

## Part III

### Chapter 6

# The secondary market for Federal Public Debt

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## 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,<sup>1</sup> 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<sup>2</sup> 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

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<sup>1</sup> Source: EMTA.

<sup>2</sup> 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;<sup>3</sup>
- 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,<sup>4</sup> 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.<sup>5</sup>

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<sup>3</sup> Financial markets contain sophisticated 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.

<sup>4</sup> As day count and asset delivery conventions.

In 2003, the new government<sup>6</sup> 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.<sup>7</sup>

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)

<sup>5</sup> 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.

<sup>6</sup> 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.

<sup>7</sup> Even with the new government's policies, the Federal Public 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;<sup>8</sup> and (c) Letras Financeira do Tesouro (LFT), floating rate bonds.<sup>9</sup>

Besides the change in the securities' profile, the volume of daily trading consistently increased,<sup>10</sup> 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

<sup>8</sup> IPCA is a consumer price index, calculated by the Brazilian Institute for Geography and Statistics (IBGE).

<sup>9</sup> This is the basic overnight interest rate, calculated by the Central Bank, for operations that mature after one day.

<sup>10</sup> 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).<sup>11</sup> 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,<sup>12</sup> (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.<sup>13</sup> Interest rates are standardized according to business days (BD/252), including the day of settlement and excluding the day of maturity.<sup>14</sup> (The Central Bank<sup>15</sup> 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).<sup>16</sup>

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

<sup>11</sup> This subject will be discussed later in this chapter.

<sup>12</sup> General Price Index - Market, calculated by the Getúlio Vargas Foundation (FGV).

<sup>13</sup> For details on this subject, see Part III, Chapter 2.

<sup>14</sup> As determined by the Ministry of Finance in Administrative Ruling No. 116 of May 1999.

<sup>15</sup> According to Central Bank Communiqué No. 7,818 of August 2000.

<sup>16</sup> 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.<sup>17</sup> 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.<sup>18</sup> 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<sup>19</sup> 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 *DVO1*<sup>20</sup> (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.<sup>21</sup> 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.<sup>22</sup> Investors buy

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to maintain equivalence with international standards, since it is linked to the foreign exchange rate.

<sup>17</sup> 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 available to honor payments in the event of negative adjustments.

<sup>18</sup> 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.

<sup>19</sup> For details on this subject, see Part III, Chapter 2.

<sup>20</sup> This is a measure of the sensitivity of an asset due to a one basis-point variation in the interest rate.

<sup>21</sup> 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 shrunk, creating greater efficiency.

In 2008, the \$80 billion traded in Brazilian foreign bonds were in its most liquid security, the global 2040. However, EMTA<sup>23</sup> 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.

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<sup>22</sup> There may also be some bonds that mature on November 15 in odd-numbered years.

<sup>23</sup> Emerging Markets Trade Association

The sector has experienced a series of consolidations, privatizations<sup>24</sup> and incorporations<sup>25</sup> 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

<sup>24</sup> These occurred mainly through the Incentive Program for the Reduction of the State Presence in the Banking System (Proes).

<sup>25</sup> 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.<sup>26</sup>

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.<sup>27</sup>

<sup>26</sup> Article 12 of the regulation 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.

<sup>27</sup> 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

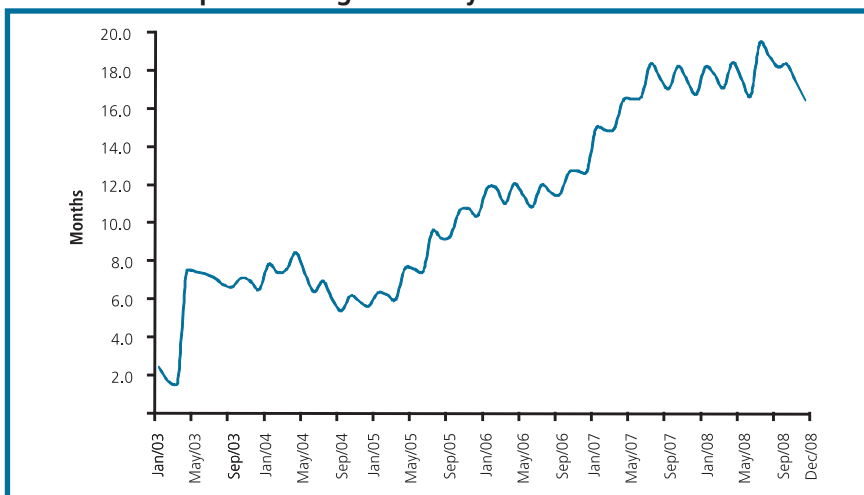
As illustrated in Table 6, the over-the-counter market accounts for almost all the secondary market trading volume. Economic stabilization, government and financial market initiatives, along with effective government measures aimed at lengthening public debt maturity and increasing the liquidity of the 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.

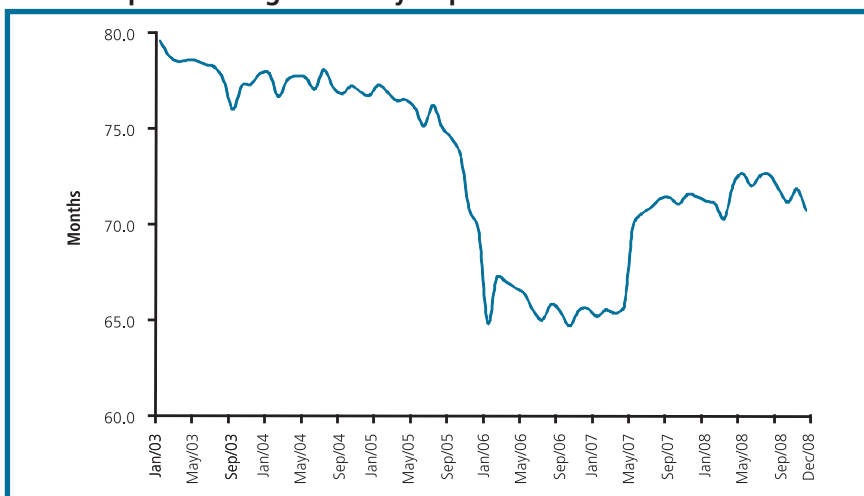
The graphs 1 and 2 show a consistent expansion of fixed-rate bond average maturities since the first half of 2003. However, in the case of price index-linked assets, average maturity has been reduced because the government's introduction of shorter-term issues to increase the liquidity of these instruments 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

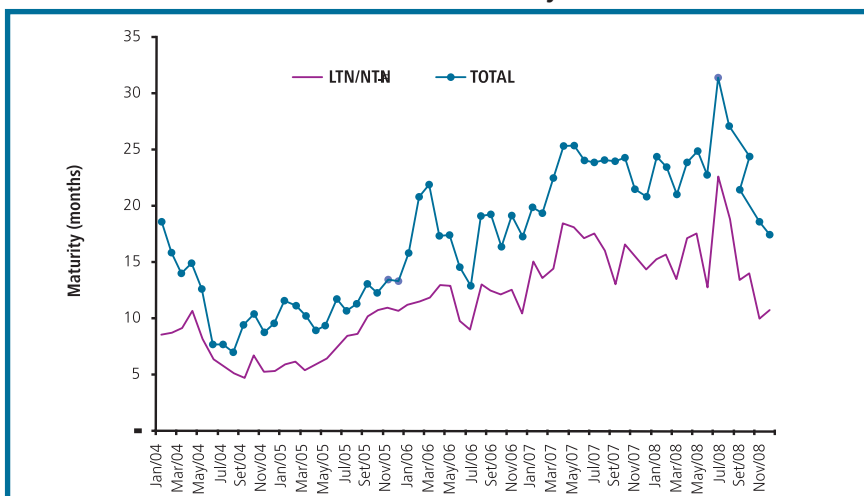
**Graph 2. Average maturity of price index-linked securities**



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.

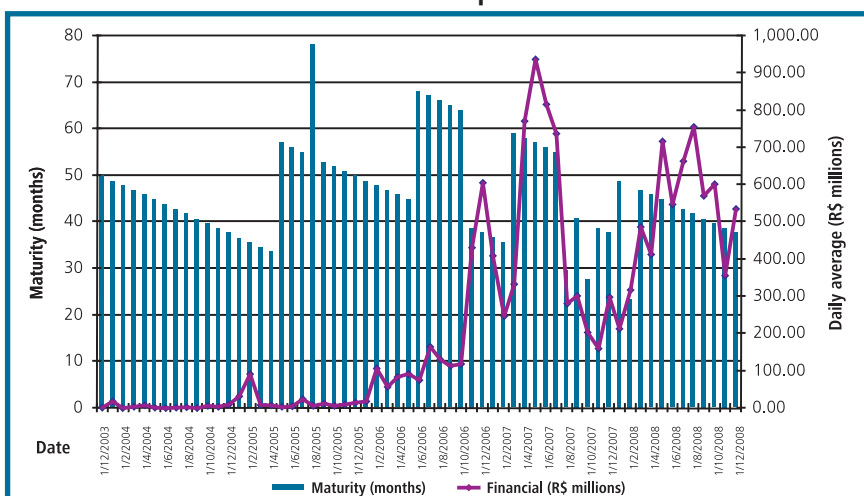
**Graph 3. Average maturity of definitive operations with federal securities on the secondary market**



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.

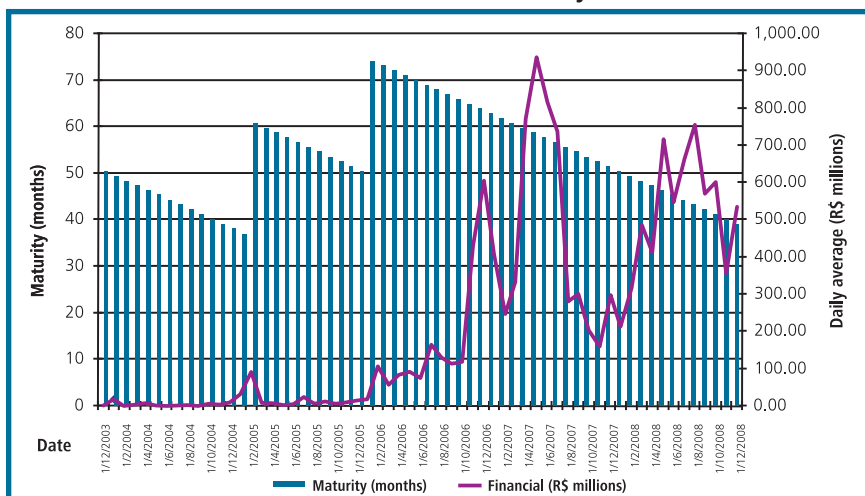
**Graph 4. Relation between NTN-F maturity period and average daily volume traded for the most liquid NTN-F in the month**



Source: BCB

Prepared by: STN

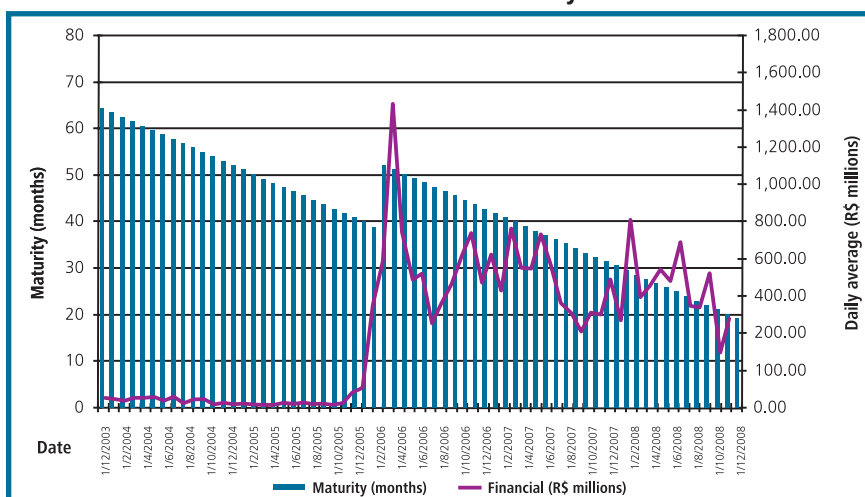
**Graph 5. Relation between NTN-F maturity period and average daily volume traded for the benchmark five-year NTN-F bond**



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<sup>28</sup>**

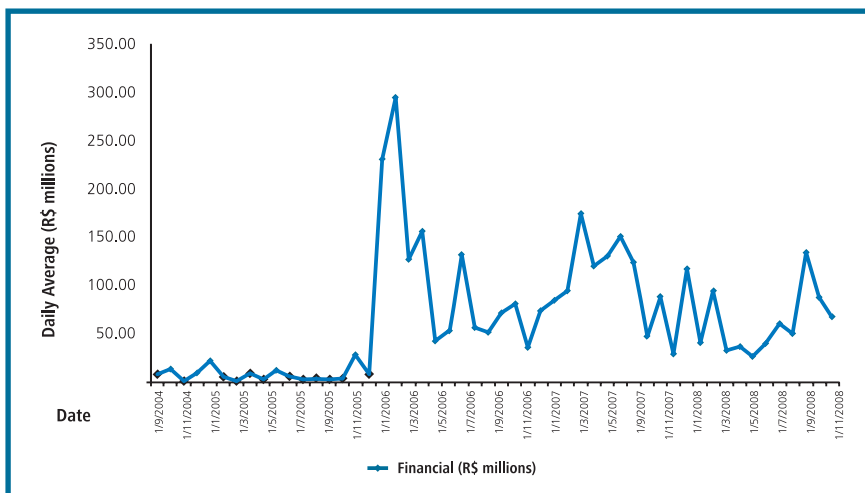


Source: BCB  
Prepared by: STN

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.

<sup>28</sup> 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**

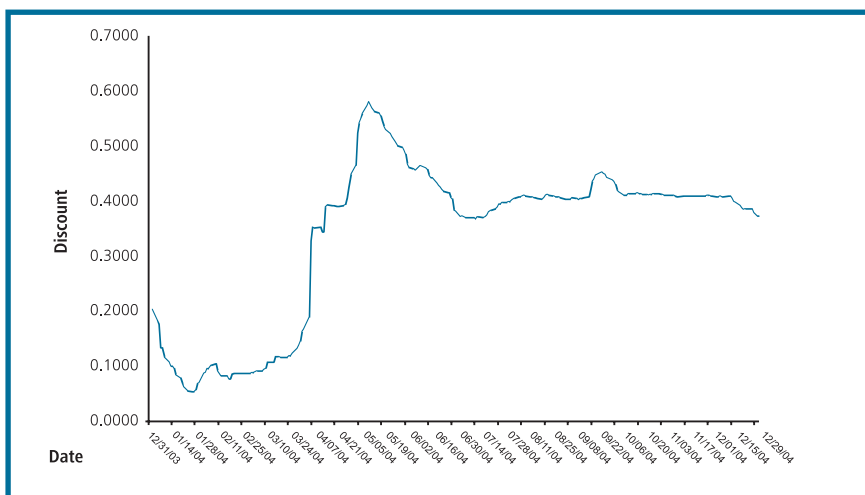


Source: BCB  
Prepared by: STN

### 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.

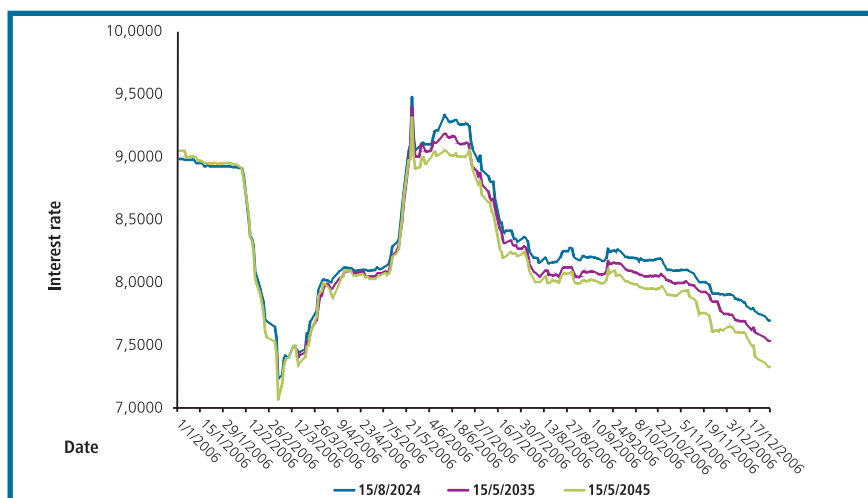
**Table 7. Asset volatility and selected indicators in 2004**

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**

<b>Asset</b>	<b>3 Apr 2006</b>	<b>24 May 2006</b>	<b>31 Jul 2006</b>
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<sup>29</sup> 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.

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<sup>29</sup> 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,<sup>30</sup> mainly because of the nature of the financial market<sup>31</sup> 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.<sup>32</sup> 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.

<sup>30</sup> See section 4.2.2, for more details.

<sup>31</sup> For example, the NTN-Bs and NTN-Fs now being issued allow for stripping operations; however, the market has not taken advantage of this.

<sup>32</sup> By acquiring a swap with a term equivalent to the bond, the investor transforms a fixed-rate asset into one linked to the daily interest rate, transferring 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<sup>33</sup> 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<sup>34</sup>

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).<sup>35</sup> 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

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<sup>33</sup> For details on the public securities dealer system, see Part III, Chapter 4.

<sup>34</sup> For details on the organizational strategy and the results of the meetings with market participants, see Part III, Chapter 5.

<sup>35</sup> Law n° 10,892 of June 2004. The CPMF tax was discontinued 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.<sup>36</sup>

#### 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.

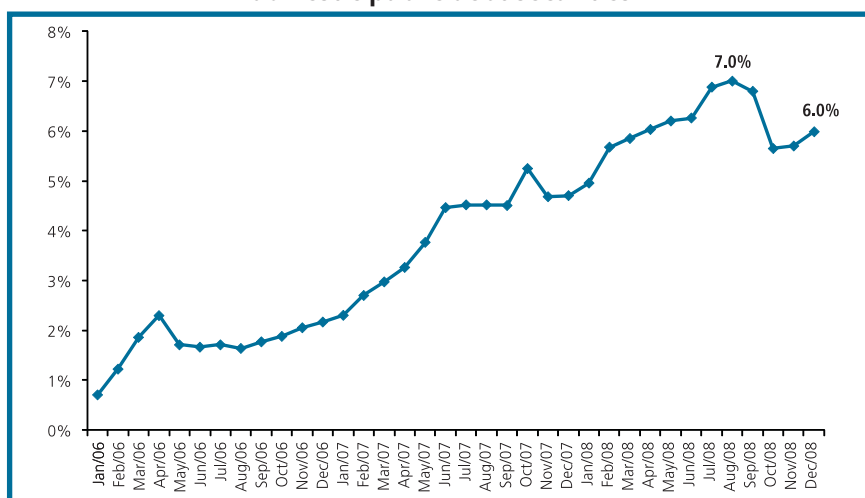
Another important measure, adopted in 2006,<sup>37</sup> exempted non-residents from paying income tax on earnings from investments in domestic public debt securities. As a result, the investor base increased:

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<sup>36</sup> 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.

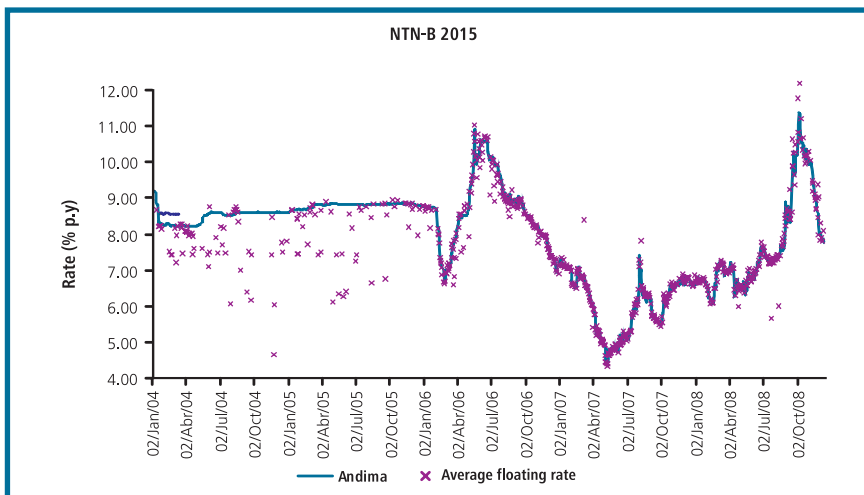
In the beginning of 2008, the Treasury changed the rules for dealers: Institutions that wanted to take part in second-round auctions would be able to view buy and sell spreads on electronic auctioning systems for one hour each day - 30 minutes in the morning and 30 in the afternoon - which greatly increased 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.

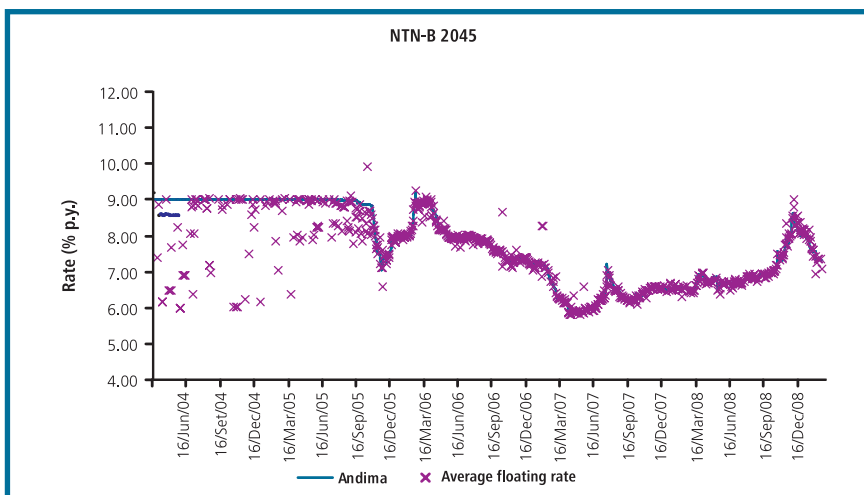
<sup>37</sup> Provisional Measure nº 28, that was published in 2006, and later converted into Law nº 11,312, of June 2006.

**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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