461 auctions of fixed/floating rate bonds, which were re-opened, which, in turn, reduced the government's borrowing cost by 10 basis points.

[3] In the international market, the government competes with other countries for investors. Since access to this market is characterized by windows of opportunity, sovereign issuances tend to be concentrated in these periods. However, extreme predictability may not be advised, since it promotes opportunistic behavior by other issuers.

[4] The National Treasury also adopted measures to increase transparency in the secondary market, as described in Part III, Chapter 6.

[5] In the past, the Central Bank also issued bonds. The shift, in which the National Treasury became the only institution responsible for

consolidated in 2000 in a specific presidential decree.[6] With respect to the institutional framework, the area within the National Treasury that manages the public debt was changed extensively, and divided into front, middle and back offices;[7] this action further delineated the responsibilities of each, including the one tasked with conducting the auctions.

Information about the Treasury's actions is well structured and timely: Documents are regularly published, which include the Annual Borrowing Plan (ABP), the Monthly Auction Calendar and the Administrative Order for each auction.

The ABP establishes clear guidelines and yearly targets for the domestic and external public debt, including general objectives, strategies and instruments to be adopted. This information gives economic agents the information they need to make investment decisions. The Monthly Auction Calendar,[8] presented on the last working day of the previous month, describes the general characteristics of domestic debt auctions, such as the date and type of auction (issuance, exchange or buyback), and establishes the maximum amount to be issued during the month. Finally, an Administrative Order[9] is released before each auction, providing information about the objective and dates of the issuance, amount to be offered by bond, and maturity,[10] among others.

Transparency about the Treasury's activities is further achieved through the Monthly Federal Public Debt Report and the Annual Report.[11] The last contains details about the public debt of the previous year, comparing the results achieved with the targets set *ex ante* in the ABP.[12] It offers information about public debt accounts to investors and society in general, providing a comprehensive view of measures adopted to define objectives and set targets - which include improving human and technological resources.

The Monthly Federal Public Debt Report presents the balance sheet on a monthly basis; it contains statistical indicators and comments about the previous month's domestic debt auctions and external debt operations.[13]

Finally, consistent financing policies with regard to achieving the ABP's targets or specific conditions defined in the auction calendars also increase the credibility of the information and allow for greater transparency and predictability. Moreover, competitive criteria offer incentives to set efficient prices in the primary market; these, in turn, help develop the secondary market and prevent distortions that could arise due to excessive government intervention.[14]

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issuing Federal government bonds, established in the Fiscal Responsibility Law (LRF), was an important step towards separating monetary and fiscal policies and increasing transparency of the two institutions in the market. See Part II, Chapter 1, section 2.5.

[6] Decree no 3,540, of July 2000.

[7] As explained in Part II, Chapter 1.

[8] See Annex 1.

[9] See Annex 2.

[10] Although bond issuances are executed through a Central Bank system called Ofpub, the decision process is managed within the Treasury.

[11] On its website, the Treasury also presents the results on external debt operations and domestic auctions in a timely fashion, providing information on the amount of bonds to be auctioned, the amount accepted, the investors involved, the average rates and accepted rates.

[12] Before the Annual Report was created in 2003, some of the information was published in the ABP. However, to provide more detailed statistics, authorities decided to create a separate document.

[13] Until November 2006, this type of information was published by the National Treasury/Central Bank Joint Report that included, besides details about domestic public debt operations, the open market operations carried out by the Central Bank. As of December 2006, the focus shifted to the Federal Public Debt (domestic and external), published exclusively by the Treasury.

[14] In many less developed markets, governments tend to act as price makers (rather than takers) in the auctions. Although there are several explanations for this (say, fear of collusion in the auctions), it generally hampers the market from being developed, adding costs in the medium and long term.

3 Financing instruments and strategy

3.1 Domestic market

The National Treasury's financing instruments in the domestic market have different characteristics in order to meet the needs of a broad base of investors. The range of instruments adopted (by means of competitive auctions) includes fixed-rate bonds (LTNs and NTN-Fs), inflation-linked bonds (NTN-Bs) and floating-rate bonds (LFTs).

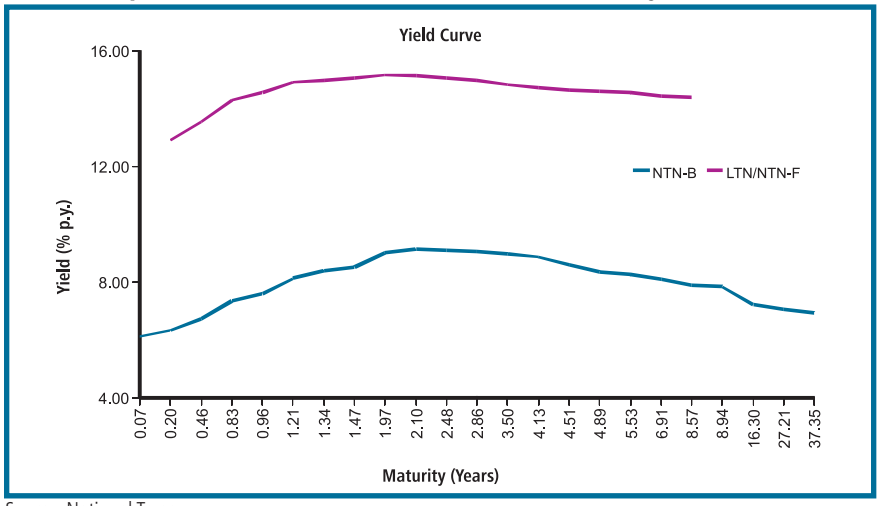
The aim of the fixed-rate bonds is to obtain funds and build an efficient yield curve, with clear and fluid benchmarks. Overall, the LTNs create six, 12 and 24-month benchmarks, while the NTN-Fs have three, five and 10-year points. The curve can also be lengthened through the creation of new fixed-rate benchmarks longer than 10 years.[15]

Auctions of fixed-rate instruments are held every Thursday (see the calendar in Annex 1). To stimulate the secondary market, the shorter LTNs (six and 12 months) and longer NTN-Fs (five and 10 years) are offered on alternate weeks.

The strategy adopted for inflation-linked bonds also aims to build an efficient curve by creating well-defined benchmarks. Issuance terms are three, five, 10, 20, 30 and 40 years, and the liquidity of the bonds has increased steadily.[16] NTN-B auctions are held every two weeks on Tuesdays, and the longer-term bonds (20, 30 and 40 years) are offered monthly. As with fixed-rate bonds, the lower frequency of inflation-linked bond offerings aims to stimulate transactions in the secondary market.

Graph 1 presents the yield curves formed by fixed-rate bonds (LTNs and NTN-Fs) and inflation-linked bonds (NTN-Bs), on August 21, 2008.

Graph 1. Fixed-rate and inflation-linked bond yield curves



Source: National Treasury

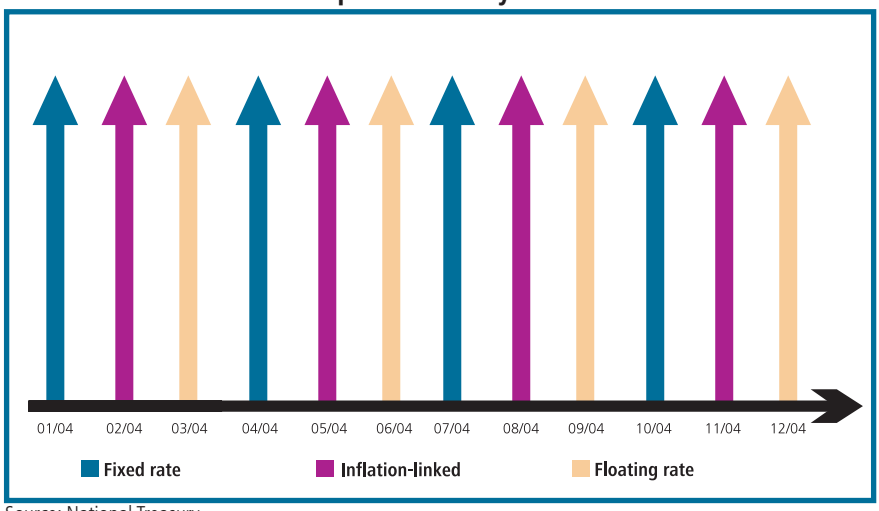
[15] Long-term, fixed-rate instruments are being gradually consolidated, as investor confidence about lengthening the terms of non-inflation-linked instruments in their portfolios increases (see Part III, Chapter 1).

[16] The NTN-B market is relatively new, with the first issuance in 2003. Before then, the main inflation-linked borrowing instrument was the NTN-C, indexed to the General Price Index-Market (IGPM).

The third financing instrument is the floating-rate LFT. Unlike operations in other countries, where these instruments are generally indexed to quarterly or six-month interest rates, the LFT is indexed to the overnight rate. Since the Treasury promotes the LTN, NTN-F and NTN-B markets (rather than the LFT market), no clear policy exists to build an LFT curve. Currently, the terms offered are four and six years, and the volumes issued are relatively low.

An important procedure for building well-defined curves is to standardize the maturity dates of the various financing instruments. Fixed-rate bonds mature on the first day of January, April, July and October, a practice that coincides with the maturity dates of future-interest contracts (DI) negotiated at the Brazilian Mercantile and Futures Exchange (BM&F).[17] For their part, inflation-linked bonds always mature on May 15 (in odd-numbered years) or August 15 (in even-numbered years), while LFTs mature on the 7th day of March, June, September and December. Thus, principal and coupon flows are distributed throughout the year (see Graph 2, below).

Graph 2. Maturity flows



Source: National Treasury

Particularly in emerging economies, debt is usually fragmented into a large number of low-value instruments with irregular maturity dates. This reduces demand, liquidity and creates conditions where price formation is difficult. Moreover, the lack of sound interest-rate references with different terms undermines other aspects of the economy, such as financing long-term private investments and executing monetary policy. Thus, the organization of maturities as described above helps resolve these problems.

However, when maturities are concentrated in certain time frames, refinancing the debt requires greater sophistication in order to manage risk: Longer maturities on specific dates need to be monitored, and an active risk management policy must be adopted. The Treasury has accomplished this in three ways. (a) It designated specific months for fixed-rate, inflation-linked and floating-rate bonds, which helps balance the monthly (but not daily) flows of debt principal and interest. (b) It has kept prudent levels of resources in cash, in the event auctions are canceled due to unexpected shocks in debt financing conditions. (c) It has a well-defined policy to manage liabilities (see Section 5).

[17] In general, local investors are more interested in duration (longer maturity), if they can create a hedge against the risk of a rise in interest rates.

3.2 External market

After the foreign debt was renegotiated in 1994, Brazil regained access to the sovereign debt market.[18] At the time, the aim was to obtain external financing so as to roll over the public debt. Actions were designed to respond to demand and to any windows of opportunity, without building a well-defined curve. The first sovereign bonds were short-term - a maximum of five years - in several currencies (yen, Deutsche mark, Portuguese escudo, Dutch florin, Austrian schilling, Italian lira, pound sterling and US dollar).

In the second stage, the aim was to target the dollar, euro and yen markets and a curve was built in each. The rationale for maintaining three curves was to diversify the investor base; this was done to better manage risk and diversify the portfolio, and also because the three have distinct characteristics. While many retail investors (individuals) participate in the European and Japanese markets, the global market in dollars is formed mainly by institutional investors.

As time passed, Brazil's borrowing requirements were reduced and the euro and yen bond markets became less important as funding sources.[19] By 2005, when the Treasury became solely responsible for international market operations, management of the domestic and external public debt was integrated. In this context, the Treasury created a yield curve in the Brazilian Real in the external market to complement the fixed-rate curve in the domestic market. In September 2005, for example, when the longest fixed-rate bond in the domestic market had a maturity of seven years (NTN-F 2012), the Treasury issued the Global BRL 2016 in the external market, the first Real yield curve bond in that market.

The current strategy for managing the external securities' debt involves an approach that consists of (a) reducing the share of foreign exchange-rate public debt; (b) developing the offshore curve in *reais*; and (c) improving the efficiency of the curve in dollars, by repurchasing *off-the-run* bonds[20] and reopening *on-the-run* bonds[21], focusing on those with 10 and 30-year points.

4 Issuance mechanisms and buyer characteristics

World Bank and IMF studies[22] suggest that a precondition for developing the primary market is that issuances should be based on market mechanisms, such as competitive auctions and offers managed through syndicates. Auctions are the prevailing method for distributing industrialized and emerging economies' public bonds in domestic markets, while syndicates are more common in the international market:[23] a syndicate is a combination of investment banking firms that bid on new security issues and sell them if the bid is successful. The syndicate disbands when the security offering has been completed.

Brazil follows the same course - auctions in domestic markets and syndicates in the external ones. Also, it frequently assesses the appropriateness of these mechanisms and monitors the various buyers' participation.

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[18] See sovereign issuances in the statistical annex.

[19] The curve in yens no longer exists, since all these bonds have matured; the most recent issue in the euro market was in January 2005.

[20] Bonds negotiated in the market, no longer available for primary issuance.

[21] Bonds negotiated in the market, available for primary issuance.

[22] Developing the Government Bond Market: A Handbook (World Bank and International Monetary Fund - IMF) and Developing the Domestic Government Debt Market: from Diagnostics to Reform Implementation (World Bank).

[23] Syndicates are gradually being used more in combination with auctions in domestic markets (for example, Belgium and Germany). A common policy launches the initial offer through the syndicate to ensure better distribution and diversification of investors. Later, auctions to reopen the same instrument are held in order to consolidate the instrument as a benchmark.

When issuing techniques are improved through careful analysis, financing costs are significantly reduced and bonds are more efficiently allocated in the primary market.[24]

4.1 Domestic market

4.1.1 Issuance mechanisms

The main type of issuance in the domestic market is a public offer by means of competitive auctions open to all institutions registered in the clearing and settlement system called SELIC,[25] managed by the Central Bank (CB). One of SELIC's functions is to register transactions with government bonds. Institutions registered in the system (banks, brokers and others entities) can participate in the public offers.[26]

Various models are used internationally in the primary market: Auctions can be open (offering wide access, as in Brazil) or closed (exclusive access to primary dealers, generally less than 15 institutions). The best model depends on the issuer's objectives, the degree to which the investor base is developed and the country's traditions, since when models are changed, those who have (or lose) access to the primary market are apt to resist.

Open auctions stimulate competitiveness in the primary market and reduce the risk of collusion, while closed auctions can favor secondary markets, where dealers may exclusively distribute the bonds they purchased. The Treasury frequently monitors the competitiveness of auctions either by tracking the demand-supply ratio at each auction or the participation of every institution.

Auctions are conducted through an electronic system managed by the Central Bank, and each participant may submit up to five bids. These are organized by decreasing order of price (or increasing order of rate), and the cut-off price is established at the point (i.e., the amount) where demand equals supply.[27] Sale auctions, also called traditional auctions, have different characteristics which are based on the instrument offered.[28] The auctions of fixed-rate instruments (LTNs and NTN-Fs) are discriminatory[29] or multiple-priced, i.e., each participant pays the price it proposed.

Conversely, the Treasury's floating rate instruments (NTN-Bs and LFTs) are offered through a single- or uniform-price auction.[30] Also, bonds with different maturities are offered simultaneously and these floating rate instruments do not specify the volume allocated to each, only the total amount. In these auctions, the Treasury receives the buyers' bids and then decides the cut-off price, rate, and amount of each bond to be sold.[31] This process, which market participants call a *hybrid* auction, gives issuers more flexibility when determining the composition of the basket to be issued.

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[24] The Treasury relies on a database of auctions that helps analyze each institution's participation.

[25] There are 6,330 institutions registered in the SELIC, of which 377 may participate in the Treasury's auctions. The latter are subdivided into: 177 brokers and distributors, 175 banks, 23 finance companies and two real estate financial institutions (this was the distribution in March 2009).

[26] Individuals and non-registered institutions may participate through a registered institution.

[27] The Administrative Order determines the maximum amount to be offered; however, the issuer may establish the cut-off price (or rate), and even to sell a quantity lower than the maximum.

[28] Annex 2 of this chapter offers more details about the classic types of auctions.

[29] The discriminatory price auction is a multi-unit auction in which units are sold for different prices.

[30] In this model, a single price, which corresponds to the minimum price to be accepted, is applied to all winning bids.

[31] Rodrigues and Bugarin (2003) analyze the merits of this model, confirming the advantage of the mechanism when there is uncertainty regarding actual demand for public bonds.

The Treasury and Central Bank rely on dealers to help develop the primary and secondary markets.[32] Although they do not have exclusive access to traditional auctions, dealers have the right (but not the obligation) to participate in so-called special operations with the Treasury: These include the second-round auction, at which each dealer may buy a certain amount of bonds offered at the average price established in the first-round auction. This type auction is only held if the entire lot (for each maturity) offered in the first stage is sold. The National Treasury Administrative Act for each auction specifies the conditions under which the second round may be held and the Joint Normative Act nº 18 establishes the criteria for defining the maximum quantity that each dealer may buy.[33]

Dealer institutions play a crucial role in so-called *firm-bid* auctions: These were held until December 2003 to place longer and (generally) fixed-rate bonds in the market when there was no strong consensus on their interest rates, occurring during periods of crisis. In this process, dealer institutions sent *firm* bids to the Treasury in the first stage to purchase certain bonds. Once the Treasury accepted the preliminary bids, the volume and cut-off price were announced. The bonds were then offered in a second stage through traditional auctions open to all institutions. The results of the two stages determined the auction's results: The first stage was a parameter through which the Treasury could check the demand and the prices that would be offered in the second stage. This type of auction has been very useful to develop new markets or new long-term benchmarks.

Box 1. Dealer system

Main characteristics

Dealers are institutions accredited by the Treasury and Central Bank to help develop the primary and secondary public bond markets. The selected institutions are classified into two sub-groups. *Primary* dealers handle transactions of public bonds in the primary market, while *specialist* dealers trade in the secondary market. There are a total of 15 dealers, of which four handle transactions only in the primary market, six only in the secondary market, and five operate in both.

To be accredited, institutions must have (a) reference assets of at least 50% of the minimum value established for financial institutions with trade portfolios; (b) a high ethical standard for conducting operations in the financial market; and (c) no restrictions regarding accreditation, determined by the Treasury or Central Bank (CB). Each institution's performance is evaluated every six months, and those that perform badly are replaced. The evaluation is based mainly on repo operations with CB and participation in the Treasury's public debt offerings.

In addition to the auctions, other forms of issuance exist which account for a relatively small share of the total debt. One involves direct bond placements for specific purposes defined in Brazilian law: e.g. debt securitizations, payments to equalize interest rates associated with the Export Funding Program (Proex), and issuances for agrarian reform (TDA). Another is the Treasury Direct program (TD),[34] which involves the direct on-line sale of public bonds to retail market (individuals). In the TD, investors can buy a fraction (20%) of a bond,[35] making it accessible to a wider base of investors. Its objectives are to: (a) democratize access to investment in Federal bonds, (b) encourage long-term savings and (c) provide information on the management and structure of the Federal Public Debt.

[32] The rules and criteria of the dealer system are defined in Joint (National Treasury and CB) Normative Acts nº 16 and nº 18, which establish dealers' rights and duties. The documents are available at http://www.tesouro.fazenda.gov.br/legislacao/download/divida/.pdf.
[33] Other references to the dealer system can be found are in Part III, Chapters 1 and 3.
[34] See Part III, Chapter 7.
[35] If the price of a bond is, say, R$1,000, an investor may buy 0.2, for R$200.

4.1.2 Buyer characteristics

To better understand how buyers of public bonds reflect the ABP guidelines (e.g. to gradually substitute floating-rate bonds for fixed-rate or inflation-linked bonds),[36] it is important to examine their characteristics and goals.

Floating rate (LFTs). These bonds are mainly carried by banks in their own portfolios, as well as by most of the investment funds, both which prefer to be remunerated by the overnight interest rates. The daily liquidity offered by the investment funds, coupled with the daily announcement of the funds' quotes, is a key reason for the significant presence of LFTs in their portfolios. To cover withdrawals that can occur when prices fall, bank/fund managers maintain a large part of their resources invested in these bonds, thus ensuring high liquidity.

Inflation-linked (NTN-Bs). Investors in these bonds seek more than daily liquidity and want to match their liabilities or investment objectives with the bonds' features. As they generally carry the bonds for longer periods, they are known as *buy-and-hold* investors and mainly include social security investors managing their own portfolios[37] and individuals (Treasury Direct).[38] Non-resident investors have also participated in this market, contributing to its liquidity and diversifying the investor's base.

Fixed-rate (NTN-Fs and LTNs). Investors in fixed-rate bonds monitor the economic situation more closely, given the greater sensitivity of prices to interest rate variations. These longer-term bonds are generally sought by financial institutions and non-resident investors. Individuals also allocate a considerable share of their public-bond investments to these instruments (through the TD program). However, shorter LTNs are in greater demand when interest rates rise, and, given their short-term and low-risk features, financial institutions use them to maintain liquidity.

4.2 External market

4.2.1 Issuance mechanisms

External market operations are regulated by a November 2004 Senate resolution[39] which authorizes the Treasury to execute the bond issues and manage liabilities;[40] these operations must be cleared by the Office of the Attorney-General of the Ministry of Finance. Operations in the global market must be conducted according to standards set by the Securities and Exchange Commission (SEC), the agency that regulates the securities market in the United States: One SEC requirement is that the issuer must hire a US law firm to represent it, not only at the SEC, but also with those participating in the market. All of Brazil's international market operations must be approved by these lawyers.

Dealer managers (DMs)[41] for external operations, acting as underwriters, help the issuer, distribute the bonds and serve as the intermediary between the issuer and investors. The issuer pays the underwriters an agreed-upon fee for their services in proportion to the volume of the operation.

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[36] For details on the public debt financing strategy and objectives, see Part II, Chapter 2.

[37] The preceding section notes that when the management of social security portfolios is outsourced to an investment fund, the profile of the investment varies, with a significant amount of holdings in floating-rate bonds.

[38] Even recent SELIC rate increases did not attract these investors to LFTs.

[39] Senate Resolution no 20 of 2004.

[40] In the past, the legal framework was provided by 1989 Resolution n. 96, which was replaced by Resolution n. 17 of 1992.

[41] In general, Brazil grants the mandate to act as DMs to two institutions in each operation.

Given the dynamic nature of the financial market, the choice of underwriters (DMs) must be based not only on criteria related to the operations' costs but also to the financial institutions' expertise. Qualities should include the DM's distribution capacity, commitment to ensure liquidity to the bond after it is issued (to stimulate negotiations in the secondary market), and its performance record in previous operations.

In recent years, the Treasury accessed the international market frequently,[42] having established relations with 15 investment banks that maintain weekly contact with its External Operations desk and are potential DMs. Such frequent contact means the Treasury need not request formal proposals (RFPs) for this task. Although RFPs could work well for investment banks with which it has less frequent contact, the Treasury does not follow this process, since it tends to generate rumors about upcoming operations, which, in turn, cause the country's financial conditions to deteriorate.

External issues follow market standards and are conducted by a process of book building (which refers to the consolidation of bids) rather than by auction, as in the domestic market. This process is relatively flexible, especially when compared to traditional auctions.

The external issuance process has three stages. In the first, the issuer and DMs define the execution strategy which identifies priorities in terms of cost and volume of resources to be raised, and defines the strategy to achieve the objective. In general, the Treasury, through the DMs, announces the rate interval (spread or price) and the volume to be issued;[43] the point of this exercise is to offer investors the information they need about the issuer's objectives. Once the operation is announced, investors offer bids, which contain the volume and rate (or price) they will pay for the bonds. After the size and quality of the bid is known, the demand curve becomes clearer.

The second stage begins when the issuer determines the bond's rate, which can differ from the one previously announced. DMs then notify investors with this information, who are free to change or cancel their purchase orders. If they agree, investors confirm their orders and the issuer decides on the volume.[44] Once the rate and volume are set, the bond is launched and the terms are announced to the market.

Despite the announcement process and the flexibility of the book-building mechanism, the final result should not differ too greatly from the initial terms, so issuers can maintain credibility with investors. Since investor decisions are based on the issuer's original signals, substantial variations could harm investors and, ultimately, the issuers. The initial rate should reflect the issuer's and the DMs' market reading, and a significant disparity between the two implies a poor reading of the market.

The third stage is the allocation of the orders. As opposed to auctions, where bonds are allocated after cut-off rates are determined, in a book building process the issuer and the DMs have the flexibility to allocate orders in ways that achieve the optimal combination between long-term investors and liquidity providers.

4.2.2 Buyer characteristics

The types of investors that participate vary. Dedicated funds generally adopt an emerging market index as a benchmark[45] whose composition must be reflected in their portfolios. Since these funds hold assets for a

[42] Forty issues were made from 2003-2008 (see the statistical annex).

[43] The indication of rate can be made by means of the end points of the interval or simply announcing a specific point, which will not necessarily be the final rate of the operation.

[44] Rate and volume are interdependent variables. If the aim of the issuer is to raise a certain volume, rate becomes the dependent variable; if it is to borrow at a certain cost, volume becomes the dependent variable.

[45] There are several emerging market rates, of which most popular is the EMBI+, created by the JPMorgan bank.

long period, the model is popularly known as *buy and hold* or *real money*. For their part, hedge funds do not need to follow any particular index and try to identify arbitrage opportunities in the market; their behavior is less steady than that of dedicated funds, but they represent an important provider of liquidity.

Other types of long-term investors include pension funds and insurance companies, as well as private banks, which are increasing their participation; these are retail funds that specialize in managing large assets. Commercial and investment banks also participate, not only to generate flows for their customers, but also as end investors. Banks, when operating through their proprietary desks as hedge funds, are generally considered short-term investors. Central banks have also been increasing their investment in other governments' domestic and external securities, although their participation is still limited. Finally, other participants include corporations and retail investors.

Long-term investors help reduce the bonds' volatility in the secondary market, enhancing their performance, while short-term investors contribute to their liquidity. However, since a large share of the latter tends to sell the bonds immediately after they are bought in the auction to profit from the new issue premium, their participation is proportionally smaller.[46]

Table 1 presents characteristics of the book-building of the Global 2037 reopening, which occurred in January 2007. It also lists the demand/supply ratio and average allocation, which indicate the issue's spreading out.

Table 1. Characteristics of the Global 2037 reopening

Type of investor	Order	Allocation
Portfolio manager	40%	54%
Banks	26%	19%
Hedge funds	27%	16%
Insurance companies	3%	5%
Private banking	2%	4%
Pension funds	2%	2%
Region	**Order**	**Allocation**
USA	49%	46%
Europe	24%	36%
Latin America	25%	15%
Asia	2%	3%
Demand/supply	3	
average allocation	$6.5 million	

The development of the capital market in recent years has broadened the investor base, making it increasingly difficult to distinguish each investor's profile: e.g. a dedicated fund can place part of its portfolio in a more leveraged fund, and the opposite can also occur. Thus, it is important for the issuer to be updated about the constant changes in this base.

In the past few years, the investors willing to add exposure to Brazil in their portfolios has expanded, due mainly to two factors. (a) As the economy strengthened and Brazil's bonds achieved investment grade in April 2008, new investors started to buy them and (b) the Treasury attempted to improve communications with the market, ultimately with a view to expanding the investor base.[47]

Further, to expand the investor base, the way in which issuances were executed changed in 2006. Given the difference in time zones in American, European and Asian markets, Brazil began announcing the issuances

[46] Investors who sell bonds immediately after they are rated are known as *flippers*.

[47] See Part II, Chapter 1 for more details on advances in the area of relationship with investors.

at the opening of the New York market, but reserved the right to reopen them later, when the Asian market opened, for a volume of up to 10% of the original issue. This strategy succeeded, as Asian participation in the primary market has grown steadily.

5 Liability management operations

Liability management (LM) operations are important for debt managers' financing strategies. Common in industrialized countries, these operations are increasingly applied in emerging economies as their markets develop and the sophistication and specialization of debt managers evolves. Through these operations, risks associated with debt maturities can be reduced, the process of improving the debt profile is accelerated, distortions in the secondary market are corrected and public bonds become more liquid. Brazil regularly uses these operations, both in the domestic and international markets, to achieve the goals described below.

5.1 Domestic market

LM operations in the domestic market are carried out to reduce short-term refinancing risks, lengthen debt maturities and help develop the secondary market. Operations are executed by means of exchange and buyback auctions announced in the monthly calendar, along with traditional auctions.

There are three different exchange auctions of LTNs, LFTs and NTN-Bs. In the LTN auction, the Treasury accepts the bond with the closest maturity, with a term of two-weeks to three-months, and, after the sale, issues the six and 12-month LTN. Similarly, in the LFT exchange auction, the Treasury accepts the shortest-term bond, between two weeks and three months, and issues bonds of four and six years.[48] The operations occur in the SELIC, with liquidation in d+2. LTN exchanges occur twice a month, while LFTs are monthly. In both auctions, the Treasury sets the prices of the bonds it is buying back, while those of the issued bonds are determined competitively.

The NTN-B exchange aims to lengthen the public debt and promote liquidity of on-the-run bonds. At the buying end, the Treasury accepts a series of assets, such as LFT, NTN-C, CFT, TDA, NTN-A and securitized debts, other than the NTN-B.[49] The major restriction it imposes is that the accepted asset must have a lower duration[50] than the NTN-B issued at the sale. Unlike LTN and LFT exchanges, with the NTN-B, the Treasury establishes the prices of the assets being issued and the holders include the price of the asset being delivered in the bid. Auctions occur twice a month, always one day after the traditional auction, and use market parameters for price references. Liquidation is carried out in d+1, through the Clearing House CETIP.[51]

Finally, there are two types of buyback auctions: Short-term LTNs (two weeks to three months) and long-term NTN-Bs (20, 30 and 40 years). The aim of the former is to reduce short-term refinancing risks, while the latter is to promote liquidity in the long part of the curve. Both occur once a month and, unlike the exchange auctions, are restricted to dealers.

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[48] As occurs in sale auctions, in the case of LFTs, the exchange auction is a hybrid with a uniform price. (See Section 4.1.1 for details).
[49] Since NTN-B coupons are detachable, they and the principal are part of the eligible assets.
[50] For the concept of duration, see Part II, Chapter 3.
[51] For details on Cetip and other depository and clearing houses, see Part III, Chapter 3.

Table 2 illustrates the contribution of these operations in the management of Brazil's public debt. Through these operations, the process of exchanging floating-rate bonds (LFTs), particularly the NTN-Bs, was accelerated, thus extending the average maturity of the debt in shorter bonds for longer ones, and reducing the refinancing risk in buyback auctions.

Table 2. Liability management operations in the domestic market

R$ Million	2004	2005	2006	2007	2008
Exchange operations that affect average maturity and profile	**4,255**	**20,174**	**44,641**	**9,904**	**3,625**
LFTs accepted in NTN-B auctions	1,385	18,931	43,021	9,904	3,625
LFTs accepted in NTN-C auctions	2,870	1,243	1,619	-	-
Exchange operations that affect only average maturity	**23,902**	**66,806**	**44,711**	**70,999**	**55,006**
Exchange of LFTs for LFTs	18,664	56,482	25,813	28,183	28,404
NTN-Bs accepted in NTN-B auctions	720	6,591	14,893	37,570	25,765
NTN-Cs accepted in NTN-B and NTN-C auctions	4,528	3,733	4,005	5,245	836
Total exchange operations*	**28,158**	**86,980**	**89,352**	**80,903**	**58,630**
Buyback operations**	**19,324**	**40,674**	**26,793**	**23,318**	**12,515**
LTNs	13,578	33,733	19,935	22,563	11,462
LFTs	3,961	3,573	238	-	-
NTN-Bs	675	2,106	6,552	755	1,054
NTN-Cs	1,110	1,262	68	-	-
Total of exchange and buyback operations	**47,481**	**127,654**	**116,145**	**104,221**	**71,145**
Percent of outstanding DFPD in market	**5.9%**	**13.0%**	**10.6%**	**8.5%**	**5.8%**

* Corresponds only to the total of exchange operations that affect average maturity and profile of the DFPD.
** Carried out to reduce refinancing risks and improve the bond's liquidity in the secondary market.

5.2 External market

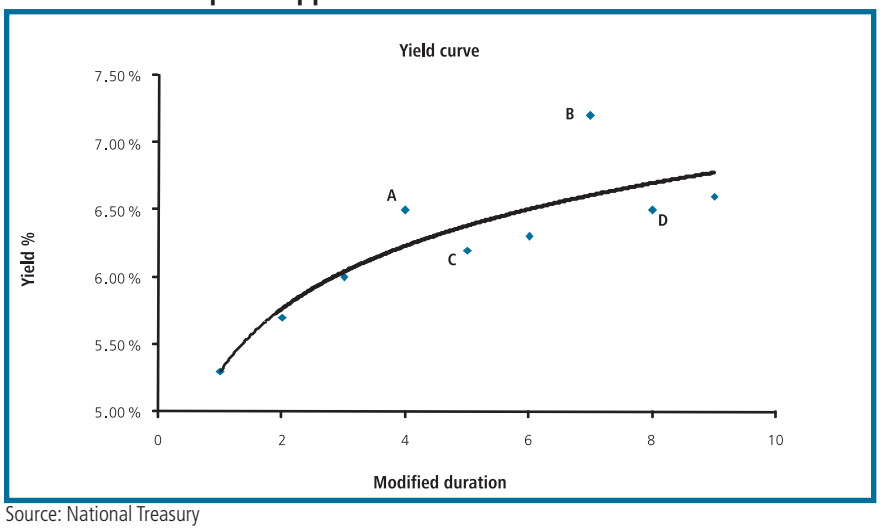
As with LM operations in the domestic market, those in the external market have various purposes, such as reducing refinancing risks at certain points of the curve, achieving net present value (NPV) savings, or simply increasing efficiency in the yield curve. There are several types of operations, such as exchanges, pure buybacks and buybacks coupled with new issuances. They can be public or private and less frequent than in the domestic market, given the particular characteristics of access and the competition with other issuers of similar risk grade in the external market.[52]

Opportunities for NPV savings occur when the bonds removed from the market have a yield rate above the curve that is considered fair. Graph 3 illustrates a clear opportunity for NPV savings. The issuer can structure an operation in which A and B bonds are bought back and bonds C and D are issued, either by means of direct exchanges or through independent operations. As a result, the issuer obtains financing at a lower cost, thus monetizing net savings at present value.[53]

Brazil's LM operations in the last two decades can be divided into three groups. The first involved restructuring the external debt, concluded in 1994, within the Brady Plan. For practical purposes, the renegotiation process can be called *first-generation* LM operations, in which the entire external debt was restructured into nine bonds, as presented in Table 3.

[52] See footnote 3.
[53] Generally, durations differ for the bonds involved in each leg of the operation, which may change the issuer's risk structure.

Graph 3. Opportunities for NPV achievement



Source: National Treasury

Bonds issued after 1994 are part of the *sovereign* debt, as opposed to *restructured* debt. As the Brady bonds[54] had the stigma of being the result of a renegotiation process, their rate was generally above the fair curve, which included only sovereign bonds. Therefore, a situation evolved, as the one described in Graph 3, where the A and B bonds were Brady bonds, while the others were sovereign bonds. Thus, second generation LM operations were carried out in order to exchange bonds derived from the renegotiation process for sovereign bonds. The primary goal was to achieve NPV and the second was to increase the sovereign debt profile, which did not suffer the stigma related to the default that occurred in the 1980s. Through second-generation LM operations, global bonds with maturities in 2011, 2018, 2024, 2027, 2030 and 2040 were issued. Finally, an exercise was carried out in 2005 that resulted in the purchase of all remaining Brady bonds.[55]

Once distortions (caused by bonds derived from the restructuring process) in the curve were eliminated, the focus shifted to reducing refinancing risks — considered high in some years — and increasing the efficiency of the curve *per se*. In this context, third-generation LM operations were conducted, which included (a) a buyback tender offer along several points of the curve, (b) a bond exchange tender offer at the long part of the curve for Global 2037, and (c) the Buyback Program, in which the Treasury performed typical secondary market transactions. Reduced liquidity of points that were considered distorted, along with increased liquidity of the benchmarks, produced a more efficient yield curve.

Table 3: LM operations in the external market

Generation	Bond issues/operations	Objectives
First	BIB, IDU and the Brazilian Brady Bonds: Discount Bond, Par Bond, Front-Loaded Interest Bond (FLIRB), Front-Loaded Interest Reduction with Capitalization Bond, Eligible Bond (EI)	External debt restructuring
Second	Global 2011, 2018, 2024, 2027, 2030 and 2040 Brady bond call exercise	Achievement of NPV and increased sovereign debt profile. Increased efficiency of the curve
Third	Tender offer, exchange offer, buyback program	

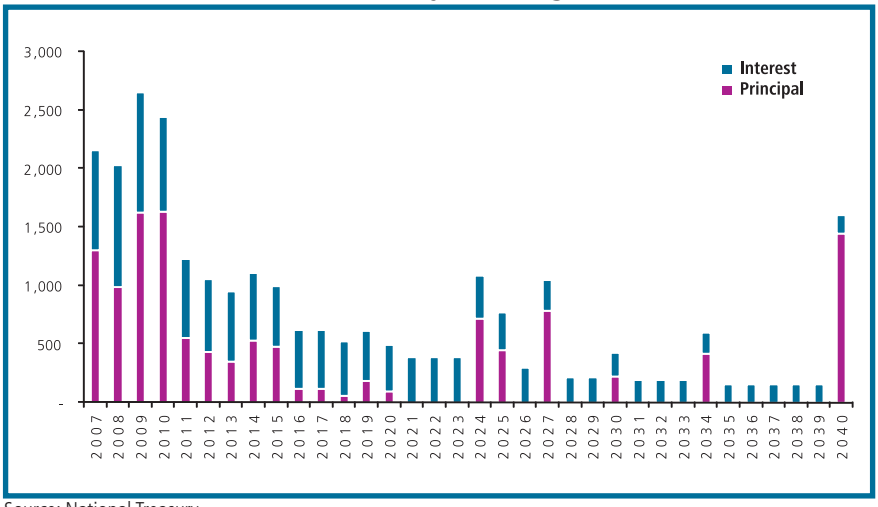
Source: National Treasury

[54] Of the nine bonds in the restructuring process, two were issued before 1994, when the Brady Plan was launched. However, for the purpose of simplification, all nine are called Brady bonds.

[55] Brady bonds had a par option, to be exercised by the issuer on any date of the coupon's payment.

The Buyback Program has significantly affected the structure of Brazil's debt. Since 2006, buybacks reached $15.5 billion in financial value ($12.5 billion in face value), which removed from the market about 24% of the total stock of global bonds, 6.96% of Bradies, 13.46% of euro bonds, 12.78% of samurai bonds and 6.53% of euro pounds.[56] As illustrated in Graph 4, the reduced flow of interest to be paid by 2040, due to the Buyback Program, reached $13.8 billion in current values. Buyback has reduced the volatility of the Federal public debt, thus diminishing refinancing risks.

Graph 4. Reduced flow of Federal Public Debt payments due to the Buyback Program



Source: National Treasury

Table 4 complements the analysis of the effects of third-generation LM operations by including the volume of tender offers and the C-Bond call exercise, and later of other Brady bonds. In all, these operations reached $21.4 billion in face value.[57] It should be noted that before the call of the C-Bond, it was exchanged for the A-Bond, which is a global bond (without a buy option, with a similar maturity structure, but displaced in time with respect to that of the C-Bond), and relied on Collective Action Clauses (CACs). The exchange, announced in July 2005 and performed that August, removed $4.5 billion from the market, equal to about 80% of the stock of the C-Bond The rest, $1.1 billion, was entirely redeemed in October, with the exercise of the call option embedded in them.

The main achievements of the exchange were to: (a) reduce principal payments in the short term, thus lengthening the external security debt's maturity and (b) reduce the stock of Brady bonds, whose prices were typically worse (lower) that those of equal average maturity global bonds, which distorted the sovereign yield curve. Further, the cost of the exchange program was low, since the exchange did not demand disbursement from the Treasury.

[56] All the percentages were calculated at the end of December 2005.

[57] Besides the liability operations, the Government anticipated paying contractual debts of $22.1 billion to the FMI and Paris Club, reducing public debt exposure to currency exchange variations even more significantly.

Table 4. LM operations in the external market: third generation (in $ billion)

Operations	Face value*
External security debt	21.4
Call of the C-Bond (October 2005)	1.1
Call of the Brady Bonds (April 2006)	6.5
Tender offer (June 2006)	1.3
Buyback Program**	12.5
2006	6.0
2007	5.4
2008	1.2

* It captures the impact of the operations on the outstanding debt.
** The program began in January 2006.
Source: National Treasury

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Annex 1. A sample calendar of domestic bond auctions

The following is the Treasury's schedule of auctions for domestic Federal Public Debt in March 2008:

Table 5. Schedule of auctions (March 2008)

Auction	Liquidation	Type	Bond*	Maturity
March 3	March 5	Exchange auction	LTN	10/1/2008; 4/1/2009**
			LFT	3/7/2012; 3/7/2014***
March 6	March 7	Traditional auction	LTN	4/1/2009; 7/1/2010
			NTN-F	1/1/2012; 1/1/2014
March 11	March 12	Traditional auction	NTN-B	5/15/2011; 5/15/2013; 5/15/2017; 8/15/2024; 5/15/2035; 5/15/2045
March 12	March 13	Exchange auction	NTN-B	5/15/2011; 5/15/2013; 5/15/2017; 8/15/2024; 5/15/2035; 5/15/2045
		Buyback	NTN-B	8/15/2024; 5/15/2035; 5/15/2045
	March 14	Buyback	LTN	4/1/2008
March 13	March 14	Traditional auction	LTN	10/1/2008; 7/1/2010
			NTN-F	1/1/2012; 1/1/2017
March 18	March 20	Exchange auction	LTN	10/1/2008; 4/1/2009[1]
March 19	March 20	Traditional auction	LTN	4/1/2009; 7/1/2010
			LFT	3/7/2012; 3/7/2014
			NTN-F	1/1/2012; 1/1/2014
March 25	March 26	Traditional auction	NTN-B	5/15/2011; 5/15/2013; 5/15/2017
March 26	March 27	Exchange auction	NTN-B	5/15/2011; 5/15/2013; 5/15/2017
March 27	March 28	Traditional auction	LTN	10/1/2008; 7/1/2010
			NTN-F	1/1/2012; 1/1/2017

* *Letras Financeiras do Tesouro* (LFT); *Letras do Tesouro Nacional* (LTN); *Notas do Tesouro Nacional – Série B* (NTN-B); *Notas do Tesouro Nacional – Série F* (NTN-F)
** LTNs sold by financial institutions, maturing on April 1, 2008.
*** LFTs sold by financial institutions, maturing on June 30, 2008.

In the month referenced, Treasury bonds totaling R$31,9 billion will mature, representing R$31,4 linked to the SELIC rate, among others.

The total offer of public bonds at traditional auctions, with liquidation in the month referred, will be limited to R$38 billion.

The values referring to buybacks may be added to the total volume of the public bonds mentioned previously.

NTN-B interest coupons can be bought back, if investors are interested.

This calendar may be modified, based on market conditions.

Brasilia, February 29, 2008.

Annex 2. Administrative Order[58]

MINISTRY OF FINANCE
NATIONAL TREASURY SECRETARIAT
ADMINISTRATIVE ORDER No 162, March 27, 2008

THE DEPUTY SECRETARY OF THE NATIONAL TREASURY, in the use of the attributions vested in him by Administrative Order MF no 183, of July 31, 2003, and Administrative Order STN no 143, of March 12, 2004, and whereas the general conditions of offer of public bonds set forth in Administrative Order STN no 410, of August 4, 2003, decides to:

Article 1. Publicize the specific conditions to be observed in the public tender offers of Letras do Tesouro Nacional (LTN), whose characteristics are defined in Decree no 3.859, of July 4, 2001:

I – The date proposals will be received, as well as the auction: 27/03/2008;
II – The time proposals will be received: 2:00 to 13:00;
III – Auction results announced: On the date of the auction, as of 14:30, by the Brazilian Central Bank;
IV - Date of issuance: 28/03/2008;
V - Date of financial liquidation: 28/03/2008;
VI - Criterion for selecting proposals: Best price for the National Treasury;
VII - Electronic system to be used: The Electronic Formal Tender Offer (OFPUB), exclusively, in compliance with the Regulation of the Special Liquidation and Custody System (SELIC);
VIII - Maximum amount of proposals per institution: 5 (five) for each bond offered;
IX - Characteristic of the issuance:

Bond	Term (days)	Quantity (in thousand)	Nominal value (in R$)	Date of Maturity	Buyer
LTN	187	1,000	1,000.000000	10/1/2008	Public
LTN	825	2,000	1,000.000000	7/1/2010	Public

Article 2. In the formulation of the proposals, the unit price with six decimal points should be used, and the sum of each proposal should contemplate multiples of 50 bonds.

Article 3. The institutions accredited to operate with the DEMAB/BCB and the CODIP/STN, pursuant to Joint Decision no 14, of March 20, 2003, may carry out a special operation defined by Article 1, Number I, of Joint Normative Act n. 15, of January 14, 2008, which shall consist of the acquisition of LTNs with the characteristics presented below, for the average price established in the tender offer referred to in Article 1 of this Administrative Order:

[58] Free translation of the original in Portuguese.

I - Date of the special operation: 27/03/2008;
II – Time for receiving proposals: 15:00 to 15:30;
III – Announcement of the total quantity sold: on the date of the auction, as of 16:00, by the Brazilian Central Bank;
IV - Date of the financial liquidation: 28/03/2008;
V - Characteristics of the issuance:

Bond	Term (days)	Quantity (in thousand)	Nominal value (in R$)	Date of Maturity
LTN	187	150	1,000.000000	10/1/2008
LTN	825	300	1,000.000000	7/1/2010

Sole paragraph. The special operation referred to in this article shall only be carried out if the total volume offered to the public, pursuant to Article 1 of this Administrative Order, is sold.

Article 4. The quantity of bonds to be offered in the special operation referred to in Article 3 shall be allocated in compliance with provisions set forth in Article 4 of said Normative Act:

I - 50% to institutions defined as primary dealers
II - 50% to institutions defined as specialist dealers.

Sole paragraph. Of the bonds allocated to each group, the maximum quantity that may be acquired by each institution shall observe the criteria established in Article 4, paragraph 1, of said Normative Act, and shall be informed to the institution through the OFPUB System.

Article 5. This Administrative Order shall enter into force on the date of its publication.

PAULO FONTOURA VALLE

Annex 3. Modalities of auctions of public bonds

There are two main models for public bond auctions:[59] (a) discriminatory auctions or multiple price auctions; and (b) uniform price or single price auctions.[60]

In the discriminatory auction, bids are classified in decreasing order of prices, and several units are sold at the highest prices until the quantity offered has been purchased. In the uniform auction, the highest bids are accepted at a uniform price that corresponds to the price presented for the highest rejected bid or last accepted bid.

In addition to these models, purchase auctions can be discriminatory or uniform. In the external market, the former are usually known as *reverse Dutch*, and the latter as *modified reverse Dutch*.

Reverse Dutch auctions are designed for buyers who want to purchase a number of items and there is more than one seller. Buyers can specify the maximum price and the exact number of assets wanted. Sellers, in turn, bid at or below that maximum price for the number of assets they want to sell. At the end of the auction, the lowest bidder wins, and the buyer gets the assets for the best price.

In modified reverse Dutch auctions, buyers make their bids to the issuers, which may vary in volume and price. All buyers will get the auctioned asset at a single price that corresponds to the lowest price (which means the greatest yield).

The literature on auctions also provides another type of classification based on the bidders' assessments of the items for sale, distinguishing between *private value* and *common value* auctions. In the former, each bidder's assessment of the items is subjective and independent from those of other bidders. In the latter, all bidders apply the same objective value. If the bidders acquire an asset with a view to resale, rather than personal consumption, the common value is adopted.

The classification of auctions as described before (private value and common value) is important for determining the optimum auction model. Public bond auctions are generally seen as common value auctions, because the value for each bidder is commonly shared and the resale price will be the value quoted in the public bonds secondary market, which is not known at the time of the auction. However, some studies find that the existence of private components in the bidders' assessments (for example, investors' obligatory requirements or those relating to minimum participation of primary dealers), lead to different strategies

[59] These models are typically treated as similar to the first price and second price models in single object auctions, respectively. This analogy ends up influencing the debate on the optimum mechanism of public bond issues. Discriminatory auctions are similar to first-price auctions, since buyers pay their own price. Uniform-price auctions are similar to second-price auctions, since buyers pay a price equal to the first losing bid. This bid, in turn, may have been presented by the winners, since each participant in multiple-commodity auctions generally presents more than one bid.
However, the similarity noted between second-price and uniform-price auctions is not accurate, since participants in uniform-price auctions apply strategically different tactics from those in second-price auctions. Conceptually, these are Vickrey auctions that, in fact, are analogous to second-price auctions, where a participant that wins a certain quantity of the commodity pays the highest losing bid of another participant, excluding its own bid. In practice, the Vickrey auction is not used, since it is very complex. For more details, see Krishna (2002).

[60] Also known by market operators as a Dutch auction, and in the external market, as a modified Dutch auction.

when several types of investors are considered. In this sense, there is disagreement about whether public bonds are of common value for all bidders.

In the common value auction, there is the risk of the winner's curse: ie. Bidders have the same value for the item in question, but only learn of the true value once the auction is over. Thus, each participant estimates the item's value and the winner generally is the one that estimated a higher value than the other bidders. However, if a buyer wins the auction by placing the highest bid, this may attach a higher value than the resale price of the bond, which can generate losses in the post-auction market.

Part III
Chapter 5

The investor base of the Federal Public Debt in Brazil[1]

by Jeferson Luis Bittencourt

1 Introduction

A diversified investor base, with respect to investment terms, risk preferences and motives for trading assets, is vital for stimulating transactions, increasing the liquidity of public bonds and obtaining government financing under various economic scenarios.[2] It is also needed to balance the market in periods of stress or abrupt shifts in expectations; such periods are common even in liquid markets and can prompt sharp drops in liquidity if, within a short period of time, an investor group with similar preferences enters or exits.

The size and composition of the investor base are linked to the structural characteristics of a country's economy, such as the development and sophistication of the financial market. Addressing its limitations is a complex task.

In recent years, Brazil (whose financial system is based on banking activities) has tried to diversify and expand its investor base (to help manage its debt), as well as improve its relations with each group of bond holders. Since its capital market has matured - against a background of high international liquidity - and its economic foundations have been strengthened, these factors, combined with some microeconomic measures, have helped enlarge and diversify the types of investors in the public debt arena: investors (especially institutional ones) have become more active in managing their resources. However, diversification in the decision-making related to investments in public bonds has not occurred at the same speed as the diversification of the final holders.

This chapter offers an overview of investors in Brazil's public bonds, the actions of public debt managers, and the main trends. Section 2 examines the composition of the investor base, as well as the demand profile of all types of investors with regard to their preference for bonds. Section 3 describes how the subject has been incorporated into the strategic planning of debt and how work on the investor base has been conducted. Also, it examines key measures that have been adopted. Section 4 presents the trends and challenges, focusing on the main debt holders.

2 Federal Public Debt holders[3]

Banks in Latin American countries play an important role in financial intermediation. In Brazil, this influences the way the capital market is organized as well as the debate over public debt, especially with

[1] The author wishes to thank the organizer, Anderson Silva, and the chapter editor, André Proite, for their comments, as well as the team at the Public Debt Institutional Relations department and the Public Debt Financing Strategies department of the National Treasury, for their valuable comments and help in organizing the data. The author takes full responsibility for any inaccuracies.

[2] World Bank, 2001; 2007.

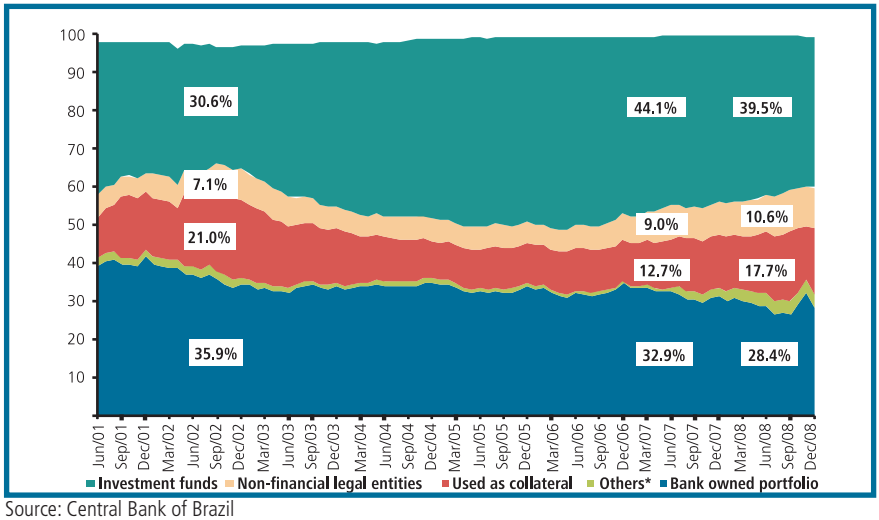
[3] Although the term Federal Public Debt (FPD) is used throughout this chapter, the statistics and analyses are restricted to the Domestic Federal Public Debt (DFPD), its most relevant share (90% of the FPD stock). Thus, the chapter will not analyze the characteristics of

regard to its domestic share. As is well known, the level of economic development[4] and years of high inflation and indexation have led to a highly bank-centered financial system. This chapter will not explore the causes; rather, it will focus on the relevance of the banks' role with respect to the concentration of investment in public debt bonds.

By the end of 2008, bank-owned portfolios still held almost 30% of the Domestic Federal Public Debt (DFPD) bonds, although this share was close to its lowest historic level. Such participation is not that different from other countries. In 2003, domestic banks held 33% of the public debt in Poland, 31.2% in Thailand (including commercial banks and the Government savings banks),[5] and 36.9% in Mexico[6] [7] .

However, the banking system's importance to the public debt cannot be measured exclusively by its share, since the issue is far more complex. As financial conglomerates, they also include brokers, asset managers and insurance companies, and social security management firms, among other institutions. Thus, they are involved in investment decisions with regard to a much larger share of the debt. For example, if investment funds' (IF) holdings of public debt - in which the banks' asset managers oversee the main share - are added to bank-owned portfolios, it is clear that financial conglomerates occupy a pivotal position in decisions about the demand for public bonds (see Graph 1).

Graph 1. Holders of Brazil's DFPD: June 2001 to December 2008[8]



Source: Central Bank of Brazil

*Includes clearing houses and clients: individuals, financial corporate entities, and other funds.

external debt holders, which represents about 10% of the FPD. Such debt is made up of bonds issued in the international market (about 76%) and the external contractual debt (divided mainly between the World Bank and the IDB).

[4] Although the financial systems of developed countries such as Japan and Germany are strongly based on banking activities, this characteristic is often associated with less developed countries. Since banks can raise funds from the public, identify good projects, manage risks and monitor the management of companies, they are more important in legal and accounting systems that are not sufficiently elaborated, which is typical of undeveloped economies (Novaes, 2005).

[5] Novaes, 2005.

[6] Lopez, 2006.

[7] This participation includes the debt share held by Central Bank, which differs from data presented by Brazil (as seen in graph 1). If the bonds held by Brazilian Central Bank were included in our statistics, the share of debt in Brazilian bank portfolios would have dropped from 24.1% in 2003 to 20.3% in 2008.

[8] The difference between the participation in the diagram and the total of DFPD bonds in public hands is related to bonds received as collateral by the Central Bank under the Incentive Program for the Restructuring and Strengthening of the National Financial System (Proer) - basically NTN-A3.

The above graph, taken from the Monthly Report on the Federal Public Debt (RMD),[9] provides the commonly-applied breakdown of public debt holdings that focuses more on registration (custody) than on final holders. For example, when bonds of banks or non-bank financial institutions are used as collateral in trades, this is classified as "used as collateral" instead of by the "final holder". Along with the share of public debt holdings in bank-owned portfolios and "used as collateral," Graph 1 lists three other categories that deserve further examination: Non-financial legal entities (PJNFs)[10], investment funds, and others.

Holdings of PJNFs,[11] such as pension funds, insurance companies and commercial or industrial companies have grown recently. A major part of their growth - from 5.3% in February 2006 to 10.6% in December 2008 - was due to a regulation that created a new investment vehicle called "Investment Accounts," which could be managed directly by these entities and which exempted them from CPMF.[12] Before then, the usual way to avoid the tax was to open a dedicated (exclusive) account with asset managers, since investment funds transactions were already tax-exempt.

Thus, investment funds benefited from such tax regimes that were crucial to their success in Brazil and to their consistently high share of holdings of public debt (shown in Graph 1); besides providing them with tax exemptions, the tax regime weakened competition among funds since migration of investments from one fund to another would have required paying the transaction tax (CPMF). In fact, even during the 2002 mark-to-market crisis[13] that caused sharp redemptions from the funds, these investment vehicles were able to hold over 30% of all domestic government bonds. Their largest participation was in April 2006, with 50.5% of the DFPD.

There is an addition explanation for investment funds' high participation in the public debt.[14]

> [...] the lack of macroeconomic stability, the economic plans and the experience of mismatches of assets and liabilities within the context of the public house financing system (SFH) created much tension among banks as intermediaries and distributors of LFTs and other securities linked to overnight rates. Considering the systemic convenience of removing such risks from the banks' balance-sheets, a strong mutual fund industry flourished – apart from these institutions, but greatly sponsored by them – with the goal of holding public debt, fragmenting the task into individual funds (similar to remunerated sight deposits, for their quotas have daily liquidity), removing the credit or market risks from the intermediary (bank or manager) and transferring it to the participants (quote holders) of such funds.

Finally, the "others" category in Graph 1 refers to clearing houses and clients (individuals, financial corporate entities and other funds). In this category, "clients/individuals" represent about 0.42% of the debt in the public domain, with bonds purchased on the secondary market and through the Tesouro Direto (TD)

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[9] For details, see Annex 5.1 of the Monthly Report on the Federal Public Debt (Relatório Mensal da Dívida Pública Federal) and Annex 1 of this chapter.

[10] Which can be public and private companies (including the ones from the insurance and capitalization sector), pension funds and open entities of complementary social security.

[11] Non financial legal entities (PJNF).

[12] CPMF is the Portuguese acronym for the Temporary contribution on financial transactions tax. For investment accounts, see section Part III, Chapter 6.

[13] In May 2002, the Central Bank (BC), in a joint decision with the Securities and Exchange Commission (CVM), instructed the country's investment funds to set the price of financial assets in their portfolios according to market prices (mark-to-market), as of June 1st of that year. Although this was a legitimate measure from a financial point of view, especially to protect investors against potentially greater losses, it was seen as negative and known as the "mark-to-market episode," bringing about important implications for the public debt dynamics and investment fund industry in the following months.

[14] Franco, 2006.

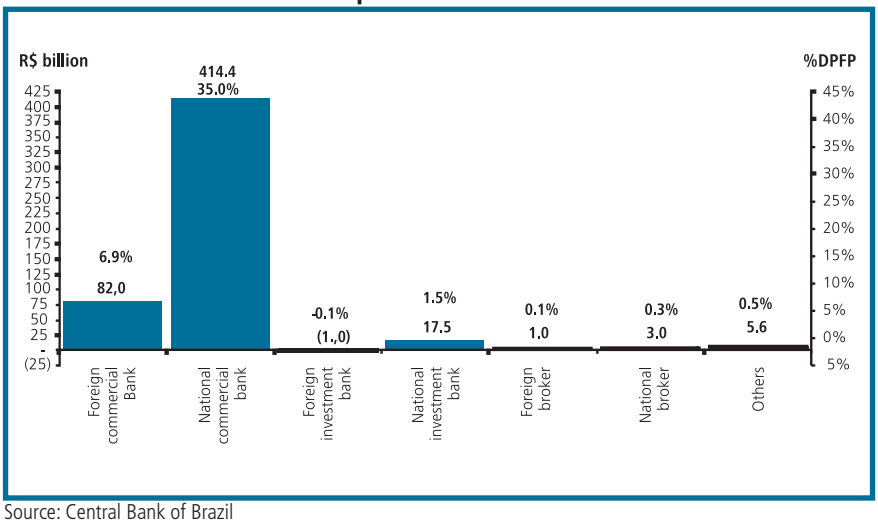
program, which represents a little more than 0.1% of the total debt. The "client/financial corporate entity" category, on the other hand, which covers financial institutions that do not hold an autonomous account in the Special Liquidation and Custody System (SELIC), held 1.14% of the debt in August 2002, and after a continuous reduction since then, resumed an upward trend due to the presence of foreign financial institutions and, as of December 2008, represented 2.63% of the outstanding DFPD held by the public.

2.1 Main groups of investors

Due to the investors' importance with respect to the FPD, this section offers a more detailed breakdown of who they are and their holdings: The data not only disaggregate the categories discussed above, but also consider all bonds "used as collateral" as the property of their respective original holders.

Regarding the banks' own portfolios, the distribution in Graph 2 shows the strong participation of commercial and national banks. The former represent 95% of the segment while national banks represent more than 80%. The graph also shows that after taking into account the bonds "used as collateral," the total holdings of the national banks reaches around 84% of the segment and 37.2% of the DFPD held by the public.

Graph 2. Composition of the major groups of DFPD holders - bank owned portfolios December 2008



Source: Central Bank of Brazil

As a further indicator of the national banks' importance, Central Bank data (in Table 1) show that in December 2008, of the 50 largest banks in Brazil, only 20 were under foreign control; of the 10 largest (in terms of total assets), only three were under foreign control.

Table 1. Largest institutions of the National Financial System (SFN), in total assets (R$ billion) – December 2008[15]

Institution	Total assets	% of SFN
Itau	631.33	19.1%
BB	507.35	15.4%
Bradesco	397.34	12.0%

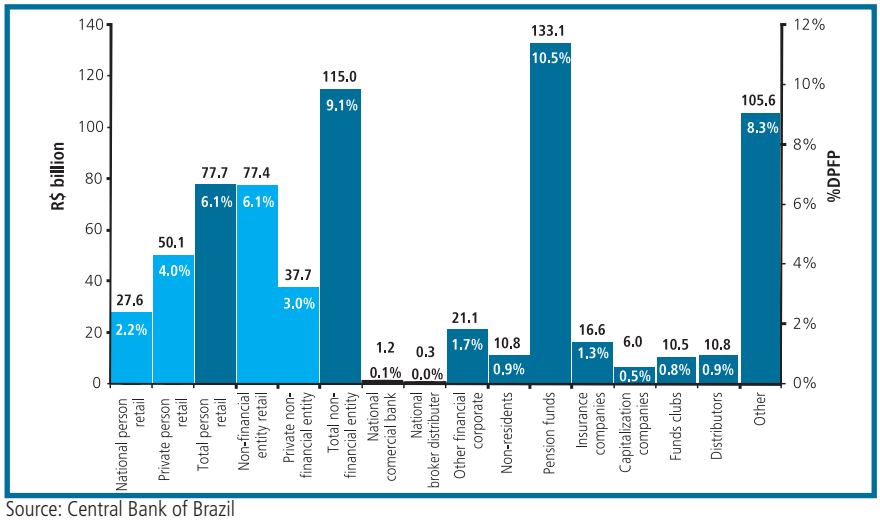
Institution	Total assets	% of SFN
Santander	344.68	10.4%
CEF	295.92	9.0%
HSBC	112.10	3.4%
Votorantim	75.08	2.3%
Safra	66.53	2.0%
Nossa Caixa	54.28	1.6%
Citibank	40.48	1.2%
Subtotal	2,525.09	75.2%
BNDES	272.09	8.2%
Total	**2,797.19**	**83.4%**

Source: Central Bank of Brazil.

Investment funds, which are also important players in the debt market, held net assets of almost R$1.1 trillion in December 2008, over two thirds of which were in public bonds. As to their costs, the average administrative fee for fixed interest rate funds was about 1%.[16] Often, fund managers charge performance fees when they obtain profits higher than reference values (usually CDI); losses are the exclusive responsibility of participants.

Public bond holders in investment funds are less concentrated when compared to bank-owned portfolios. Complementary pension funds, individuals and non-financial legal entities account for the largest share with 26.2%, 15.3% and 22.6%, respectively of the total public bonds held by investment funds. Each group's share in the total debt held by the public and the volume of resources in public bonds are presented in Graph 3.

Graph 3. Composition of DFPD holder groups – investment funds – December 2008



Source: Central Bank of Brazil

[15] Brazil has proven to be much more resistant than other countries in the recent international crisis and, as was to be expected, its banking system has become more concentrated. During the second half of 2008, one of the largest, Santander (seventh in the ranking of assets, as of June 2008) took over ABN Amro Bank (fifth); Itaú (second) merged with Unibanco (sixth); Banco do Brasil announced the acquisition of Nossa Caixa (eleventh) and part of Banco Votorantim (ninth).

[16] Despite the average rate presented, rates are clearly segmented per invested volume. In 2006, portfolios with an initial investment

The close relationship between investment funds and banks becomes clearer when the ranking of main managers' net assets is analyzed: Eight of the 10 largest investment fund managers are part of the 10 largest bank conglomerates. This indicates that while participants are not so concentrated, management is—due to the similar investment decisions taken by these funds and the bank-owned portfolios, which is reflected in a concentration of demand for certain instruments.

Table 2. Largest managers in net assets (R$ billion), December 2008

Institution	Net Assets	% of Total
BB DTVM S.A.	233.19	21.4%
Bradesco	151.66	19.9%
Itau	138.20	12.7%
Santander	80.49	7.4%
Caixa	76.52	7.0%
HSBC	46.66	4.3%
Unibanco	45.53	4.2%
UBS Pactual	40.89	3.8%
Safra	24.97	2.3%
Nossa Caixa	24.70	2.3%
Subtotal	862.81	79.3%
Total	**1,088.50**	

Source: Anbid

2.1.1 The final debt holders

Before analyzing the composition of the public debt portfolio for each segment, it is important to go a step further, identifying the final bond holders. Since the above categories focus on bond registration (custody), it was necessary to obtain information[17] from the Central Bank and CVM (Securities and Exchange Commission) and rearrange public debt holders in categories with respect to public bond demand and the final holders[18] (see Graph 4).

The category "financial institutions" includes: (a) bank-owned portfolios; (b) amounts retained by financial institutions without individual SELIC accounts; and (c) financial institutions that hold investment funds, such as the national commercial bank (Bco. Com. Nac.), national distributor broker (Corr. Dist. Nac.), other national financial corporate entities (Out. PJF Nac.) and participants of funds that distribute their shares (Cot. Distr).

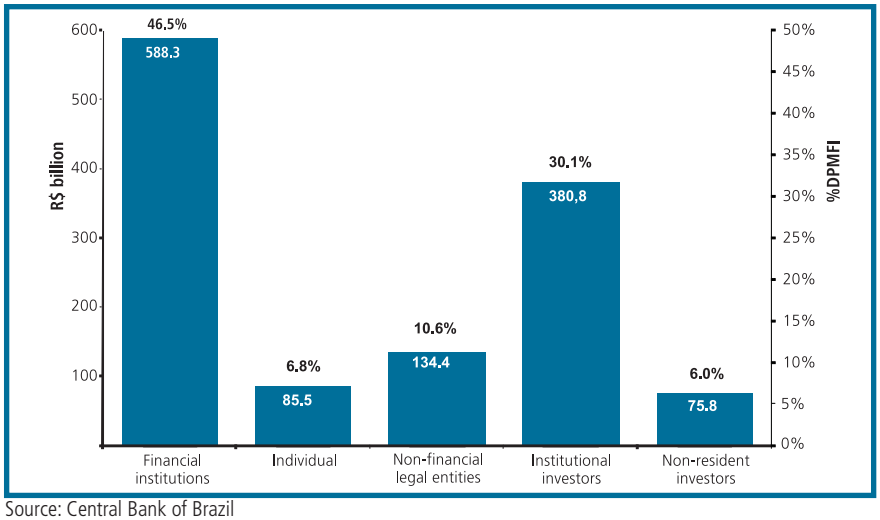
The "individuals" category includes the shares of individuals in investment funds - retail and private (PF Var. and PF Priv., respectively) - plus the resources they directly retain (Individual Client Accounts, Annex 5.1, RMD). The category "non-financial legal entities" includes these corporate entities' shares of investment

of up to R$5,000 had rates from 1.5% to 5.5%; between R$5,000 and R$100,000, from 0.85% to 3.5%; and above R$100,000, from 0.3% to 1.5%.

[17] The author wishes to thank Beatriz da Costa Lourenço Florido, from the Central Bank of Brazil, and Luiz Américo Ramos, of the Securities and Exchange Commission (CVM), for the valuable clarifications and information.

[18] This is just a proxy, since overlaps have been necessary for classifying some segments. Also, there is a difference of about R$ 4 billion (0.3% of the total DFPD) between the components and the total DFPD regarding linked bonds, the ownership of which was not determined by the categories.

Graph 4. Composition of final DFPD holders – December 2008



Source: Central Bank of Brazil

funds - retail and private (PJ Var. and PJ Priv., respectively) - and the resources they directly retain (PJNF Client account, Annex 5.1, RMD), excluding those held by institutional and foreign investors.

"Institutional investors" includes indirect holders of government bonds (via investment funds) such as complementary pension funds (Prev. Comp.),[19] insurance companies, capitalization companies (Soc. Capital), club funds, others in FI (other), and other funds (Client account other FI, Annex 5.1, RMD), as well as all direct holdings of government bonds by complementary pension funds, insurance companies (including health insurance) and capitalization societies (in PJNF Client Account, Annex 5.1, RMD). Finally, the category "non-resident investors" refers to non-residents participation in investment funds (Inv. N. Res.) and all other accounts.

In these new categories, based on final bond holders, the concentration is not so strong when compared to the classification by the registry (custody) shown earlier. The share of institutional and non-resident investors exceeds 36.5% of the debt (i.e., a significant share with a profile that targets more long-term investments), even after the last international financial crisis. If we consider that, in addition to the demand from these two groups, there is also long-term savings that can be tapped from individuals and non-financial corporate entities, the potential exists to extend the maturity of the public debt.[20]

2.2 The main holders' portfolios

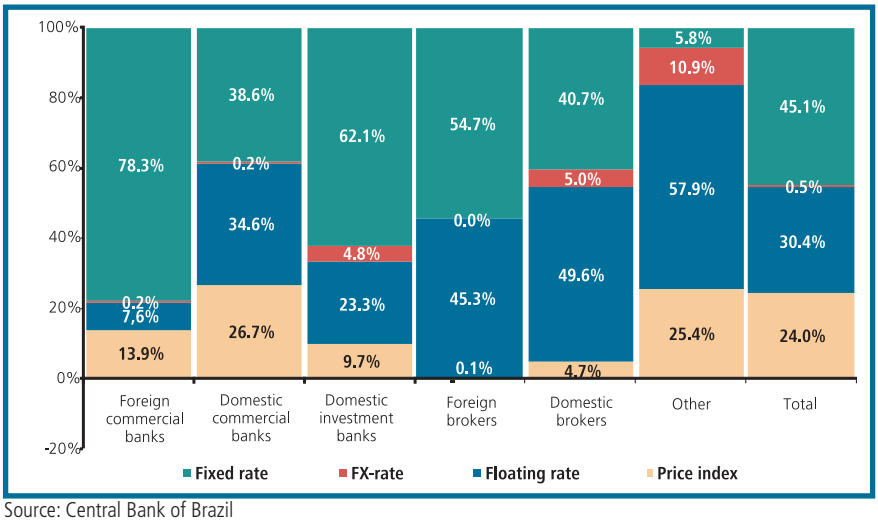
The last section shows that the holdings of government securities are not so concentrated when the statistics are disaggregated to identify the final investors. Thus, an analysis of their demand profile would help evaluate the potential to extend the average debt maturity and improve its composition.

[19] These include both open and closed complementary pension funds, and municipal and state social security systems.

[20] Available data for Brazil and other countries do not allow for a more accurate comparison of terms or final holders. The disaggregation made for this analysis uses data from January 2007 onwards. For 2003, Novaes (2005) notes that Poland had 50% of its debt (including bonds held by the Central Bank) in the hands of non-financial legal entities, while Thailand had 59%. For Brazil, if the debt in the Central Bank is included, the figure is 42.4%.

The composition of public debt portfolios with regard to maturities and characteristics (nominal and indexed debt), provides important information about the market activity of each segment of investors. As expected, an examination of bank portfolios shows that fixed-rate bonds and floating-rate bonds are the most prevalent, as shown in Graph 5. It should be noted that the growth of fixed-rate bonds in their portfolios is recent, due to the stabilization of Brazil's economy. Also, it shows the preference of foreign-controlled banks for fixed-rate bonds (none of the institutions in this group has less than 50% of these in their portfolios) while national institutions hold high percentages of floating-rate bonds. Since the latter are highly represented in the set, floating-rate bonds achieve almost one third of total bank-owned portfolios.[21]

Graph 5. Composition of public bond portfolios by index (bank-owned portfolios), December 2008



Source: Central Bank of Brazil

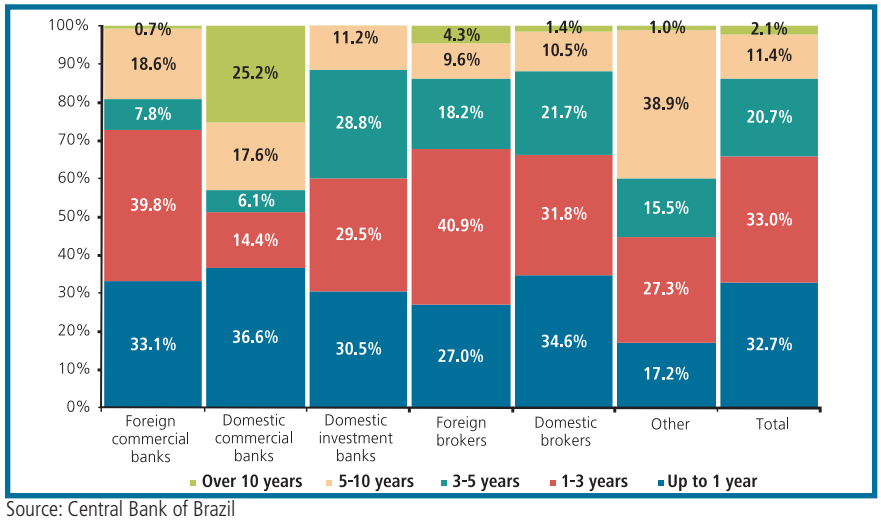
With regard to maturities, bank-owned portfolios mainly hold short-term bonds (up to three years). In December 2008, the commercial banks (both national and international) and the national investment banks, which are more heavily represented in the total DFPD, had more than 50% in bonds with maturities of no more than three years. Although the concentration in shorter maturities persists, its share has been reduced since July 2007, when it was 75%. The reduction in the share of bonds with maturities below three years is consistent with the overall lengthening of the average maturity of the outstanding public debt in December 2008.

International experience has shown that institutional investors are key to the functioning of a country's public debt market. In Brazil, they represent a group with rather homogenous investment goals but one that follows its own strategies, for example, with respect to bond maturities. If that was the case, their demand should encompass a wide range of public bonds, from short-term, fixed-rate bonds to long-term, inflation-linked instruments. However, it is difficult to compare the Brazilian experience with that of other countries, given the wide use of the LFT, a floating-rate instrument linked to overnight rates. In spite of the recent evolution of Brazil's capital market, these instruments are still very prominent in the public bond portfolios of several

[21] Foreign investment banks were omitted from the graphs because, in December 2008, they presented a net position in the public bonds portfolio of just R$1 billion (0.2% of the segment "own portfolio"), which would distort the comparison. Such a negative position was concentrated in fixed-rate bonds of up to five years.

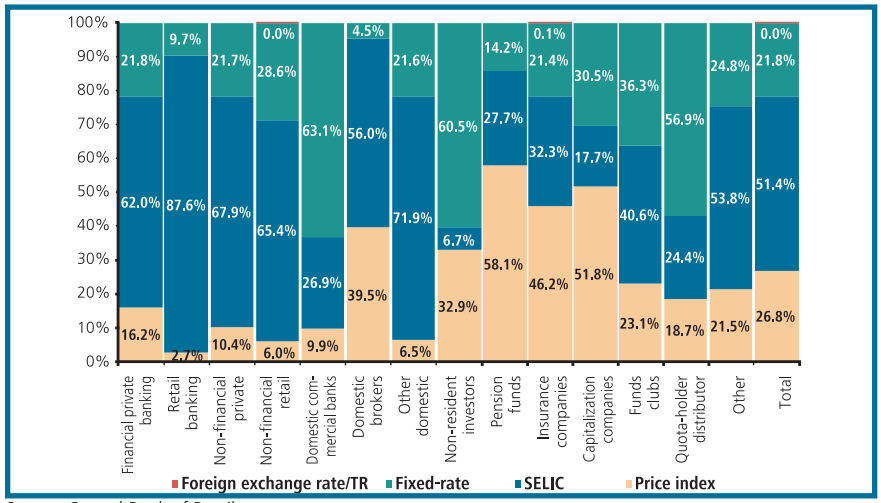
investment funds. It would appear that investors, and not only institutional investors with different types of liabilities (such as investment funds and clubs, complementary pension funds and insurance companies), still maintain a substantial share of their assets in floating-rate bonds. The high level of short-term real interest rates in Brazil contributes to this phenomenon.

Graph 6. Composition of public bond portfolios by term (Bank-Owned Portfolios) December 2008



Source: Central Bank of Brazil

Graph 7. Composition of public bond portfolios by index (investment funds) December 2008



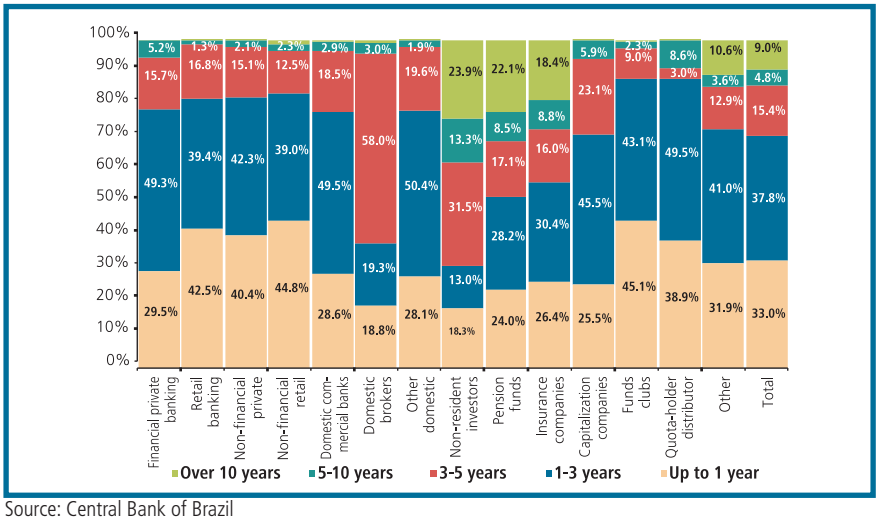
Source: Central Bank of Brazil

Graph 7 indicates that the more diffuse a group's investment goal, the higher the fund's LFT percentage. Hence, "individuals" and "non-financial corporate entity" groups (retail or private) hold a larger share of such bonds, as well as groups with a closer link to the financial sector, except for national commercial banks. It should be noted that these segments all increased their LFT portfolios, especially during the international crisis; thus,

the share of these bonds in the investment funds' portfolios grew by 10% in one year, accounting for over half of their public bond portfolios. The preference of non-resident investors for fixed-rate bonds and inflation-linked bonds, which represent almost 95% of their public bond portfolios in investment funds, is equally noteworthy. Although the SELIC rate increased in the last months of 2008, these investors' appetite for LFTs did not, and their percentage in the portfolios grew by only two points from December 2007 to December 2008.

In terms of maturities, very short-term bonds prevail in retail clients' portfolios, while there is a greater share of bonds with maturities longer than three years in private client funds. Even if this difference is not very large, it signals a greater portfolio selection effort by asset managers of private client funds to add value to the fund beyond the typical strategy of simply buying instruments with low market risks. Another interesting group, the foreign investors, despite its different preferences, has a portfolio with a longer maturity than national institutional investors, even when compared specifically to complementary pension funds.

Graph 8. Composition of public bond portfolios by term (investment funds) December 2008



Source: Central Bank of Brazil

2.3 Self management *versus* outsourced management: an analysis of portfolios

If the size of the investment fund (mutual fund) segment represents an advantage for Brazilian financial markets due to its capacity to capture savings, the preference for instruments such as the LFT to some extent hampers public debt management objectives to improve the debt profile. Also, regulations hinder any attempt to restrict daily liquidity in these funds, which sparks a greater demand for bonds with one-day duration.

In this context, although the base of final debt holders is not so concentrated, the management of public debt portfolios is very much the task of agents whose motivation for negotiating rests mainly on tactical considerations.[22] This causes their positions to remain focused on LFTs, as they offer less exposure to risk within the shorter spectrum of the interest curve for public bonds, thus reducing incentives to extend debt maturities. In turn, this reduces the transparency around price formation in the cash markets of less liquid bonds.

[22] Moura, 2005.

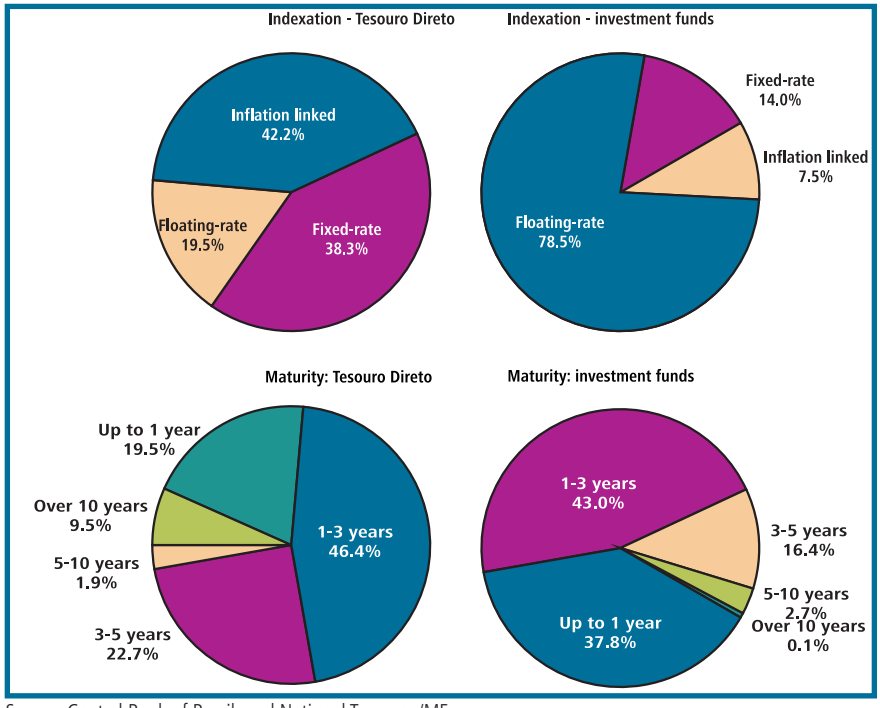
It has been argued[23] that the daily liquidity offered by investment funds and the daily disclosure of quotas are key factors in promoting the LFT in these portfolios. These features lead investors to withdraw funds at the first signs of losses; thus, managers keep a major part of their assets in bonds with a one-day duration and high liquidity.

Another problem with the profile of investment fund portfolios is the so-called "CDI culture." Typical investment fund managers will not (and would not be able to) buy bonds with a fixed rate (instead of the LFT) if they need to obtain daily returns that are equal to or higher than the CDI. Thus, the liquidity of investment funds linked to a daily benchmark affect the demand of this bond-holder segment and the debt profile itself. [24]

In this scenario, tactical decisions prevail over strategic decisions in the investment funds' allocation of public bonds; thus, issues related to maturity and investor profiles are less important than other aspects, such as the assets' daily liquidity. Also, this practice is due to the lack of a stronger financial culture among a large share of individuals and corporate entities, as well as some institutional investors - which delegate banks and asset management companies ample control over their funds.

Hence, a major part of public bonds in investment funds is managed without any consideration given to the final investors' goals in terms of time frames or risk aversion, since the bonds are traded almost without any type of segmentation: resources are invested in bonds that generate a smaller risk for managers (in terms of deviation from a generic benchmark) and allow for daily liquidity, a requirement common among clients of investment funds. A good way to perceive the distinction in investment allocations by fund managers versus those made directly by end investors is to compare the public bond portfolios of individuals in investment funds and their investments in the Treasury Direct program (TD).[25]

Graph 9. Composition of individuals' public bond portfolios
December 2008



Source: Central Bank of Brazil and National Treasury /MF

[23] Franco, 2006.
[24] Garcia and Salomão, 2006.
[25] An Internet-based program that sells federal bonds to individuals. For details, see Part III, Chapter 7.

Although differences exist between individuals who invest in public bonds through the TD and investment funds, both investment vehicles have a similar target audience. The December 2008 graphs illustrate that managers concentrate resources in short-term bonds (80.8% in up to three-year bonds) and floating-rate bonds (78.5% in LFTs), while individuals on their own invest mostly in fixed-rate and inflation-linked bonds (80.5%), with a greater diversification in maturities (32.8% have terms longer than three years).

It should be noted that in both static and dynamic terms, individuals and managers control their investment portfolios quite differently. Between June 2007 and December 2008 (when the Central Bank raised interest rates), the share of LFTs in public bond portfolios managed by investment funds for individuals grew about 20 percentage points to reach 78.5% at the end of the period, while the share of these instruments in the portfolios managed directly by individuals in the TD dropped 2 percentage points. This demonstrates that besides a slower response to movements in the yield curve, individuals' demand for public bonds involves other factors than daily liquidity, and that protection against interest rate variations, though critical for managers, may not be to investors.

With regard to the comparison between closed complementary pension funds and investment funds, the share of fixed-rate, inflation-linked and short-term bonds in both portfolios also reflects the difference between self and outsourced management. In December 2006, the share of fixed-rate bonds in self-managed portfolios was no more than 2%, compared to 32.6% in outsourced-managed portfolios. Moreover, inflation-linked bonds accounted for 82.7% in the former and just 48.5% in the latter. Finally, the percentage of maturities of up to three years was 25% against 60%, respectively.

There are two peculiarities in the comparison between self and outsourced management of public bond portfolios that distinguishes individuals from pension funds: with pension funds, (a) the discrepancy between self and outsourced management has been decreasing gradually due to a drop in interest rates; (b) a segregation process of the portfolio management prevents the convergence between self and outsourced management.

About the first particularity, considering lower short term interest rates until 2007, it was natural for pension funds to lengthen the maturities in their portfolios, with bonds offering the protection they needed against inflation to meet their actuarial liabilities. Thus, the LFT share in investment funds that manage pension funds assets dropped from 41.7% in 2005 to 18.7% in December 2006. Such a large shift does not occur with investment funds that manage individual investors' resources, either when interest rates rise or fall, because they have more varied savings goals.

Still, in some cases, investment funds (mainly the exclusive ones[26]) adhere to the requirements of closed complementary pension funds; these involve separating the asset management of retirement benefits which have not yet been granted from those which have. Such strategies have led some pension funds to self-manage their portfolios for retirement benefits to be granted in the future and to outsource (through investment funds) those allocated for retirement benefits currently being paid. With this distinction, the outsourced-managed portfolio is of much shorter maturity and carries less risk of interest rate volatility than the internally managed one.

Such a separation offers only a partial explanation for the different composition of self-managed and outsourced-managed pension fund public bonds portfolios. First, many pension funds are small, and the costs of self-managing their assets are thus high. A 2006 study indicated that, out of a sample of 42 entities, 67% completely outsourced their asset management, while 2% managed all assets themselves.[27] Further, the separation strategy is not yet widespread in Brazil's financial market, since the same study shows that

[26] "Exclusive" funds are closed-end mutual funds whose assets belong to only one institution (e.g. a pension fund).

[27] For more information about this study, visit the website:
http://www.towersperrin.com/tp/getwebcachedoc?webc=HRS/USA/2007/200704/Brazil_1.pdf.

although 12% of the companies sampled wanted to separate the asset management, 66% did not - nor did they consider doing this until the end of 2006.

Finally, the number of closed complementary pension funds that pay more benefits than receive contributions must be considered, since it is not high enough to justify such a short-term portfolio for resources set aside for retirement benefits being granted. Although the percentage of inflation-linked bonds in the outsourced portfolios grew from the end of 2007 to the end of 2008 (46.5% to 58.1%), a discrepancy still exists between their investment goals and the allocations in the different types of public bonds made by outsourced managers. This is likely to be even greater among smaller entities.[28]

To reduce the discrepancy, the National Treasury is attempting to link managers' incentives to the goals of final investors and expand and diversify the investor base. These initiatives are discussed in the following section.

3 Diversifying the investor base

The idea that a broad investor base is needed to ensure a strong and stable demand for bonds has been a constant among National Treasury debt managers. As in other countries, the demand for domestic bonds reflects the characteristics of the financial system - such as the main types of investors and their investment preferences, as presented in the last section. In Brazil, given the well developed banking and investment fund industry, little had to be done to stimulate their further participation as holders of public debt instruments.

Nevertheless, the Treasury has aimed to promote a more diverse investor base, since those with different profiles with regard to maturity terms, risk and motivation to trade, would stimulate even more transactions and market liquidity. Given this goal and in order to maintain its financing strategy under various market conditions, the Treasury adopted regulatory measures and established a communications network with different agents: All investor groups are now analyzed while the debt management strategy is designed and implemented, and specific programs and contacts exist for individual, institutional and foreign investors, investment funds and others.

Besides seeking ways to expand the investor base, the Treasury attempted to change the CDI culture that developed due to Brazil's past high rate of inflation and indexation. This involved creating new programs, such as the TD (see Part III, Chapter 7), and providing information to larger investors that helps them better match their investment choices with their client's goals, rather than with the market's average management.[29]

3.1 The Institutional Relations Unit (Gerin)[30]

In 1999, while adopting best international practices and conducting an institutional reorganization of Brazil's public debt, the Treasury established a specific unit for investor relations (Gerin).

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[28] By delegating management, and choosing the CDI or SELIC index as a benchmark for their fixed-income portfolio, pension funds pressed managers to shorten their portfolios and concentrate them in LFTs or in Central Bank repo operations. In 2006, according to the Towers Perrin's survey, 72% of the funds surveyed adopted such practices.

[29] Franco (2006) describes the average management of fixed-income bonds as still quite geared towards the overnight interest rate, due to the influence of LFTs, which negatively affected the capital market.

[30] For more information on the Unit, see Part II, Chapter 1.

In addition to its routine communication with the market (in order to reduce misinformation and promote better pricing of assets), Gerin is designed to expand and diversify the investor base. As its efforts are closely linked to the overall mid- and long-term debt strategy, the unit was placed in the middle office, which is the strategic planning area, and not in the front office, which works with operations.

As a result, the Gerin focuses more on structural and strategic issues than daily communications, offering a longer-term perspective that is more connected to FPD management guidelines. Also, the unit created communication channels with several groups of investors, ensuring that the products it offers match the demands of the various market segments. Its broader efforts and strong strategic focus also made it easier for the unit to absorb the new tasks it inherited due to the transfer of the external debt management mandate from the Central Bank to the Treasury, especially those related to providing information and studies tailored to the specific needs of rating agencies.

3.2 Building experience with institutional investors

Since its beginning, the Gerin has sought close contact with institutional investors, even those whose portfolios are managed by others. For example, in 2003, it held several meetings with investors (especially pension funds) that prefer long-term instruments. As a result, it identified measures to stimulate the demand for such bonds. For example, it regularly issued NTN-Bs, long-term bonds indexed to the consumer price index (CPI), in line with the goals of the asset and liabilities management of pension funds and of overall debt management. The strategic point of the Treasury's action was to show that the CPI is highly correlated with the INPC, the price index generally used by social security entities as actuarial benchmarks.[31]

The success of the first initiative led to 15 meetings in 2004 with national investor institutions such as commercial banks, investment banks, open and closed complementary pension funds; this series of contacts created a permanent communication channel between public debt managers and main investors, expanding communications and its coverage. Thus, what began with the issue of NTN-Bs was continued with a series of initiatives.[32]

Aware that institutional investors are key to changing the public debt profile, the government revised the tax scheme with regard to social security-related investments in 2004. This created an added incentive for long-term investments and for an increase in the share of complementary pension funds (open and closed) in the debt. In particular, open complementary pension funds gained momentum from the tax incentive and started to compete with traditional investment/mutual funds for long-term investors. Also, the new scheme responded to an earlier request from closed complementary pension funds to end the Special Taxation Regime.[33]

Further, to reduce the so-called CDI *culture*, representatives from the Treasury and market institutions publicized the family of benchmark indexes for investments in public bonds created by Andima (IMA). In 2005,

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[31] The Treasury already offered a similar instrument, the NTN-C, which paid the IGP-M index plus an interest rate. But, as it aimed to offer an instrument linked to the price index used as a reference for the inflation target system and one that was more aligned with the government's primary surplus - besides concentrating its issuances in a single bond with such characteristics - the Treasury offered special incentives to promote the demand for NTN-Bs.

[32] For more details on some of the measures, see Part III, Chapter 1.

[33] The Special Taxation Regime (Regime Especial de Tributação) involved withholding taxes or paying income tax separately on the revenues and gains from the technical reserves and benefit plans of complementary pension funds, insurance societies and Fapi, as well as from life insurance plans with a survival clause. Thus, the whole accumulation stage of social security plans was now exempt from income tax.

they held seminars at five regional offices of the Brazilian Association of Pension Funds(Abrapp), describing the relevance of the new indexes, especially when compared with the CDI, as references for entities that needed assets with longer maturities.[34] They also highlighted the importance of the migration of investments from floating-rate bonds to inflation-linked bonds. In September 2005, interest rates began to drop and as it was clear that the process would be sustained, the Treasury emphasized that the short-term safety provided by LFTs would no longer be compatible with the profitability demanded by the pension funds' actuarial targets.

The share of floating rate (SELIC) bonds in the pension funds' portfolio dropped from 35.9% in March 2005 to 17.7% by December 2006. Gradually, the NTN-Bs replaced the NTN-Cs as the most sought-after instrument for institutional investors. Also, the cycle in which basic interest rates were reduced and the Treasury's strategy of no longer issuing regular NTN-Cs (beginning in 2006), created greater potential for the growth of NTN-Bs, both in the stock of outstanding public debt, as well as in the complementary pension fund portfolios. Thus, while IPCA-indexed bonds represented fewer than 20% of these pension funds' public bond portfolios and the IGP-M-indexed bonds accounted for over 30% in March 2005, they changed to 35% and 23%, respectively, by December 2006.

The drop in the Central Bank interest rate (SELIC) alone could have sparked the change in the composition of assets (held by this segment), but the clarification effort, along with other measures such as the creation of the Investment Account,[35] supported the macro-structural movement underway, thus accelerating the transition.

3.3 Non-resident investors in the domestic market

During the same period, the Treasury tried to attract non-resident investors, which have a greater appetite for long-term and fixed-rate bonds. It participated in various meetings to encourage their investment in public bonds, not only for debt management purposes, but also to develop the domestic market, since the entry of new players would help diversify the risk. This represented the most important change in the public debt investor base in recent times.

Besides offering information about domestic bonds on the Treasury website (e.g., which includes the manual for participating in the domestic bond market and rules for pricing bonds), foreign investors were surveyed about the features of Brazil's market that still made it unattractive.

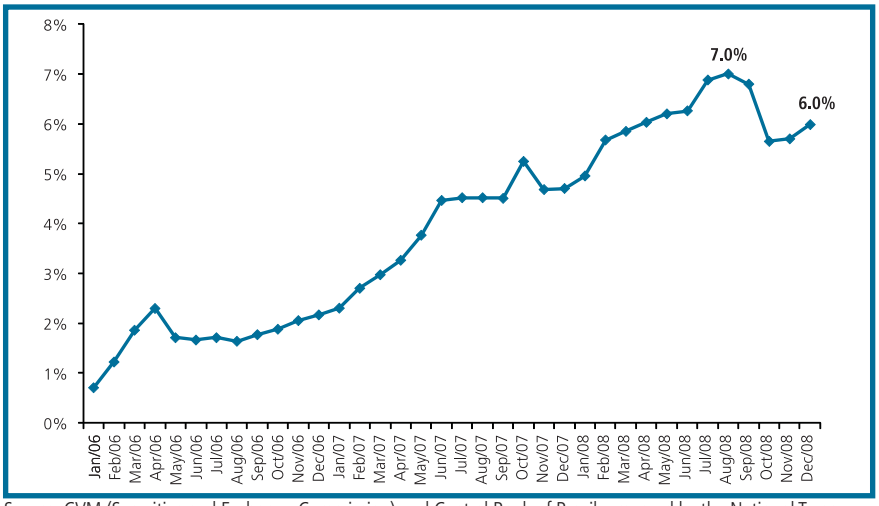
The Treasury effort was not restricted to opening the domestic debt market to promote the various investors' access, a forum on developing the secondary bond market (still considered a bottleneck to diversifying the investor base), was created; such a market helps expand the investor base and its efficiency depends on a diversified investor base.[36] Given this interdependency, the success of this forum will be determined by how well it brings together the various agents. Hence, the Treasury's relationship with them has been crucial.

[34] An updated version of the Towers Perrin study, of 53 institutions, showed that as of April 2007, the number of entities that continued to use the CDI as a benchmark for the fixed-income portfolio dropped to 57%, compared to 72% in the previous survey.

[35] The same study, which sampled 42 pension funds, found that in 2006, after all resources deposited in investment funds were allowed to migrate to other funds without paying the CPMF, 20% intended to change their investment structure due to the Investment Account.

[36] See Part III, Chapter 6.

Graph 10. Non-resident investor share in DFPD
January 2006 to December 2008



Source: CVM (Securities and Exchange Commission) and Central Bank of Brazil, prepared by the National Treasury

Box 1. Incentives for non-resident investors

As mentioned earlier, the new tax regime for non-resident investors was the most significant measure in recent years that affected the investor base. But the process of making Brazil's market more accessible began long before these investors were exempted from income tax (IR) on bond investments in February 2006.

Since early 2005, the Treasury, aware that it was crucial to expand the investor base within the scope of the BEST initiative (Brazil: Excellence in Securities Transactions),* had already been improving the structure of the domestic financial market with regulations and measures that would make it more accessible to foreign investors. Thus, in that year, the Treasury streamlined the registration process for non-resident investors at the Securities and Exchange Commission (CVM) and promoted innovations with regard to registering in the national register of corporate entities (CNPJ), which allowed non-resident investors to start their operations with swiftness and simplicity.

The Treasury also participated in debates hosted by the National Association of Financial Market Institutions (Andima), which had asked a consulting firm to analyze the issue of income tax exemptions for investments by non-residents in the domestic fixed-income market. Further, aware that it needed to attract this segment to assets in Brazilian *reais*, the Treasury successfully launched the first bonds in *reais* abroad (Global BRL 2016)** in September 2005. The high demand from international investors meant that interest in such sovereign assets already existed.

After that, the government issued a provisionary measure that triggered a significant entry of these investors into the domestic bond market. As a result, foreign investors' participation in Brazil's domestic debt, which was only 0.69% in January 2006, jumped to over 6% by December 2008. With respect to this measure, the following should be noted: (a) to achieve the Annual Borrowing Plan goals, the share of fixed-rate and inflation-linked bonds in the total debt increased, as seen in the foreign investors portfolio; and (b) this participation grew significantly during the first stage of the international financial crisis (until mid-2008), which showed that Brazil is acknowledged as a safe haven for investments.***

* Partnership between the public sector (National Treasury, Central Bank, Securities Commission - CVM) and the private sector (BM&F, Bovespa, CBLC and Anbid). For additional information, visit the website: http://www.bestbrazil.org/index.asp.
** Brazil was elected the best sovereign issuer during 2005 by the *Latin Finance* magazine, especially due to the issuances of the Global BRL 2016 (best issuance in local currency) and the A-Bond (best sovereign issuance in foreign currency), the latter in the exchange operation of the C-*Bond*.
*** Starting in August 2008, with the deepening of the international financial crisis, the movement towards "fly to quality" or even simple profit realization, caused foreign investors to flee the bond market, reducing their participation in the public debt to less than 6%. But,, investments in this segment resumed in October, and by December 2008, its participation had returned to the same levels observed in July.

3.4 Interaction between institutional and non-resident investors: market maturity

The increased participation of foreign investors beginning in February 2006 (after they were exempt from income tax on gains from investments in public bonds) illustrates how diversifying the investor base generated important results in the domestic market. A good example is the relationship between closed complementary pension funds and foreign investors. In May 2006, these funds were affected by a congressional investigation set to find out if pension funds had tried to illegally influence members of the House of Representatives. Although no evidence was found of such wrongdoings, since the investigated operations occurred in the less transparent secondary market, pension funds moved away from doing operations in this market.

At the same time, when it appeared that US interest rates might rise, some foreign investors that had participated in the domestic sovereign bond market initiated a "flight to quality" movement. When they tried to sell their bonds - which can be seen in Graph 10 - they did not find counterparts willing to trade in the secondary market easily, precisely because the natural demander for these bonds (complementary pension funds) was outside the market. Thus, the Treasury held auctions to sell and purchase bonds, so as to provide price parameters for all investors, as well as an exit for non-resident investors and an opportunity for pension funds to make purchases through primary auctions.

In May 2006, the market for long-term bonds grew stronger and, as events indicated, it was able to adjust itself without any government intervention. Again, in August 2007, during the US financial crisis, some non-resident investors exited their positions in Brazil's public bonds, but the Treasury did not have to enter the market as it had done the year before. Due to the opportunity that had been opened, institutional investors - especially pension funds - took advantage of the attractive prices, not only of public bonds, but also of stocks, and entered the market buying both. Hence, the short-term effects of the initial crisis upon the Brazilian market as a whole were significantly softened.

3.5 Brazil reaches out to non-resident investors[37]

In 2004, under the agreement established between the Central Bank and the Treasury, efforts started to be made to incentive investors to buy external debt securities. Initially, reports about the results of issuances in the international market were released. Later, these reports were complemented by studies and presentations that analyzed points commented by rating agencies.

In 2005, with the Treasury fully responsible for managing the external federal debt, work with non-resident investors intensified: for example, activities attached to issuances in international capital markets, such as due diligence, were incorporated in the Unit of Research and Scenarios (Gepec), while Gerin was responsible for announcing the issuance results. Closer contact with foreign investments banks was also established to gain access to a broader investor base.

As early as 2005, given the partnership with foreign investment banks, the Treasury held meetings in Europe, Asia and the United States, always focusing on the final investor. These events (a) expanded the public debt investor's contacts; (b) confirmed Brazil as sovereign issuer abroad; (c) strengthened communication with this market; and (d) contributed to the success of external operations.

[37] For more information on primary issuances of external debt bonds, see Part III, Chapter 4.

Later, with the aim of saving time and maintaining ongoing communications, the meetings focused on BEST[38] and used teleconferences to gain access to foreign investors. In 2007, a schedule for regular teleconferences was set and publicized - to ensure greater predictability for the market - although special events were held, when needed. It should be noted that the teleconferences are sponsored by investment banks, under a rotation system, with an average of 100 participants on-line.

Another example of Brazil's effort to gain proximity to non-resident investors involves its experience with the Asian market. After Treasury staff visited various countries in 2005 to publicize Brazil's role as an important sovereign issuer, an innovative measure was adopted: The timing between the opening and closing of Brazil's global bond issuances was adjusted so they would open at a time compatible with the start of operations in the Asian markets (Hong Kong), and end at the close of the American market (New York).[39] This first step was needed to familiarize investors with primary issuances of sovereign debt bonds. As the market responded positively, the practice was also adopted by other Latin American countries.

In April 2007, the Treasury adopted a green shoe strategy designed to improve access to the Asian market and protect both Brazil and investors from volatility during the operation: The Treasury issued bonds according to the opening and closing times of the North American market, reserving the right to reopen the operation automatically in the Asian market, with pre-established volumes and with the same conditions as the bonds sold in the American and European markets.

4 Trends and challenges

Brazil's capital market has developed considerably in recent years, despite the international financial crisis. For example, the stock market and the private fixed-income market performed extremely well until mid-2008, generating positive externalities for other markets. Public debt managers saw these advances as very beneficial - rather than as competition with government bond markets - since such externalities materialize through (a) the capital market's expansion, (b) retail investors' increasing understanding of financial markets and (c) incentives for more proactive management by institutional investors.

Given a context of great liquidity until the end of 2007, countries, particularly emerging ones, sought through public debt management to strengthen their investor base, improving the regulation and consistency of the institutional investors, non-resident and other segments. In Brazil, the Treasury has focused on these actions in recent years and the course will continue: A more developed capital market tends to attract a larger investor base, either by making the financial system less bank-centered or by reducing the concentration of asset management.

Despite the difficulty in attracting investors, given the unstable global financial markets (mainly after the demise of Lehman Brothers), the government bonds market is still developing. The following analysis focuses on the demand prospects of three main investor groups (banks, complementary pension funds and non-resident investors) so as to identify the strategic role each plays in helping the Treasury implement its long-term debt management guidelines.

[38] BEST: Brazil Excellence in Securities Transactions.

[39] Previously, external issuances were opened and closed based on the schedules of the European and North American markets.

4.1 Banks in Brazil's new financial market

Given the important role of the bank-owned portfolios - commercial and investment banks alone hold almost one third of all DFPD - it is crucial to understand their expected impact on debt management in the next few years.

At the end of 2007, before the main effects of the global financial crisis had been felt, several institutions in the Brazilian market, including five of the 10 largest, were surveyed (for the purposes of this chapter) to determine their expectations for the future size, composition and maturity of the bank-owned portfolios.[40]

With regard to size, it was generally thought that portfolios would gradually shrink, as has been occurring, even after the worst of the crisis in the last quarter of 2008 had passed. This reduction is expected to continue despite the many functions of the bonds in the bank-owned portfolios: (a) to allocate reserves, (b) to control liquidity, (c) to deposit margins/guarantees/pledges in law suits, and (d) to reduce market risks. The first three generally slow the pace of the reduction. However, finding alternative ways to avert risk (in the derivatives market), against a background of low interest rates, higher economic growth and the possibility that banks will offer more credit to the private sector diminishes the attractiveness of government bonds and fosters a shift in the composition of bank-owned portfolios.

Structural factors also tend to reduce the banks' holdings (of public debt), such as bank mergers (in particular), and the entry of foreign investors or accelerated growth of other investors (investment funds) in the market. Moreover, recent monetary policy measures (adopted after September 2008) to reactivate the credit market, such as the series of reductions in reserve requirements, also contributed to keeping the size at historically low levels, even at the height of the crisis.

With regard to composition, the market's view is that after the most acute phase of the crisis and the cycle in which the SELIC rate was reduced, there is room for more fixed-rate bonds. Currently, more than three-fourths of these portfolios are in fixed-rate or floating-rate bonds. As investment instruments, the latter are no longer justified, either due to the long-term reduction in interest rates or the alternative of replacing these bonds with synthetic instruments (such as derivatives). Moreover, the Treasury's strategy of refinancing increasingly smaller proportions of these bonds at favorable periods can promote the purchase of other instruments, not only those with fixed rates, but also those that are linked to inflation. However, as liquidity management instruments, the demand for floating-rate bonds is still sustained, due to the high level of bank liabilities benchmarked to the CDI and with short maturities.

With regard to maturity, it was agreed that stability plays a crucial role in this process, primarily because it affects the agents' perception of risk, mainly for those that trade long-term bonds. Although the movement towards longer-term bonds is not as clear as the change in composition, the increasing liquidity and presence of new players in the market of inflation-linked instruments can make these bonds more attractive for banks, which would entail lengthening their portfolios. It is important to note that between 2007 and 2008, maturity of bank-owned portfolios lengthened, despite the deepening of the financial crisis.[41]

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[40] As agreed with those interviewed, the names of the institutions will not be mentioned in view of the strategic information provided. The author thanks them immensely for their contribution.

[41] At the end of 2007, more than 75% of the government bonds' portfolio of the banks (treasuries) was concentrated in bonds of up to three years; one year later, the percentage fell to about 65%.

4.2 Complementary pension funds

The main segment among institutional investors is that of complementary (or private) pension funds, because of their (a) more homogeneous investment objectives, (b) representativeness in the debt and (c) growth perspectives. In 2008, reserves of the complementary pension market (open and closed) reached R$560 billion, while five years ago, they were just R$200 billion - an increase of almost 200%. Even in the atypical year of 2008, there was a positive yield, mainly from the stock portfolio, ensuring a 2% growth of the segment's investment assets, as compared to 2007.

It may be unrealistic to expect the pension funds to maintain this course, since important structural changes that contributed to this growth have already been registered and current net cash flows are positive only in the open complementary pension fund segment. However, it is still difficult to measure the growth potential of the latter, both in corporate and individual plans. In recent years, it diverged from forecasts, which expected growth of around 10% a year as of 2003.[42] Instead, the open pension funds' investment portfolio almost tripled from 2003 until December 2008, from R$48.5 billion to R$141.9 billion, expanding its size by 11.5%, even in the difficult year of 2008. With such growth - an average of over R$20 billion a year[43] - private pension funds will lead the segment of institutional investors in Brazil in the not-too-distant future.[44]

Some factors that caused the open pension funds to develop are: (a) the official social security system which cannot guarantee the purchasing power of higher income brackets, (b) the high number of self-employed workers in the labor market, (c) workers that are not served by closed pension funds and (d) the public's increasing financial sophistication.[45] Also, some companies are providing complementary pension funds to employees through open funds, thus avoiding the organization, control and management costs of the closed pension systems.

Another important attraction is the tax differential. If individuals seek long-term objectives for their investments, the regressive income tax table for the pension fund (with respect to the investment's maturity) makes it more advantageous than a regular investment fund. In addition, individuals may deduct the amount they contributed to pensions in their tax returns. Since the earnings of the two products (pensions and investment funds) are not significantly different, it is more advantageous to invest in pension funds, even if the objective is not ultimately related to pensions.

With regard to the open pension funds' investments, according to a survey,[46] those without stock investments[47] accounted for 76.62% of the market in 2007, while 23.4% of were in mixed funds (fixed-income plus stocks). In terms of assets, in 2008, Fenaprevi reported that 90% of investments were in fixed income securities.[48]

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[42] See http://www2.camara.gov.br/comissoes/temporarias/especial/refprev/pronunciamentos/anapp.pdf

[43] According to the National Federation of Private Pension Funds and Life Insurance (Fenaprevi).

[44] With respect to Brazil's concentrated financial market, it should be noted that, according to Fenaprevi, in December 2008, the biggest open pension funds in terms of portfolios were: Bradesco Vida e Previdência (37.58%), Itaú Vida e Previdência (17.20%), Brasilprev (13.83%), Unibanco Vida e Previdência (6.52%), Caixa Vida e Providência (5.12%), Real Tokio Marine (4.24%), Santander Segs (3.66%), HSBC Vida e Previdência (3.09%), Sul America Seg. Prev. (2.03%), Icatu Hartford Seguros (1.81%). Thus, of the 10 largest institutions in the segment, eight are linked to the 10 largest conglomerates in the financial system.

[45] Attention should be drawn to research conducted with young Brazilians by Quorum Brasil - Informação e Estratégia (www.quorumbrasil.com/sondagens/2007_08_Os_Jovens_e_os_Investimentos.pdf) - that shows there is rising concern in the country with long-term investments, also in terms of pensions. Another study by the same institution indicates the concern of rent levels B and C with private pensions.
(http://www.quorumbrasil.com/sondagens/2007_02_As_Classes_Sociais_e_os_Investimentos.pdf.).

[46] See https://www.netquant.com.br/content/view/120/66/

[47] Including multimarket funds, with no stock investments, and fixed-income funds.

[48] See http://www.luterprev.com.br/noticia-detalhe.php?NoticiaID=62

In 2007, a very positive year for stock investments, new contributions to these funds represented R$13.77 billion, of which 88.7% were for mixed funds and 11.3% for those investing only in fixed-income bonds; in 2006, the figures were 14.5% and 85.5%, respectively.

However, it will take time for this significant change to be reflected in the demand for public bonds, which are still the open pension funds' main assets. The legislation limits the amounts - 15%, 30% and 50% - that the various mixed open pension funds may invest in stocks. However, in 2007, the funds invested less than they were permitted. For example, those that could invest up to 50% allocated an average of 25.6%, those with the 30% limit allocated 18.5%, and those with a ceiling of 15% allocated about 9%. However, in a different scenario, where the stock investments are not as attractive as in 2007, the growth of this group of assets in the open pension funds' portfolios should be slow, making room for government bonds.

The challenge for the open pension funds is how to match investors' savings goals with those of the pension fund managers in a more effective way, since they currently are not the same, even in the portfolio for benefits currently granted. Rather, competition is a key factor for this divergence, mainly in plans that do not invest in stocks. In particular, when the CDI is used as the benchmark, asset managers tend to change the focus from the long to the short-term to ensure greater adherence to the benchmark and avoid being less competitive: Long-term investments would cause greater volatility of returns in the short-term and investors lacking a full understanding about the long-term objective of the pension fund might shift their resources to a different fund if their current ones are performing below the benchmark. This fact does not occur with closed complementary pension funds, because (a) shifts to other closed pension funds are not allowed and (b) shifts to open pension funds would result in investors losing the employers' contribution.

Still, on a positive note, there is a long-run trend for investors to choose mixed plans, by choosing them when they begin contributing or switching resources from one fund to another. If this trend continues, despite the reversal during the global financial crisis, investors will no longer use the CDI benchmark, due to the dominance of mixed funds. Thus, as these funds grow, more resources will be allocated to stocks and longer-term bonds that are more in keeping with pension fund objectives and higher long-term returns. This will help (a) the Brazilian financial market to develop further and (b) the Treasury to achieve its goals of lengthening the maturities and improving the public debt profile.

4.2.1 Closed pension funds and the public debt

Closed private pension fund entities (EFPC), also known as closed complementary pension funds, are an important sector for public debt management. Although their total assets doubled between December 2002 and December 2006, reaching R$417.5 billion in 2008, the balance between contributions and benefits has been negative since 2004. Moreover, in 2008, because of investments in stocks, the sector's assets dropped by 3.3%.

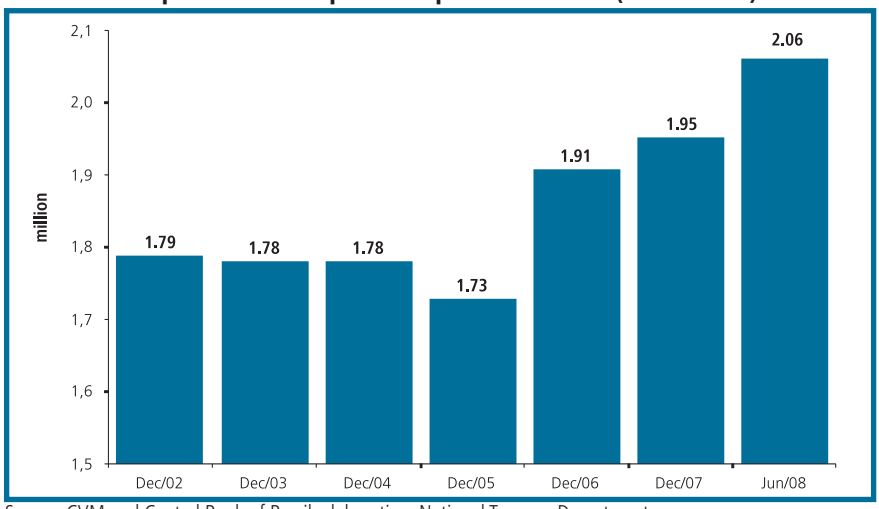
As noted in Graph 11, the stagnation or drop in the number of individuals investing in closed pension funds shifted in 2006, largely when funds organized by professional associations - *fundos instituídos* - were created.[49] However, it is uncertain that the recent growth in the number of participants will be enough to change the negative balance between contributions and benefits, especially due to the new type of closed pension fund; this is caused by the existing plans' maturities and the fact that companies may offer their employees the alternative of open pension fund plans.

[49] This is a type of closed pension fund created by professional associations such as unions and councils.

However, if complementary pension funds were created for Federal civil servants, and enlarge the number already developed for state and municipal employees, this could end the stagnation and downward trend. For this to occur, the rules of the constitutional amendment that address the subject must be specified; to this end, the National Congress needs to approve the proposed law to create a pension fund for civil servants. Since a shift from the civil servants' current pension regime to complementary pension funds will not be encouraged, due to the cash problems it would create for the Federal government, the growth of this new fund should occur gradually, when new employees enter the public service.

Since the EFPC's net receipts (contributions less benefits) are not likely to grow significantly in the short term, {the role of these entities in the public debt will be observed by movements in their current portfolio, which already has a high proportion of public bonds. Given the poor performance of the stock market in the second half of 2008, it is estimated that the percentage of public bonds in the EFPCs' total assets (self-managed portfolios plus investment funds), which was already high (43% in 2006), reached 50%. This number would be even higher if the largest pension fund (Pension Fund of Bank of Brazil Employees - Previ) - whose investments in stocks are greater than the average and above the limits set by regulations, was removed from the calculation. Then, fixed-income bonds would increase from about 65% of the closed pension funds' portfolios in November 2008 to 76.8%, while the share of stocks would drop from 27% to 15.7%.[50]

Graph 11. Participants in pension funds (in millions)



Source: CVM and Central Bank of Brazil; elaboration: National Treasury Department

Moreover, in mid-2007, a period of historically low interest rates, pension funds had to buy government bonds that no longer guaranteed their actuarial target return, (which was about 6%, indexed for inflation). This caused them to re-think their strategies and look for investments that provided higher yields (and risk exposure) than public debt securities.[51] As a result, it is expected that pension funds will not contribute much to the Treasury's strategy of changing the public debt profile. In fact, EFPCs' asset reallocations before the crisis deepened in September 2008 mainly reflected their intention to search for new investment opportunities in

[50] The Previ's stock investments, which account for over 50% of its total portfolio, are due to the company's strong participation in the Brazilian privatization process in the late 1990s. Previ is already following an adjustment plan so that by 2012 it will comply with laws that set a limit of 50% in stocks.

[51] Nunes e Simão, 2007.

other kinds of assets.[52] Given the SELIC's cycle of reduction that began in 2009 to boost the economy after the crisis, yields on public bonds may fall again below the pension funds' actuarial targets. Also, these funds are not expected to lengthen the maturity of their portfolios, because the pension fund segment is paying more benefits than receiving contributions. Thus, pension funds will focus more on developing the secondary market, disseminating new benchmarks for the management of fixed-income bonds (IMA) and promoting a culture of long-term savings, than to refinancing the public debt.

Table 3. Largest EFPC in total assets (R$ billion) December 2008

EFPC	Main sponsor	Total assets	% of total
Previ	Banco do Brasil	116.72	26.4%
Petros	Petrobras	45.20	10.2%
Funcef	Caixa Econômica Federal (CEF)	32.52	7.3%
Fundação CESP	Eletropaulo/CESP/CPFL/CTEEP	20.09	4.5%
Valia	Vale	9.89	2.2%
Sistel	Telebras and other telecom comp.	9.35	2.1%
Itaubanco	Itau Bank	9.27	2.1%
Banesprev	Banespa	9.18	2.1%
Forluz	CEMIG	8.20	1.9%
Centrus	Central Bank of Brazil	7.40	1.7%
Subtotal	Subtotal	267.81	60.5%
Total	**Total**	**442.87**	

Source: Complementary Pension Secretariat /Ministry of Social Security

4.3 Non-resident investors

Foreign investors have been active in Brazil's financial market since the 1990s. As the economy opened more rapidly in the middle of the decade, the volume of their resources in the country's capital market increased - almost entirely invested in the stock market, whose growth accelerated due to the privatization process. However, the currency crisis, which peaked in January 1999, temporarily halted their entry, and their stock portfolio, which was nearly US$50 billion in July 1997, dropped to less than US$10 billion by February 2003, also due to the depreciation of the real.

The second period in which non-resident investors became more prominent was after Brazil's 2002 elections, although the situation differed somewhat from the previous phenomenon: Instead of concentrating their investments in equities, they bought fixed-income securities, since this market was a little more developed. Also, the government had made significant changes in the public bonds market in 2006 which, as mentioned earlier, exempted foreign investors from income tax.

In addition to these measures, institutional advances and a well-structured economic policy in a highly favorable international scenario considerably improved Brazil's risk rating: From 2003 until June 2007, Brazil rose three to four notches in the rating of the three main agencies (Standard & Poor's, Moody's and Fitch),

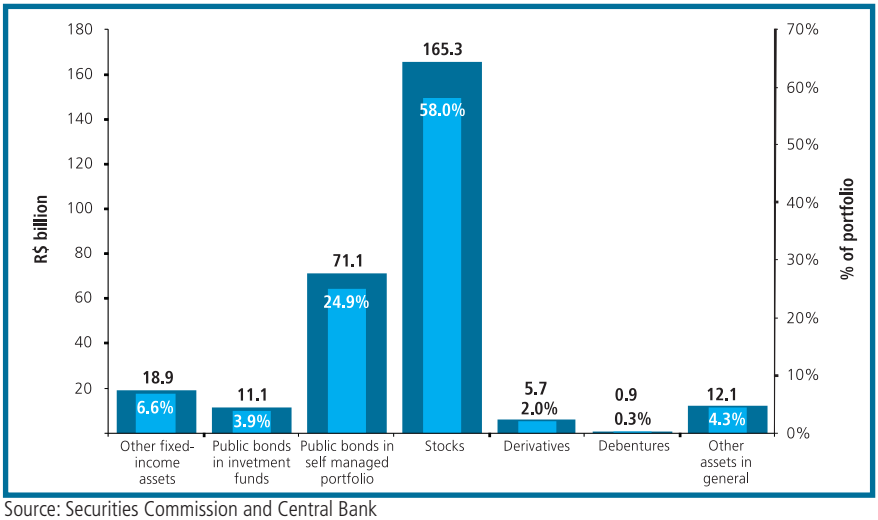
[52] The Towers Perrin study indicates a reduction of three percentage points in the participation of the fixed income portfolios in total pension fund investments between 2005 and 2006 and a rise of eight percentage points of investments in credit instruments (CDB, FDIC, CRI and others), between 2006 and 2007.

and reached investment grade by Standard & Poor's in April 2008 and by Fitch in May. This was an important indication of the economy's soundness, especially at a time when the American financial crisis was evolving (since mid-2007).[53]

Non-residents' public bond portfolios only grew more significantly after 2006, when they received the same tax treatment as that afforded stock investments. However, there is still growth potential for their participation, mainly because the country's gains in the public bonds market (due to the investment grade), were not fully achieved due to the international crisis. Also, the exchange rate depreciation and exit of investments in stocks resulting from the crisis help explain the substantial change in the portfolio composition of non-residents from mid-2007 to the end of 2008.[54]

Regardless of the current global financial crisis, non-residents' investments in Brazil's long-term domestic

Graph 12. Portfolio composition of non-resident investor's assets in December 2008



Source: Securities Commission and Central Bank

debt bonds will be influenced by the recent path of the sovereign external debt. From 2005 through 2008, the External Federal Public Debt (EFPD) dropped nominally from R$157.4 billion to R$132.5 billion, even with the depreciation of the real. Based on the country's reduced vulnerability and the impact of this fact on its risk rating, the lowering of the EFPD will bring added benefits, linked to a National Treasury objective, which is to increase foreign investors' participation in domestic debt bonds.

Brazil's position on the international scene, with its public sector being a net external creditor at the height of the global crisis, demonstrated the greater resilience that has been built against shocks. This bodes well for the presence of foreign investors in the domestic financial market of public bonds, once the global economy begins to normalize. These investors began to participate more widely just two months after the crisis reached its peak in 2008.

[53] Since May 2007, Standard & Poor's considered the long-term sovereign debt in local currency to be investment grade. For the other two agencies (Moody's and Fitch), the rating for local currency investments was the same as for those in foreign currencies. For more information, see the box in Section 1.2.1, Part I, Chapter 1.

[54] In June 2007, the percentage of non-residents' portfolios invested in stocks was over 76%, while it did not reach even 20% in public bonds; by the end of 2008, these percentages changed to 58% and 28.8%, respectively.

Before September 2008, it was estimated that fewer than 15% of non-resident investors in the DFPD were pension funds, and 70% were asset managers and mutual fund managers. The remaining 15% were hedge funds, banks and other institutions. Given the strengthening of Brazil's external economic and financial position and the removal of some impediments to investments,[55] it would appear that non-resident investors' participation in the DFPD will rise well above the 7.4% that was reached on the eve of the Lehman Brothers collapse.

Also, since Brazil's interest rates reached historically low levels, it is expected that the composition of foreign investors will change, with increased participation of pension funds and reduced activity by hedge funds. Then, non-resident investors will most likely invest in the bonds in which they have already shown the most interest - fixed-rate and inflation-linked, both with longer terms - which are consistent with the long-term strategy of Brazil's Federal Public Debt management.

By removing some of the impediments that remain, the market should gain liquidity with the entry of new investors, generating, in a longer timeframe, a cycle that will attract new foreign resources, which, again, will help the Treasury achieve its goals.

5 Conclusions

Brazil has experienced continuous development and its financial system has become sophisticated, which favors a more heterogeneous investor base. Thus, the gains described at the beginning of this chapter should continue to materialize along with the overall advances: Risks will be more dispersed and financing for the government in different scenarios will be more secure. In this environment, there will be more competition among asset managers and less discrepancy between the objectives of investors and asset managers.

Debt management has already benefited from these ongoing improvements. Given (a) Brazil's sound financial market (even during the global crisis), (b) the prospects of continuity of the economic policy and reforms that will ensure the country's economic foundations and sustained growth, along with (c) the improved risk climate, the private sector should also register gains. In this scenario, public sector funding conditions in general and public debt refinancing in particular, will improve considerably.

The trends described in Section 4 offer an optimistic scenario. Improvements in the public debt profile should emerge from (a) reducing the participation of bank-owned portfolios (with their increased volumes of fixed-rate securities), (b) greater participation of investment funds, (c) the TD program, (d) open complementary pension funds and (e) foreign investors, all of which occurred despite profound uncertainties in world markets. At the same time, maturities should lengthen on all sides, since pension funds and foreign investors naturally demand longer-term bonds, and even bank-owned portfolios may take this path, although at a smaller scale. Thus, lengthening and improving the profile, which is already being achieved, must continue, and the search for a long-term debt structure will occur under more favorable conditions.

In this context, public debt is no longer the focus of discussions about the development of the Brazilian capital market, and its structural improvements stimulate a positive cycle: By reducing the crowding-out caused by public debt refinancing, savings can be used to fund private projects that will ensure even more sustainable economic growth.

[55] One example is the expansion of the investor base that occurred when Brazil's risk evaluation rose. Other impediments could be removed or minimized over the next few years, such as standardization of the counting of days, international clearing, currency exchange contracts and negotiation screens.

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Annex 1. Statistical information

Most of the statistics on the holders of Brazil's DFPD bonds are from Annex 5.1 of the Monthly Report on the Federal Public Debt (RMD). The data are gathered from the registers in the Central Bank's Special Liquidation and Custody System (SELIC), which is the central depositary of public debt bonds - accounting for about 97% of the total domestic debt. The data were presented in the chapter's first graph.

Information on the Treasury Direct (TD) program in Section 2.3, was drawn from the Brazilian Settlement and Custody Company (CBLC), the Treasury's partner in the program that serves as the custodian for the bonds issued through the TD and accounts for 0.1% of domestic debt. The CBLC has a specific account in the SELIC; thus, TD stock is captured by the statistics supplied by the Central Bank.

Other data were taken from Table 5.1 of the RMD, whose source is also the SELIC. With regard to the breakdown of the investment funds presented in that table, the result is an effort by the Securities and Exchange Commission (CVM) and the Central Bank: the CVM provides the composition of investors of each investment fund to the Central Bank, which splits their portfolios of each fund by the relative proportion of each type of investors, according to the SELIC registers.

Part III
Chapter 6

The secondary market for Federal Public Debt

by Fabiano Maia Pereira
Guilherme Binato Villela Pedras
José Antonio Gragnani

1 Introduction

A main prerequisite for public borrowing to be efficient is a developed secondary market for public securities. The reference prices of the different assets are formed by the trading in this market, which, in turn, determine the cost of government borrowing. Likewise, the ease with which investors can enter and leave the market, in other words, its liquidity, is an important variable for determining the attractiveness to different types of investors. Thus, one of the jobs of debt management is to continually improve the secondary market.

This chapter describes the current state of Brazil's secondary market for public securities and efforts over the years to make it more liquid and transparent. Section 2 presents the main statistics describing this market, which reflect its present situation and structure, while Section 3 describes its characteristics. Finally, Section 4 deals with the ways in which it has been improved in recent years. It should be noted that this chapter focuses more on the domestic secondary market than the external one since it is the most relevant for managing Brazil's Federal Public Debt (FPD).

2 The current secondary market

In most emerging market countries, greater volumes are traded on the domestic market than on foreign markets: Of US$ 4.1 trillion traded in public securities in emerging markets in 2008 about 70% (US$ 2.8 trillion) involved local trading instruments,[1] ample proof of the importance of this source of borrowing.

Brazil's secondary market for public securities is critical to this sector (local markets), especially when compared to other emerging market countries. In fact, in 2008, the equivalent of 20.8% ($591 billion) of the total volume traded in local emerging markets was traded in Brazil's market.

2.1 International prerequisites

The World Bank recently conducted a pilot study of 12 countries[2] with a wide range of economic conditions and geographic locations. It found that for the secondary market to perform well, certain criteria and prerequisites must be met; also, that a well-operated market allows for a more efficient, transparent assessment of financial assets, better risk management and increased liquidity, and creates conditions in which the primary market can more fully develop. Also, it notes that when the trading environment involves

[1] Source: EMTA.
[2] For details, see World Bank (2007).

public securities with longer maturities and fairer parameters, governments can issue financial instruments at lower cost and with low refinancing risks.

The essential prerequisites include:

a) An established system of dealers who have rights and obligations associated with meeting trading targets; this gives the market greater credibility and stimulate liquidity;

b) Alternatives that increase the number of participants, even at times of great volatility, allowing unfavorable positions to be closed under competitive conditions. This characteristic is key to reconciling the issuers' need to lengthen the debt with the investors' demand for liquid markets;[3]

c) A diversified investor and financial agent base that includes financial institutions, institutional investors, brokers, companies and individuals, and different types of funds;

d) Non-resident investors, which can generally trade longer securities; however, their presence requires greater liberalization of the country's financial accounts and good economic foundations;

e) Standardization of public debt securities,[4] which concentrates maturities, and a reoffer system, which increase liquidity and facilitate the issue of long assets with fixed-rate yields. In turn, this lengthening of the debt, together with the availability of fixed-rate bonds, reduces exposure to interest rate risk and government refinancing;

f) The existence of an over-the-counter market that allows financial products to be customized to meet the needs of a larger number of participants;

g) The use of electronic systems that increase the market's efficiency, as they allow participants to easily see what is being offered, minimizing restrictions and asymmetric information about the parameters for pricing securities. These factors increase the number of investors and, consequently, market liquidity;

h) Clear rules of conduct to prevent fraud and market manipulation. These rules can be set by a regulatory body or through self-regulation by associations of market participants.

Given the importance of these factors (increasing liquidity, consolidating the secondary market and improving the public authorities' capacity for borrowing), the rest of the chapter will describe the features of this market and will develop the ideas that helped improve it. As will be shown, the above mentioned prerequisites generally exist in Brazil. For those non existent or being developed, the various participants in the financial system (class associations, investors and government agencies) are discussing how they might be attained.

2.2 The economic situation and recent data on the domestic secondary market

Some periods in Brazil's recent history should be analyzed carefully because they directly affected the secondary market for domestic public debt securities. Among them are the measures announced in 1999, when the National Treasury and Central Bank created a study group to improve the secondary market (see Section 4.1), as well as the 2002 pre-election period, when uncertainty caused volatility and increased Brazil's risk.[5]

[3] Financial markets contain sophistated structures: For example, short selling is an important mechanism for reducing risk, because investors that hold short positions operate in a way that dampens impacts at times of volatility. The futures interest market is no less important, as this protects call positions.

[4] As day count and asset delivery conventions.

In 2003, the new government[6] issued a series of measures to meet analysts' expectations about how it would conduct its monetary and fiscal policies, including: (a) the revision and announcement of inflation targets consistent with the real situation at the time of 8.5% and 5.5% for 2003 and 2004, respectively; (b) the increase of the floating interest rate to 26.5% a year; (c) the increase of the primary surplus target from 3.75% of GDP to 4.25% for 2003; and (d) the proposition to Congress of a Constitutional amendment (PEC) for reforming the social welfare service and tax system. Once those measures were adopted and it was established that the monetary and fiscal policies would remain the same as before, investors regained confidence in the government and the real-dollar exchange rate, the country risk, the current inflation rate, as well as forecast inflation rates fell.[7]

The secondary market was also affected by the measures taken to counter the uncertainties in 2003, when the National Treasury included the following directives in its Annual Borrowing Plan (ABP) for that year: (a) reduce the percentage of securities maturing in the short term to levels considered comfortable, minimizing the risk of refinancing; (b) reduce the share of debt linked to the exchange rate and interest rates; (c) increase the share of fixed-rate and inflation-linked debt; (d) continue announcing the auction schedule for the next month at the end of the previous month; and (e) remain close to market participants and make transparent the strategy for carrying out the ABP. These directives, as stated below, succeeded in changing market behavior, increasing liquidity and reducing the spread between the buying and selling prices of the assets traded.

Table 1 shows that, at the end of 2002, the FPD included only 1.5% and 8.8% of fixed-rate and inflation linked bonds, respectively, while, by December 2008, these instruments represented 29.9% and 26.6% of outstanding debt on the market. As a result, exchange rate-linked debt (which includes foreign debt) plummeted from 45.8% of the FPD to 9.7%, and floating-rate debt was reduced from 42.4% to 32.4%. These structural movements brought about lower systemic risk and better predictability of payments, among other factors, that improved the management of the debt.

Table 1. Composition of the Federal Public Debt (FPD)

Type of remuneration	Dec 2002	Dec 2003	Dec 2004	Dec 2005	Dec 2006	Dec 2007	Dec 2008
Fixed rate (%)	1.5	9.5	16.1	23.9	32.5	35.1	29.9
Floating rate (%)	42.4	46.5	45.7	43.8	33.4	30.7	32.4
Inflation linked (%)	8.8	10.3	11.9	13.2	19.9	24.1	26.6
FX linked (%)	45.8	32.4	24.2	17.3	12.2	8.2	9.7
Others (%)	1.4	1.4	2.2	1.8	2.0	1.9	1.4

Source: STN (Brazilian National Treasury)

[5] Several indicators deteriorated during this period: (a) the real-dollar exchange rate, which was R$ 2.30 per dollar at the start of 2002, approached R$ 4.00 as the election neared; this affected the inflation rate, which was running at 3% per month by the end of the year; (b) inflation forecasts, measured by the IPCA consumer price index, jumped from 5.5% per year to 11% in less than two months; and (c) the Federal public debt at the end of 2002 was 55.5% of GDP, mainly linked to the exchange and floating rates.

[6] In 2002, Luiz Inácio Lula da Silva was elected President of the Republic, and took office on January 1st, 2003. The Workers' Party (PT), which won the elections, had historically advocated policies that would change monetary and fiscal policies. Therefore, the economic agents, especially those operating in the financial markets, were apprehensive.

[7] Even with the new government's policies, the Federal Pubic Debt : GDP ratio still rose to 57.2% by the end of 2003. However, due to the monetary and fiscal policies, this indicator was reversed in 2004, as the new public debt management directives began to take effect and were considered more robust.

After the change in the debt profile, the assets negotiated on Brazil's secondary market for public securities altered significantly (see Table 2). While interest and exchange rate-linked bonds (LFT/LFT-A/LFT-Bs and NTN-D/NBCEs, respectively) represented 88.2% of the daily trading volume in December 2002, they dropped to just 30% of the total by the end of 2008. Thus, fixed-rate bonds (LTNs and NTN-Fs), which represented only 2.6% of the total secondary market at the end of 2002, jumped to 62.2% by 2008.

Inflation-linked bonds (NTN-Bs and NTN-Cs) maintained a share of around 9%. However, in 2003 and 2004, their relative importance fell significantly (to 4.9% and 2.3%, respectively) because of the market perception that the monetary and fiscal policies that had been adopted guaranteed macroeconomic stability, which, in turn, reduced the demand for securities that protected investors against the risk of inflation, among other factors. On the other hand, the increase in volume from 2005 on is related mainly to the National Treasury's strategy of giving priority to NTN-Bs, instead of LFTs.

At present, agents basically trade three types of securities: (a) Letras do Tesouro Nacional (LTN) and Notas do Tesouro Nacional – Series F (NTN-F), fixed rate bonds; (b) Notas do Tesouro Nacional – Series B (NTN-B), inflation (IPCA)-linked bonds;[8] and (c) Letras Financeira do Tesouro (LFT), floating rate bonds.[9]

Besides the change in the securities' profile, the volume of daily trading consistently increased,[10] from R$ 6.8 billion in December 2002 to R$ 13.3 billion in December 2008, indicating that the measures adopted by the government, along with a new transparency (described in the following sections), produced some of the results the authorities desired. For market participants, the changes translated into longer maturities and greater security.

Table 2. Volume of operations in the secondary market (daily average in R$ billion)

Period	LTN / NTN-F	(%)	NTN-B / NTN-C	(%)	LFT / LFT- A/B	(%)	NTN-D / NBCE*	(%)	Total
Dec 2002	0.2	2.6	0.6	9.2	5.5	80.1	0.6	8.1	6.8
Dec 2003	2.7	25.0	0.5	4.9	7.1	65.9	0.5	4.2	10.7
Dec 2004	7.1	52.1	0.3	2.3	5.9	43.4	0.3	2.3	13.7
Dec 2005	7.0	53.6	1.2	9.4	4.8	36.7	0.1	0.4	13.0
Dec 2006	9.7	60.6	1.9	11.9	4.4	27.4	0.0	0.0	16.0
Dec 2007	8.7	59.0	1.6	11.0	4.4	29.9	0.0	0.1	14.7
Dec 2008	8.3	62.2	1.1	8.6	3.9	29.2	0.0	0.0	13.3

Source: STN

* NBCEs were exchange-rate linked bonds issued by the Central Bank until 2002.

Note: The percentages in each column represent each group's share of the total volume of the Domestic Federal Public Debt (DFPD) traded. They, therefore, add up to 100%.

It should be noted that the fixed-rate instruments are issued according to a rule based on benchmarks, consistent with international best practices (see details in Section 2.1). Since January 2007, NTN-Fs have

[8] IPCA is a comsumer price index, calculated by the Brazilian Institute for Geography and Statistics (IBGE).

[9] This is the basic overnight interest rate, calculated by the Central Bank, for operations that mature after one day.

[10] It is known that if there is an increase in an asset's stock, it is natural for the volume traded on the market to increase. In other words, if the turnover (the ratio between the values traded and the outstanding stock) of a public security is constant, a simple increase in its stock generates an increase in the financial volume traded. However, the depth of the market increased once it was understood that it was possible to enter and leave the asset with increasingly higher financial values.

been issued with three, five and 10-year maturity periods and LTNs have maturities of 6-24 months. NTN-Fs have a longer maturity period and also differ from LTNs in that they have semi-annual interest payments, while the LTN is a zero coupon security.

Another important change relates to the type of bonds traded: The secondary market has a higher NTN-F participation (due to new policies, such as the regressive income tax and income tax exemptions for non-residents on investments in domestic public securities).[11] Thus, their share of the secondary market increased from almost zero in December 2002 to 9.5% in December 2008.

With regard to inflation-linked bonds, investors have preferred those linked to the IPCA: NTN-Bs, which accounted for a miniscule share of the secondary market in December 2002, reached 8.1% by the end of 2008, while those linked to the IGP-M index,[12] (NTN-Cs), fell from 9.2% to 0.5% from 2002-2008 (see Table 3).

Table 3. Volume of definitive operations in the secondary market (daily average in R$ billion)

Period	LTN	(%)	NTN-F	(%)	NTN-B	(%)	NTN-C	(%)
Dec 2002	0.2	2.6	0.0	0.0	0.0	0.0	0.6	9.2
Dec 2003	2.7	25.0	0.0	0.0	0.2	1.6	0.4	3.3
Dec 2004	7.1	21.5	0.0	0.1	0.0	0.2	0.3	2.1
Dec 2005	6.9	53.4	0.0	0.2	1.2	8.9	0.1	0.5
Dec 2006	8.8	54.9	0.9	5.7	1.6	10.2	0.3	1.7
Dec 2007	7.4	50.3	1.3	8.7	1.4	9.5	0.2	1.6
Dec 2008	7.0	52.8	1.3	9.5	1.1	8.1	0.1	0.5

Source: BCB (Central Bank)
Prepared by: STN
Note: The percentages in each column represent each bond's share of the total volume of the DFPD traded, and add up to 100%.

2.3 Trade dynamics

Bonds are traded on Brazil's domestic market based on rates, unlike the practice adopted for the international market, where trading is based on the clean price.[13] Interest rates are standardized according to business days (BD/252), including the day of settlement and excluding the day of maturity.[14] (The Central Bank[15] determined that the yield rate associated with the price of Federal public securities registered in the Special Custody and Settlement System (Selic) would be according to business days).[16]

As mentioned earlier, most trading on the secondary market now involves fixed-rate instruments. However, an unusual feature is the existence of highly liquid interest-rate derivatives contracts (Interbank Deposit Futures (DI Futuro) traded on the Securities, Brazilian Mercantile and Futures Exchange (BM&F))—due

[11] This subject will be discussed later in this chapter.
[12] General Price Index - Market, calculated by the Getúlio Vargas Foundation (FGV).
[13] For details on this subject, see Part III, Chapter 2.
[14] As determined by the Ministry of Finance in Administrative Ruling No. 116 of May 1999.
[15] According to Central Bank Communiqué No. 7,818 of August 2000.
[16] The NTN-D (Nota do Tesouro Nacional – Series D) is an exception. This uses 30/360 as the standard for counting the number of days

to the (a) assets' liquidity, (b) credibility of the clearinghouse where they are traded, and (c) low financial inputs required for conducting the operations.[17] Thus, this market constitutes a large part of the fixed-rate reference for interest rates for different maturities, and fixed-rate public bonds are usually traded in basis points with respect to the interest rate futures derivative contracts traded on the BM&F.

The DI Future derivative is a fixed-rate swap and involves a one-day interbank deposit.[18] If investors buy an interest rate derivative, they have an asset position in Interbank Deposit Certificates (CDI) and a liability position in fixed-rate bonds, and vice-versa if they sell it. Fixed-rate bonds are most often traded through the sale or purchase of the bond jointly with the future interest-rate derivative (which usually mature at the same time). By purchasing a bond and derivative at the same time, the buyer obtains a product that pays CDI +/- spread. Since a substantial part of the fund industry and a large number of commercial banks use the CDI as the benchmark, this instrument is in great demand as a substitute for the LFTs. In spite of the NTN-Fs not having durations[19] equal to their maturities, they are traded at spreads that are higher than that of derivatives with the same maturity. In this case, hedging generally involves buying the same quantity of *DV01*[20] (dollar value of one basis point) of both the bond and derivative.

This special feature, along with a focus on the short term (a strong characteristic of the domestic investor base), brings an important synergy to the public debt market: The National Treasury sells fixed-rate instruments and buyers can hedge on the derivatives market, passing the fixed-rate risk to other agents. This synergy is demonstrated by the fact that the most liquid fixed-rate bonds tend to be those whose maturity dates coincide with the most liquid maturities of the DI Futuro contracts, and vice-versa.[21] This interrelationship is productive because it reduces investors' exposure to interest rate risk, increasing the trading volume.

However, another aspect of this synergy may harm the public securities market. This occurs when the derivatives market is highly liquid, and the two instruments compete, reducing the bond market liquidity. Further, in Brazil, the market widespread use of fixed-rate bonds associated with a derivative (so as to trade at the overnight rate) perpetuates the practice of trading instruments with short maturities on the domestic market.

With respect to LFTs, trading is based on a rate that reflects the premium or discount relative to their original remuneration. Since this bond pays the daily floating rate, when it is bought with a discount, the buyer receives the floating rate plus a premium. However, when it is bought at a premium, the buyer receives the floating rate minus a discount. These bonds generally have low daily volatility and are favored by more conservative investors, who, when using the DI as the benchmark, require daily yields with low volatility. These investors are currently less concerned about the asset's liquidity.

On the other hand, NTN-Bs are bonds based on real interest rates because they pay the current inflation rate plus a fixed rate. Since 2003, in order to better standardize these instruments and increase their liquidity, the bonds were issued to mature on specific dates, following these rules: If they mature in even-numbered years, this must occur on August 15; if they mature in odd-numbered years, this must occur on May 15.[22] Investors buy

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to maintain equivalence with international standards, since it is linked to the foreign exchange rate.

[17] To trade in this market, it is necessary to only deposit guarantees that are, initially, considerably less than the notional (reference) value. Besides this, investors must have funds avaialable to honor payments in the event of negative adjustments.

[18] The average one-day interbank deposit rate is calculated by the Center for the Custody and Settlement of Securities (Cetip). This subject will be discussed later in this chapter.

[19] For details on this subject, see Part III, Chapter 2.

[20] This is a measure of the sensitivity of an asset due to a one basis-point variation in the interest rate.

[21] As shown in later sections, the secondary market for fixed-rate public securities and the volume of future interest rate contracts traded have increased consistently over the last few years.

them for several reasons: (a) they use inflation rates as benchmarks (like pension funds, for example); (b) they get protection against inflation risks; (c) they can earn profits because the bonds offers returns that guarantee real interest rates; or (d) the bonds offer the longest durations on the market (up to 40 years).

These securities are also associated with future interest-rate derivatives. As the secondary market developed over the past few years, during a time of economic stability, implicit inflation has become part of the deals between investors: If investors believe inflation will be higher than the difference between the rate of the fixed-rate bonds and those linked to the IPCA, they will go long buying an IPCA linked bond and short selling a fixed-rate bond. They take the opposite position when they think future inflation will be lower than the implicit inflation implied in the difference between the rates of the two bonds.

2.4 The secondary market for foreign debt securities

Brazil has a very active secondary market for foreign debt securities, and the highest trading volume of all emerging countries. In 2008, $ 192.5 billion of Brazilian sovereign bonds were traded on international markets, representing 22.5% of the total volume traded in sovereign foreign debt securities of emerging countries.

In fact, Brazilian securities are considered benchmarks for all the class; actually, before the operation to exchange the C-*bond* for the A-*bond* in 2005, the former was the most liquid instrument in the emerging markets class. After this operation, the function was carried out by the global 2040 bond.

In recent years, the National Treasury has strived to improve the liquidity of certain instruments, with the aim of developing the public securities yield curve. Thus, by reopening benchmark term bonds (10-30 years), and making them more liquid, the spread between the buy and sell prices has shrinked, creating greater efficiency.

In 2008, the $80 billion traded in Brazilian foreign bonds were in its most liquid security, the global 2040. However, EMTA[23] data show that the global 2040 share, in the total of sovereign bonds traded, has fallen, relative to the 10- and 30-year bonds. In 2008, these represented 42% of the total traded, compared to 52% in 2007 and 56% in 2006, which points to a dilution of trading options available to foreign investors. Also, the share of the 10- and 30-year bonds increased slightly in 2008 to 8% and 13%, respectively, in line with the strategy of improving these benchmarks.

3 Market characteristics

This section describes the characteristics of the secondary market for public securities in Brazil, its agents and trading environment.

Brazil's financial market has experienced various changes along the process launched to reduce inflation. This began in the mid-1990s with an economic policy focused on flexible exchange rates, inflation targets and fiscal surpluses to guarantee the public debt's sustainability. Since inflation decreased, the financial system needed to be restructured to be more productive. Some banks have achieved this by reducing the number of staff, raising productivity and service charges, and investing more in technology.

[22] There may also be some bonds that mature on November 15 in odd-numbered years.
[23] Emerging Markets Trade Association

The sector has experienced a series of consolidations, privatizations[24] and incorporations[25] which have led to its concentration. During this time, new rules were devised and the Temporary Contribution on Financial Transactions Tax (CPMF) was introduced, all of which stimulated the investment fund (IF) industry, which previously had only limited reach. As a result, it achieved a high market share compared to other forms of financial investment.

IFs have become the largest holders of public securities in Brazil (see Table 4, which lists the various types). The exceptions are the NTN-Fs and the NTN-Bs. Regarding the former, financial institutions are the largest holders because short-term NTN-Fs are not yet available in significant volumes; thus, they have a higher fixed-rate risk than the others, making them less interesting to IFs. Also, financial companies which represent non-resident investors are greatly interested in the NTN-Fs and hold 12.86% of the volume, which is a relatively large amount in terms of their overall holdings. With the NTN-Bs, the distribution is more even, due to the greater presence of the pension funds (which are major players in this market, in Brazil).

Table 4. Public holders of federal securities (in relation to the total, by security) December 2008

Security	Financial institutions (%)	PJNF* (%)	Investment funds (%)	Others (%)
LTN	59.0	7.5	30.7	2.8
NTN-F	56.5	8.2	22.2	13.2
NTN-B	40.4	23.5	33.7	2.4
NTN-C	7.5	31.9	60.4	0.2
LFT	34.9	6.3	58.0	0.9

Source: STN/BCB

* Non-financial legal entities, which can be public and private companies (including the ones from the insurance and capitalization sector), pension funds and open entities of complementary social security.

Due to the high real interest rates of the last few years, the greater liquidity of public securities compared to other fixed-income assets and to the large stock of the former, these securities still represent a substantial part of the fixed-income market in Brazil - around 45% in 2008 (see Table 5). However, the stabilization of the country's macroeconomic situation and the resulting reduced interest rates of Federal public securities have been increasing investors' demand for private securities, such as Bank Deposit Certificates (CDBs) and debentures. The new private securities market is still being developed but has enormous potential given improved standardization, creation of a secondary market and introduction of derivatives.

Table 5. Fixed-income market in Brazil in R$ billion

Year*	Corporate securities			Granting credit and/or securitization** (b)	DFPD securities (c)
	Debentures	Promissory notes	Total (a)		
2004	46.1	46.1	48.1	16.7	810.3
2005	86.7	86.7	87.7	33.9	979.7
2006	157.1	157.1	158.4	42.5	1093.5
2007	210.0	210.0	212.4	63.4	1224.9
2008	248.0	248.0	266.7	102.1	1264.0

[24] These occurred mainly through the Incentive Program for the Reduction of the State Presence in the Banking System (Proes).

[25] These occurred mainly through the Incentive Program for the Restructuring and Strengthening of the Brazilian Financial System (Proer).

Year*	Financial institution securities / Financial instruments				Fixed income market (a + b + c + d)
	CDB	DI	Others ***	Total (d)	
2004	129.3	109.3	1.2	239.7	1114.7
2005	286.5	178.1	2.7	467.3	1568.5
2006	342.7	257.5	3.4	603.6	1898.0
2007	396.5	446.8	3.8	847.1	2347.8
2008	722.1	458.0	4.5	1184.5	2817.3

Source: STN, BCB, Cetip and BM&F Prepared by: Andima
* Position in December of each year.
** Includes agricultural securities kept at the BM&F.
*** Includes bank deposit receipts (RDBs) and letters of exchange.

3.1 The over-the-counter market and trading systems

The large majority of Brazilian public securities are traded over-the-counter (see Table 6) by telephone, either directly or through brokers; thus, there is no centralized area for trading and auctioning of buy and sell proposals. Some brokers hold their own auctions at predefined times, via telephone (a securities call), in which market participants trade securities. This is an important practice as it brings together many players that trade instruments of reduced liquidity, and contributes towards a more transparent formation of reference prices. However, it would be ideal if the market adopted an organized trading environment that could be accessed by all segments operating in the financial market - as this would be even more transparent and easier to regulate.

Two measures were introduced in 2004 to help develop the secondary market for public securities in an electronic trading network (one of the important factors, described in Section 2.1); these included the Asset Clearinghouse, developed by the BM&F, and the Cetip trading platform (CetipNet). The main outcomes of an electronic trading system are: (a) greater transparency, (b) better pricing of the assets traded, (c) increased liquidity of the secondary market, and (d) greater accessibility to a broader base of investors. Such transparency and accessibility have stimulated trading on the secondary market and contributed to consolidating the forward rate structure for the domestic interest rate.

It should be noted that the electronic system-based secondary market expanded even more due to other follow-up measures, such as the requirement that pension fund organizations trade on electronic platforms.[26]

At the same time these measures were introduced, the National Treasury and the Central Bank proposed a regulation on the role of *specialist dealers,* which was approved in the first half of 2008: Institutions classified as such attempt to place bid-ask spreads in the trading system for certain securities during 30-minute periods in the morning and afternoon - so as to bring greater transparency to the market parameters for government-issued assets and generate greater liquidity. If they meet their monthly targets, they have the right to take part in special operations that the STN opens only to dealer institutions.[27]

[26] Article 12 of the regualtion added to National Monetary Council (CMN) Resolution No. 3,456, of June 2007, and Complementary Social Security Management Council (CGPC) Resolution No. 21, of September 2006.
[27] The public security dealer system will be described later in this chapter.

Table 6. Federal public security trading by mode in R$ million

Year	Electronic system trading				Trading outside electronic systems
	Sisbex*	CetipNet*	Total		
			R$ million	%	
2003	-	-	-	-	100.0%
2004	1,308,837	197	1,309,034	3.4%	96.6%
2005	1,143,096	10	1,143,106	3.0%	97.1%
2006	3,419,672	463	3,420,135	7.1%	92.9%
2007	4,146,390	12,899	4,159,289	6.9%	93.1%
2008	514,563	38,171	552,734	0.8%	99.2%

Source: Treasury, Central Bank, Cetip and Sisbex Prepared by: Andima
* Electronic asset trading systems.
Note: The percentages are related to the total volume traded. Thus, they add up to 100%.

3.2 Lengthening maturity periods traded on the secondary market

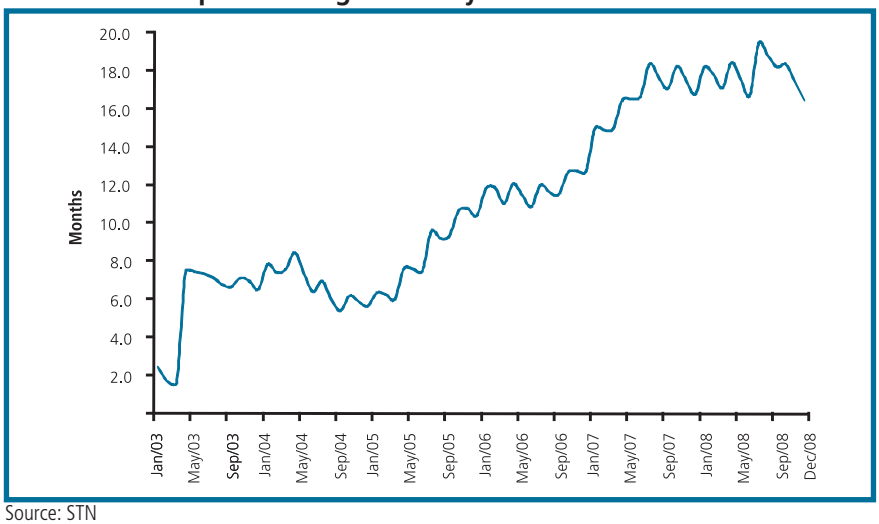
As illustrated in Table 6, the over-the-counter market accounts for almost all the secondary market trading volume. Economic stabilization, government and financial market initiatives, along with effective government measures aimed at lengthening public debt maturity and increasing the liquidity of the secondary market, may help expand trading through electronic systems.

Although the maturity of securities traded on this market increased considerably in recent years, it is still short - a direct result of the so-called "DI culture". An interbank deposit, or DI, is a one-day inter-bank loan, whose interest rate, calculated by Cetip, is the main parameter for the financial yield. In other words, financial market investments, even longer-term investments, are often compared to the overnight rate. Indeed, in Brazil, insurance companies, pension funds and investment banks, among others potential players in the long-term public securities market, are still not as interested in longer-term maturities as they are in more developed financial markets. Thus, the National Treasury wants to increase the investor base in order to lengthen public debt while, at the same time, increases the liquidity of assets with longer maturities. In fact, the financial market initiatives coupled with these government measures (discussed in Section 4) have promoted this liquidity.

As discussed in the previous section, there has been a consistent rise in fixed-rate instruments linked to price indexes on the secondary market, coupled with an improved debt profile (with longer securities) over the last few years. Thus, the government has been relatively successful in lengthening the debt and at the same time increasing the number of investors (more recently, income tax exemptions brought in non-resident investors, which are more familiar with longer securities and lower interest rates), allowing the debt to be better managed.

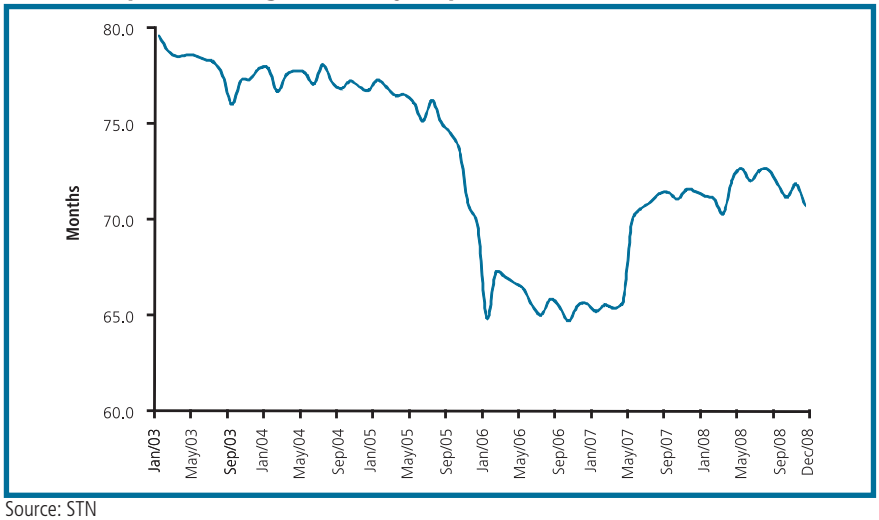
The graphs 1 and 2 show a consistent expansion of fixed-rate bond average maturities since the first half of 2003. However, in the case of price index-linked assets, average maturity has been reduced because the government's introduction of shorter-term issues to increase the liquidity of these instruments and the speed at which exchange rate and interest rate debt are phased out. Later on, these maturities stabilized and, more recently, an increase was observed.

Graph 1. Average maturity of fixed-rate bonds



Source: STN

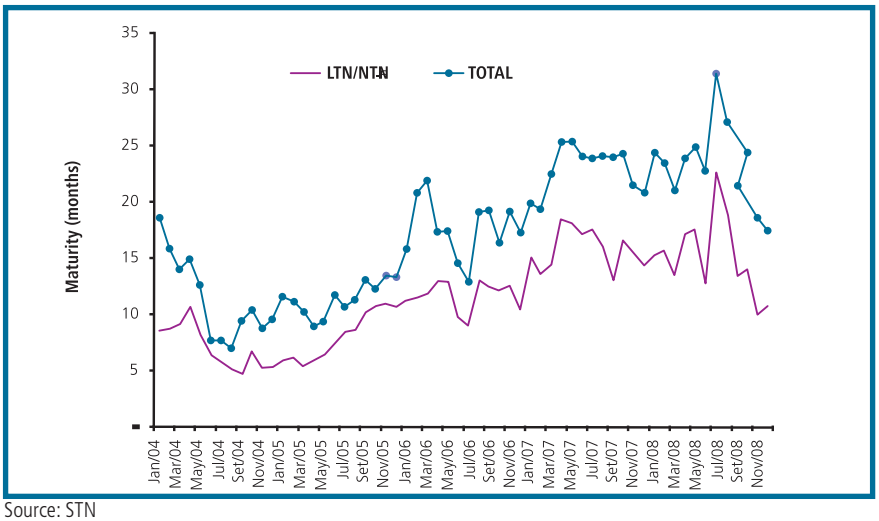
Graph 2. Average maturity of price index-linked securities



Source: STN

At the same time that the average maturity of the fixed-rate and price index-linked debt increased, longer public securities gained greater liquidity. For example, as illustrated by Graph 3, the average maturity of Federal public securities increased from 10 months to 20 months between 2004 and 2007; with fixed-rate bonds, the increase was from five to 15 months. The drop after this date reflects unfavorable global financial market conditions rather than a specific feature of Brazil's securities market. Thus, there is a clear trend towards lengthening the maturities on the public debt market.

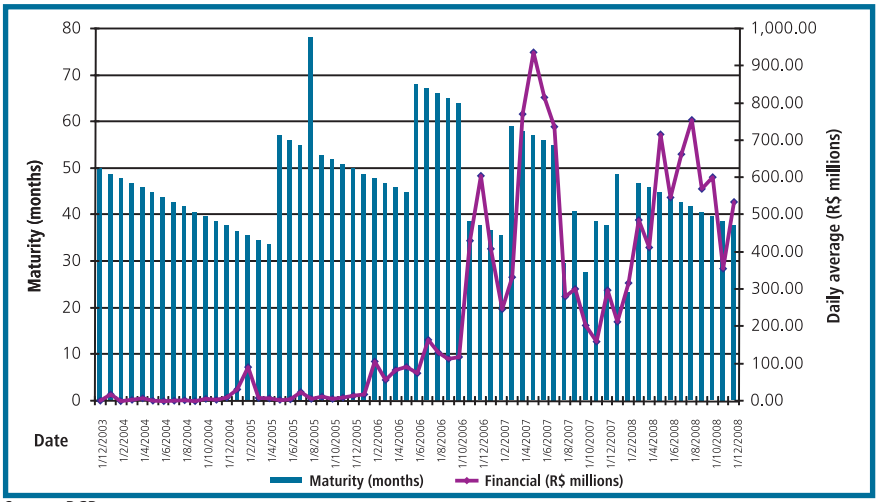
Graph 3. Average maturity of definitive operations with federal securities on the secondary market



Source: STN

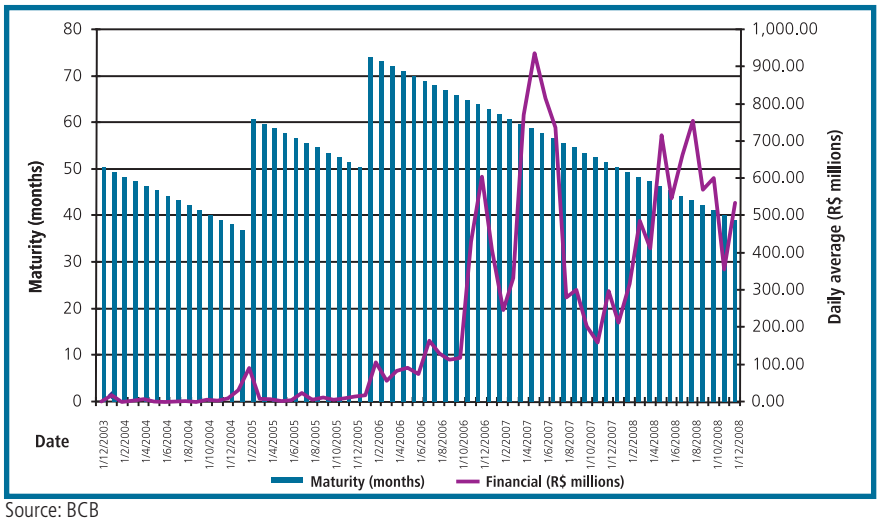
When only the NTN-Fs (fixed-rate bonds with longer maturities) were analyzed (Graph 4), it can be seen that the average volume traded increased greatly since the start of 2006, from under R$ 100 million/day to values that are generally over R$ 300 million/day. At the same time, there has been a trend towards an increase in the average maturity of the most traded bonds. Another interesting example is a five-year NTN-F, which matures after approximately 60 months, and where the average daily volume traded since the beginning of 2006 significantly increased.

Graph 4. Relation between NTN-F maturity period and average daily volume traded for the most liquid NTN-F in the month



Source: BCB
Prepared by: STN

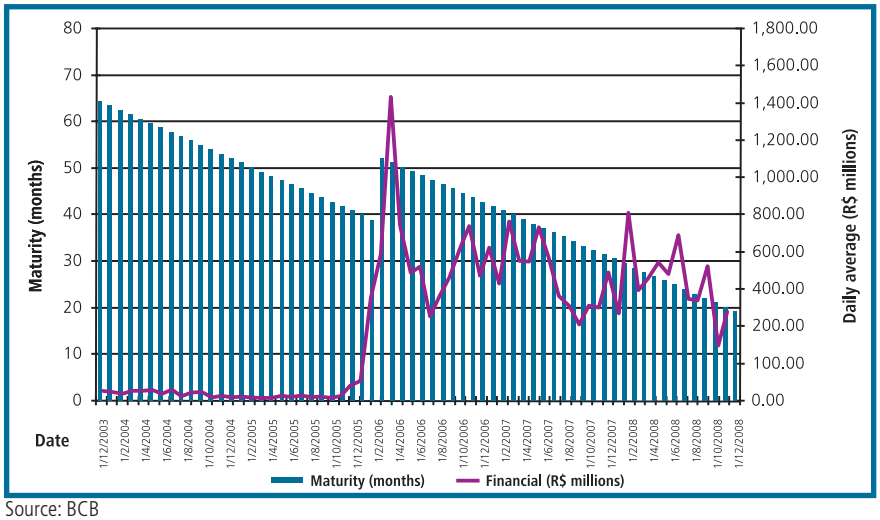
Graph 5. Relation between NTN-F maturity period and average daily volume traded for the benchmark five-year NTN-F bond



Source: BCB
Prepared by: STN

Statistics for the NTN-Bs are also positive. For example, with a five-year benchmark NTN-B, the average daily trading volume jumped from under R$100 million to over R$400 million/day, at the same time the bond's maturity increased from 40 months to 55 months.

Graph 6. Relation between NTN-B maturity period and average daily volume traded for the benchmark five-year NTN-B bond[28]

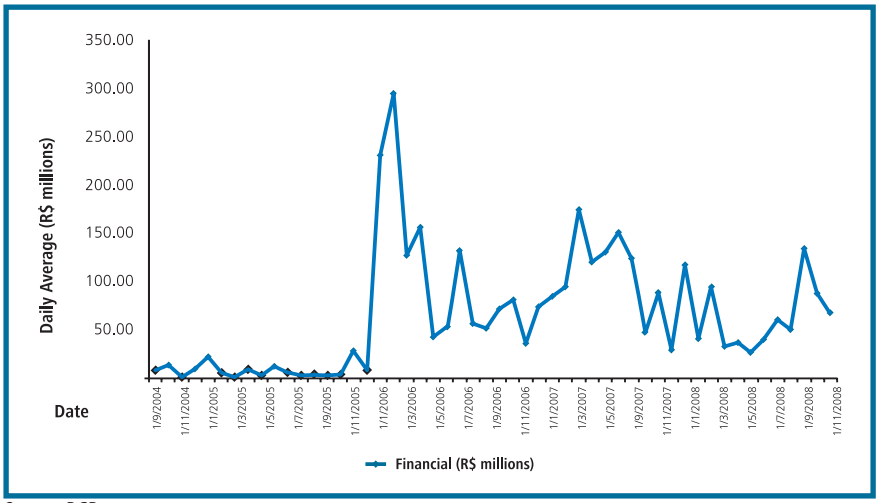


Source: BCB
Prepared by: STN

The NTN-B bond that matures in 2045, which is the longest bond available in the market, has moved in the same way as other bonds, with increases in the monthly volumes traded. Data in Graph 7 show an increase in the average daily volume from under R$ 20 million/day to over R$ 50 million/day.

[28] In 2007, the National Treasury changed the maturity of the five-year benchmark bond and started to offer NTN-Bs that matured in

Graph 7. Average daily volume traded - NTN-B bond maturing in 2045

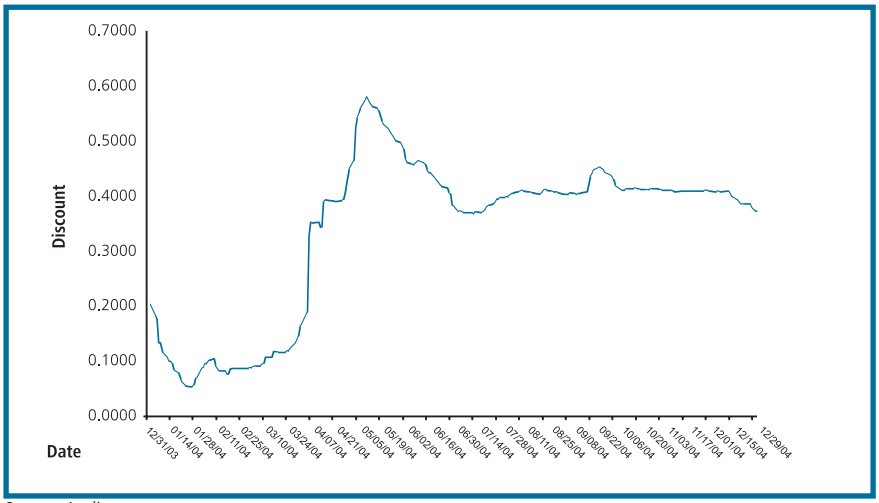


Source: BCB
Prepared by: STN

3.3 The role of the National Treasury

Despite the improvements described thus far, Brazil's secondary market still cannot absorb high volatilities without the loss of reference rates, significantly reduced daily trading, and widened buy and sell spreads. Thus, the National Treasury must operate at times of high volatility by means of operations such as simultaneous buy and sell of securities, with the prime objective of providing the fixed-rate market with price parameters until normal market conditions are re-established.

Graph 8. Interest rates for LFTs maturing on June 18, 2008



Source: Andima

2011 and, later, in 2012. However, the market liquidity remained in the bond that matured in 2010, which is the instrument portrayed in the graph.

In May and August 2004, the National Treasury carried out early redemptions and held simultaneous buy and sell auctions of LFTs so as to maintain the transparency of prices and provide price parameters since, as can be seen in Graph 8 and Table 7, there was a strong correction in the domestic and international financial markets. Also, the Treasury tried to reduce volatility, given the turbulence in the financial markets, and improve liquidity of the secondary market. Further, in May, two simultaneous LTN buy and sell auctions were held with the same objectives. These operations achieved the desired effect and the market returned to normality; thus, the following month, borrowing began again, with the issuing of fixed-rate bonds.

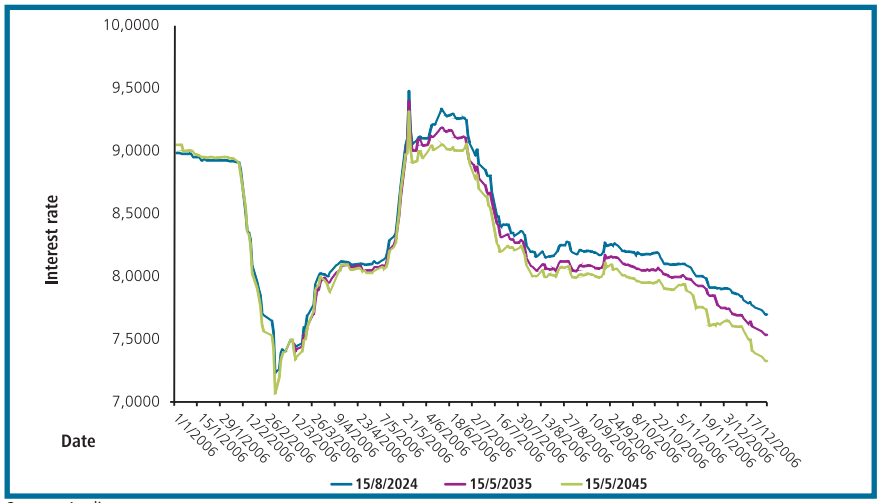
Table 7. Asset volatility and selected indicators in 2004

Asset	3 March 2004	10 May 2004	30 July 2004
LFT 18 Jun 2008 (annual premium)	0.09%	0.58%	0.40%
LTN 1 Jan 2006 (annual rate.)	15.71%	19.11%	18.33%
Trsy 10 years (annual rate.)	4.05%	4.79%	4.48%
Dollar (exchange rate)	2.8812	3.1249	3.0268
EMBI Brazil (base points)	547	808	593

Prepared by: STN

At the end of May 2006, there was greater volatility in the international markets due to uncertainties about US monetary policy; and since asset prices were expected to worsen, Brazil's market liquidity was reduced. Non-resident investors that had bought the longer NTN-Bs (2024, 2035 and 2045) and wanted to sell could not find financial institutions willing to acquire them on the secondary market, which made interest rates of the longer securities rise, thus increasing the National Treasury's cost of borrowing, as shown in Graph 9.

Graph 9. Longer maturity NTN-B interest rates



Source: Andima

At this time, the Treasury realized that a potential imbalance existed in the market and decided to hold buy and sell auctions. This prompt intervention reduced the stress initially observed in the NTN-B market, and that later intensified in the other markets, before the market recovered and returned to April levels at the end of July, as shown below.

Table 8. Volatility of selected assets annual rate

Asset	3 Apr 2006	24 May 2006	31 Jul 2006
NTN-B 2045	7.97%	9.32%	8.23%
LTN Jan 2008	14.65%	16.78%	14.65%
Trsy 10 years (annual rate)	4.86%	5.04%	4.98%
Dollar (exchange rate)	2.15	2.37	2.18
EMBI Brazil (base points)	236	289	222

Prepared by: STN

As observed in the two cases described and in the reactions of the managers to minimize any negative effects on the public debt, the National Treasury improved its capacity to monitor volatility and liquidity of securities, preserving market dynamism and asset quality.

With this in mind, the following section describes a series of measures taken by market participants so as to develop the liquidity of the secondary fixed-rate asset market and ensure it works properly. It will also examine how market processes are consistent with international best practices and have helped debt managers achieve positive results.

4 Development of the secondary market

As was mentioned at the start of this chapter, the National Treasury must maintain liquidity in the secondary market for public securities because this reduces its borrowing costs: Price parameters are more transparent and, as a result, buyers of bonds require a lower premium to acquire them. Liquid transparent markets imply fairer spreads between the buying and selling prices, which reduce entry and exit costs. Thus, if information asymmetry can be reduced, this increases efficiency, improves the management of assets and liabilities, and benefits the issuer.

Therefore, the government introduced a series of measures to increase the liquidity of public bonds, which, from the Treasury's viewpoint, will reduce the borrowing costs and refinancing risk, and consequently improve public debt administration.

4.1 The 21 measures taken in 1999

Before 1999, the large number of maturities, often two in a week, hampered the pricing of securities and contributed to the liquidity shortage due to the low concentration of each of the maturities. Also, there was an excessive number of auctions, without explicit rules, which reduced the need for institutions to use the secondary market and, consequently, reduced the liquidity of the assets traded.

The reduced number of secondary market participants over the years affected the system's flow. Moreover, the predictability of the overnight rates added to the interest rate curve (which was negatively inclined for a long period), made LFTs more attractive, as they were the least volatile security; this constrained the trading volume for other bonds. In addition, factors that negatively affected the primary and secondary markets were (a) the inability of dealer institutions to establish efficient prices and supply liquidity, and (b) the lack of transparency in the prices and deals.

In 1999, a group was created with members from the National Treasury and Central Bank to diagnose the various problems related to the domestic public debt and local financial market. This involved studies and discussions, based on international experiences and interviews with representatives of financial institutions, class associations and stock markets.

Both institutions concluded that ongoing practices needed to be redesigned and new instruments/ procedures devised to create a more dynamic secondary market, increase liquidity, expand the investor base, promote transparency, improve pricing and lengthen FPD maturities. They proposed 21 measures (some of which have been approved) to do the following:

- Reduce the number of outstanding public bond maturities, further concentrate the amounts maturing on each specific date for fixed-rate instruments, and reduce the frequency of public bids (auctions);
- Announce public auctions in advance;
- Hold public long-term bond auctions, with fixed rates, after the Treasury receives requests from financial institutions containing firm buy proposals;
- Have the National Treasury hold regular, standardized public bond purchasing auctions;
- Create a zero-coupon exchange rate bond;
- Allow separate (strip) trading of principal and interest of exchange rate securities with less than five years terms;
- Hold periodic meetings with dealers, end customers (pension funds, insurance companies and other institutional investors) and class associations;
- Issue periodic press releases with information about the government bond market and liquidity conditions;
- Create a new process to select Central Bank dealers[29] so as to boost their capability of being market makers;
- Issue long securities with fixed rate returns and simultaneous competitive put options;
- Purchase and sell short securities, supplementing banking reserve actions by the Central Bank;
- Periodically purchase and sell public bonds;
- Launch floating-rate securities with D+1 settlements;
- Stimulate transparency in trading government bonds on the secondary market, for example, by using electronic systems;
- Make it easier to financial institutions' to adopt short positions;
- Buy and sell fixed-rate bonds with reverse repo for dealer institutions to cover short positions;
- Have Andima produce daily reports on outstanding fixed-rate and exchange-rate bonds;
- Develop a system to register forward operations with government bonds at a floating rate;
- Loosening the leveraging limit on operations with government bonds;
- Offer incentives to the stock exchange to create a derivatives market for put options issued by the Central Bank;
- Allow the overnight rate to fluctuate around the target for the Selic rate.

[29] The financial institutions were chosen to be exclusive Central Bank dealers in order to make monetary policy more efficient. In 2003,

Some of the measures have not yet been adopted, such as the zero-coupon exchange rate bonds and the STRIPS,[30] mainly because of the nature of the financial market[31] or changes in FPD management policy, which stopped issuing exchange-rate bonds in 2003. Still, most were applied and succeeded, such as reducing maturities and publishing monthly auction schedules.

The National Treasury and other institutions interested in developing the secondary market have promoted these concepts since 1999. The next section deals with institutional modifications and other structures that were created to improve the liquidity of public securities and other fixed-rate assets.

4.2 New actions for increasing liquidity

Since 1999, various measures have been introduced and the ones originally adopted have been improved. As noted earlier, in the first quarter of 2003, the new government confirmed its commitment with fiscal austerity, the inflation target regimen, and floating exchange rate. Also, the National Treasury moved to improve the primary and secondary markets for public securities. These actions represented a concentration of maturities and lengthening of public securities. Furthermore, the Treasury implemented a new dealer system and built stronger relationships with investors in the different segments. Also, it stopped issuing bonds linked to the exchange rate in the domestic market.

4.2.1 Maturity concentration

LTNs and NTN-Fs started to mature on the same dates as interest rate contracts on the futures market (every January, April, July and October), which made it easier to combine them with other financial assets; this increased liquidity, demand and transparency in the yield curve. Further, once the maturity coincided with the DIs' maturities, this eliminated the risk of maturity mismatches and helped investors by reducing the volume of margin required in derivatives' operations. Also, better pricing and greater liquidity reduced the bonds' risk premiums, thereby lowering the FPD's financial costs. Liquidity was also increased by a procedure to reoffer securities in significant volumes.

The LFTs and NTN-Bs were concentrated in longer maturities falling due in different months than those established for fixed-rate bonds. LFTs started to mature at the beginning of the third month in each quarter, and NTN-Bs in the middle of the second month (equidistant from the fixed-rate bonds' maturities). It should be noted that the quarterly flow of the NTN-Bs was introduced to meet a demand of the pension funds. This increased the volume traded on the secondary market.

The concentration of fixed-rate bond maturities at the beginning of each quarter increased the investors' use of BM&F interest-rate derivatives to modify their assets from fixed-rate to floating-rate positions linked to the CDI.[32] This significantly increased the trading of derivatives, partly due to the Treasury's new

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the dealer institutions were also asked to help manage the FPD and develop the secondary market. More information on the system appears later in this chapter.

[30] See section 4.2.2, for more details.

[31] For example, the NTN-Bs and NTN-Fs now being issued allow for stripping operations; however, the market has not taken advantage of this.

[32] By acquiring a swap with a term equivalnt to the bond, the investor transforms a fixed-rate asset into one linked to the daily interest rate, transfering the fixed-rate risk to a third party investor. However, from the debt manager's viewpoint, the fixed-rate risk continues with the market, and does not compromise the strategy to reduce volatility risk on servicing the debt.

strategy. Also, more fixed-rate bonds were offered at the time when competing interests were reconciled; these were (a) the Treasury's desire to increase the share of this liability in the outstanding debt, (b) the investors' desire to have the CDI as a benchmark for their portfolios, and (c) agents who preferred fixed-rate investments (as they believed the economy would stabilize).

As illustrated in Table 2, the average daily volume of fixed-rate bond trades rose from R$ 0.18 billion to R$ 2.68 billion, from 2002 to 2003, as did the volume of future interest rate (DI) contracts. As shown in Table 9, the number of contracts grew in recent years, despite the drop in 2008 which was caused by the turbulence in global financial markets. These values demonstrate that the liquidity of public securities increased the importance of the derivatives market, reconciling the interests of issuers and investors.

Table 9. Average monthly interbank deposit futures (DI Futuro) contracts traded on the securities, Brazilian Mercantile and Futures Exchange (BM&F)

Year	Average number of contracts
2003	183,429
2004	440,111
2005	386,245
2006	704,630
2007	827,690
2008	582,769

Source: BM&F

4.2.2 The creation of STRIPS

Since 2003, the Treasury began issuing NTN-Fs, fixed-rate bonds with a coupon payment, with the possibility of stripping the coupons, as is done on the international market. This helped create a medium-term, fixed-rate yield curve (between three and four years), which allowed it to be more fairly priced and minimized the Treasury's borrowing costs. The first of this type NTN-F matured in 2008.

In 2005, the Treasury issued NTN-Fs maturing on January 1, 2010 and 2012 to meet the growing demand for longer-term, fixed-rate securities. In 2007, it issued NTN-Fs that mature in 2017, the first time a fixed-rate bond with a 10-year term was placed on the domestic market. This instrument was regularly issued in the auctions that followed and has become a benchmark for the local market.

STRIPS help make NTN-Fs similar to LTNs, which have a higher liquidity on the secondary market. However, it should be noted that the market has yet to adopt the practice of stripping bond coupons because it is not used to this type of instrument and because NTN-F coupons and LTNs have different codes. The Treasury and Central Bank have been attempting to resolve this.

4.2.3 The debt cushion

Since the 1997 Asian Crisis, the Treasury has sought to maintain a sufficient volume of cash to guarantee payment of the public debt during less favorable times. As market conditions improved, it was possible to accumulate enough funds to service the FPD for at least three months, and the Treasury has

retained an adequate amount ever since. These resources are used solely to repay the maturing debt, reduce the refinancing risk, and reassure the market that the Treasury can honor its payments at times when (a) the market is reluctant to acquire public securities or (b) the Treasury does not feel comfortable matching the rates offered at auctions. Moreover, the reserve allows public debt managers to stabilize the secondary market at moments of high volatility.

4.2.4 The new dealer[33] system

Introduced in 2003, the new dealer system accredited the most efficient institutions to work with the National Treasury and Central Bank to develop the public securities market; this helped improve the secondary market, increasing liquidity and improving the way interest rates were structured. Two groups of dealers were created - primary and specialist (the latter being attached to the secondary market). The second group was tasked with bringing liquidity to the secondary market by introducing larger volumes of trading in securities. Hence, it offered incentives for market transactions, which expanded the system's liquidity.

The Treasury and the Central Bank anticipated that specialist dealers would trade securities considered strategic to debt management and open spreads in electronic trading systems; primary dealers were urged to participate in the Treasury's auctions of securities, among other activities.

4.2.5 Meetings with market participants[34]

The measures that were adopted also led to periodic meetings with the pension funds, which are natural investors in long-term instruments and participants in the secondary market. In 2004, annual meetings were begun with pension funds, commercial and investment banks, investment funds, insurance companies and capitalization companies. This diversification of the investor base not only increased the number of participants in the secondary market, but also helped dilute the concentration of public debt holders, largely mutual funds (investment funds) and banks (own portfolios), thus improving the debt profile and reducing the risk of sudden changes in the Treasury's refinancing conditions at times of market volatility. With the expansion in investor base, strategies and interests were diversified, minimizing the so-called "herd" behavior.

4.2.6 The creation of the Investment Account

In 2004, the government created the Investment Account. If investors move their funds into it and keep them there, regardless of the number of transactions, they will not be charged the Temporary Contribution on Financial Transactions Tax (CPMF).[35] This new account allowed investors to allocate resources more efficiently and granted them equal treatment with larger investors and the rest of the industry; it removed the high fees charged when they moved their funds into other investments. In turn, this prompted the flow of funds towards higher-yield investments and funds, which generated greater competition and efficiency. Further, the reduced transaction costs between financial instruments increased turnover on the secondary

[33] For details on the public securities dealer system, see Part III, Chapter 4.

[34] For details on the organizational strategy and the results of the meetings with market participants, see Part III, Chapter 5.

[35] Law nº 10,892 of June 2004. The CPMF tax was dicontinued at the end of 2007; thus, the Investment Account was, in practice, no longer necessary.

market, and added benefits by implying better asset pricing and expanded operations on the secondary market for public securities. [36]

4.2.7 Derivatives contracts

Also in 2004, BM&F launched two contracts involving derivative instruments, offering investors that traditionally demand price index-linked assets more financial instruments with which to administer their portfolios. The first was the Consumer Price Index (IPCA) futures contract, and the second was the IPCA x CDI coupon futures contract. Also, it attracted new investors, increasing trading in this type of security on the secondary market. It is worth noting that, until 2008, this derivative had not achieved satisfactory liquidity and the financial market, represented by its committees at BM&F (now BM&FBovespa), is analyzing the best way to develop it.

4.2.8 Fixed income indices

To continue initiatives that would positively affect the secondary market for public securities, the National Treasury and market participants, under Andima's guidance, helped create new fixed-income indices (IMAs); these meet the demands of portfolio managers for benchmarks and strengthen the trust between fund holders and managers, allowing for reliable quantitative comparisons among different investments. This process also aimed to eliminate the practice in which investors were comparing the performance of their investments against an index that is linked to daily interest rates (the Interbank Deposit Certificates - CDIs), a practice that created distortions. The object of the paradigm shift was to increase the liquidity of longer-term bonds by expanding the number of investors with long-term benchmarks.

4.2.9 Non-residents' participation

Along with attempts to diversify the investor base (by increasing the share of non-residents in the domestic debt market), the Treasury also distributed data more broadly about internal debt prices through various information agencies. Another measure involved simplifying and hastening the process of including these investors in the National register of corporate entities (CNPJ), which was standardized in 2005 through a joint project of the National Treasury, Securities and Exchange Commission (CVM) and Federal Data Processing Service (Serpro): Administrative requirements were eliminated and a 24-hour deadline was created to register new foreign investment in the market, with investors receiving their CVM and CNPJ codes within this time. These measures increased the number of participants that could trade in longer securities, which, in turn, stimulated a more liquid secondary market at these points on the curve.

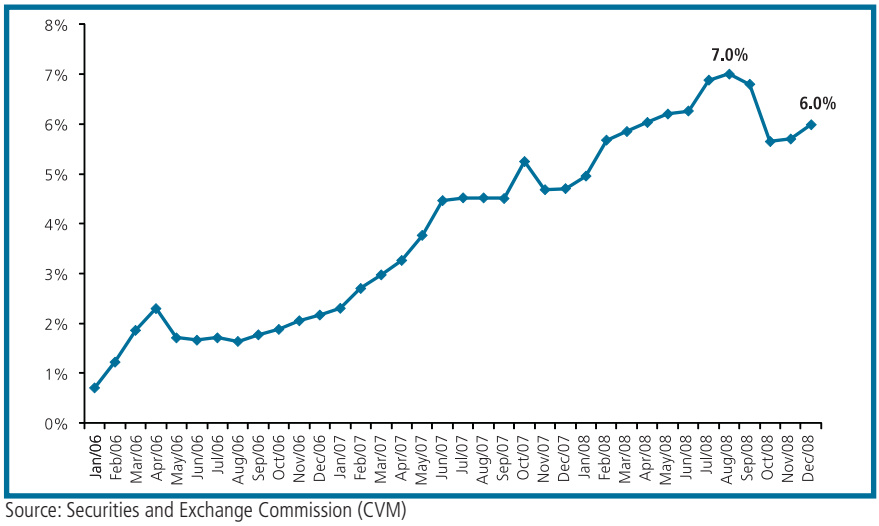
Another important measure, adopted in 2006,[37] exempted non-residents from paying income tax on earnings from investments in domestic public debt securities. As a result, the investor base increased:

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[36] Soon after the Investment Account was approved, Provisional Measures nº 206 and 209, published in August 2004, were issued. Their goal was to stimulate medium- and long-term financial investments by means of a differentiated tax treatment for fixed and floating rate investments, which, in turn, would stimulate long-term savings and improve public debt management. After these measures were taken and before the end of 2004, the Treasury successfully placed NTN-Bs maturing in 2045; in 2007, it placed NTN-Fs maturing in 2017.

Non-residents' share of the domestic market mushroomed and their average debt holdings, about R$ 2.7 billion from January 2005-February 2006, jumped to around R$ 10.7 billion from March-December 2006. As non-resident investors, which typically hold longer-term investments, increased their participation in Brazil, the market for these types of bonds (such as the NTN-Bs maturing in 2045– see Graph 8) became more dynamic. As illustrated in Graph 10, in December 2008, non-resident investors held approximately 6.5% of the outstanding DFPD, amounting to R$ 70 billion in domestic public securities.

Graph 10. Non-resident investors' share of domestic public debt securities



Source: Securities and Exchange Commission (CVM)

4.2.10 Transparency

To strengthen the secondary market, in 2006 the Treasury supported "Compare," an online system to compare federal public securities rates. Managed by Andima, the system allows investors to review data and rates related to the prices and volumes traded on the secondary market, and to compare market information and parameters. The system also promoted transparency, stimulated liquidity and made conditions more attractive to investors which, for regulatory reasons, had not previously acquired securities on the secondary market.

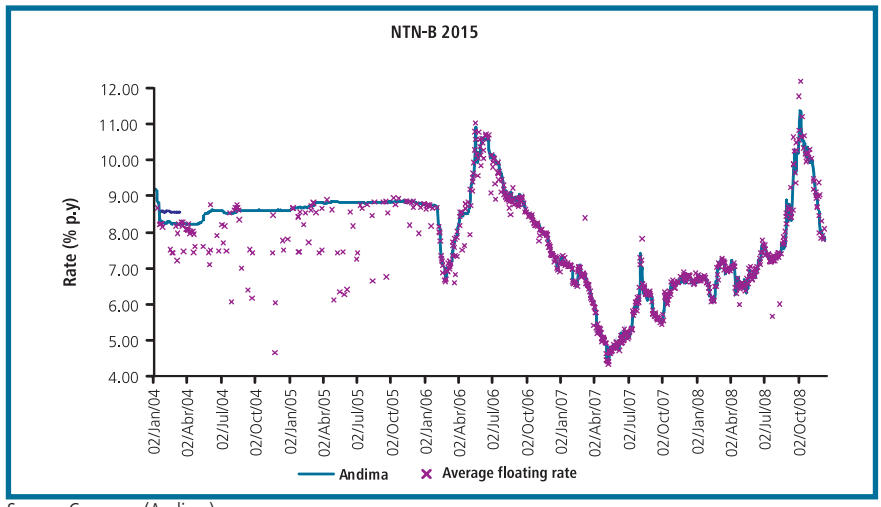
In the beginning of 2008, the Treasury changed the rules for dealers: Institutions that wanted to take part in second-round auctions would be able to view buy and sell spreads on electronic auctioning systems for one hour each day - 30 minutes in the morning and 30 in the afternoon - which greatly increased transparency.

With all the steps taken in recent years - to promote transparency, expand the investor base, provide information on the debt and increase market's predictability - the pricing of public securities has improved and, consequently, the costs of the public debt were reduced.

The following graphs show the rates calculated and published by Andima (as a result of a daily survey among financial institutions), as well as the average daily floating rates. Two cases are illustrated: NTN-Bs maturing on May 15, 2015 (Graph 11) and May 15, 2045 (Graph 12). It should be noted that, since the end of 2005, floating rates are much closer to Andima's published rates.

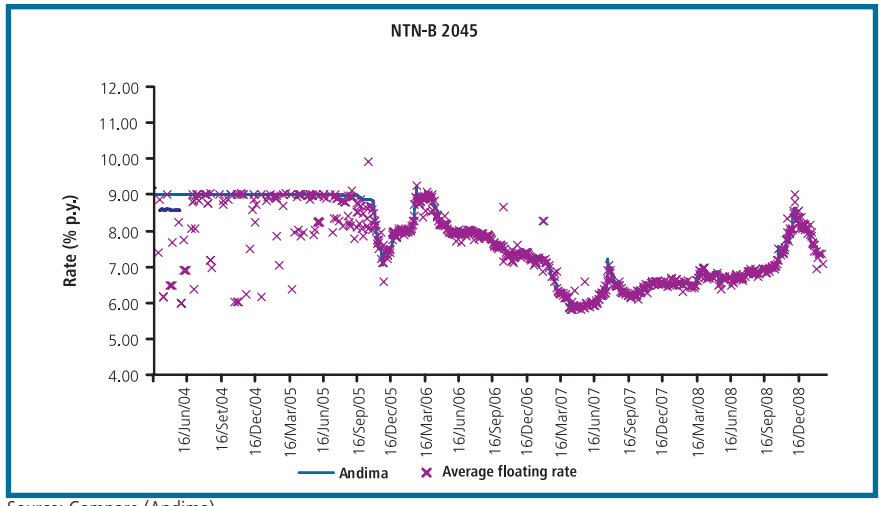
[37] Provisional Measure nº 28, that was published in 2006, and later converted into Law nº 11,312, of June 2006.

Graph 11. Rates of NTN-Bs maturing on May 15, 2015



Source: Compare (Andima)

Graph 12. Rates of NTN-Bs maturing on May 15, 2045



Source: Compare (Andima)

5 Conclusions

One feature of Brazil's capital markets is the practice of daily indexation, which began during the years of high inflation. The secondary market for public securities also follows this practice, which is reflected in the preference for assets with short maturities that are indexed daily and consequently prevent the market from developing further.

Several measures have been taken to promote investors' access to public securities and make the secondary market more efficient. Some progress has been made, which is reflected in the increased volume of securities traded, especially in fixed-rate and price index-linked bonds and in their maturities.

Despite these gains, the structure of the public debt must be further improved. To this end, the Treasury continually monitors the environment to identify and introduce measures it considers will help meet this goal.

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Part III
Chapter 7

Treasury Direct: Internet public securities retail sales program

by André Proite[1]

1 Introduction

The discussion of government financing through public security retail markets begins with a brief look at its history. For example, records from 17th century France show that the country adopted the practice to finance the Thirty-Year War. Similarly, in the next century, the UK applied market instruments that have survived until now[2]; and in Sweden, the State issued special public bonds to build war ships. Reasons vary, but the public security retail market has been critical for centuries.

This chapter will describe the National Treasury program known as *Treasury Direct*, which sells domestic Federal debt bonds directly to individuals in Brazil over the Internet.

1.1 Why develop such a program?

For their part, most retail investors view government securities as the only source whose loans are risk free, an important fact if the public is considered the primary source of savings. And, there is little doubt about families' need to save: Most require savings to deal with temporary shocks to their income flows since a surprisingly large share do not have enough resources to cover expenses even for a few months[3]. While these investors can be numerous and diversified, they are still a relatively untapped source.

For governments, this market is crucial since retail investors, as well as the institutional (wholesale) market, help finance their budget deficits. Also, domestic savings help sustain economic growth. Thus, regardless of their relevance in proportional terms - which can be small - developing this market segment should rank high on economic policy makers' agendas[4].The reasons are varied. A basic issue is the importance of savings. Even when the macroeconomic debate on the domestic savings rate is put aside, there is little doubt about families' needs to save. This fact cannot be minimized: Most need savings to deal with temporary shocks to their income flows since a surprisingly large share do not have enough resources to cover expenses even for a few months[5].

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[1] The author thanks the Investor Relations team (as of July 2008) for its valuable comments, particularly Fabio Guelfi, Fabricio Moreira, Flávia Fernandes, Juliana Coelho, Leonardo Tavares and Helena Menezes, besides all those involved in bond pricing, registrations and payments. Important information was provided by those involved in bond custody at BM&FBovespa, especially Gustavo Laurino, Valmir Soler, Valéria Lorenzo and Alexandre Gushi.

[2] World Bank, 2006.

[3] Tufano, Schneider, 2005.

[4] McConnachie, 1997.

[5] Tufano, Schneider, 2005.

First, this market can correct possible imbalances created by the concentration of wholesale investors, which are very important in narrow markets where authorities agree that, lacking some degree of competition, yields could be forced against them.[6] The literature[7] shows that costs can be reduced through different means, but that some - i.e. a vibrant retail market - are more efficient in the long run.

Second, financing public deficit through individual investors may positively affect monetary policy by reducing the base of deposits in commercial banks[8] since this course expands the supply of assets available to investors[9]. Third, governments in developing countries can benefit by establishing financial markets other than repo and money markets (the primary ones). Fourth, governments usually see savings as a practice that promotes national wealth.

In recent years, technology has reduced costs and increased access to an array of financial services[10]. In this regard, the Treasury Direct (TD) program was conceived by the National Treasury in 2001 to democratize access to public securities, disseminate information about the public debt, stimulate medium- and long-term savings, and increase the base of public security holders. In November 2001, a Technical Cooperation Agreement was signed between the National Treasury (STN) and the Brazilian Settlement and Custody Company (CBLC) to offer Federal securities to the public over the Internet. One month later,[11] the Treasury regulated this practice and in January 2002, the government started selling public securities on the Treasury website (www.tesourodireto.gov.br).

This chapter is divided into five sections. Besides the Introduction, Section 2 presents the program's objectives, Section 3 describes its *modus operandi*, Section 4 discusses the results, Section 5 reviews international experiences and Section 6 offers some conclusions.

2 Treasury Direct objectives

The new program was based on the need to offer retail investors an alternative to the investment fund industry, which, until then, was basically the only distribution channel of public securities and charged rather high fees to small-sized investors. It was thought that by increasing competition in the distribution of public bonds, the program would motivate institutions to reduce their profit margins for products with little value added - such as DI (Interbank Deposit rate) funds. Further, the public debt investor base would be expanded in a way that the National Treasury - as the entity issuing public securities - could reap the benefits of diversification. Finally, the program could promote transparency and disseminate the principles of Brazil's public debt management.

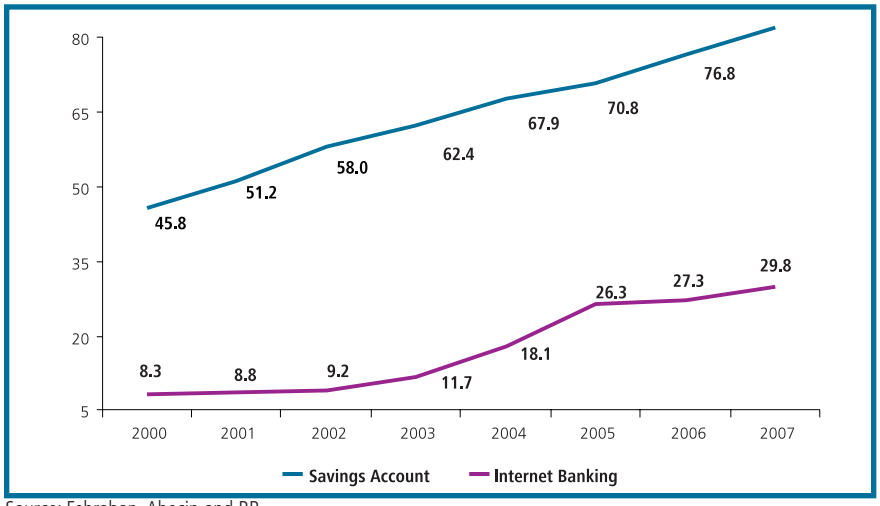
2.1 Increasing the investor base

A large, more heterogeneous investor base gives the government added flexibility to manage its public debt, as this helps lengthen it at a lower cost: It reduces the degree to which demand is concentrated because retail investors have different preferences for duration and instruments. This fact explains the importance

[6] In Sweden, the Parliament issued a guideline that the National Debt Office would to be financed by retail investors, but only where this could reduce the State`s interest rate.
[7] Wheeler, Jensen 2000.
[8] In Bulgaria, authorities offer this reason as a justification for developing this market.
[9] McConnachie, 1997.
[10] Glaessner, Kantur, 2004.
[11] On December 12, 2001, the National Treasury issued Administrative Ruling STN No. 554.

of policies such as the Treasury Direct program. Also, while the share of securities sold to these investors is small - it accounted for just 0.11% of the DFPD (Domestic Federal Public Debt) in December 2007 - the practice is still in its early stage and has huge potential: Indeed, the indicators for 2007 show there are about 30 million Internet banking users, nearly four times the eight million in 2001. The number of those with savings accounts also rose substantially during that time (see Graph 1).

Graph 1. Population using Internet banking and holding savings accounts (millions)

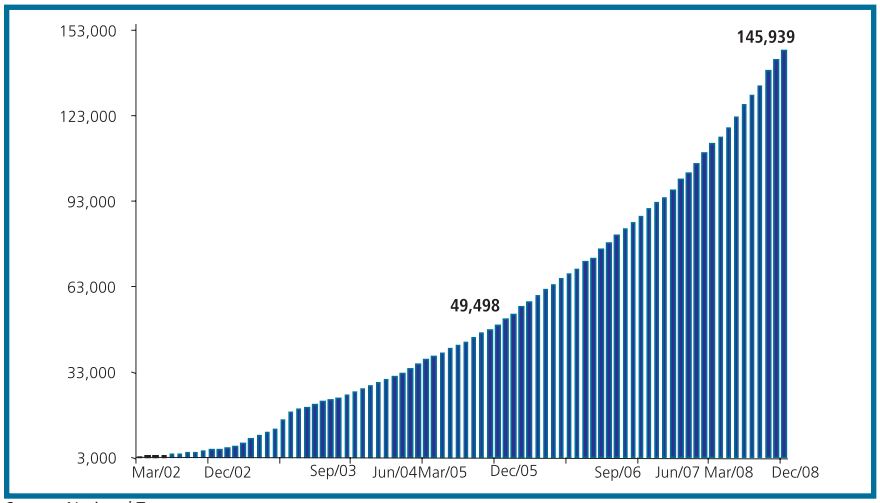


Source: Febraban, Abecip and BB

The use of instruments that expand and diversify the investor base is an international trend (see Part III, Chapter 5), and the direct sale of public securities to individuals is an important model.

Graph 2 shows the rise in the number of people registered with the TD program. Although it already increased four times in just three years, it can still be substantially enlarged (see Section 4: Treasury Direct Results)

Graph 2. Number of investors registered in the TD program



Source: National Treasury

2.2 Incentives to develop medium and long-term savings

Another important TD aim is to promote medium and long-term savings. Currently, the investment fund structure does not fully contribute to this objective, since it does not offer the incentive of higher yields associated with decreasing costs for medium and long-term investments; however, it is crucial for the government to develop domestic savings to sustain economic growth.

Conversely, by offering weekly liquidity,[12] the TD structure encourages medium and long-term savings. This occurs through the tax scheme applied to financial investments (the same as any fixed income investment), as described in the next section.

Further, the Treasury only offers securities with maturities of over six months and longer (up to 40 years, as a benchmark), which not only lengthen the public debt maturity profile, but also build long-term savings' practices. As investors lengthen the horizon of their investments, seeking higher yields through the TD, it can be assumed that investment funds will have a larger volume of long-term securities in their portfolios, thus reducing public debt refinancing risks. This should occur because investors usually see debts with longer maturities as less susceptible to default, which accounts for the lower risk premium, or spread, required by investors to purchase them and, ultimately, the lower cost of public debt in the long run.

2.3 Disseminating the public debt concept

Since the TD program began, the National Treasury has provided the public with information about the types of securities it offers. Pricing guides, amortization schedules, reference indexes, profitability, tax structure and all sort of information on public securities are provided within the program. It also explains the concept of public debt, pointing out that a significant share of small investors' savings is channeled into public securities through either the TD or investment funds and also that these securities - which are not concentrated in banks - are spread into many financial products. Further, it stresses that the government does not intend to declare a moratorium on its debt (as some have urged);[13] thus, small and medium savers would not lose their savings. Further, the information refutes the notion that default on the public debt - as some have encouraged - would benefit the country. Armed with this information, the public is less likely to back such an action.

This discussion is consistent with the orthodox fiscal policies Brazil has adopted since the early 2000s and the inflation control since 1995. There is no significant debate on drastic changes of those policies and public debt management is a meaningful part of it. The manner in which the public securities market functions and debt is managed can, against a backdrop of interest rate shocks, trigger mechanisms that will destabilize the economy.

Despite the difficulty in measuring the exact contribution of the TD program to improve the domestic debt profile, data already exist on (a) small investor participation, (b) their geographic distribution and (c) their preference for longer-term/lower-indexed investments when compared to other types of investors. Their individual decisions under market conditions can be well observed and point up the program's democratic aspects.

[12] Some funds discourage early redemption by their participants.

[13] Breach of contract is a practice that is harshly criticized in Brazil. As seen in the latest elections, fiscal irresponsibility and breach of contract were dropped from the debates, reflecting the strong public repudiation of such postures.

3 Treasury Direct (TD) operations

Before the TD program was introduced, domestic debt securities were sold only in public offers through auctions and direct issuances to meet specific needs provided for by law. The TD program, however, does not participate in auctions.

Also, before securities were traded on the web, buyers of public securities in the primary market were restricted to banks, brokerage firms, distributors and other financial institutions registered with the Special System for Settlement and Custody (Selic), and had to purchase at least R$50,000 (roughly US$30,000). Now, however, TD bonds can be sold to all Brazilian residents who have an Individual Taxpayer's Registry (CPF) checking account in a bank or brokerage firm, and are registered with any of the financial institutions that operate in the program.

These institutions, called depository agents, are accredited with the Stock Exchange - the BM&FBovespa[14] - and are responsible for updating the registry, collecting taxes and transferring funds to/from investors with respect to their purchases, paying interest, or redeeming the securities' principal. Depository agents include stock brokers, commercial and investment banks, and asset distributors, which are all listed, along with their volume of operations and fees charged, on the website. Their role is to facilitate investors' buying and selling; they do this by contacting the investors directly, since the National Treasury does not communicate with individuals.

After they register with depository agents, the latter send them a temporary password (via email) from BM&FBovespa that allows them to access the restricted website to buy or sell securities or make inquiries. After this, they can also update their personal registration forms with information relevant to the program.[15]

3.1 Purchase and sale of securities

Investors can buy and sell securities in three ways. First, they can access the restricted TD website. Second, if they do not have Internet access or want to buy their securities from brokers, they can use a depository agent. Third, they can conduct trades on the latter's website (home brokers), if it is integrated with that of the TD.

Purchases can be made weekdays from 9 a.m. to 5 a.m. the next morning; after this time, the system is closed for four hours until 9 a.m. for maintenance and updates. On weekends and holidays, the site is open 24 hours a day. To protect retail investors, the Treasury can temporarily suspend sales during periods of extreme market volatility.

After securities are purchased, investors have two choices: They may hold them to maturity or sell them back to the National Treasury. Repurchase transactions can be done from Wednesday at 9 a.m. to Thursday at 5 a.m. except on Copom[16] meeting days, when Wednesday sales are interrupted at 5 p.m. and

[14] This is the company that resulted from the merger of the São Paulo Stock Exchange (Bovespa) and the Brazilian Mercantile and Futures Exchange. Together, the two are among the five largest stock exchanges in the world.

[15] In November 2009, 10 depository agents delivered a new tool to their clients, integrating the TD to their home brokers (internet based trading platforms). Thus, investors can buy and sell public securities within the TD through the same screen on which they access the equity market. This was due to a joint effort by BM&FBOVESPA and the National Treasury to boost the Program and cover more than 80% of sales.

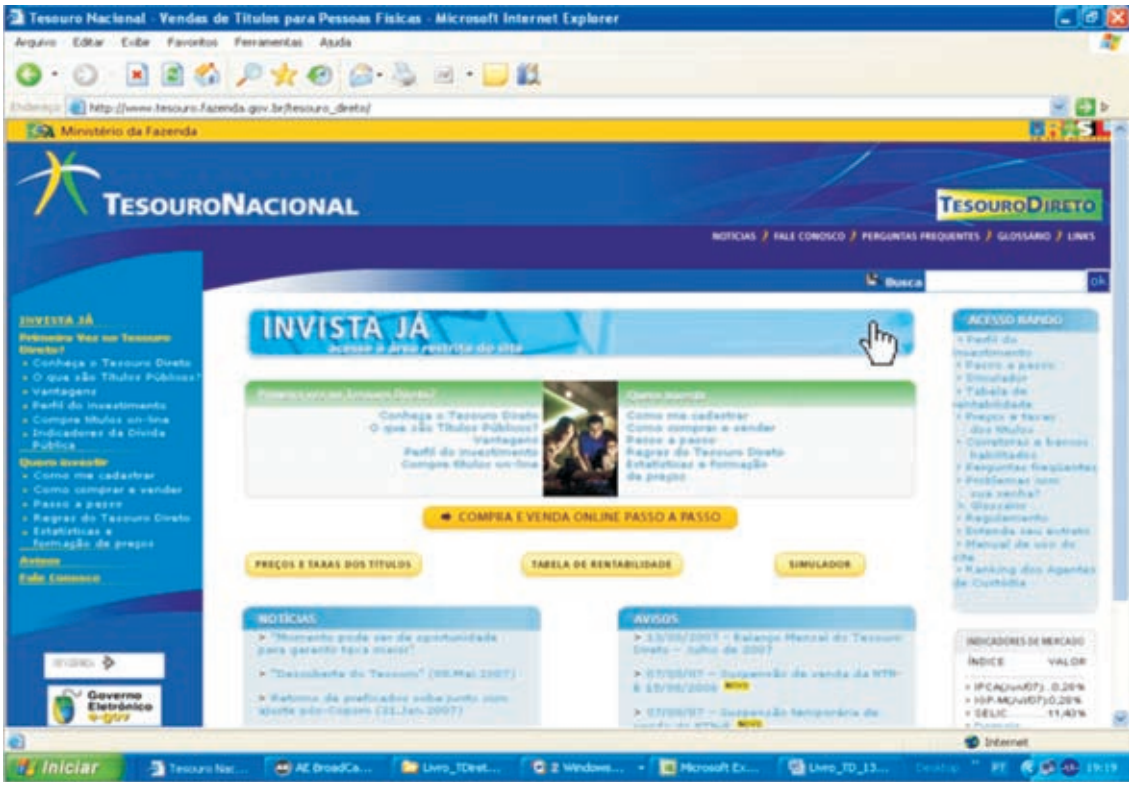
[16] Monetary Policy Committee.

resumed at 9 a.m. the next day. Thus, even long-term securities have weekly liquidity. It should be noted that when investors sell their securities before maturity, they get the day's market rate, which can be higher or lower than the purchase rate. Still, repurchase represents an important added flexibility.

Investors need to pay at least 20% of a bond's cost and the total must be a minimum of R$100 (around US$60): Amounts are generally R$160 to R$400, depending on the bonds; all purchases must be in multiples of 20% of a bond. In December 2008, investors' purchases were limited to R$400,000 a month, except for months in which the bonds mature, when the limit is R$ 400,000 plus the redemption and interest amounts.

The ceiling for purchases was established to curb arbitration between the National Treasury and the secondary market. Without a limit, investors could take advantage of possible differences[17] between the National Treasury prices and those they could get by selling securities in the secondary market.

Figure 1. The TD website – fast and easy access



3.2 Availability and pricing of securities

The Treasury's aim is to offer securities similar to those in traditional weekly auctions. In December 2008, these were divided into those with fixed (LTN and NTN-F), inflation-linked (NTN-B and NTN-B Principal) and floating rates (LFT),[18] with different maturity dates.

[17] These discrepancies can reflect different points in time, since TD prices are updated based on the secondary market only three times a day, while the market varies every minute.

[18] For details, see Part III, Chapter 2, on Instruments and Pricing.

All buy and sell operations are carried out at market prices that the Treasury's trading desk routinely monitors. Prices are updated about three times a day, but the Treasury can temporarily suspend sales at any time depending on market conditions, so as to protect retail investors from sudden price fluctuations.

There is a slight spread between the purchase and sale price of securities traded through the TD; this is due to the market practice of having different buy and sell prices to avoid intra-day transactions and to promote the holding of assets for longer periods.

3.3 Fees and taxes on operations

Fees on TD operations differ. At the end of 2008, the CBLC charged a 0.4% fee on the security purchase value for custodial services and providing information on investors' balances and transactions.[19] When the company was incorporated into the BM&FBOVESPA, the fees changed: The trading fee in the first year is now 0.10% of the purchase amount, with a custodial fee of 0.3% (of the purchase amount) a year, collected on a semi-annual basis. Thus, the total cost in the first year is the same as before, but in the following years it is reduced, and is charged at different periods.

Depository agents charge brokerage fees, custodial account maintenance fees and other service fees, agreed upon between investors and financial institutions. In general, agents' fees are 0.4% to 4% a year on the securities' value. Institutions that do not charge such fees eliminate them so as to attract clients to their other services, where profits are higher and more than compensate for expenses associated with TD operations.

As a result, total fees are 0.30% to 4.40% a year on the value of investments and length of maturity, and are the same for all investors, regardless of the amount invested. This practice is not common in the market, which tends to discriminate against retail investors, charging wholesale investors less. Thus, an important feature of the TD is providing all investors with equal access to reduced fees and similar yields; this benefits both small and medium investors, who generally do not find market options regarding fixed-income investment funds at such reduced fees.

Taxes charged at the TD are the same as those of other fixed-income investments and are collected by depository agents. Income tax (IR) is charged retroactively on the nominal yield of securities and the Financial Operations Tax (IOF) is levied on investments maturing in less than 30 days. The main difference in relation to investment funds is that the IR on public securities is charged only when interest is paid or the securities are redeemed. Investment funds, however, are subject to semi-annual IR payments, which reduce long-term yields as compared to the direct purchase of public securities.

In general, investors do not have a clear idea about the effects of administrative fees on yields. However, these can be compared by checking securities purchased through an investment fund with those through the TD. For example, an investment through the TD with a nominal yield of 12% a year, for a one-year period and a 3.5% inflation rate for that year, will benefit from higher deductions. The Income Tax (IR) on the investment is 20% (for 180-360 days).

[19] After the first year, the 0.4% annual fee is charged proportionally to the period the investor keeps the securities with the CBLC; fees are calculated on the investor's current stock in the day (*pro rata* day) and are charged at the time interest is paid, on redemption or repurchase dates by the National Treasury.

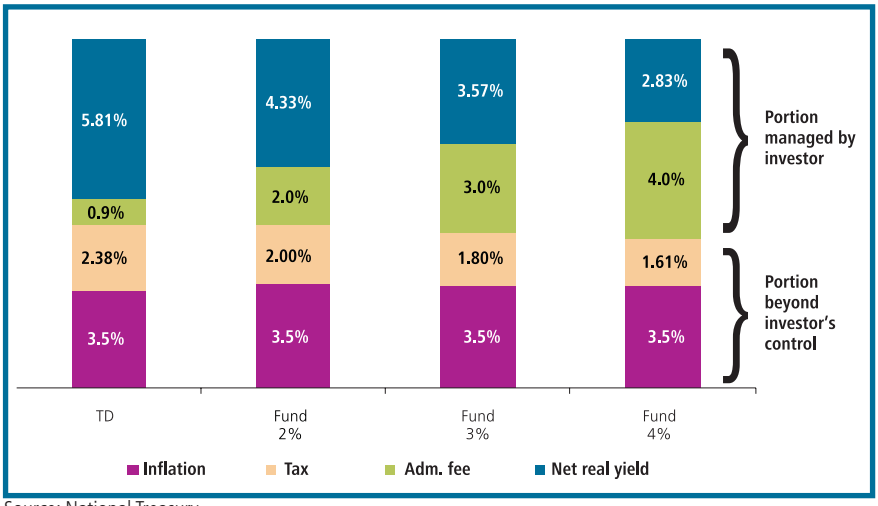
Further, the TD charges an administrative fee of 0.9% a year (CBLC and depository agent's fee) while different investment funds might charge 2%, 3% and 4% yearly fees. At this point, differences appear when the income tax is charged after the administration fee. With the TD, the IR deduction is 2.38%, while with the three funds it is 2%, 1.8% and 1.61%, respectively (it varies inversely to the fee charged). With inflation equally discounted in each investment, the net yield in the TD program is 5.81%, but just 4.3%, 3.57% and 2.83%, respectively (see Table 1), with securities bought through the investment fund.

Table 1. Comparison between the Treasury Direct and investment funds simulation: nominal yield 12% yr., IT 20% /yr, and CPI 3.5%

Administration Fee	Treasury Direct	Investment funds		
	0.9%	2.0%	3.0%	4.0%
Gross nominal yield	**12.0%**	**12.0%**	**12.0%**	**12.0%**
Administration fee	0.9%	2.0%	3.0%	4.0%
Tax discount	2.38%	2.0%	1.8%	1.61%
Yield *net nominal* of taxes and fees	**9.51%**	**7.99%**	**7.20%**	**6.43%**
Inflation realized (CPA)	3.5%	3.5%	3.5%	3.5%
Yield *net real* of taxes and fees	**5.81%**	**4.33%**	**3.57%**	**2.83%**
Treasury Direct yield above all others		**34.08%**	**62.59%**	**105.57%**

Note: TD fee (0.9%) includes CBLC (0.9%) and average custodian broker fee (0.5%)
Prepared by the National Treasury

Graph 3. Treasury Direct *vs.* investment funds



Source: National Treasury

Once inflation and taxes are discounted, what is left of the yield is divided between the investor and the administrator. In the TD, the average administrative fee accounts for 9% of the total, while investment funds charge 4% a year plus administrative costs that represent 34%.

The tax scheme that applies to investment funds and the TD differs in an important respect: In the first, taxes on yields are charged semi-annually - the so-called "quota eater" scheme which adjusts the income

tax bracket to the investment period. In the TD scheme, taxes are charged only when the security falls due or is sold; therefore, bond holders have higher interest yields and relatively higher profits.

The TD and BM&FBovespa websites also feature a simulator[20] that allows investors to see gross and net yields, which include the yearly costs; this ensures that information is clear and timely.

3.4 The dissemination program

Since the program began in 2001, the Treasury has supported investors by following up on sales, holding free lectures and participating in special events. Each day, the TD team answers investors' inquiries, submitted electronically[21] - about 200 messages a week - regarding the bonds offered and their pricing schemes; BM&FBovespa (the stock exchange) also provides a similar service to depository agents and the general public.

The Treasury's lectures to universities, private and public companies, brokerage firms and congresses, *inter alia*, provide a forum for answering questions and increase public confidence in the products, which helps promote these types of investments.

During the year, the TD participates in financial events for retail investors,[22] where Treasury and stock exchange employees give lectures and answer questions; the events are mainly in the state capitals stretching from the south to the northeast. These activities are extremely useful in a country of Brazil's size and where small investors' behavior varies from one region to another.

Since 2009, the TD has assumed a larger role in dissemination and financial education programs promoted by BM&FBovespa, which aim to reach retail investors, opinion makers and financial institutions. Results have been positive for the stock market and home brokers' market, which posted high growth rates from 2002-2008.

Interestingly, the TD program benefits most from unsolicited news articles by columnists and discussions on news shows. This could be a response to the quality of the TD, when compared to other programs (see Section 4: TD Results).

3.5 The next steps

In early 2009, a study reviewed the TD in terms of scope, segmentation, resources involved, bottlenecks, its efforts compared to international experiences, and proposals for decision-makers to adjust various aspects to enlarge the program and promote a more robust framework in terms of infrastructure and personnel. Armed with this information, administrators can offer a product that is easily understood.

One issue the study uncovered was that the program was not as widespread as anticipated. To correct this, it was suggested that sales could occur at lottery ticket shops and the Post (Postal Bank). In Brazil, lotteries are a state monopoly linked to the large Federal Savings Bank (CEF) and the ticket shops are regularly used by the low-income population because they extend banking services at low costs.

Similarly, because the Postal Bank provides services to almost all 5,561 Brazilian municipalities, public securities could therefore be a savings alternative to the lowest income levels. However, such an extension would be difficult to establish and changes are not expected in the near future.

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[20] See http://www.tesouro.fazenda.gov.br/tesouro_direto/.

[21] See http://www.tesouro.fazenda.gov.br/tesouro_direto/faleconosco.asp.

[22] See http://www.expomoney.com.br/ e http://www.traderbrasil.com/expo/index.php.

4 Treasury Direct results

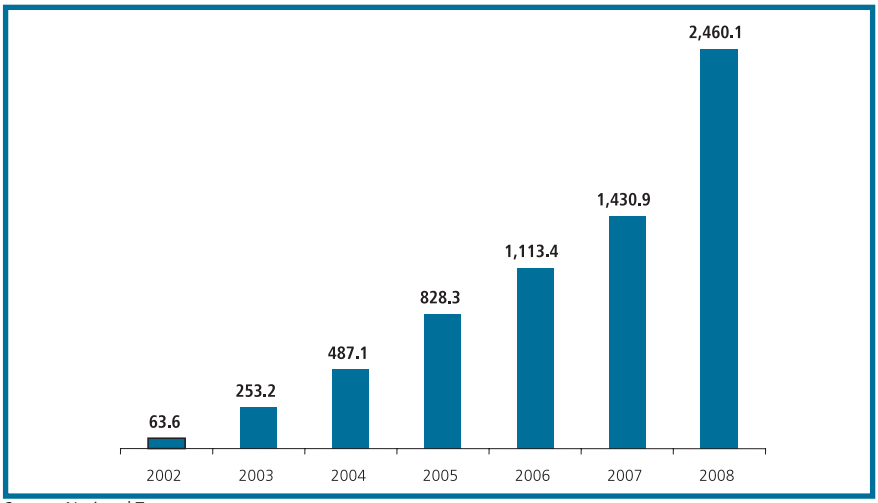
Some of the programs' outcomes with respect to outstanding securities, their average maturity, sales and investor profiles will be reviewed in this section.

4.1 Outstanding securities

TD outstanding securities in December 2008 were R$2.4 billion, a 72% increase over the previous year, although still just 0.17% of the Domestic Federal Public Debt (DFPD). This growth was due to the way the TD developed, as well as the greater volatility of the market in Brazil and worldwide, which led many to move their investments to public securities, which were considered safe in times of crisis.

In December 2008, the TD had about 146,000 registered investors, of which 43.6% are relatively small, with holdings of up to R$10,000 - a figure that illustrates the wide range of retail investors. Larger investors also participate, which reflects the TD quality and lower costs, since these groups are generally better informed of the opportunities offered by other financial products.

Graph 4. Treasury Direct stock – R$ million



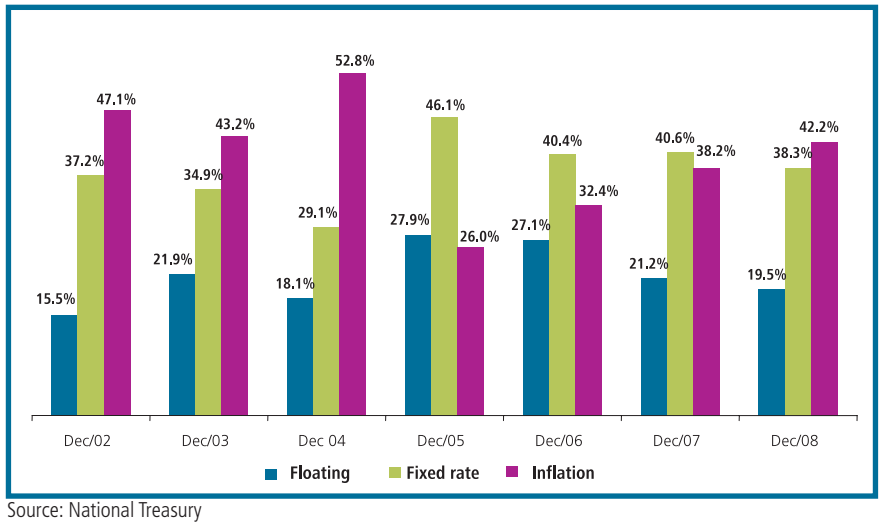
Source: National Treasury

Graphs 4 and 5 show that the distribution of outstanding TD securities differs from that of the DFPD (Domestic Federal Public Debt). In the TD, securities with higher volumes, which account for 42% of the overall amount, are inflation-linked (24.6% in NTN-Bs, 13.3% in NTN-Bs Principal and 4.3% in NTN-Cs). The share of fixed-rate securities is 38.3%, with a large number of LTNs, which account for 24.8% of the total and exceed R$610 million. At the same time, the share of floating rate securities declined: In December 2005, they accounted for 28% and by December 2008, were just 19.5%.

In general, the profile of TD outstanding securities, which is concentrated in fixed-rate and inflation-linked instruments, somewhat anticipated the changes in the DFPD profile: In 2004, these two categories accounted for 83% of outstanding securities while for the DFPD they represented only 35%. This is the first evidence that individual investor preferences do not closely follow those of wholesale investors, many of which

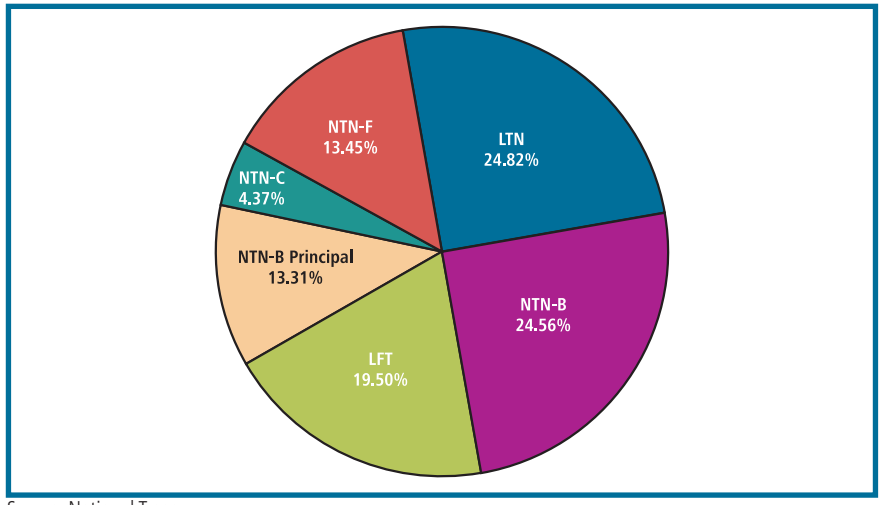
offer these same securities to the public indirectly, via investment funds. The composition of fixed-income funds from the largest Brazilian banks shows that LFTs account for the largest share of assets.[23] In other words, there is a mismatch between the portfolio allocation between individuals and fixed income funds.

Graph 5. Historical series of outstanding securities



Source: National Treasury

Graph 6. Share and type of securities in the outstanding debt – December 2008



Source: National Treasury

4.2 Sale profiles

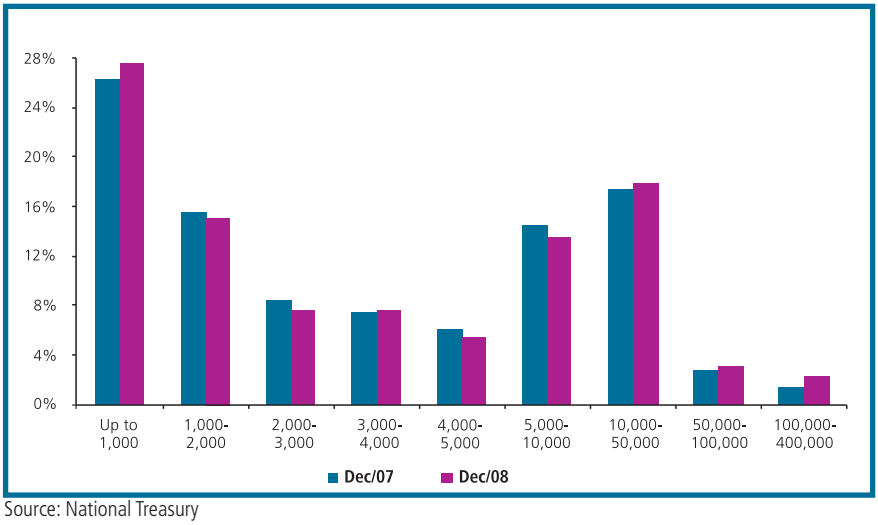
The TD's attractiveness to retail investors is also illustrated by the high volume of investments of up to R$5,000, which accounted for 63.2% of the total in 2008. Moreover, as shown in Graph 6, about 62% of the investments were below R$1,000, a distribution that has been relatively stable over time.

[23] See Chapter 5, Part 3.

In 2008, the total value of public securities sold was R$1,558.32 million, which was a 102.1% increase over the previous year, the largest since 2003: Demand was high for fixed-rate securities (LTNs and NTN-Fs), whose share reached 45.9%, followed by Consumer Price Index (IPCA) indexed securities (NTN-Bs and NTN-B principals), which accounted for 37.7%. The best selling securities during the year were LTNs, which represented 30.3%. This trend has continued since the program began and is obviously reflected in the stock: IPCA-indexed securities (NTN-Bs and NTN-B principals) ranked second among best-selling securities in recent months, above LFTs.

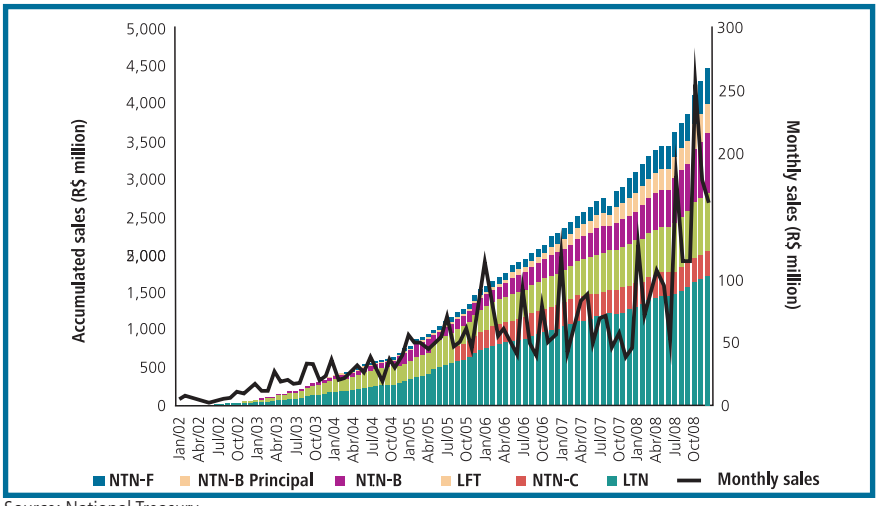
In part, this is because they are easily understood and meet investors' goals to develop long-term savings, which protect against inflation. In an economic scenario where interest rates are expected to drop in the medium term,[24] investors can expect excellent yields with the longer-term instruments currently offered by the National Treasury. Graph 7 shows sales over time.

Graph 7. Number of sales by investment level



Source: National Treasury

Graph 8. Evolution of monthly sales



Source: National Treasury

[24] See market expectations *Focus – Central Bank*.

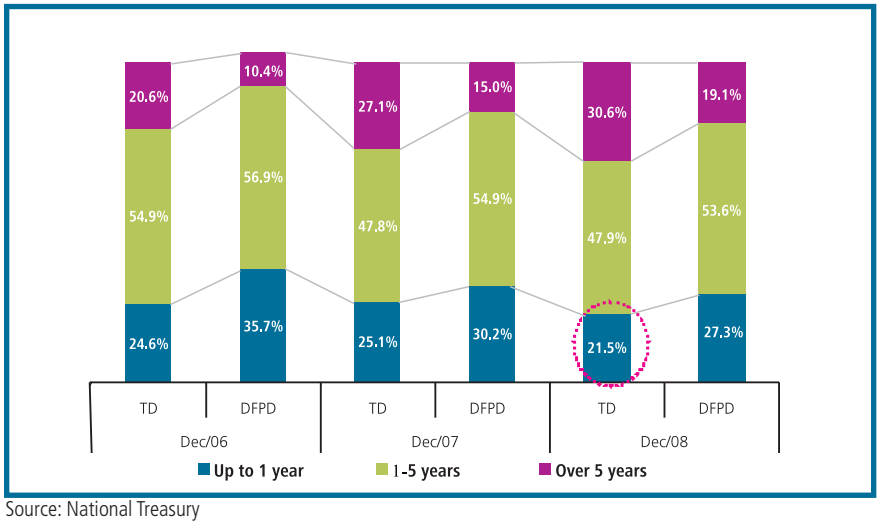
4.3 Maturities

Graph 8 compares the maturities of outstanding TD and DFPD securities. As can be seen, bonds matured over a wide range of dates: The percentage of TD securities falling due in 12 months - mainly in December 2006 - was very low when compared to the outstanding DFPD, but the share of those with maturities under five years was twice as high within the TD for 2006 and 2007, and considerably higher for 2008. When the profiles of the two stocks are compared, retail investors prompted changes within the FPD.

It should be noted that the decrease in the percentage falling due in a year occurred before and was steeper in the TD than in the overall domestic debt;[25] thus, by December 2006, just over a third of the DFPD matured every 12 months, while the percentage was close to a fourth with the TD. Similarly, the over-five-year share rose in the two groups but was higher and increased earlier in the TD outstanding securities: Here, the change was even more pronounced because non-resident investors were exempted from withholding taxes since February 2006, which contributed to improving the DFPD profile.

This is the second piece of evidence that individual and wholesale investors' preferences differ. As for maturities, small investors prefer longer terms because transaction costs affect them more heavily than they impact banks and institutional investors; thus, the first group would not benefit fully from market fluctuations while the latter would gain from the operational economies of scale, thereby mitigating the costs. Retail savers also seek longer terms because their alternatives (with regard to this type of savings) are limited to only a few products, which have less attractive yields.

Graph 9. Outstanding securities by maturity



Source: National Treasury

4.4 Investors' profiles

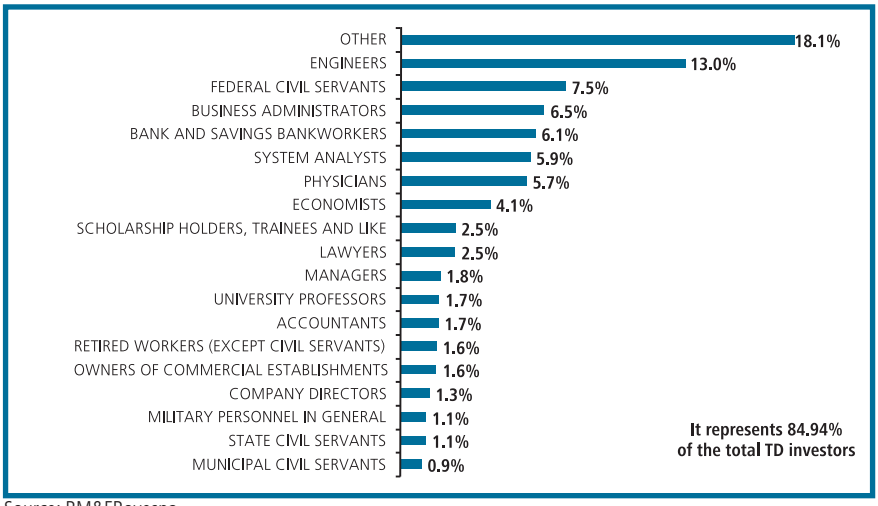
Small and medium investors, who are interested in investments that require relatively low amounts of cash, are increasingly important in terms of their participation in the TD program. Thus, it is necessary to

[25] Although the TD is computed in the DFPD, its outstanding securities and profile are insignificant when compared to the DFPD total.

understand their characteristics - e.g. occupation, sex, age, geographic location and frequency at which they participate in the system - so the program can be tailored to their needs when appropriate.

In late 2008, registered TD investors represented 101 professions of which only 14 had a participation level above 1.5%. Engineers were the most numerous, accounting for 13%, followed by Federal civil servants (7.5%), business administrators (6.5%) and bank employees (6.1%). This last number was surprising, as it was thought the share of bank employees would have been higher, given their easy access to financial services.

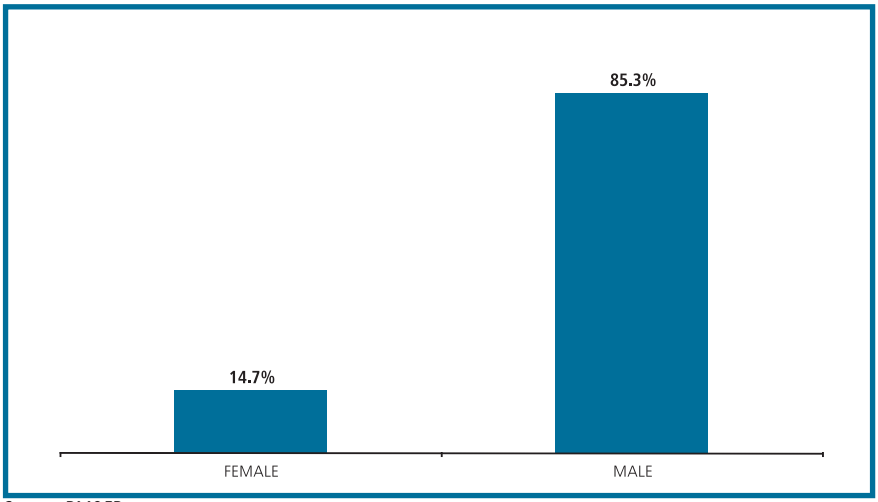
Graph 10. Investors by profession



Source: BM&FBovespa
Prepared by: National Treasury

However, in 2007, Federal civil servants were the most numerous, accounting for 62.5% of the total. This fact is linked to this group's relatively high savings, when compared to other occupations. Economists were the second most active group, which could reflect their greater familiarity with the performance indicators for public securities.

Graph 11. Purchase distribution by gender and age – December 2008

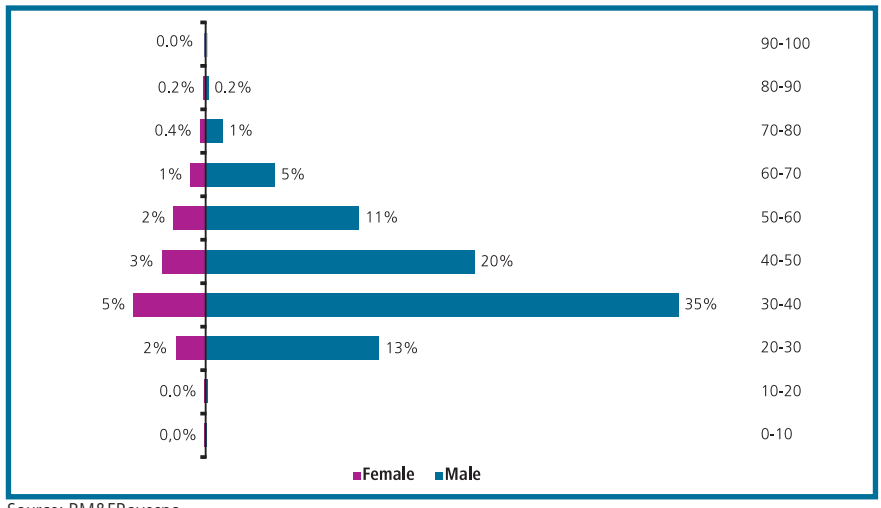


Source: BM&FBovespa
Prepared by: the National Treasury

Of those who invested at least once, 38.7% also purchased securities over the past 12 months. Men account for most of those registered with the TD program (see Graph 10) and 81.4% of those who actually bought securities. However, historical information since 2004 showed that women have been more active participants since 2004: 54.2% made at least one purchase during that time, while the figure for men was 45.8%. These figures indicate women's higher aversion to risk, since public securities are among the safest financial assets. Thus, it is possible that men, more than women, are distributing their funds into fixed and variable income investments, as well.[26]

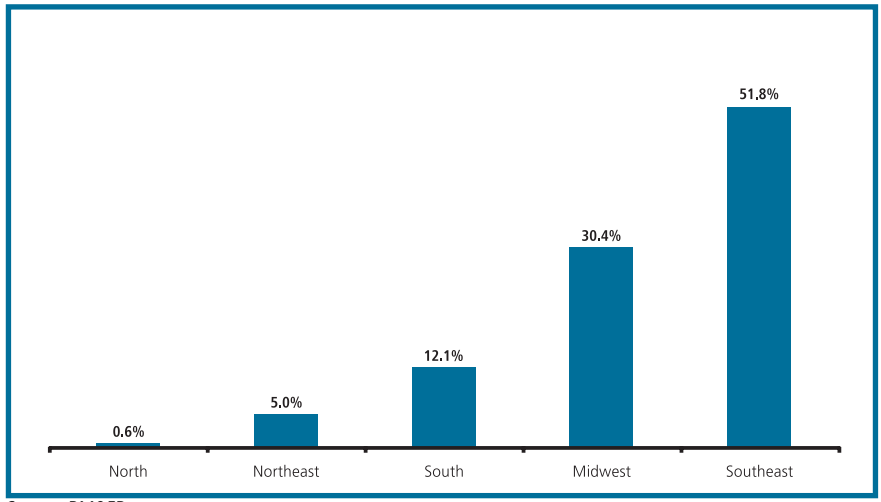
Distribution by age group is basically similar to Brazil's demographics: Groups between 20 and 50 years of age (at 10-year intervals) represent about 15, 40 and 23%, respectively, of total participants, which is consistent with the life-cycle theory in terms of savings and productivity. Women are more numerous in the 30- to 40-year old age group.

Graph 12. Participation of registered investors by age



Source: BM&FBovespa
Prepared by the National Treasury

Graph 13. Geographic distribution of purchases



Source: BM&FBovespa
Prepared by the National Treasury

With respect to geographic locale, the data confirm the concentration of investors in Brazil's southeast (where 53% of wholesale buyers are located), while the north and northeast account for just 5.7% and the central-west region for 12%. Important growth can be seen in the south, which is the country's second richest region: For this reason, since 2006, there have been more events and training in the capitals of the three southern states. This situation is positively correlated to income concentration in those regions, along with levels of schooling and access to information. Thus, government efforts to promote the program in regions where TD participation is lower, are justified.

5 International experience

Public securities are sold directly to individual investors in many countries, especially developed economies. As noted in Section 1, the countries are motivated by different factors, but all aim to offer investors low-cost alternatives and thus diversify the base (see Table 2 for a comparison of objectives).[27]

In general, these instruments can be divided into negotiable - similar to those purchased by large investors - and non-negotiable. Of the latter, the most important are savings and lottery bonds.

Most countries offer both negotiable and differentiated products (see Table 3) due to the positive correlation between the level of financial education and the demand for negotiable instruments - since this type of security generally requires a greater understanding of their characteristics and pricing. Even where readily available, information is generally sought by investors who value the capital market. Differentiated products represent a smaller share relative to those interested in the general program. For this group, non-negotiable and easily understood products are usually more attractive.[28]

Table 2. Objectives of retail programs, for selected countries

Country	Objectives of retail program
Belgium	Diversify the instruments offered to retail investors Promote their participation in the market
Brazil	Democratize the offer of public securities Increase financial knowledge among local population Stimulate long-term savings Diversify the investor base Introduce competition among financial intermediaries in the retail market
Canada	Low cost financing that is stable for the government
India	Promote long-term and diversified instruments for retail investors Ensure low cost and long-term financing to the government Provide an investment mechanism for the elderly and pensionists

[26] In May 2007 women represented some 22% of equity investors according to Bovespa (www.bovespa.com.br).
[27] For detail, see World Bank (2006) "*Retail government debt programmes: practices and challenges*".
[28] This explanation is consistent with that of Tufano & Schneider (2005), who suggest the revitalization of US savings bonds as an important marketable product.

Country	Objectives of retail program
Ireland	Offer investors a savings alternative
Italy	Allow retail investors to choose an alternative investment
Japan	Reduce government total financing costs Diversify the investor base Promote their participation in the market
Pakistan	Ensure the government an additional financing source Encourage people to save Diversify the investor base Diversify savings instruments accessible to retail Develop a secondary market for market securities
Philippines	Diversify the investor base Reduce the concentration of public debt holders Enhance competition among dealers in primary auctions
South Africa	Diversify the investor base and financing source Diversify instruments offered to retail investors Promote long-term savings
Sweden	Borrow at the lowest cost possible, with regard for risks Offer investors a diversified and low cost alternative Enhance financial market competition
UK	Minimize financing costs in the long run, with regard for risks Diversify instruments offered to investors Provide a totally safe investment alternative Provide the government with another financing alternative
US	Borrow at the lowest cost possible, with regard for constraints

Source: World Bank

As mentioned in Section 3, Brazil is interested in expanding distribution channels and reviews various countries' experiences with respect to selling public securities to a broader public. Sweden, for example, actively promotes its program and, according to the Swedish National Debt Office, retail investors hold 5.5% of the central government debt, with lottery bonds as the main financial instrument.

Table 3. Public financial instruments available to retail investors

Country	Negotiable	Non-negotiable	
	Standard bond	Savings bond	Lottery bonds
Belgium		✓	
Brazil	✓		

Country	Negotiable	Non-negotiable	
	Standard bond	Savings bond	Lottery bonds
Bulgaria		✓	
Canada		✓	
China		✓	
Germany	✓	✓	
India	✓	✓	
Indonesia		✓	
Ireland	✓	✓	✓
Italy	✓	✓	
Japan		✓	
Pakistan		✓	✓
Philippines	✓	✓	
South Africa	✓	✓	
Sweden	✓	✓	✓
UK	✓	✓	✓
USA	✓	✓	

Source: World Bank

The country comparisons (see Table 4) illustrate a range with regard to type of investor access, securities' characteristics, and liquidity. The six countries, which are geographically diverse, have programs that are well established or being developed.[29] Most ensure investors some liquidity to redeem their funds before maturity. In Sweden, for example, investors can sell their assets via the local stock market at current prices.

Table 4. Comparisons in selected countries

Country	Internet access	Type of instrument			Liquidity
		Floating rate	Fixed rate	Inflation-linked	
Brazil	✓	✓	✓	✓	✓
Italy	**no**	✓	✓	✓	**no**
Philippines	✓	**no**	✓	**no**	✓
Spain	✓	**no**	✓	**no**	✓
Sweden	✓	✓	✓	✓	✓
USA	✓	✓	✓	✓	✓

Source: Governments' websites and other publications.

[29] It is important to note that the specific choice of these particular countries reflects only the greater availability of and easiness to get information on the programs, whether by the internet or (direct personal) contact.

The examples present an array of security maturities, from six months to 30 years. This allows investors to customize their portfolios by blending different maturities and types of instruments. All require a minimum investment: In Brazil, it is about $50, possibly the lowest among the sample.

Some countries interrupted their retail programs in the 1990s (for example, Denmark and Australia) due to macroeconomic adjustments and lower borrowing requirements, as well as issues related to market operations such as cost-benefit ratios. However, other factors should also be considered, such as objectives and risks, the design of the offers to retail investors, and preconditions that are legally viable and reliable.[30]

6 Conclusion

The economic literature indicates that a diversified investor base is needed to reduce the cost of sovereign debt and, most important, make it less susceptible to financial shocks.[31] An analysis of the data shows that the TD has gradually met its objective to attract retail investors - despite limited media coverage.

Evidence also suggests that expanding the TD program will eventually attract more small and medium investors and provide them with important savings, as their yields will increase. Already, due to increased competition in the banking sector, loan spreads were lowered. Given this reality, the financial sector has been concerned that the TD's growth will create significant competition. However, this fear is overblown, since even an enlarged program will still only attract a small share of total investment.

Nevertheless, an expanded TD program could promote competition among financial institutions as they will need to offer interesting, alternative fixed-income investments to benefit investors. In the same manner, individuals will gain from a more efficient financial sector and a more diversified supply of assets, whose operations form the base of economic growth and reduce the tax burden, because the resources obtained through the sale of public securities are used to finance public investments in infrastructure and other essential areas.

Compared to most of the countries analyzed, Brazil relies on a high level of automation and decentralization with respect to investors' participation. Thus, the TD program's overhead is quite low: It uses web-based systems and gains economies of scale through the expertise of BM&FBovespa, the National Treasury's partner in consolidating custody-related actions, and daily interactions with brokerage firms and banks, which serve as depository agents.

Finally, it should be noted that in many developed countries, including the US, mechanisms like the TD comfortably co-exist with the financial sector: In these countries, most investment funds carry not only floating rate public securities, but offer equity funds and other portfolios with higher value-added to investors. With the structural downward trend in nominal interest rates in Brazil, it is expected that most fund managers will benefit from lower administrative costs and could switch their portfolios to more diversified structures. Thus, the TD could be a popular, effective channel to distribute public securities to retail investors.

[30] See Thedéen (2004) , (Glaessner, Kantnur, 2004)
[31] (Wheeler, Jansen, 2000)

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Statistical annex

A.1. EXTERNAL INDICATORS
[USD Million]

Year	Public Sector External Debt	Private Sector External Debt	Gross External Debt [a]	International Reserves [b]	Net External Debt	GDP	Exports of goods and services	Ratio between Gross External Debt and Reserves	GDP (%)	Exports
1952	-	-	638	482	156	21,918	1,418	1.3	2.9	0.4
1953	-	-	1,159	421	738	12,378	1,539	2.8	9.4	0.8
1954	-	-	1,196	372	824	11,230	1,562	3.2	10.6	0.8
1955	-	-	1,395	442	953	11,406	1,423	3.2	12.2	1.0
1956	-	-	2,736	608	2,128	14,616	1,482	4.5	18.7	1.8
1957	-	-	2,491	474	2,017	16,833	1,392	5.3	14.8	1.8
1958	-	-	2,870	465	2,405	12,209	1,243	6.2	23.5	2.3
1959	-	-	3,160	366	2,794	15,326	1,282	8.6	20.6	2.5
1960	-	-	3,738	345	3,393	17,066	1,269	10.8	21.9	2.9
1961	-	-	3,291	470	2,821	17,245	1,403	7.0	19.1	2.3
1962	-	-	3,533	285	3,248	19,207	1,214	12.4	18.4	2.9
1963	-	-	3,612	215	3,397	23,262	1,406	16.8	15.5	2.6
1964	-	-	3,294	244	3,050	20,921	1,430	13.5	15.7	2.3
1965	-	-	3,823	483	3,340	22,466	1,595	7.9	17.0	2.4
1966	-	-	3,771	421	3,350	28,283	1,741	9.0	13.3	2.2
1967	-	-	3,440	198	3,242	31,086	1,654	17.4	11.1	2.1
1968	-	-	4,092	257	3,835	33,874	1,881	15.9	12.1	2.2
1969	-	-	4,635	656	3,980	37,162	2,311	7.1	12.5	2.0
1970	-	-	6,240	1,187	5,053	42,302	2,739	5.3	14.8	2.3
1971	-	-	8,284	1,723	6,561	48,849	2,904	4.8	17.0	2.9
1972	-	-	11,464	4,183	7,281	58,406	3,991	2.7	19.6	2.9
1973	-	-	14,857	6,416	8,441	83,551	6,199	2.3	17.8	2.4
1974	-	-	20,032	5,269	14,763	109,740	7,951	3.8	18.3	2.5
1975	-	-	25,115	4,040	21,075	129,140	8,670	6.2	19.4	2.9
1976	-	-	32,145	6,544	25,601	153,093	10,128	4.9	21.0	3.2
1977	-	-	37,951	7,256	30,695	176,257	12,120	5.2	21.5	3.1
1978	-	-	52,187	11,895	40,292	200,091	12,659	4.4	26.1	4.1
1979	32,364	23,439	55,803	9,689	46,114	222,285	15,244	5.8	25.1	3.7
1980	35,632	28,627	64,259	6,913	57,346	236,841	20,132	9.3	27.1	3.2
1981	40,575	33,388	73,963	7,507	66,456	257,269	23,293	9.9	28.7	3.2
1982	46,047	39,440	85,487	3,994	81,493	269,900	20,175	21.4	31.7	4.2
1983	58,975	34,770	93,745	4,563	89,182	188,532	21,899	20.5	49.7	4.3
1984	70,569	31,558	102,127	11,995	90,132	188,801	27,005	8.5	54.1	3.8
1985	77,444	27,727	105,171	11,608	93,563	210,167	25,639	9.1	50.0	4.1
1986	86,140	25,063	111,203	6,760	104,443	256,509	22,349	16.5	43.4	5.0
1987	92,222	28,967	121,188	7,458	113,730	280,949	26,224	16.2	43.1	4.6
1988	90,437	23,074	113,511	9,140	104,371	304,185	33,789	12.4	37.3	3.4
1989	88,831	26,675	115,506	9,679	105,827	413,564	34,383	11.9	27.9	3.4
1990	86,355	37,083	123,439	9,973	113,466	466,635	31,414	12.4	26.5	3.9
1991	81,408	42,502	123,910	9,406	114,504	405,097	31,620	13.2	30.6	3.9
1992	93,726	42,223	135,949	23,754	112,195	387,277	35,793	5.7	35.1	3.8
1993	91,768	53,958	145,726	32,211	113,515	429,647	38,555	4.5	33.9	3.8
1994	94,526	53,769	148,295	38,806	109,489	546,219	43,545	3.8	27.1	3.4
1995	94,628	64,628	159,256	51,840	107,416	769,007	46,506	3.1	20.7	3.4
1996	92,548	87,387	179,935	60,110	119,824	839,704	47,747	3.0	21.4	3.8
1997	85,673	114,325	199,998	52,173	147,825	871,200	52,994	3.8	23.0	3.8
1998	103,044	138,600	241,644	44,556	197,088	843,827	51,140	5.4	28.6	4.7
1999	104,761	120,849	225,610	36,342	189,267	586,866	48,011	6.2	38.4	4.7
2000	99,508	117,413	216,921	33,011	183,910	644,452	55,086	6.6	33.7	3.9
2001	103,449	106,485	209,934	35,866	174,068	553,998	58,223	5.9	37.9	3.6
2002	121,122	89,589	210,711	37,823	172,888	505,904	60,362	5.6	41.7	3.5
2003	131,421	83,508	214,930	49,296	165,633	552,239	73,084	4.4	38.9	2.9
2004	125,291	76,083	201,374	52,935	148,439	663,552	96,475	3.8	30.3	2.1
2005	96,587	72,863	169,450	53,799	115,651	881,754	118,308	3.1	19.2	1.4
2006	85,534	87,055	172,589	85,839	86,750	1,088,999	137,807	2.0	15.8	1.3
2007	80,746	112,473	193,219	180,334	12,885	1,333,576	160,649	1.1	14.5	1.2
2008	79,720	120,473	200,192	193,783	6,409	1,575,873	197,942	1.0	12.7	1.0

Source: Central Bank of Brazil. Elaboration: IPEA (Dimac) and National Treasury Secretariat - STN (COGEP)

a Includes short, medium and long term debts (short term debt not included before 1956). Does not include intercompany loans from 1998 on.

b International liquidity concept

A.2. FISCAL INDICATORS
[% GDP]

Year	DFPD [a] held by the public	EFPD [b]	FPD (a+b)	General Government Gross Debt [c]	Net Public Sector Debt [d]	Net Public Sector Debt Domestic [d]	Net Public Sector Debt External [d]	Borrowing requirements Primary [e]	Borrowing requirements Interest	Borrowing requirements Nominal
1981	-	-	-	-	34.6	-	-	-	-	13.3
1982	-	-	-	-	32.8	14.9	17.9	-	-	16.4
1983	-	-	-	-	51.5	18.4	33.1	-	-	20.8
1984	-	-	-	-	55.8	22.4	33.4	-	-	24.6
1985	-	-	-	-	52.6	21.7	30.9	-2.61	31.3	28.7
1986	-	-	-	-	49.4	20.6	28.8	-1.59	12.8	11.2
1987	-	-	-	-	50.3	19.3	31.0	0.99	30.9	31.9
1988	-	-	-	-	46.9	21.3	25.6	-0.91	54.6	53.7
1989	-	-	-	-	40.2	21.7	18.5	1.03	84.4	85.4
1990	-	-	-	-	40.6	17.8	22.8	-4.69	34.8	30.2
1991	-	-	-	-	38.2	14.0	24.2	-2.71	29.5	26.8
1992	-	-	-	-	37.0	18.4	18.7	-1.58	47.3	45.8
1993	-	-	-	-	32.6	18.3	14.3	-2.18	67.0	64.8
1994	17.7	25.6	43.3	-	30.1	21.3	8.7	-5.64	32.6	27.0
1995	15.4	12.0	27.4	-	28.0	22.9	5.1	-0.26	7.5	7.3
1996	27.3	8.8	36.1	-	30.7	27.1	3.6	0.10	5.8	5.9
1997	31.1	7.8	38.9	-	31.8	27.9	4.0	0.96	5.2	6.1
1998	38.1	8.3	46.4	-	38.9	33.2	5.8	-0.02	8.0	7.9
1999	46.1	11.5	57.6	-	44.5	35.2	9.4	-3.23	13.2	10.0
2000	48.8	12.1	60.9	50.3	45.5	36.5	9.0	-3.47	8.0	4.5
2001	47.9	13.0	60.9	50.8	52.2	42.3	9.9	-3.36	8.1	4.8
2002	42.2	18.3	60.4	53.1	60.6	44.6	16.1	-3.55	12.9	9.4
2003	43.0	13.3	56.3	58.4	54.9	43.5	11.5	-3.89	7.2	3.3
2004	41.7	10.5	52.2	53.5	50.6	42.5	8.1	-4.17	6.4	2.3
2005	45.6	8.3	53.9	56.3	48.2	44.9	3.3	-4.35	7.1	2.8
2006	46.1	6.1	52.2	56.4	47.0	48.0	-1.1	-3.81	6.7	2.9
2007	47.2	4.2	51.3	58.0	45.1	52.5	-7.4	-3.91	6.1	2.1
2008	43.8	4.6	48.4	57.9	38.4	49.3	-10.9	-4.08	5.7	1.6

Source: Brazilian Central Bank. For DFPD, EFPD and FDP, National Treasury Secretariat - STN (CODIV) Elaboration: IPEA (Dimac) and STN (COGEP)

[a] Domestic Federal Public Debt held by the public, issued by STN and the Central Bank.

[b] External Federal Public Debt. From 1994 to 1996, data of the Central Bank annual report. From 1997 on, data published by the Brazilian National Treasury.

[c] Federal Government (except Central Bank), states and municipalities debts. From 2000 to 2005, recalculated by STN considering Central Bank new methodology. From 2006 on, Central Bank data.

[d] From 1981 to 2000, data includes the Federal Government Oil Company's (Petrobras) assets and liabilities. From 2001 on, the company was excluded of the statistics.

[e] Positive value indicates deficit. Includes the Central Government (National Treasury, Central Bank and the Public Pension System), States, Municipalities and state-owned companies.

A.3. MONETARY INDICATORS
[p.y.]

Year	Wholesale Price Index [a]	Consumer Price Index [b]	Nominal interest rate (accumulated) [c]	Real interest rate [d]
1948	8.0	3.3	-	-
1949	12.3	4.2	-	-
1950	12.4	3.7	-	-
1951	12.3	11.3	-	-
1952	12.7	27.2	-	-
1953	20.5	19.2	-	-
1954	25.9	22.6	-	-
1955	12.1	18.4	-	-
1956	24.5	26.5	-	-
1957	7.0	13.7	-	-
1958	24.4	22.6	-	-
1959	39.4	42.7	-	-
1960	30.5	32.2	-	-
1961	47.8	43.5	-	-
1962	51.6	61.7	-	-
1963	79.9	80.5	-	-
1964	92.1	85.6	-	-
1965	34.2	41.2	-	-
1966	39.1	46.3	-	-
1967	25.0	25.3	-	-
1968	25.5	25.2	-	-
1969	19.3	22.6	-	-
1970	19.3	17.6	-	-
1971	19.5	20.6	-	-
1972	15.7	17.5	-	-
1973	15.5	14.0	-	-
1974	34.5	33.1	17.27	-11.86
1975	29.4	29.3	21.86	-5.72
1976	46.3	38.0	41.15	2.26
1977	38.8	41.1	41.94	0.60
1978	40.8	39.9	46.40	4.64
1979	77.2	67.2	42.57	-14.73
1980	110.2	99.7	46.35	-26.71
1981	95.2	93.5	89.27	-2.18
1982	99.7	100.3	119.35	9.50
1983	211.0	178.0	199.73	7.83
1984	223.8	209.1	255.51	15.01
1985	235.1	239.0	276.53	11.06
1986	65.0	59.2	119.99	38.17
1987	415.8	394.6	452.94	11.79
1988	1,037.6	993.3	1,157.73	15.04
1989	1,782.9	1,863.6	2,506.85	32.76
1990	1,476.7	1,585.2	1,253.24	-19.70
1991	480.2	475.1	636.87	28.13
1992	1,157.8	1,149.1	1,649.14	40.04
1993	2,708.2	2,489.1	3,159.79	25.90
1994	1,093.9	929.3	1,253.62	31.51
1995	14.8	22.0	53.08	25.50
1996	9.3	12.5	27.41	13.21
1997	7.5	5.4	24.78	18.41
1998	1.7	2.1	28.78	26.19
1999	20.0	5.3	25.58	19.26
2000	9.8	5.3	17.43	11.57
2001	10.4	7.4	17.31	9.20
2002	26.4	8.8	19.17	9.49
2003	7.7	11.1	23.34	11.01
2004	12.1	7.5	16.24	8.11
2005	1.2	6.8	19.04	11.50
2006	3.8	4.6	15.07	9.98
2007	7.9	4.1	11.87	7.52
2008	9.1	4.8	12.48	7.31

Sources: FGV, IBGE and Central Bank of Brazil Elaboration: IPEA (Dimac) and National Treasury Secretariat (COGEP)

[a] Wholesale Price Index - IGP-DI, compounded by a weighted mean of IPA, IPC and INCC.

[b] Consumer Price Index proxy. Until 1979, IPC-Fipe (CPI of São Paulo municipality). From 1980 to 1995, INPC (Índice Nacional de preços ao consumidor), published by IBGE. From 1996 on, IPCA (Índice de Preços ao Consumidor Amplo, also published by IBGE), the official price index of the inflation target regime, established by the Central Bank in 1999.

[c] Until 1985, overnight rate. From 1986 on, SELIC index.

[d] Theoretical value calculated based on nominal interest rates (Selic) and consumer price indexes (IPC/INPC/IPCA).

A.4.1. EXTERNAL PUBLIC DEBT - 1824 to 1950

[1,000 £]

Year	Loans			External Services			Stock
	Amount	Issuance costs	Net revenues [a]	Interest	Fees	Amortization [b]	In circulation
1824	710	178	533	67	1	-	1,333
1825	2,376	408	1,968	372	4	-	5,086
1826	-	-	-	252	3	110	4,976
1827	-	-	-	251	3	110	4,866
1828	-	-	-	249	3	60	4,806
1829	769	354	415	285	3	56	5,519
1830	-	-	-	283	3	187	5,332
1831	-	-	-	280	3	-	5,332
1832	-	-	-	278	3	-	5,332
1833	-	-	-	275	3	-	5,332
1834	-	-	-	271	3	-	5,332
1835	-	-	-	268	3	-	5,332
1836	-	-	-	265	3	25	5,307
1837	-	-	-	261	3	50	5,257
1838	-	-	-	257	3	49	5,208
1839	411	111	300	274	4	39	5,580
1840	-	-	-	270	4	-	5,580
1841	-	-	-	265	4	-	5,580
1842	-	-	-	260	4	-	5,580
1843	732	109	623	291	4	125	6,187
1844	-	-	-	285	4	-	6,187
1845	-	-	-	278	4	-	6,187
1846	-	-	-	271	4	-	6,187
1847	-	-	-	263	4	-	6,187
1848	-	-	-	255	4	-	6,187
1849	-	-	-	247	4	-	6,187
1850	-	-	-	238	4	4	6,183
1851	-	-	-	229	4	173	6,010
1852	1,041	52	989	267	15	72	6,979
1853	-	-	-	206	4	1,107	5,872
1854	-	-	-	196	4	48	5,824
1855	-	-	-	185	4	188	5,636
1856	-	-	-	174	4	143	5,493
1857	-	-	-	162	4	148	5,345
1858	1,527	69	1,458	218	4	153	6,719
1859	508	-	508	231	5	743	6,484
1860	1,373	275	1,098	271	5	102	7,655
1861	-	-	-	257	6	223	7,432
1862	-	-	-	251	6	227	7,205
1863	3,855	462	3,393	400	14	240	10,820
1864	-	-	1,735	348	6	2,873	7,947
1865	6,964	1,811	5,153	686	9	176	14,735
1866	-	-	3,410	676	10	318	14,417
1867	-	-	-	658	10	348	14,069
1868	-	-	-	641	10	372	13,697
1869	-	-	-	622	10	633	13,064
1870	-	-	-	603	10	343	12,721
1871	3,460	381	3,079	755	12	356	15,825
1872	-	-	-	734	13	362	15,463
1873	-	-	-	715	13	410	15,053
1874	-	-	-	685	13	423	14,630
1875	5,301	185	5,116	908	16	444	19,487
1876	-	-	-	876	19	450	19,037
1877	-	-	-	832	19	536	18,501
1878	-	-	-	777	19	573	17,928
1879	-	-	-	724	19	774	17,154
1880	-	-	-	669	19	601	16,553
1881	-	-	-	611	19	683	15,870
1882	-	-	-	550	19	868	15,002
1883	4,600	600	4,000	693	19	566	19,036
1884	-	-	-	630	19	617	18419
1885	-	-	-	565	19	592	17827
1886	6431	322	6109	818	23	704	23554
1887	-	-	-	747	23	602	22,952

Source: "Estatísticas Históricas do Brasil: séries econômicas, demográficas e sociais de 1550 a 1988".

2nd edition. revised and updated from vol. 3 from "Séries estatísticas retrospectivas. Rio de Janeiro: IBGE, 1990".

[a] Includes fees and other issuance costs.

[b] Up to 1931, prices represent the bond's nominal values.

From 1932 on, they represent market value, excluding quantities obtained in Brazil, in local currency.

A.4.1. EXTERNAL PUBLIC DEBT - 1824 to 1950

[1,000 £]

Year	Loans			External Services			Stock
	Amount	Issuance costs	Net revenues [a]	Interest	Fees	Amortization [b]	In circulation
1888	7097	369	6728	811	25	681	30,368
1889	19837	1984	17853	911	89	18,101	31,104
1890	-	-	-	1,305	14	207	30,897
1891	-	-	-	1,299	15	318	30,579
1892	-	-	-	1,279	15	399	30,180
1893	3,170	853	2,317	1,448	16	403	33,487
1894	-	-	540	1,430	18	558	32,929
1895	7,442	1,117	6,325	1,405	18	554	39,817
1896	1,000	-	1,000	1,902	22	615	40,203
1897	2,000	60	1,940	1,874	34	1,743	40,461
1898	1,421	-	-	1,053	25	1,574	40,308
1899	2,908	-	-	359	15	1,196	42,020
1900	2,869	-	-	444	9	707	44,182
1901	16,031	396	14,219	1,297	15	217	59,996
1902	-	-	-	2,331	26	227	59,769
1903	8,500	640	7,852	2,829	32	420	68,269
1904	2,062	327	1,735	2,967	33	465	69,866
1905	8,814	946	7,817	3,168	36	657	78,023
1906	10,290	1,129	9,161	4,148	41	658	87,656
1907	5,650	284	5,366	4,690	52	2,060	91,246
1908	23,750	2,487	21,263	8,235	49	3,397	111,599
1909	4,300	498	3,802	6,851	53	2,214	113,685
1910	18,200	2,695	15,505	6,415	58	3,625	128,260
1911	9,900	1,203	8,697	6,899	60	5,976	132,184
1912	4,200	531	3,669	6,882	62	4,858	131,526
1913	19,620	487	19,133	7,529	67	6,913	144,233
1914	18,702	-	18,702	7,449	57	1,948	160,987
1915	3,530	-	3,530	7,945	32	2,617	161,900
1916	1,158	100	1,058	5,380	38	1,435	161,623
1917	-	-	-	6,442	98	3,078	158,545
1918	346	-	346	8,190	75	5,213	153,678
1919	2,019	175	1,844	7,579	81	3,274	152,423
1920	-	-	-	7,890	87	2,088	150,335
1921	20,336	2,042	18,294	7,360	77	1,303	169,368
1922	17,716	1,483	16,233	8,017	90	1,707	185,377
1923	-	-	-	8,989	103	1,935	183,442
1924	-	-	-	8,411	107	1,759	181,683
1925	3,082	82	3,000	8,284	101	1,783	182,982
1926	29,246	3,457	25,789	9,491	356	1,774	210,454
1927	26,622	2,649	23,973	10,295	121	2,890	234,186
1928	25,293	1,786	23,507	12,264	137	4,510	254,969
1929	2,877	376	2,501	13,082	157	5,560	252,286
1930	20,000	2,000	18,000	13,359	151	6,132	266,154
1931	18,359	-	18,359	11,908	135	8,548	275,966
1932	-	-	-	5,244	130	7,536	268,430
1933	-	-	-	3,111	30	1,993	266,430
1934	-	-	-	4,519	51	2,398	264,021
1935	-	-	-	5,849	143	1,760	258,783
1936	-	-	-	5,918	138	1,807	252,638
1937	-	-	-	6,497	134	1,845	242,706
1938	-	-	-	-	-	-	242,706
1939	-	-	-	-	-	-	242,706
1940	-	-	-	2,537	76	519	241,290
1941	-	-	-	3,039	98	844	239,539
1942	-	-	-	3,013	92	882	231,850
1943	-	-	-	2,993	87	807	226,237
1944	-	-	-	7,000	451	11,347	186,818
1945	-	-	-	4,750	193	5,833	173,214
1946	-	-	-	454	175	4,476	160,044
1947	-	-	-	4,464	141	3,763	154,295
1948	-	-	-	4,297	117	3,793	145,936
1949	-	-	-	3,767	219	24,702	116,487
1950	-	-	-	3,793	303	27,776	106,828

[a] Includes fees and other issuance costs.

[b] Up to 1931, prices represent the bond's nominal values.
From 1932 on, they represent market value, excluding quantities obtained in Brazil, in local currency.

A.4.2.DOMESTIC PUBLIC DEBT - 1883 to 1969 [a]

Year	Stock	Year	Stock
1883	408,000	1927	2,435,367
1884	406,000	1928	2,166,412
1885	405,000	1929	2,450,373
1886	453,000	1930	2,533,914
1887	440,000	1931	2,589,709
1888	437,000	1932	3,016,097
1889	435,000	1933	3,005,155
1890	539,000	1934	3,003,002
1891	537,000	1935	3,282,983
1892	542,000	1936	3,505,292
1893	537,000	1937	3,748,252
1894	535,000	1938	4,247,786
1895	535,000	1939	5,081,189
1896	534,000	1940	6,212,178
1897	636,000	1941	5,970,994
1898	637,000	1942	5,290,183
1899	637,000	1943	5,853,473
1900	511,000	1944	6,782,370
1901	570,363	1945	7,895,263
1902	570,363	1946	9,965,459
1903	581,520	1947	10,063,228
1904	568,952	1948	10,416,533
1905	558,477	1949	10,427,595
1906	552,477	1950	10,439,288
1907	546,477	1951	10,446,425
1908	546,477	1952	10,450,213
1909	558,560	1953	10,451,141
1910	591,751	1954	10,451,537
1911	620,526	1955	10,558,245
1912	685,290	1956	10,642,446
1913	726,747	1957	10,736,766
1914	758,673	1958	11,000,050
1915	781,904	1959	12,444,418
1916	864,436	1960	12,568,908
1917	937,725	1961	14,359,797
1918	1,012,138	1962	31,303,545
1919	1,042,351	1963	54,650,370
1920	1,113,486	1964	152,131,903
1921	1,344,358	1965	169,728,000
1922	1,531,430	1966	717,000,000
1923	1,778,201	1967	1,260,000,000
1924	2,032,177	1968	1,767,500,000
1925	2,137,771	1969	5,881,000,000
1926	2,392,061		

Sources: From 1883 to 1900 and from 1966 to 1969, "Série Históricas - Dívida Pública". ANDIMA, 1993
From 1901 to 1965, "O Brasil em Números Séc. XX". IBGE, 1961.
* Funded Public Debt. Values expressed in million of "contos de réis" up to 1941.
From 1942 on, values expressed in thousand of cruzeiros.

A.4.3 DOMESTIC FEDERAL PUBLIC DEBT HELD BY THE PUBLIC - 1970 TO 2008

Year	National Treasury Bonds							Total	Central Bank Bonds [b]			Total	DFPD
	OTN	BTN	LFT	NTN	LTN	CTN/CFT	Others		NBC-E/NBC	LBC	BBC/BBC-A		
1970	9,389	-	-	-	496	-	-	9,885	-	-	-	-	9,885
1971	11,511	-	-	-	2,070	-	-	13,581	-	-	-	-	13,581
1972	15,892	-	-	-	8,054	-	-	23,946	-	-	-	-	23,946
1973	20,804	-	-	-	12,612	-	-	33,416	-	-	-	-	33,416
1974	32,969	-	-	-	14,404	-	-	47,373	-	-	-	-	47,373
1975	58,432	-	-	-	22,136	-	-	80,568	-	-	-	-	80,568
1976	80,945	-	-	-	64,750	-	-	145,695	-	-	-	-	145,695
1977	97,386	-	-	-	106,179	-	-	203,565	-	-	-	-	203,565
1978	151,811	-	-	-	161,940	-	-	313,751	-	-	-	-	313,751
1979	233,384	-	-	-	163,853	-	-	397,237	-	-	-	-	397,237
1980	448,157	-	-	-	172,773	-	-	620,930	-	-	-	-	620,930
1981	1,371,184	-	-	-	798,639	-	-	2,169,823	-	-	-	-	2,169,823
1982	4,155	-	-	-	711	-	-	4,866	-	-	-	-	4,866
1983	9,150	-	-	-	374	-	-	9,523	-	-	-	-	9,523
1984	50,867	-	-	-	2,214	-	-	53,081	-	-	-	-	53,081
1985	249,596	-	-	-	8,893	-	-	258,489	-	-	-	-	258,489
1986	148,697	-	-	-	8,057	-	-	156,754	-	202,465	-	202,465	359,219
1987	617,542	-	-	-	41,431	-	-	658,973	-	1,633,602	-	1,633,602	2,292,575
1988	9,921,852	-	21,605,595	-	-	-	-	31,527,447	-	-	-	-	31,527,447
1989	747	13,885	691,992	-	-	-	-	706,623	-	-	-	-	706,623
1990	466	102,942	1,390,485	-	687,926	-	-	2,181,819	-	30,417	-	30,417	2,212,236
1991	687	518,193	7,569,674	1,553,547	-	-	-	9,642,101	-	729,953	1,984,298	2,714,251	12,356,352
1992	2,232	586,787	24,421,538	162,492,964	-	-	-	187,503,521	-	16,331,686	247,093,057	263,424,743	450,928,264
1993	3	13,655	516,680	9,562,413	660,547	-	-	10,753,298	-	3	2,962,487	2,962,490	13,715,788
1994	-	41	7,771	26,999	519	-	-	35,330	-	2,133	24,320	26,453	61,783
1995	-	50	18,417	21,137	19,535	-	-	59,139	-	22,561	26,784	49,345	108,484
1996	-	54	-	44,975	48,077	-	53,982	147,088	-	32,789	50,316	83,105	230,193
1997	-	60	63,592	61,865	64,755	-	36,772	227,044	11,629	25,282	28,327	65,238	292,282
1998	-	64	157,171	52,241	5,438	4,237	48,893	268,044	33,800	22,537	48,372	104,709	372,753
1999	-	67	204,223	98,182	38,118	11,292	76,580	428,462	61,897	1,122	-	63,019	491,481
2000	-	64	265,699	46,233	79,190	14,280	86,225	491,691	83,914	-	-	83,914	575,605
2001	-	67	321,734	87,488	48,791	19,366	20,441	497,887	126,198	-	-	126,198	624,085
2002	-	100	372,418	127,399	13,596	19,214	23,339	556,066	67,125	-	-	67,125	623,191
2003	-	74	443,180	126,721	91,055	18,236	21,500	700,767	30,659	-	-	30,659	731,426
2004	-	62	457,757	133,700	159,960	17,343	27,858	796,680	13,584	-	-	13,584	810,264
2005	-	48	504,653	167,379	263,436	15,799	21,532	972,847	6,815	-	-	6,815	979,662
2006	-	39	412,034	296,598	346,984	14,532	23,309	1,093,495	-	-	-	-	1,093,495
2007	-	-	409,024	452,337	325,149	13,939	24,422	1,224,871	-	-	-	-	1,224,871
2008	-	-	453,131	536,606	239,143	14,022	21,921	1,264,823	-	-	-	-	1,264,823

Sources: From 1970 until 1999, Central Bank. From 2000 onwards, National Treasury Secretariat - STN (CODIV) Elaboration: Andima ("Série Históricas - Dívida Pública", 1993) and STN (COGEP)

[a] Domestic Federal Public Debt - DFPD. Values expressed in Cr$ million, from 1970 to 1981; Cr$ billion, from 1982 to 1985; Cz$ million, from 1986 to 1988; NCz$ million, in 1989; Cr$ millon, from 1990 to jul/1993; CR$ million, from aug/93 to jun/94; and in R$ million, from jul/94 onwards.

[b] Accordind to article 34, caput, of Complementary Law 101, of 2001, Central Bank was prohibited of issuing bonds from May 4th, 2002 onwards. Nevertheless, Central Bank bonds were kept in circulation until 2005.

A.4.4. FEDERAL PUBLIC DEBT (DOMESTIC AND EXTERNAL) HELD BY THE PUBLIC - 1995 TO 2008
[in Brazilian real million]

Year	Domestic Federal Public Debt - DFPD										
	LTN	LFT	NTN-C	NTN-D	NTN-B	NTN-F	Securitized Debt	TDA	Others	Central Bank bonds	Total (A)
1995	19,535	18,417	333	3,919	-	-	-	-	16,935	49,345	108,484
1996	48,077	0	9	12,443	-	-	60,528	2,470	23,561	83,105	230,193
1997	64,755	63,592	-	24,187	-	-	15,284	2,495	56,731	65,238	292,282
1998	5,438	157,171	-	24,187	-	-	24,517	3,060	53,671	104,709	372,753
1999	38,118	204,223	831	27,346	-	-	29,684	3,154	125,107	63,019	491,481
2000	79,190	265,699	7,022	15,000	-	-	25,512	2,551	96,716	83,914	575,605
2001	48,791	321,734	23,478	38,050	-	-	16,044	2,276	47,512	126,198	624,085
2002	13,596	372,418	46,578	49,820	9,646	-	15,406	2,005	46,597	67,125	623,191
2003	91,055	433,180	60,591	30,026	17,498	430	19,880	1,933	46,175	30,659	731,426
2004	159,960	457,757	77,072	11,715	25,432	2,776	25,448	2,411	34,110	13,584	810,264
2005	263,436	504,653	65,380	5,151	72,021	10,173	18,084	3,448	30,501	6,815	979,662
2006	346,984	412,034	65,650	1,307	167,226	48,054	19,095	4,213	28,931	-	1,093,495
2007	325,149	409,024	66,225	1,097	242,268	131,824	20,777	4,859	23,648	-	1,224,871
2008	239,143	453,131	59,117	-	298,888	168,021	15,089	4,743	26,690	-	1,264,823

Source: National Treasury Secretariat (CODIV)

Ano	External Federal Public Debt -EFPD [a]					Federal Public Debt (A) + (B)
	Securities	Multilateral Agencies	Governmental Ag, and Private banks	Paris Club	Total (B)	
1995	58,110	4,351	3,257	19,205	84,923	193,407
1996	54,482	2,355	2,549	15,031	74,417	304,610
1997	53,348	5,046	2,846	11,670	72,910	365,192
1998	58,984	5,985	4,331	12,131	81,431	454,184
1999	89,185	12,550	5,362	14,992	122,088	613,569
2000	105,519	16,669	6,698	13,907	142,794	718,399
2001	124,483	23,371	7,895	13,635	169,384	793,468
2002	200,668	38,952	11,989	18,143	269,753	892,944
2003	171,614	30,947	9,298	14,193	226,053	957,479
2004	160,369	25,456	8,415	9,703	203,943	1,014,208
2005	144,156	22,076	7,190	4,052	177,474	1,157,136
2006	112,913	24,676	5,866	-	143,455	1,236,950
2007	84,568	20,284	4,032	-	108,884	1,333,755
2008	100,925	26,514	5,073	-	132,512	1,397,336

Source: National Treasury Secretariat (CODIV)

[a] From 1995 to 1996, data extracted from the Central Bank Annual Report. From 1997 onwards, National Treasury Secretariat

A.4.5. AVERAGE MATURITY OF THE DOMESTIC FEDERAL PUBLIC DEBT HELD BY THE PUBLIC - 1964 TO 2008
[in years]

Year	Average Maturity - Domestic Federal Public Debt held by the public											
	OTN	BTN	LFT	LTN	NTN-B	NTN-C	NTN-D	NTN-F	Securitized Debt	TDA	Others	Total
1964	4.98	-	-	-	-	-	-	-	-	-	-	4.98
1965	3.94	-	-	-	-	-	-	-	-	-	-	3.94
1966	2.03	-	-	-	-	-	-	-	-	-	-	2.03
1967	2.06	-	-	-	-	-	-	-	-	-	-	2.06
1968	2.03	-	-	-	-	-	-	-	-	-	-	2.03
1969	1.69	-	-	-	-	-	-	-	-	-	-	1.69
1970	1.43	-	-	0.06	-	-	-	-	-	-	-	1.36
1971	1.36	-	-	0.12	-	-	-	-	-	-	-	1.17
1972	1.81	-	-	0.22	-	-	-	-	-	-	-	1.28
1973	2.31	-	-	0.31	-	-	-	-	-	-	-	1.56
1974	2.59	-	-	0.32	-	-	-	-	-	-	-	1.90
1975	3.16	-	-	0.29	-	-	-	-	-	-	-	2.37
1976	2.66	-	-	0.30	-	-	-	-	-	-	-	1.61
1977	2.58	-	-	0.28	-	-	-	-	-	-	-	1.42
1978	2.28	-	-	0.27	-	-	-	-	-	-	-	1.19
1979	2.11	-	-	0.26	-	-	-	-	-	-	-	1.16
1980	2.84	-	-	0.26	-	-	-	-	-	-	-	2.06
1981	2.98	-	-	0.36	-	-	-	-	-	-	-	2.04
1982	3.00	-	-	0.28	-	-	-	-	-	-	-	2.47
1983	2.69	-	-	0.16	-	-	-	-	-	-	-	2.60
1984	1.68	-	-	0.16	-	-	-	-	-	-	-	1.59
1985	1.01	-	-	0.08	-	-	-	-	-	-	-	0.86
1986	0.49	-	-	0.07	-	-	-	-	-	-	-	0.70
1987	0.51	-	-	0.04	-	-	-	-	-	-	-	0.94
1988	0.19	-	0.26	-	-	-	-	-	-	-	-	0.40
1989	0.07	1.21	0.40	-	-	-	-	-	-	-	-	0.41
1990	1.15	3.42	1.46	0.07	-	-	-	-	-	-	-	0.92
1991	0.71	14.67	1.12	-	-	1.13	1.95	-	-	-	-	0.94
1992	0.44	13.65	1.26	-	1.44	0.65	0.93	-	-	-	-	0.22
1993	-	12.65	0.76	0.06	1.67	0.71	0.43	-	-	-	-	0.29
1994	-	10.99	0.23	0.01	0.83	1.16	0.19	2.29	-	-	1.28	0.45
1995	-	9.86	0.18	0.20	-	-	0.18	1.78	-	-	1.51	0.53
1996	-	8.84	-	0.27	-	-	0.58	1.27	-	-	1.89	0.67
1997	-	-	-	0.30	-	-	1.83	0.77	-	-	4.09	1.44
1998	-	-	0.39	0.31	-	-	1.46	0.27	-	-	3.90	1.38
1999	-	-	0.90	0.17	-	4.11	1.24	-	-	-	5.36	1.89
2000	-	-	2.31	0.43	-	3.15	0.89	-	6.46	4.15	7.60	2.68
2001	-	-	3.07	0.29	-	6.02	1.66	-	6.26	4.33	7.13	3.32
2002	-	-	1.82	0.25	-	5.68	1.51	-	5.12	4.51	9.90	2.94
2003	-	-	1.89	0.53	-	5.74	1.06	-	4.98	4.98	9.16	2.67
2004	-	-	1.45	0.43	8.75	5.70	0.97	-	6.58	5.35	8.00	2.36
2005	-	-	1.59	0.79	4.90	6.56	1.00	2.77	7.32	5.31	6.94	2.29
2006	-	-	1.88	0.77	4.81	6.79	1.40	3.14	7.25	5.03	4.95	2.59
2007	-	-	2.18	0.76	5.71	6.70	0.52	2.95	7.32	4.69	3.73	3.04
2008	-	-	2.54	0.59	5.47	7.87	-	2.49	6.74	4.28	8.16	3.28

Sources: From 1964 to 1999, Central Bank. From 2000 onwards, National Treasury Secretariat - STN (CODIV)
Elaboration: Andima ("Série Históricas - Dívida Pública", 1993) and STN (COGEP)

A.4.6. AVERAGE MATURITY [a] OF THE FEDERAL PUBLIC DEBT HELD BY THE PUBLIC - 2000 TO 2008
[in years]

Year	Domestic Federal Public Debt - DFPD									
	LTN	LFT	NTN-C	NTN-D	NTN-B	NTN-F	Securitized Debt	TDA	Other	Total
2000	0.43	2.31	3.15	0.89	-	-	6.46	4.15	7.60	2.68
2001	0.29	3.07	6.02	1.66	-	-	6.26	4.33	7.13	3.32
2002	0.25	1.82	5.68	1.51	-	-	5.12	4.51	9.90	2.94
2003	0.53	1.89	5.74	1.06	-	-	4.98	4.98	9.16	2.67
2004	0.43	1.45	5.70	0.97	8.75	-	6.58	5.35	8.00	2.36
2005	0.79	1.59	6.56	1.00	4.90	2.77	7.32	5.31	6.94	2.29
2006	0.77	1.88	6.79	1.40	4.81	3.14	7.25	5.03	4.95	2.59
2007	0.76	2.18	6.70	0.52	5.71	2.95	7.32	4.69	3.73	3.04
2008	0.59	2.54	7.87	-	5.47	2.49	6.74	4.28	8.16	3.28

Year	External Federal Public Debt -EFPD [d]					FPD
	Renegotiated Bonds [b]	New Bonds [c]			Total	
		Global	Euro	BRL		
2000	7.00	9.09	3.82	-	7.19	3.58
2001	6.51	8.41	3.84	-	6.72	3.99
2002	6.07	7.20	3.39	-	5.97	3.74
2003	5.73	6.87	3.41	-	5.95	3.31
2004	5.52	7.05	3.09	-	5.89	2.95
2005	6.16	7.04	3.68	5.74	6.32	2.81
2006	3.06	7.61	3.74	6.09	6.80	2.98
2007	2.68	6.58	3.42	6.79	6.15	3.24
2008	2.27	6.52	2.98	6.55	6.04	3.48

Source: National Treasury Secretariat - STN (CODIV)

[a] Considers the principal and interest flows in each period, brought to present value, to be used as weight for the correspondent maturities

[b] Bonds issued under external debt renegotiation Plan (Brady Plan). All but few were redeemed by april 2006.

[c] Sovereing bonds issued from 2005 on, in public offers.

[d] Does not include the average maturity of contractual external debt.

A.4.7. AVERAGE COST [a] OF THE FEDERAL PUBLIC DEBT HELD BY THE PUBLIC - 2005 TO 2008
[Yields p.a.]

Month	Domestic Federal Public Debt - DFPD									
								Securitized		
	LFT	LTN	NTN-B	NTN-C	NTN-D	NTN-F	TDA	Debt	Others	Total
Dec/05	18.59	18.33	14.00	9.72	119.69	0.00	7.15	8.58	44.13	18.85
Jan/06	18.16	18.11	14.20	10.10	-5.04	1.24	7.09	8.55	30.66	18.46
Feb/06	17.77	17.89	14.28	10.60	-8.61	2.34	7.09	8.51	17.81	18.11
Mar/06	17.39	17.64	14.47	10.86	26.95	3.32	6.95	8.46	15.30	17.76
Apr/06	17.02	17.39	14.44	11.12	-1.37	4.19	6.93	8.39	11.89	17.37
May/06	16.67	17.15	14.32	11.05	-5.92	4.98	6.86	8.32	19.57	16.99
Jun/06	16.34	16.90	14.19	10.97	9.69	5.67	6.83	8.25	15.99	16.58
Jul/06	16.00	16.66	14.06	11.17	-47.98	6.28	6.74	8.17	14.50	16.25
Aug/06	15.66	16.42	13.86	11.33	31.02	6.82	6.70	8.07	22.30	15.90
Sep/06	15.32	16.17	13.88	12.22	22.99	7.30	6.65	7.98	13.24	15.72
Oct/06	15.00	15.94	13.65	13.69	-28.75	7.74	6.51	7.91	12.02	15.40
Nov/06	14.69	15.72	13.52	14.51	-10.43	8.15	6.46	7.83	7.57	15.12
Dec/06	13.46	15.65	16.41	14.24	-5.38	14.87	6.43	8.18	2.43	14.19
Jan/07	13.40	15.49	15.21	16.12	4.27	14.50	7.06	8.13	6.46	14.21
Feb/07	13.20	14.89	16.47	13.79	7.30	14.01	5.47	7.83	7.75	13.99
Mar/07	13.00	14.70	14.20	13.98	-22.84	13.84	6.68	7.65	-5.66	13.02
Apr/07	12.83	14.50	12.92	10.23	1.16	13.61	6.10	7.62	4.13	12.86
May/07	12.67	14.11	12.81	10.15	-38.97	13.31	6.49	7.42	-13.46	11.99
Jun/07	12.27	13.97	12.66	13.26	10.04	13.01	5.73	7.26	8.19	12.71
Jul/07	11.93	13.79	11.57	13.17	-16.42	12.72	6.25	7.07	-1.97	12.01
Aug/07	11.63	13.45	14.19	22.02	81.32	12.62	6.16	6.93	33.63	13.74
Sep/07	11.42	13.41	11.03	29.83	-52.58	12.59	4.97	7.14	-15.39	11.89
Oct/07	11.34	13.29	12.09	23.52	-38.96	12.57	5.83	6.92	-9.46	12.00
Nov/07	11.33	13.10	13.56	19.59	48.73	12.55	5.23	6.89	23.85	13.02
Dec/07	11.33	12.97	18.78	36.54	2.58	12.53	5.28	7.13	12.83	14.52
Jan/08	11.32	12.91	15.04	24.09	4.29	12.54	5.65	6.87	9.62	13.14
Feb/08	11.32	12.45	15.39	17.55	-38.12	12.44	4.80	6.63	-11.33	12.15
Mar/08	11.31	12.41	14.82	20.29	81.57	12.45	5.01	6.46	33.95	13.31
Apr/08	11.48	12.41	15.41	19.03	-27.32	12.46	5.68	6.95	-4.19	12.53
May/08	11.74	12.33	19.31	34.23	-27.81	12.48	5.45	7.25	1.40	14.20
Jun/08	12.19	12.35	18.02	38.99	-15.30	12.50	5.94	7.58	11.81	14.45
Jul/08	12.46	12.37	14.45	32.99	-6.03	12.53	6.72	7.63	8.07	13.58
Aug/08	13.01	12.25	11.68	5.60	0.00	12.61	6.49	7.36	26.04	12.30
Sep/08	13.48	12.30	11.25	11.12	0.00	12.67	6.88	7.67	114.64	14.08
Oct/08	13.74	12.39	13.44	22.11	0.00	12.73	7.40	8.23	73.39	14.73
Nov/08	13.71	12.52	13.00	15.23	0.00	12.81	6.62	8.24	81.47	14.51
Dec/08	13.73	12.58	11.52	8.19	0.00	12.81	7.09	7.61	6.52	12.32

Source: National Treasury Secretariat - STN (CODIV)

[a] Measured in Brazilian *reais* , considering the gains and loses in comparison to other currencies (through exchange rates variation).

[b] Sovereing bonds issued from 2005 on, in public offers.

[c] Bonds issued under external debt renegotiation Plan (Brady Plan). All but few were redeemed by april 2006.

[d] Does not include the average maturity of contractual external debt.

A.4.7. AVERAGE COST [a] OF THE FEDERAL PUBLIC DEBT HELD BY THE PUBLIC - 2005 TO 2008
[Yields p.a.]

External Federal Public Debt - EFPD [d]						FPD
New Bonds [b]			Renegotiated			
Global	Euro	BRL	Bonds [c]	Others	Total	
118.02	123.37	106.41	13.16	133.92	115.23	31.21
-40.70	-18.20	13.20	-43.80	-32.20	-36.60	29.63
-33.80	-54.30	13.20	-36.80	-40.90	-35.50	28.24
33.90	65.30	13.20	26.70	20.40	36.60	27.03
-35.80	11.50	13.20	-38.60	7.10	-26.20	25.62
234.60	294.00	13.20	219.60	281.00	238.50	24.50
-46.70	-48.50	13.20	-49.00	-56.80	-45.30	23.15
18.40	14.50	13.20	13.20	17.40	17.60	22.25
-8.40	-6.00	13.20	-12.30	-18.30	-7.50	21.25
36.30	18.60	13.20	30.40	15.20	32.10	20.97
-6.80	-0.60	13.20	-10.90	5.00	-4.60	19.92
27.20	103.30	13.20	21.80	55.00	37.70	19.02
-6.53	-14.00	-10.45	13.03	-29.98	-6.80	12.23
2.95	-13.16	-1.31	13.02	-10.11	1.08	13.00
5.92	32.74	1.55	12.64	25.57	10.10	13.64
-23.82	-16.34	-26.97	12.46	-23.69	-19.86	10.21
-0.19	29.67	-4.26	12.46	22.01	4.88	12.19
-39.81	-49.49	-42.24	12.18	-46.66	-35.95	8.27
8.52	15.51	4.15	11.93	28.54	9.90	12.37
-17.59	-7.61	-20.90	11.92	-	-12.92	10.19
78.75	69.85	71.61	11.92	-	70.25	17.97
-53.26	-15.61	-55.08	11.92	-	-40.12	8.28
-39.84	-30.97	-42.19	11.92	-	-32.18	9.10
46.58	77.91	40.72	11.92	-	46.49	15.21
1.11	3.10	-2.99	11.92	-	2.74	13.76
2.82	12.30	-1.33	11.92	-	5.24	12.63
-39.00	-19.04	-41.43	11.92	-	-29.64	9.62
78.91	186.81	71.84	11.92	-	85.20	17.73
-28.39	-37.50	-31.20	11.92	-	-24.58	10.34
-28.87	-32.97	-31.68	11.92	-	-23.82	12.03
-16.61	-4.69	-19.81	11.92	-	-10.95	13.02
-7.49	-17.11	-11.07	11.92	-	-5.99	12.48
83.39	-12.75	75.90	11.92	-	59.89	15.02
574.32	311.93	547.72	11.92	-	460.67	42.94
229.32	8.79	215.88	11.92	-	174.04	25.72
279.10	264.98	263.96	11.92	-	246.29	31.60
12.39	202.98	7.92	11.92	-	35.68	14.05

[a] Measured in Brazilian *reais* , considering the gains and loses in comparison to other currencies (through exchange rates variation).
[b] Sovereing bonds issued from 2005 on, in public offers.
[c] Bonds issued under external debt renegotiation Plan (Brady Plan). All but few were redeemed by april 2006.
[d] Does not include the average maturity of contractual external debt.

A.4.8. AVERAGE COST, ACUMULATED IN 12 MONTHS [a], OF THE FEDERAL PUBLIC DEBT HELD BY THE PUBLIC - 2006 TO 2008
[Yields p.a.]

Month	Domestic Federal Public Debt - DFPD										External Federal Public Debt - EFPD [d]						FDP
								Securitized				New Bonds [b]		Renegotiate			
	LFT	LTN	NTN-B	NTN-C	NTN-D	NTN-F	TDA	Debt	Other	Total	Global	Euro	BRL	Bonds [c]	Other	Total	
Dec/06	15.39	16.82	13.11	13.91	2.16	15.88	6.51	8.18	5.68	14.82	1.15	11.36	-3.38	12.98	1.42	3.66	13.78
Jan/07	14.99	16.58	12.90	13.42	7.24	15.66	6.50	8.12	7.41	14.63	6.14	11.95	1.48	12.97	3.95	7.96	14.02
Feb/07	14.68	16.35	12.89	13.69	10.94	15.46	6.49	8.09	8.81	14.53	9.86	21.34	5.00	13.15	10.10	12.37	14.34
Mar/07	14.25	16.00	12.75	14.28	5.52	15.17	6.45	8.06	7.01	14.19	4.37	13.60	-0.05	12.82	5.34	6.96	13.58
Apr/07	14.10	15.90	12.85	14.88	8.94	15.10	6.53	8.10	8.30	14.22	-6.53	-14.01	-10.45	13.03	-29.98	9.72	13.84
May/07	13.81	15.61	13.01	14.48	-6.18	14.85	6.51	8.04	2.34	13.76	7.71	15.07	3.15	12.87	6.50	-5.12	12.30
Jun/07	13.48	15.28	13.44	13.87	-0.46	14.54	6.39	7.87	4.46	13.66	-7.27	-3.82	-11.16	12.79	-10.30	0.52	12.53
Jul/07	13.26	15.07	13.43	14.01	-3.45	14.31	6.38	7.79	3.36	13.47	-1.65	2.82	-5.73	12.64	-1.87	-2.02	12.34
Aug/07	12.95	14.78	13.78	14.68	2.65	13.99	6.27	7.67	5.97	13.45	-4.65	0.97	-8.59	12.58	-	3.59	12.71
Sep/07	12.66	14.48	13.60	15.76	-5.40	13.67	6.14	7.54	3.28	13.16	1.35	6.57	-2.81	12.47	-	-2.52	12.07
Oct/07	12.47	14.29	13.48	16.46	-8.93	13.46	6.08	7.44	2.05	13.00	-6.62	3.80	-10.40	12.32	-	-5.39	11.80
Nov/07	12.26	14.06	13.45	16.37	-7.88	13.22	6.01	7.35	2.52	12.85	-10.15	0.54	-13.77	12.27	-	-4.93	11.68
Dec/07	12.09	13.85	13.63	18.03	-7.29	13.04	5.92	7.27	3.31	12.88	-9.13	-0.52	-12.77	12.17	-	-4.19	11.77
Jan/08	11.91	13.63	13.61	18.71	-7.29	12.87	5.80	7.16	3.57	12.78	-8.57	3.22	-12.22	11.99	-	-3.85	11.71
Feb/08	11.82	13.51	13.60	19.07	-11.04	12.81	5.77	7.10	2.09	12.70	-12.28	-0.45	-15.78	11.98	-	-7.01	11.51
Mar/08	11.58	13.20	13.53	19.45	-4.59	12.58	5.58	6.94	5.02	12.62	-5.92	9.93	-9.64	11.84	-	-0.44	11.82
Apr/08	11.52	13.09	13.79	20.27	-7.18	12.54	5.57	6.92	4.31	12.64	-8.49	3.55	-12.11	11.84	-	-3.12	11.71
May/08	11.34	12.83	14.19	22.07	-5.56	12.37	5.44	6.84	5.75	12.72	-6.89	6.48	-10.54	11.72	-	-1.43	11.91
Jun/08	11.39	12.75	14.69	24.24	-7.56	12.38	5.48	6.90	5.78	12.91	-8.88	4.85	-12.45	11.77	-	-3.10	12.02
Jul/08	11.49	12.68	15.00	26.14	-6.64	12.42	5.54	6.98	6.72	13.11	-7.99	3.78	-11.59	11.82	-	-2.48	12.23
Aug/08	11.50	12.47	14.67	24.44	-	12.31	5.52	6.96	5.96	12.87	-8.21	-2.23	-11.79	11.72	-	-3.40	11.95
Sep/08	11,82	12.54	14.83	23.14	-	12.48	5.75	7.09	14.70	13.22	14.83	12.05	10.29	11.87	-	16.72	13.44
Oct/08	12.09	12.52	15.01	23.11	-	12.54	5.92	7.24	21.66	13.52	33.83	16.63	28.51	11.92	-	32.38	14.82
Nov/08	12,28	12.47	14.97	22.75	-	12.56	6.03	7.35	25.41	13.63	44.31	23.47	38.57	11.92	-	41.74	15.71
Dec/08	12.58	12.54	14.49	20.58	-	12.70	6.23	7.45	24.90	13.56	45.67	35.69	39.83	12.02	-	45.25	15.91

Source: National Treasury Secretariat - STN (CODIV)

[a] Measured in Brazilian *reais* , considering the gains and loses in comparison to other currencies (through exchange rates variation).

[b] Sovereing bonds issued from 2005 on, in public offers.

[c] Bonds issued under external debt renegotiation Plan (Brady Plan). All but few were redeemed by april 2006.

[d] Does not include the average maturity of contractual external debt.

A.4.9. SOVEREIGN ISSUANCES OF EXTERNAL FEDERAL PUBLIC DEBT BONDS - 1995 TO 2008

BONDS	Issuance			Leaders	Values (on issuing date)		Maturity	Coupom		Spread (local currency)	Yield
	Date	Price (%)	Currency		In issue currency	In USD		% p.a	Period	in basis points on issue date	% p.a
Yen 1997	19.06.1995	100.000	JPY	Nomura Sec.	80,000,000,000	945,540,418	2 years	6%	annually	481	
DM 1998	20.07.1995	100.500	DEM	Dresdner Bank	1,000,000,000	724,055,289	3 years	9%	annually	410	
Samurai 2001	22.03.1996	100.000	JPY	Nomura Sec.	30,000,000,000	280,906,767	5 years	5,5%	semiannually	320	
Caravela 1999	15.05.1996	100.000	ESC	Finantia	12,000,000,000	76,180,319	3 years	LIBOR + 2.4%	semiannually	226	
Eurolibra 1999	11.06.1996	100.394	GBP	Midland Bank	100,000,000	153,522,575	3 years	9,75 %	annually	250	
Global 2001	05.11.1996	99.857	USD	J.P.Morgan e Swiss Bank	750,000,000	750,000,000	5 years	8,875 %	semiannually	265	
DM 2007	26.02.1997	101.900	DEM	Credit Suisse F.Boston	1,000,000,000	592,150,454	10 years	8 %	annually	242	
Parallel 2002											
French Franco	21.05.1997	100.755	FRF	Banque Paribas	1,000,000,000	175,387,826	5 years	6,625%	annually	195	
Ducth Guilder		101.325	NLG	ING Barings	400,000,000	210,100,586				190	
Austrian Schilling		101.100	ATS	Creditanstalt BankVerein	2,000,000,000	168,137,873				190	
Global 2027	09.06.1997	93.234	USD	J.P.Morgan Goldman Sachs	3,000,000,000	3,000,000,000	30 years	10,125 %	semiannually	395	10.896
	27.03.1998	98.350		J.P.Morgan Goldman Sachs	500,000,000	500,000,000				440	10.294
Eurolira 2017	26.06.1997	101.300	ITL	Deustche M. Grenfell	500,000,000	296,180	20 years	11 %	annually	348	
	10.07.1997				250,000,000	146,456					
Eurolibra 2007	30.07.1997	101.088	GBP	Barclays Credit Swisse F.Boston	150,000,000	244,303,653	10 years	10%	annually	268	
Euroeuro 2003	03.03.1998	99.863	XEU	Paribas SBC Warburg	500,000,000	546,675,122	5 years	8.625%	annually	417	
EuroDM 2008	23.04.1998	101.450	DM	ABN Amro Dresdner	750,000,000	417,339,046	10 years	10% (1st and 2nd years) 7%(following)	annually	328	
Global 2008	07.04.1998	99.738	US$	Merril Lynch	1,250,000,000	1,250,000,000	10 years	9,375%	semiannually	375	9.401
Global 2004	30.04.1999	99.070	US$	Salomon Smith Barney Morgan Stanley D. Witter	2,000,000,000 1,000,000,000	2,000,000,000 1,000,000,000	5 years	11.625%	semiannually	675	11.882
Euro 2002	29.07.1999	99.440	EUR	Credit Suisse First Boston Dresdner Bank	700,000,000	750,018,750	3 years	9.50%	annually	600	9.720
		99.800		Credit Suisse First Boston Dresdner Bank	100,000,000	107,145,536				595	9.580
Euro 2004	30.09.1999	98.500	EUR	ABN Amro Paribas	300,000,000.000	320,420,392	5 years	11.125%	annually	695	11.536
		98.900		ABN Amro Paribas	100,000,000	106,806,797				688	11.426
		99.200		ABN Amro Paribas	100,000,000	106,806,797				681	11.343

A.4.9. SOVEREIGN ISSUANCES OF EXTERNAL FEDERAL PUBLIC DEBT BONDS - 1995 TO 2008

BONDS	Issuance characteristics										
	Issuance			Leaders	Values (on issuing date)		Maturity	Coupom		Spread (local currency)	
	Date	Price (%)	Currency		In issue currency	In USD		% p.a	Period	in basis points on issue date	Yield % p.a
Global 2009	25.10.1999	99.444	USD	Chase Securities J.P.Morgan	2,000,000,000	2,000,000,000	10 years	14,50%	semiannually	850	14.610
Euro 2006	17.11.1999	99.500	EUR	Credit Suisse First Boston	500,000,000	520,540,529	7 years	12,00%	annually	685	12.110
	17.11.1999	100.875		Deutsche Bank	200,000,000	208,216,212				682	11.810
Euro 2001	26.11.1999	99.850	EUR	Dresdner Bank	600,000,000	610,016,470	2 years	8.25%	annually	450	8.330
Euro 2010	04.02.2000	98.540	EUR	BNP Paribas	750,000,000	736,955,881	10 years	11.00%	annually	571	11.25
Global 2020	26.01.2000	96.394	USD	Deutsche Bank Chase Securities Goldman Sachs	1,000,000,000	1,000,000,000	20 years	12.75%	semiannually	650	13.270
Global 2030	06.03.2000	93.299	USD	Merril Lynch	1,000,000,000	1,600,000,000	30 years	12.25%	semiannually	679	13.151
	29.03.2000	98.250		Morgan Stanley D. Witter	600,000,000					635	12.470
Samurai 2003	17.04.2000	100.000	JPY	Nomura Sec.	60,000,000,000	574,063,798	3 years	4.50%	semiannually	474	4.500
Euro 2005	05.07.2000	99.226	EUR	Credit Suisse First Boston Schroder Salomon Smith Barney	750,000,000	714,619,203	5 years	9.00%	annually	417	9.200
	09.05.2001	101.250			500,000,000	442,477,876				399	8.644
Global 2007	26.07.2000	94.588	USD	Goldman Sachs Merril Lynch	1,000,000,000	1,000,000,000	7 years	11.25%	semiannually	610	12.430
	17.04.2001	100.500			500,000,000	500,000,000				615	11.130
Global 2040	17.08.2000	80.203	USD	Goldman Sachs, Chase e Morgan Stanley D. Witter	5,157,311,000	5,157,311,000	40 years	11.00%	semiannually	788	13.732
Euro 2007	05.10.2000	98.772	EUR	J.P.Morgan	500,000,000	434,431,286	7 years	9.50%	annually	446	9.750
		99.500		UBS Warburg	250,000,000	217,215,643				441	9.642
Samurai 2006	22.12.2000	100.000	JPY	Nomura, Bank of Tokyo- Mitsubishi, Kokusai	60,000,000,000	531,707,490	5,3 years	4.75%	semiannually	355	4.750
Global 2006	11.01.2001	98.895	USD	Morgan Stanley D. Witter Bear Sterns	1,500,000,000	1,500,000,000	6 years	10.25%	semiannually	570	10.540
Euro 2011	24.01.2001	97.357	EUR	Dresdner Kleinwort Merril Lynch	1,000,000,000	924,240,044	10 years	9.50%	annually	517.5	9.929
Global 2024	22.03.2001	71.270	USD	Salomon Smith Barney Credit Suisse First Boston	2,150,000,000	2,150,000,000	23 years	8.875%	semiannually	773	12.910

A.4.9. SOVEREIGN ISSUANCES OF EXTERNAL FEDERAL PUBLIC DEBT BONDS - 1995 TO 2008

BONDS	Issuance characteristics										
	Issuance			Leaders	Values (on issuing date)		Maturity	Coupom		Spread (local currency)	
	Date	Price (%)	Currency		In issue currency	In USD		% p.a	Period	in basis points on issue date	Yield % p.a
Samurai 2007	10.04.2001	100.000	JPY	Nomura Sec.	80,000,000,000	643,200,566	6 years	4.75%	semiannually	412	4.750
Global 2005	15.05.2001	94.660	USD	Deutsche Bank J.P.Morgan Chase	1,000,000,000	1,000,000,000	4,2 years	9.625%	semiannually	648	11.250
Samurai 2003 B	30.08.2001	100.000	JPY	Nomura Securities Daiwa Securities	200,000,000,000	1,674,901,600	2 years	3.750%	semiannually	358	3.750
Global 2012	11.01.2002	91.040	USD	J.P. Morgan Sec. Inc. Salomon Smith Barney	1,250,000,000	1,250,000,000	10 years	11.000%	semiannually	754	12.600
Global 2008 B	12.03.2002	99.004	USD	Goldman Sachs Merril Lynch	1,250,000,000	1,250,000,000	6 years	11.500%	semiannually	738	11.736
Euro 2009	02.04.2002	99.769	EUR	ABN Amro Dresdner Kleinwort	500,000,000	440,600,000	7 years	11.500%	annually	646	11.550
Global 2010	16.04.2002	98.086	USD	J.P. Morgan Chase Morgan Stanley DW	1,000,000,000	1,000,000,000	8 years	12.000%	semiannually	719	12.384
Global 2007 B	06.05.2003	97.939	USD	UBS Warburg Merril Lynch	1,000,000,000	1,000,000,000	3,7 years	10.000%	semiannually	783	10.700
Global 2013	17.06.2003	97.993	USD	Deutsche Bank Goldman Sachs	1,250,000,000	1,250,000,000	10 years	10.250%	semiannually	738	10.580
Global 2011	07.08.2003	93.717	USD	J.P.Morgan Morgan Stanley	500,000,000	126,813,000	7 years	10.000%	semiannually	726	11.210
		90.485				373,187,000				757	11.875
Global 2024 B	07.08.2003	75,581 [1]	USD	J.P.Morgan Morgan Stanley	824,702,000	824,702,000	20,7 years	8.875%	semiannually	764	12.590
Global 2011 (reopening)	18.09.2003	96.500	USD	Citigroup Goldman Sachs	750,000,000	750,000,000	7,9 years	10.000%	semiannually	664	10.663
Global 2010 N	22.10.2003	98.992	USD	Merril Lynch Credit Suisse First Boston	1,500,000,000	1,500,000,000	7 years	9.250%	semiannually	561	9.450
Global 2034	20.01.2004	94.723	USD	Citigroup Deutsche Bank	1,500,000,000	1,500,000,000	30 years	8.250%	semiannually	377	8.750
Floater 2009	28.06.2004	99.245	USD	Goldman Sachs Merrill Lynch	750,000,000	750,000,000	5 years	3-month LIBOR plus 575 bps	every 3 months	593 bps over 3-month LIBOR	-
Global 2014	14.07.2004	98.192	USD	Deutsche Bank Morgan Stanley & Co.	750,000,000	750,000,000	10 years	10.500%	semiannually	632	10.800
Euro 2012 [2]	24.09.2004	98.881	EUR	UBS Limited Dresdner Bank AG	750,000,000	921,300,000	8 years	8.50%	annually	477 bps over DBR 5% 07/12	8.700
Euro 2012 (reopening)	30.09.2004	101.875	EUR	UBS Limited Dresdner Bank AG	250,000,000	310,900,000				439 bps over DBR 5% 07/12	8.170
Global 2019	14.10.2004	97.780	USD	Citigroup Global Markets Inc. J.P. Morgan Securities Inc.	1,000,000,000	1,000,000,000	15 years	8.875%	semiannually	492	9.150

A.4.9. SOVEREIGN ISSUANCES OF EXTERNAL FEDERAL PUBLIC DEBT BONDS - 1995 TO 2008

BONDS	Issuance characteristics										
	Issuance			Leaders	Values (on issuing date)		Maturity	Coupom		Spread (local currency)	Yield
	Date	Price (%)	Currency		In issue currency	In USD		% p.a	Period	in basis points on issue date	% p.a
Global 2014 (reopening)	08.12.2004	114.750	USD	J.P. Morgan Securities Inc. Morgan Stanley & Co.	500,000,000	500,000,000	10 years	10.500%	semiannually	398	8.244
Euro 2015	03.02.2005	98.800	EUR	BNP Paribas Deutsche Bank A.G. London	500,000,000	648,425,000	10 years	7.375%	annually	398,5 bps over DBR 3.57% 01/15	7.550
Global 2025	04.02.2005	98.610	USD	Deutsche Bank Securities Inc. UBS Securities LLC	1,250,000,000	1,250,000,000	20 years	8.750%	semiannually	431	8.900
Global 2015	07.03.2005	99.829	USD	Citigroup Global Markets Inc. J.P. Morgan Securities Inc.	1,000,000,000	1,000,000,000	10 years	7.875%	semiannually	352.5	7.900
Global 2019 (reopening)	17.05.2005	100.375	USD	Goldman Sachs & Co Merrill Lynch	500,000,000	500,000,000	14 years	8.875%	semiannually	458	8.830
Global 2034 (reopening)	02.06.2005	94.125	USD	Deutsche Bank Bear Stearns	500,000,000	500,000,000	29 years	8.250%	semiannually	440	8.814
Global 2015 (reopening)	27.06.2005	100.945	USD	Citigroup Global Markets Inc. HSBC Securities (USA) Inc.	600,000,000	600,000,000	9,5 years	7.875%	semiannually	363	7.732
A-Bond 2018 [6]	01.08.2005	101.250	USD	J.P. Morgan Securities Inc. Credit Suisse First Boston LLC	4,508,571,000	4,508,571,000	12,5 years	8.000%	semiannually	336	7.580
Global 2025 (reopening)	13.09.2005	102.125	USD	Morgan Stanley Bear Stearns	1,000,000,000	1,000,000,000	19,5 years	8.750%	semiannually	417	8.522
Global BRL 2016	26.09.2005	98.636	BRL	J.P. Morgan Securities Inc. Goldman Sachs & Co	3,400,000,000	1,478,839,546	10 years	12.500%	semiannually	-	12.750
Global 2015 (reopening 2)	17.11.2005	100.702	USD	Citigroup Global Markets Inc. HSBC Securities (USA) Inc.	500,000,000	500,000,000	9 years	7.875%	semiannually	312	7.765
Global 2034 (reopening 2)	06.12.2005	99.325	USD	Merrill Lynch & Co. Barclays Capital Inc.	500,000,000	500,000,000	28 years	8.250%	semiannually	362.5	8.311
Global 2037	18.01.2006	94.856	USD	Deutsche Bank Securities. UBS Investment Bank	1,000,000,000	1,000,000,000	31 years	7.125%	semiannually	295	7.557
Euro 2015 (reopening)	03.02.2006	113.428	EUR	Dresdner Bank AG Barclays Capital Inc.	300,000,000	360,450,000	9 years	7.375%	annually	185 bps over 9 year MidSwap	5.448
Global 2037 (reopening)	23.03.2006	103.747	USD	J.P. Morgan Securities Inc. HSBC Securities (USA) Inc.	500,000,000	500,000,000	31 years	7.125%	semiannually	204	6.831
Global 2034 (Troca Global 2030) [a]	02.06.2006	100.125	USD		197,802,000	197,802,000	27 years	8.250%	semiannually		8.240
Global 2037 (Exchange Offer) [b]	16.08.2006	99.680	USD	Deutsche Bank Securities Inc. Citigroup Global Markets Inc.	500,043,000	500,043,000	31 years	7.125%	semiannually	205	7.150
Global BRL 2022	13.09.2006	97.563	BRL	Citigroup Global Markets Inc. J.P. Morgan Securities Inc.	1,600,000,000	743,356,253	15 years	12.500%	semiannually	-	12.875

A.4.9. SOVEREIGN ISSUANCES OF EXTERNAL FEDERAL PUBLIC DEBT BONDS - 1995 TO 2008

BONDS	Issuance characteristics										
	Issuance			Leaders	Values (on issuing date)		Maturity	Coupom		Spread (local currency)	Yield
	Date	Price (%)	Currency		In issue currency	In USD		% p.a	Period	in basis points on issue date	% p.a
Global BRL 2022 (reopening 2)	11.12.2006	105.875	BRL	Morgan Stanley & Co. Goldman Sachs & Co	750,000,000	346,068,660	15 years	12.500%	semiannually	-	11.663
Global 2037 (reopening 2)	30.01.2007	106.338	USD	Bear Sterns Merril Lynch	500,000,000	500,000,000	30 years	7.125%	semiannually	173	6.635
Global BRL 2028	14.02.2007	96.451	BRL	J.P. Morgan Securities Inc. UBS Securities LLC	1,500,000,000	714,711,137	21 years	10.250%	semiannually	-	10.680
Global BRL 2028 (reopening)	27.03.2007	99.750	BRL	Citigroup Global Markets Inc. Barclays Capital Inc.	750,000,000	360,750,361	21 years	10.250%	semiannually	-	10.279
Global 2017 (reopening)	11.04.2007	100.796	USD	Morgan Stanley & Co. Merril Lynch	525,000,000	525,000,000	10 years	6.000%	semiannually	122	5.888
Global BRL 2028 (reopening 2)	17.05.2007	112.250	BRL	Deutsche Bank Securities Inc. HSBC Securities (USA) Inc.	787,500,000	389,196,402	21 years	10.250%	semiannually	-	8.938
Global BRL 2028 (reopening 3)	26.06.2007	115.500	BRL	J.P. Morgan Securities Inc. Credit Suisse Securities	750,000,000	393,494,229	21 years	10.250%	semiannually	-	8.626
Global 2017 (reopening 2)	14.05.2008	104.816	USD	Deutsche Bank Securities Inc. HSBC Securities (USA) Inc.	525,000,000	525,000,000	10 years	6.000%	semiannually	140	5.299
Global 2019 N	13.01.2009	98.135	USD	Goldman Sachs & Co Merril Lynch	1,025,000,000	1,025,000,000	10 years	5.875%	semiannually	370	6.127
TOTAL						76,430,779,030					

Source: National Treasury Secretariat - STN (CODIP)

Note: Payment of principal occurs fully on maturity date, except A-Bond 2018.

[a] The deal refers to the exchange from new Global 2034s for old Global 2030s, without the intermediation of Leaders.

[b] Bonds issued through Exchange Offer, involving exchange of Global 2020s, Global 2024s, Global 2024 Bs, Global 2027s e Global 2030s.

A.4.10. ANNUAL BORROWING PLAN INDICATORS AND TARGETS - 2001 TO 2008

Domestic Federal Public Debt Indicators - DFPD

Indicators	2001 results	ABP 2001	2002 results	ABP 2002		2003 results	ABP 2003		2004 results	ABP 2004		2005 results	ABP 2005		2006 results	ABP 2006		2007 results	ABP 2007	
				Min	Max		Min	Max		Min	Max		Min	Max		Min	Max		Min	Max
DFPD Stock (R$ billion)	**624.1**	548.4	**623.2**	700.0	760.0	**731.4**	690.0	750.0	**810.3**	820.0	880.0	**979.7**	940.0	1,000.0	**1,093.5**	1,130.0	1,200.0	**1,224.9**	1,230.0	1,300.0
DFPD Average Maturity (years)	**2.9**	3.6	**2.8**	2.8	3.2	**2.6**	2.8	3.2	**2.3**	2.8	3.2	**2.3**	2.3	2.8	**2.6**	2.5	2.9	**3.0**	2.7	3.0
Maturing within 12 months (%)	**25.6**	27.1	**38.9**	25.0	29.0	**35.3**	35.0	40.0	**46.1**	30.0	35.0	**41.6**	40.0	45.0	**35.7**	31.0	36.0	**30.2**	29.0	33.0
Stock Composition (%)																				
Fixed-rate	**7.8**	22.0	**3.2**	7.0	10.0	**12.5**	5.0	15.0	**20.1**	13.0	23.0	**27.9**	20.0	30.0	**36.1**	28.0	37.0	**37.3**	37.0	43.0
Inflation-linked	**7.0**	8.0	**12.5**	6.0	8.0	**13.6**	12.0	18.0	**14.9**	15.0	21.0	**15.5**	15.0	20.0	**22.5**	18.0	24.0	**26.3**	23.0	27.0
Floating Rates	**52.8**	42.0	**60.8**	51.0	56.0	**61.4**	52.0	60.0	**57.1**	50.0	61.0	**51.8**	47.0	57.0	**37.8**	39.0	48.0	**33.4**	29.0	36.0
FX Rates	**28.6**	22.0	**22.4**	25.0	30.0	**10.8**	13.0	22.0	**5.2**	15.0	21.0	**2.7**	3.0	5.0	**1.3**	1.0	3.0	**0.9**	1.0	2.0
Others	**3.8**	6.0	**2.1**	3.0	4.0	**1.8**	2.0	4.0	**2.7**	1.0	3.0	**2.1**	2.0	4.0	**2.2**	2.0	4.0	**2.1**	2.0	4.0

Source: National Treasury Secretariat - STN (CODIV)

° From 2001 to 2002, the Annual Borrowing Plan only established limits for DFPD. From 2003 to 2007, limits were established for DFPD and FPD (including external and domestic debts). From 2008 onwards, limits were established only for FPD.

Federal Public Debt Indicators (Domestic and External) - FPD

Indicators	2003 results	ABP 2003	2004 results	ABP 2004		2005 results	ABP 2005		2006 results	ABP 2006		2007 results	ABP 2007		2008 results	ABP 2008		ABP 2008 revised	
		Min		Min	Max		Min	Max		Min	Max		Min	Max		Min	Max	Min	Max
FPD Stock (R$ billion)	**965.8**	940.0	**1,013.9**	1,080.0	1,150.0	**1,157.1**	1,160.0	1,240.0	**1,237.0**	1,280.0	1,360.0	**1,333.8**	1,370.0	1,450.0	**1,397.3**	1,480.0	1,540.0	1,360.0	1,420.0
FPD Average Maturity (years)	**3.3**	3.4	**2.9**	3.3	3.8	**2.7**	3.0	3.4	**3.0**	2.9	3.4	**3.3**	3.1	3.5	**3.5**	3.5	3.8	3.5	3.8
Maturing within 12 months (%)	**30.7**	31.0	**39.3**	26.0	32.0	**38.2**	34.0	40.0	**32.4**	28.0	33.0	**28.2**	27.0	31.0	**25.4**	24.0	27.0	24.0	27.0
Stock Composition (%)																			
Fixed-rate	**9.5**	4.0	**16.1**	9.0	19.0	**23.6**	16.0	25.0	**32.4**	25.0	33.0	**35.1**	33.0	39.0	**29.9**	35.0	40.0	29.0	32.0
Inflation-linked	**10.3**	9.0	**11.9**	12.0	17.0	**13.1**	12.0	16.0	**19.9**	16.0	22.0	**24.1**	20.0	24.0	**26.6**	25.0	29.0	25.0	29.0
Floating Rates	**45.5**	38.0	**45.7**	39.0	47.0	**43.9**	39.0	47.0	**33.4**	35.0	43.0	**30.7**	26.0	32.0	**32.4**	25.0	30.0	31.0	34.0
FX Rates	**32.4**	36.0	**24.2**	24.0	30.0	**17.6**	18.0	23.0	**12.2**	11.0	15.0	**8.2**	10.0	12.0	**9.7**	7.0	9.0	7.0	9.0
Others	**1.4**	1.0	**2.2**	1.0	3.0	**1.8**	1.0	3.0	**2.0**	1.0	3.0	**1.9**	1.0	3.0	**1.4**	1.0	3.0	1.0	3.0

Source: National Treasury Secretariat - STN (CODIV)

° From 2001 to 2002, the Annual Borrowing Plan only established limits for DFPD. From 2003 to 2007, limits were established for DFPD and FPD (including external and domestic debts). From 2008 onwards, limits were established only for FPD.

Remissive index

Part I – UNDERSTANDING THE BRAZILIAN PUBLIC DEBT

Chapter 1 Origin and history of Brazil's public debt up to 1963

Caixa de Amortizacão, 35, 42
Colonial Brazil, 31
Debt service, 36, 37, 38, 46, 47, 48, 49
Financial Recovery Securities, 45
Funded Domestic Debt, 35, 36, 43
Funding loan, 45, 47, 48, 49
Imperial period, 31, 34, 40, 41, 42
Obrigacões de Reaparelhamento Economico, 44
Republican period, 31, 42, 45, 49

Chapter 2 History of public debt in Brazil: 1964 to the present

Annual Borrowing Plan – ABP, 62
Benchmark, 53, 63, 69
Central Bank, 54, 55, 57 to 60, 62, 66, 67, 69
Cetip, 62
Dealers, 62
Domestic Federal Public Debt – DFPD, 53 to 57, 59, 60
Federal Public Debt – FPD, 53, 63, 69
Investment account, 62
National Treasury Secretariat – STN, 57, 58
Paris Club, 69
Selic, 58, 59, 62

Chapter 3 Public debt sustainability

Asset and Liability Management (ALM), 82, 83
Budget constraints, 73, 74, 76, 78
Debt/GDP ratio, 81, 82, 88
Default, 73, 78, 83
Economic Policy Secretariat – SPE, 85
Government net assets, 82
Solvency, 79, 83, 85
Sustainability, 73 to 79, 81 to 83, 85, 86, 88
Value-at-Risk (VaR), 82

Chapter 4 Public debt concepts and statistics

Annual Borrowing Plan – ABP, 98, 101, 102, 103, 109
Annual Federal Public Debt Report – ADR, 103
Average cost, 100 to 102
Average life, 101, 102
Average maturity, 99, 101 to 103
Central Bank, 91 to 98, 102 to 104, 107 to 111, 114
Credit rating agencies, 93, 96, 97
Credit rating, 93, 97, 98
External contractual debt, 93, 95, 100
External Federal Public Debt – EFPD, 92, 94, 95, 98 to 102
External securities debt, 94, 95, 100
Federal Public Debt – FPD, 91 to 93, 95 to 98, 102, 103, 108, 109, 111
Fiscal Responsibility Law– LRF, 108, 110, 111
General Government Gross Debt – GGGD, 96, 97, 104, 108, 109
General Government Net Debt – GGND, 97, 104, 109
National Treasury , 91 to 99, 102 to 104, 108 to 111, 114

Net fiscal debt, 92, 114

Net Public Sector Debt – NPSD, 92, 93, 95 to 98, 104, 108, 109, 114

Percentage due in 12 months, 99, 101, 102

Part II – MANAGING THE BRAZILIAN PUBLIC DEBT

Chapter 1 Institutional structure and recent developments in Federal Public Debt management

Annual Borrowing Plan – ABP, 121, 124

Annual Debt Report– ADR, 122

Back office, 119, 120, 129

Central Bank, 117 to 119, 123, 129

Codip, 120

Codiv, 120

Cogep, 120

Debt Management Office – DMO, 119, 120, 125, 127

Federal Public Debt management committee, 121

Fiscal Responsibility Law – LRF, 118, 119

Front office, 120

Governance, 117, 118, 121, 128, 129

IMF, 117, 121, 125, 127, 129

Institute of International Finance – IIF, 123

Institutional structure, 117, 119, 127, 128, 129

Integrated Debt System (IDS), 127, 128

Investor relations, 123

Latin American and Caribbean Expert Group on Public Debt Management (LAC Debt Group), 128, 129

Middle office, 120

Ministry of Finance, 118, 119

Monthly issuance schedules, 122

National Treasury , 118 to 123, 125 to 127, 129

OECD, 125, 129

Strategic planning and risk management system (Gerir), 126, 127

Transparency, 118, 121 to 124, 127, 129

World Bank, 117, 121, 124, 125, 127, 129

Chapter 2 Strategic planning of the Federal Public Debt

Annual Borrowing Plan – ABP, 131 to 133, 138, 140 to 143, 146, 147

Assets and Liability Management (ALM), 137

Benchmark, 131, 132, 134 to 139, 142, 143, 146 to 148

Borrowing requirements, 137, 140, 141, 143

Cash-flow-at-risk – CFaR, 137

Convergence speed, 143, 146

Cost-at-risk – CaR, 137

Efficient portfolio, 136, 138

Long term strategy, 146, 148

Management committee, 131, 133, 146

Market risk, 137, 141, 145

Net issuance, 147

Optimal composition of public debt, 134, 136, 138

Percent due in 12 months, 137, 141, 143

Public debt refinancing and risk management system (Gerir), 140

Refinancing risk, 136, 137, 141, 145

Risk management, 131, 132, 133, 135, 136, 148

Roll-over percentage, 147

Steady state, 135, 136,138, 139, 146

Strategic planning, 131, 132, 135, 138 to 140, 142, 146, 148

Stress test, 137

Tactical planning, 138, 146

Transition strategy, 131, 134, 138, 142, 143, 144, 146

Chapter 3 Federal Public Debt risk management

Assets and Liabilities Management - ALM, 152, 165, 182

BaR – Budget-at-Risk, 153, 156, 159, 174

Benchmark, 152, 153, 162 to 166, 179, 182, 190, 191

Budget risk, 155, 159,

CaR – Cost-at-Risk, 153, 156, 174

CFaR – Cash-Flow-at-Risk, 153, 156, 158, 159, 174

Debt sustainability, 156, 167, 169, 182, 191

Duration, 153, 155, 160, 162, 174, 192

Market risk, 155, 156, 158

Optimal composition of debt, 152

Public debt risk management, 151, 152, 165, 172, 182

PVBP – Present Value of a Basis Point, 153, 160, 161

Refinancing risk, 154, 155, 158, 159, 192

Risk measures on the demand side, 153, 155, 159

Uncertainty, 155, 156, 158, 159, 167, 173, 179, 180, 185,

VaR – Value-at-Risk, 153, 154, 156, 157, 160, 161, 174

Chapter 4 The Federal Public Debt budget

Annual Budgetary Law – LOA, 195, 199, 202, 203, 204, 210

Bonded public debt refinancing, 199

Budget's execution, 193, 198, 202

Budgetary Guidelines Law – LDO, 195, 196, 197, 202,

Federal accounting system, 197

Federal system of financial administration, 197

Federal system of internal control, 197

Fiscal Responsibility Law – LRF, 196, 199, 201, 202, 210

Golden rule, 201

Granting of guarantees, 199

Integrated System of Budget Data – SIDOR, 197

Integrated System of Financial and Budgetary Administration – SIAFI, 197

Joint budget and plans commission, 195, 196

Managing units, 196

Multi-Year Plan – PPA, 195, 197, 206

National Treasury Secretariat – STN, 197,198,

Payment, 193, 198, 199, 200, 201, 202, 203, 207, 209

Public budget, 193, 194, 196, 201

Public debt budget, 199, 203,

Secretariat for Strategic Planning and Investments – SPI/MPOG, 195

Secretariat of the Federal Budget – SOF, 196, 197, 202,

Sectoral bodies, 196, 197, 198

Settlements, 198

Chapter 5 Regulatory frameworks and government auditing of public debt

Brazil´s legal system, 213, 214, 222, 224

Code of public ethics, 220

Consolidated debt, 216, 217, 218, 221, 222, 226,

Credit operations, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 233

Fiscal Responsibility Law – LRF, 215

Fiscal transparency, 225, 227, 228, 229, 232,

Floating debt, 217, 221, 227

Funded debt, 215, 218, 219, 223, 227

Government audit institutions, 231, 232

Government auditing, 213, 221, 229, 231, 232

Rules for public sector indebtedness, 213, 215, 221,

The executive branch, 219
The legislative branch, 219

Part III – THE PUBLIC DEBT MARKET IN BRAZIL

Chapter 1 Recent evolution of the Federal Public Debt market

Average maturity, 251, 252, 255, 260, 261
Bank for International Settlement - BIS, 248, 249, 260
Benchmark securities, 254, 257, 263, 265, 266
BM&F, 256, 265, 266
Clearing house, 265
Dealers, 264, 265
Domestic debt market, 248 to 250
Domestic Federal Public Debt – DFPD, 252, 255, 258 to 261
External debt market, 248
External Federal Public Debt – EFPD, 250, 258
Federal Public Debt – FPD, 247 to 250, 257, 258 to 261, 263
Floating-rate securities, 251, 258, 260
FX-linked securities, 258
Inflation-linked securities, 247, 256, 257, 258, 261, 266
Investor base, 249, 254, 260, 261, 263, 264, 265
Liquidity, 248, 249, 257, 260, 262, 263, 266
Pricing, 262 to 265
Primary market, 263, 264, 265
Public Sector Net Debt – PSND, 259
Secondary market, 249, 260, 263, 264, 265
Securities market, 247, 251, 265, 266, 267
Sisbex, 265
Trade Association for the Emerging Markets – EMTA, 262, 263
Yield, 247, 249, 250, 254, 257, 264, 266, 267

Chapter 2 Pricing federal public securities

A-bond, 271, 272, 278 to 281, 287, 295
ANV, 275, 276
Bond price, 274, 275, 278, 290
Bootstrapping, 278, 283
Business days, 269, 272 to 278, 288, 292, 293
Clean price, 272, 277, 278, 294, 295, 296
DI future, 281, 282, 289 to 291
Dirty price, 272, 277, 294
Duration, 282, 283, 284, 285
Eurobonds, 271, 278, 279
Global BRL bonds, 271, 278
Global USD bonds, 271, 278, 281
Letras do Tesouro Nacional – LTN, 270, 273, 281, 282, 289, 290, 292, 297
Letras Financeiras do Tesouro – LFT, 270, 274, 276, 291, 293, 298
Notas do Tesouro Nacional, B series – NTN-B, 270, 274, 275, 282, 293, 298
Notas do Tesouro Nacional, C series – NTN-C, 269, 270, 274, 275, 282, 293, 298
Notas do Tesouro Nacional, F series – NTN-F, 270, 271, 273 to 275, 281, 282, 284, 289, 290, 292, 293, 298
P, 273, 274, 275, 276, 279
Pricing, 269, 270, 272, 275 to 277, 281, 282, 283, 286, 292
Spread Over Treasury (SOT), 281, 284
YTM, 272, 273, 277, 284, 289, 290, 292, 293, 294, 295
Zero curve, 275, 283, 284, 285

Chapter 3 Organization of Brazil's financial market

Abipem, 306

Abrapp, 306, 307

Anbid, 306, 307

Andima, 306, 307, 310, 311

BM&F, 311 to 314

BM&FBovespa, 310 to 312, 314, 315

Bovespa, 311 to 315

Brazilian Central Bank (BC, BCB), 301 to 305, 309 to 311, 314

BVRJ, 311, 313

CBLC, 310, 312, 315

CDI, 306, 307, 308

Cetip, 307, 310, 311, 313, 314

CGPC, 301, 304

Class associations, 302, 306, 308

Clearing, 302, 304, 310 to 313, 315, 316

Clearstream, 315, 316

Closed pension funds, 303, 304

CMN, 301, 303

CNSP, 301

Custody, 306, 310 to 313, 315, 316

CVM, 301 to 303, 305, 307

Dealers, 304, 305, 307, 310 to 312, 314 to 316

DTC, 315, 316

DTCC, 315

EAPC – Open complementary social security entities, 301, 308

EFPC –Closed complementary social security entities (pension funds), 301, 305

Euroclear, 315, 316

Febraban, 306, 308

Federal Revenue Secretariat, 301 to 303

Fenaprevi, 306, 308

Fenaseg, 306, 308

Insurance companies, 301, 302, 305, 306, 308, 311, 312

Intermediaries, 302, 304 to 306, 314, 315

Investment funds, 302, 303, 305, 307, 311, 312, 315, 316

Investors, 302 to 308, 311

IRB, 301, 302

IRFM, 307, 308

MTS, 315

Multiple Banks, 301, 305, 307, 310, 311

NYSE, 316

Open social security, 302

Pension funds, 301 to 307, 311, 313

Regulatory agencies, 301, 302, 309, 313, 316

SEC, 315, 316

Sisbex, 307, 311 to 314

SPB, 310, 314

SPC, 302, 305, 306, 313

STR, 310, 311, 314

SUSEP, 301, 302

Chapter 4 Primary market of the Federal Public Debt

Auction, 319 to 325, 327 to 330

Book building, 327, 328

Brady bonds, 331, 332, 333

Buyback program, 331 to 333

Dealer Managers (DMs), 326, 327

Dealers, 324, 325, 329, 337, 338

Discriminatory auction, 338

Exchange auction, 329, 335

Liability management, 329, 330

Primary market, 319, 320, 323 to 325, 329

Request for Proposal – RFP, 327

Restructured debt, 331
Securities and Exchange Commission – SEC, 326
Sovereign debt, 323, 331
Tender offer, 331 to 333, 336
Underwriters, 326, 327
Uniform price auction, 324, 329, 338
Yield curve, 321, 323, 330, 331, 332

Chapter 5 The investor base of the Federal Public Debt in Brazil

Diversification, 341, 352
Investment funds, 342 to 347, 349 to 353, 355, 359, 360, 362, 365, 367
Investor base, 341, 353 to 358, 365
Open entities, 343
Pension funds, 343, 345, 347, 349, 350, 352 to 355, 357, 358, 360 to 363, 365

Chapter 6 The secondary market for Federal Public Debt

Benchmark, 372, 374, 375, 381, 387, 389
Broker, 370, 377
Dealers, 370, 377, 384 to 386, 388, 390
DV01, 374
EMTA, 369, 375
Hedge, 374
Market-makers, 385
Overnight rate, 374, 378, 384, 385
Real interest, 374, 375, 376
Refinancing risk, 370, 384, 388
Secondary market, 369 to 378, 380, 382 to 391
Short selling, 370, 375
Spread, 371, 374, 375, 377, 382, 384, 388, 390

Chapter 7 Treasury Direct: Internet public securities retail sales program

Administration fee, 400
BM&FBovespa, 393, 397, 399, 401, 406, 407, 411
CBLC, 394, 399, 400
Custodial account, 399
Depository agents, 397, 399 to 401, 411
Investment fund, 394, 396, 399, 400, 403, 411
IPCA, 404
Letras do Tesouro Nacional – LTN, 398, 402, 404
Letras Financeiras do Tesouro – LFT, 398, 403, 404
Notas do Tesouro Nacional, serie B – NTN-B, 398, 402, 404
Notas do Tesouro Nacional, serie B Principal – NTN-B, 398, 402, 404
Notas do Tesouro Nacional, serie C – NTN-C, 402
Notas do Tesouro Nacional, serie F – NTN-F, 398
principal, 397

Acronyms

Abipem	Brazilian Association of State and Municipal Social Security and Assistance Institutions
ABP	Annual borrowing plan
Abrapp	Brazilian Association of Pension Funds
ADR	Annual Federal Public Debt report
ALM	Asset and liability management
Anapp	National Complementary Social Security Association
Anbid	National Association of Investment Banks
Andima	National Association of Financial Market Institutions
Andima	National Association of Open Market Institutions
ANV	Present nominal value
ARO	Credit operations through anticipation of budgetary revenues
Bacen	Brazilian Central Bank
BaR	Budget-at-Risk
BC	Brazilian Central Bank
BCB	Brazilian Central Bank
Bco. Com. Nac.	National commercial bank
BEST	Brazil: Excellence in Securities Transactions
BFC	Belgian Banking and Finance Commission
BIB	Brazil Investment bond
BIS	Bank for International Settlements
BM&F	Brazilian Mercantile and Futures Exchange
BM&FBovespa	Securities, Commodities and Futures Exchange
Bovespa	São Paulo Stock Exchange
Bovespa Fix	A system for negotiations, settlements and custody of private fixed-income securities in a stock exchange environment
BPM5	The 5th edition of the IMF's balance of payments manual
BVRJ	Rio de Janeiro Stock Exchange
CACs	Collective action clauses
CaR	Cost-at-Risk
CBLC	Brazilian Settlement and Custody Company

CCAPM	Consumption Capital Asset Pricing Model
CDB	Bank deposit certificates
CDI	Interbank deposit certificates
CE	Code of Ethics
CEF	Caixa Econômica Federal (Federal government bank)
CETIP	Center for custody and financial settlement of securities
CetipNet	Cetip trading platform
CFaR	Cash-Flow-at-Risk
CFC	Federal Accounting Board
CFT	Treasury Financial Certificate
CGPC	Complementary Social Security Management Council
CGU	Office of the Comptroller General
CIR	Cox, Ingersoll and Ross model
CKLS	Chan, Karolyi, Longstaff and Sanders model
CMN	National Monetary Council
CMO	Mixed commission for plans, public Budgets and inspection
CNPJ	National register of corporate entities
CNSP	National Private Insurance Council
CODIP	Public Debt Operations Department (front office)
CODIV	Public Debt Control Department (back office)
COGEP	Public Debt Strategic Planning Department (middle office)
Compare	System that compares rates
Confere	Electronic federal public security calculator
Copom	Monetary Policy Committee
COREX	Foreign Affairs General Coordination
Corr. Dist. Nac.	National distributor broker
COSO	Committee of Sponsoring Organizations
CPF	Individual taxpayer's registry
CPMF	Temporary contribution on financial transactions tax
CRI	Certificate of real estate receivables
CTN	National Treasury Certificate
CVM	Securities and Exchange Commission
DCB	Debt Conversion bond
DCL	Consolidated net debt

Demab	Open Market Operations Department of the Central Bank
Depec	Economic Department of the Central Bank
DFPD	Domestic Federal Public Debt
DI	Interbank deposit
DM	Dealer manager
DMO	Debt management office
DRS	World Bank's external debt reporting system
DTC	Depository trust company
DTCC	Depository trust & clearing corporation
DV01	Dolar value of 1 basis point
DVP	Delivery versus payment
EAPC	Open complementary social security entities
EDP	Excessive deficit procedure
EFPC	Closed complementary social security entities (pension funds)
EFPD	External Federal Public Debt
EFS	Superior auditing bodies
EFU	Federal government financial burdens
EI	Eligible Interest bond
EMTA	Trade Association for the Emerging Markets
ESA95	European system of accounts 1995
FAT	Workers' assistance fund
Febraban	Brazilian Federation of Banks
Fenaprevi	National Federation of Private Pension Funds and Life Insurance
Fenaseg	National Federation of Private Insurance and Capitalization Companies
FGV	Getúlio Vargas Foundation
FI	Investment funds
FIDC	Investment funds in credit rights
FLIRB	Front-Loaded Interest Reduction bond
FPD	Federal Public Debt
GAP	Asset and liability management
GDP	Gross domestic product
Gepec	Unit of Research and Scenarios
Gerin	Unit for Investor Relations
GFSM	Government finance statistics manual

GGGD	General government gross debt
IADB	Inter-American Development Bank
IBGE	Brazilian Institute for Geography and Statistics
IBRD	International Bank for Reconstruction and Development
IDS	Integrated debt system
IDU	Interest Due and Unpaid
IFAC	International Federation of Accountants
IGCP	Treasury Management and Public Credit Institute of Portugal
IGP	General price index
IGPM	General price index-market
IIA	Institute of Internal Auditors
IIF	Institute of International Finance
IMA	Andima market index
IMA 5 –	Andima market index that involves securities maturing in up to five years
IMA 5+	Andima market index that involves securities maturing after 5 years
IMA-B	Andima market index which includes CPI-indexed securities
IMA-C	Andima market index which includes IGPM-linked federal public securities
IMA-General	Andima market index composed of a ponderation of all IMAs
IMA-S	Andima market index composed by floating-rate securities
IMF	International Monetary Fund
INSS	National Social Security Institute
INTOSAI	International Organization of Supreme Audit Institutions
INV N Res	Non - resident investor
IOF	Financial operations tax
IPC	Consumer price index
IPCA	Consumer price index
IPSASs	International public sector accounting standards
IR	Income tax
IRB	Reinsurance Institute of Brazil
IRF-M	Fixed Income market index
IRPF	Individuals income tax
JBIC	Japan Bank for International Cooperation
JSTN	National Treasury bonds linked to Selic rate
KfW	Kreditanstalt für Wiederaufbau (Development bank of German government)

LAC Debt Group	Latin American and Caribbean expert group on public debt management
LBC	Letra do Banco Central (Central Bank floating-rate securities)
LBTR	Real time gross settlement (LBTR)
LDO	Budgetary guidelines law
LFT	Letras Financeiras do Tesouro (National Treasury floating rate securities)
LM	Liability management
LOA	Annual budgetary law
LRF	Fiscal responsibility law
LTN	Letras do Tesouro Nacional (National Treasury fixed-rate securities)
Mercosur	Southern Cone Common Market
MF	Ministry of Finance
MGDD	Manual on government debt and deficit
MOC	Market operational code
MTF	Manual on fiscal transparency
MTS	Electronic market for government bonds
NASD	National Association Of Securities Dealers
NBB	National Bank of Belgium
NBCE	Nota do Banco Central – série E (Central Bank exchande-rate security)
NTN	Notas do Tesouro Nacional (National Treasury securities)
NTN-B	Nota do Tesouro Nacional, série B (inflation-linked National Treasury securities)
NTN-C	Nota do Tesouro Nacional, série C (inflation-linked National Treasury securities)
NTN-D	Nota do Tesouro Nacional, série D (foreign-exchange linked National Treasury securities)
NTN-F	Nota do Tesouro Nacional, série F (fixed National Treasury securities)
NYSE Regulation, Inc	New York Stock Exchange
OECD	Organization for Economic Cooperation and Development
OGU	Federal government budget
ORTN	Obrigação Reajustável do Tesouro Nacional (National Treasury inflation-linked securities)
OUT PJF Nac	Other national financial corporate entities
PAEG	Government economic action program
PCASP	Account plan applied to public sector
PEC	Constitutional amendments proposition
PF PRIV	Individuous private (investment funds)

PF Tot	Individuous total (investment funds)
PF Var	Individuous retail (investment funds)
PJNF	Non financial legal entities
PND	National privatization program
PPA	Multi-year plan
Prev Comp	Complementary pension funds
Proer	Program for the restructuring and strengthening of the Brazilian financial system
Proes	Program for the reduction of the State presence in the banking system
PSBR	Public sector's borrowing requirements
PSND	Public sector net debt
PVBP	Present value of a basis point
RCL	Net current revenues
RDB	Bank deposit receipts
RFP	Request for proposal
S&P	Standard and Poor's
SAI	Supreme Audit Institution
SAIN	International Affairs Secretariat
SaR	Stock-at-Risk
SDDS	Special data dissemination standard
SE	Executive Secretariat
Seae	Economic Monitoring Secretariat
SEC	Securities and Exchange Commission
Selic	Special settlement and custody system. This system determines the basic floating rate of the Brazilian economy (Selic rate).
SET	Security loan service
SFH	Public house financing system
SFN	National financial system
SGS	Time series management system
Siafi	Unified account and the integrated system of financial and budgetary administration
Sidor	Integrated system of budget data
Sisbex	Electronic negotiation system of BM&F
SNA	System of national accounts
Soc Capital	Capitalization companies
SOF	Federal Budget Secretariat

Soma Fix	A system for negotiations, settlements and custody of private fixed-income securities in a stock exchange environment
SOT	Spread over Treasury
SPB	Brazilian payments system
SPC	Complementary Social Security Secretariat
SPE	Economic Policy Secretariat
SPI	Secretariat for Strategic Planning and Investments
SPS	Secretariat for Social Security Policies
SRF	Federal Revenue Secretariat
STN	National Treasury Secretariat
STR	Reserve transfer system
SUSEP	Private Insurance Superintendence
TCU	Federal Court of Accounts
TD	Treasury Direct
TODA	Agrarian Debt Securities, issuance for agrarian reform
Unctad	United Nations Conference on Trade and Development
USA	United States of America
Usaid	United States Agency for International Development
Var	Value-at-Risk

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