

The role of the central bank in developing debt markets in Mexico

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1. Introduction

Debt markets play an important role in any economy as they provide economic agents with alternative options to banking for allocating their savings efficiently. From a central bank perspective the development of domestic debt markets is of particular relevance, as they enable the use of short-term interest rates to convey monetary policy signals across the whole maturity spectrum.

In Mexico, the central bank has participated actively in developing domestic debt markets. Banco de México (BM) has not limited its contribution to attaining low and stable rates of inflation, a necessary condition for developing sound debt markets. It has also taken other key measures such as the use of government securities as monetary policy instruments, the development of quick and reliable clearing and settlement systems, the modification of the legal and regulatory framework and the promotion of market transparency. It has collaborated with the Ministry of Finance in the design of government bonds, the composition of domestic debt and issuance and placement of it.

This document analyses significant central bank policy decisions that have contributed to the development of debt markets in Mexico. It is organised as follows. After this introduction, the second section describes the evolution of debt markets in Mexico; the third deals with the role of BM in developing debt markets; and the last lists some ideas for future developments.

2. The evolution of debt markets in Mexico

Mexican authorities have made considerable efforts in the last two decades to develop domestic debt markets. The initial step was taken back in 1978, when the first government peso-denominated fixed rate security (Cetes) was issued. At the beginning, both the number of market transactions and the amounts involved were small; securities had short-term maturities, there was no secondary market and the government determined interest rates. Despite these limitations, over the years, both the government and the central bank increasingly relied on the debt market, the former to cover its financial needs and the latter as an instrument of monetary policy.

Secondary markets started to develop slowly after 1982, when the government allowed banks and brokerage houses to submit bids at public auctions for Cetes. During that period, BM decided to begin gradually conducting its monetary policy through the use of marketable government securities. To support the development of markets for government securities, BM refrained from issuing its own securities until 2000. To subtract liquidity from or add it to money markets, BM sold and purchased government securities.

Government debt markets

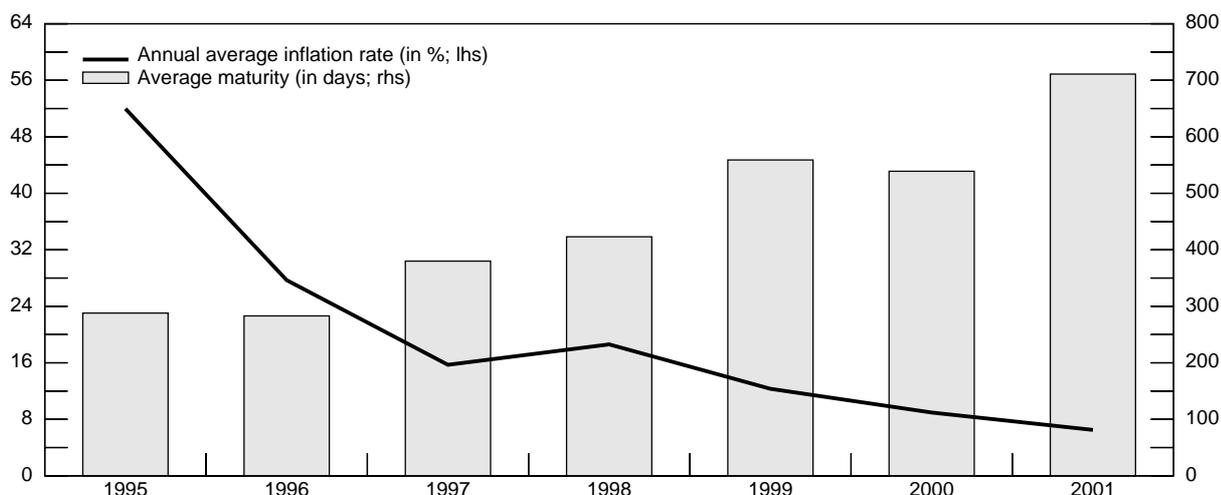
In the early stages of debt market development, when private issuance is small, financial authorities usually pay particular attention to improving the market for government securities as these provide a benchmark for pricing other fixed income securities, help financial intermediaries to manage their interest rate risks and can also be used as vehicles for funding.

¹ The views expressed in this paper are the author's and do not necessarily represent those of Banco de México.

The characteristics of government debt and its issuance process have a profound influence on the development of markets. An active and liquid market requires securities with certain characteristics to facilitate pricing and trading. Securities should have simple structures with codes that identify them by the date of their maturity rather than by the date of their issuance. Measures to facilitate trading such as easy access to market information are also essential to eliminate information asymmetries.

The composition and average maturity of peso-denominated government securities have been changing over the years in response to several episodes of financial instability. Policymakers have been constrained in the issuance of marketable securities by the changing risk perceptions of market participants in response to the sharp depreciations of the domestic currency and their ensuing impact on inflation and interest rates.

Graph 1
Average maturity of government domestic debt



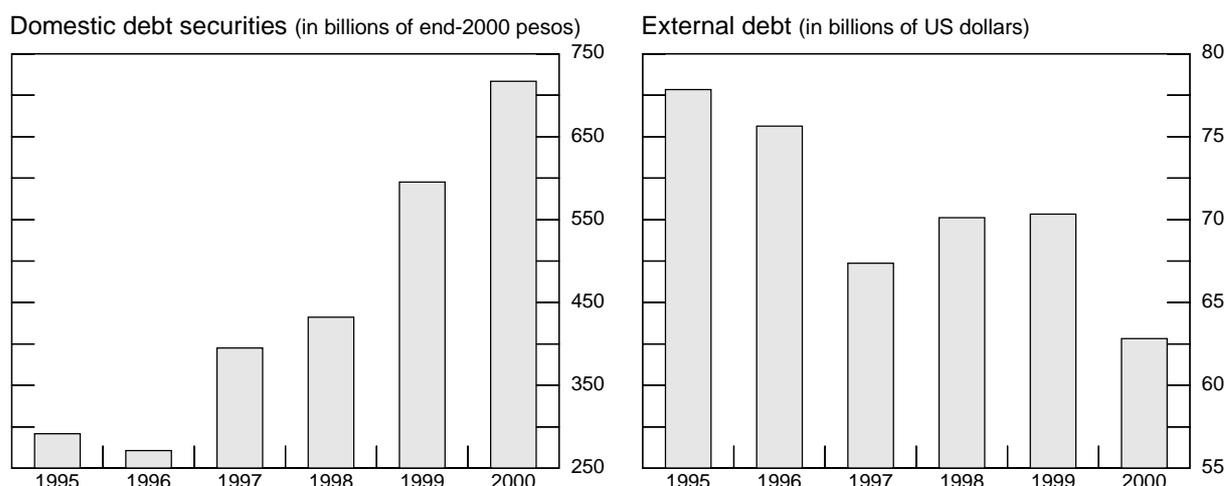
Source: Banco de México.

For many years, the government's domestic funding came from placing short-term zero coupon bills, floating rate notes, inflation- and oil-price-indexed bonds, and, until 1994, short-term dollar-linked bonds. The first issuance in the market of one-year zero coupon bonds took place in 1990. Other sources of funding were obtained from the issuance of long-term bonds sold to banks over-the-counter to facilitate their compliance with mandatory reserve requirements.

In several episodes of stress, the government was able to issue only short-term bills, sometimes with maturities as short as seven days. On more recent occasions, such as the Asian and Russian crises of 1997-98, the government had to increase its reliance on floating rate bonds, as investors were reluctant to be exposed to interest rate risks. The strict observance of monetary and fiscal discipline has allowed the Mexican economy to enjoy economic growth and financial stability in the last few years. This stability has permitted the government to increase the size and average maturity of its domestic debt (Graph 1) and decrease its dependence on foreign debt. In fact, in recent years, the stock of peso-denominated government debt has been growing rapidly, as the government has issued securities in the domestic market beyond the amount required by its fiscal deficit, thus reducing the stock of foreign debt (Graph 2).

As macroeconomic conditions have become more stable, market participants are showing greater willingness to hold longer maturities and fixed coupon securities, to take advantage of the expected decline in interest rates. The government has therefore been able to issue successfully three-, five- and 10-year fixed coupon bonds and to decrease the share of floating rate issues in the outstanding stock of government debt.

Graph 2

Federal government debt outstanding¹

¹ Figures exclude securities sold by Banco de México for monetary policy purposes.

Nowadays, the government issues short-term zero coupon bills with maturities up to one year, floating rate bonds, fixed coupon bonds and inflation-indexed bonds with maturities up to 10 years (Table 1). Floating rate bonds constitute half of the government debt. Ten-year inflation-indexed bonds were issued for the first time in October 1999, five-year fixed coupon bonds were issued in May 2000 and 10-year fixed coupon bonds in July 2001.

Table 1

Government debt securities

Instrument	Type of coupon	Maturity	Coupon payment	Government debt outstanding (in billions of dollars) ¹		
				1999	2000	2001
Cetes	Zero	28, 91, 182 and 364 days		14.2	19.0	21.9
Bondes	Floating	3 and 5 years	28, 91 and 182 days	35.3	43.3	37.8
Udibonos ²	Fixed	5 and 10 years	182 days	8.2	8.9	9.9
Bonos	Fixed	3, 5 and 10 years	182 days		3.5	12.0
Total				57.8	74.7	81.6
% to GDP				12.0%	13.2%	13.1%

¹ Includes securities sold by BM for monetary policy purposes. ² Inflation-indexed bonds.

The central bank started issuing its own securities in 2000, to sterilise the continuous increase in its foreign reserves. These securities, called "Brems", consist of one- and three-year floating rate bonds with coupons linked to overnight rates. BM considered this a more appropriate course than continuing to sell long-term government debt, as the latter has a larger impact on the shape of the yield curve. At the same time, the deposit insurance agency (IPAB) has been issuing floating rate debt with government guarantees to finance its operations and the costs incurred during the banking crisis of 1994-95. These measures have augmented the variety of low credit risk securities available to investors.

Primary market

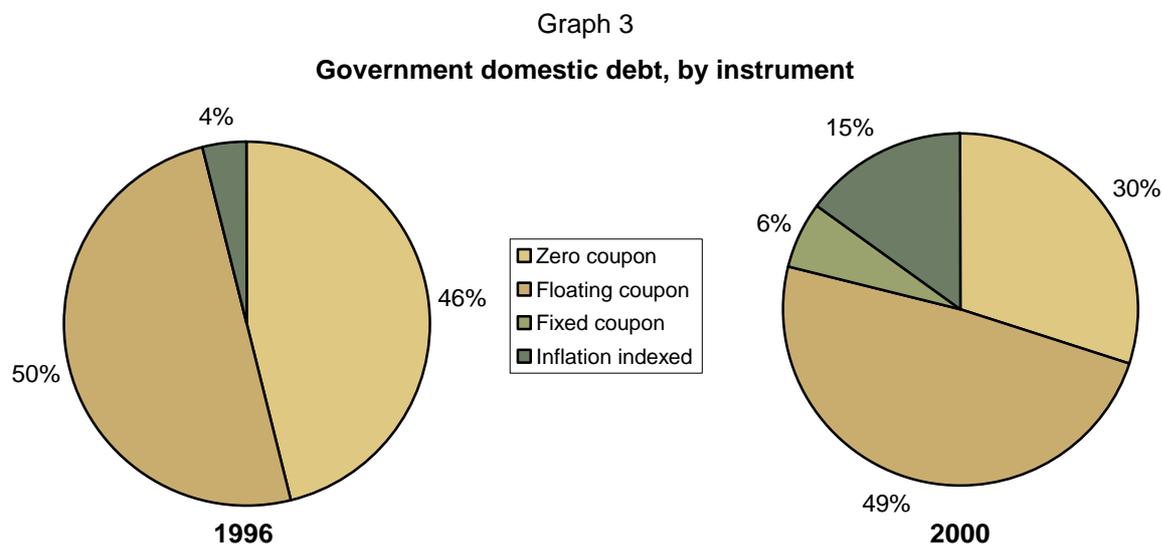
BM, acting as the government's financial agent, carries out auctions of government securities every week. In order to reduce the uncertainty in the process of securities issuance, the government commits itself to a preannounced quarterly calendar that provides the basic elements of its domestic debt strategy. This calendar specifies: the type of securities to be auctioned, the minimum amount tendered and the maximum nominal value of the total placement during the quarter.

Even though the government provides the issuance calendar in advance, the exact nominal amount and other technical characteristics of the instrument to be tendered are normally announced two working days prior to the auction. Securities are identified by their maturity date and certain issues are reopened to promote liquidity in the secondary market.

Primary auctions of government securities take place usually on Tuesdays, and are carried out through an electronic system developed by the central bank. Bids are received until 1.30 pm and the results are published at 3 pm. Banks, brokerage houses, pension funds, mutual funds and insurance companies are allowed to submit bids. Currently, all securities are placed following a multiple price auction procedure with the exception of fixed coupon bonds, which are placed using a Dutch auction mechanism. Settlement takes place 48 hours after the auction. At the same time, the government makes coupon and principal payments on outstanding securities.

The authorities must strike a difficult balance between issuing different maturities to provide the market with a benchmark yield curve and issuing amounts of single maturities large enough to attract investors concerned with liquidity. In this regard, a policy of reopening some issues several times has been adopted to increase the amount outstanding of particular securities but, at the same time, the government has avoided concentrating the maturity of large issues on a single date to decrease refinancing risks; see Sidaoui (2000).

Despite the efforts to extend the yield curve by issuing securities with maturities of up to five and 10 years, the average duration of the debt is relatively short and has increased proportionally less than the increase in average maturity, because a large proportion of longer-term bonds are floating rate notes.



Note: Figures exclude securities sold by Banco de México for monetary policy purposes.

Source: Banco de México.

Secondary market

Securities in Mexico are dematerialised and registered at a private depository institution (Indeval). Most of the secondary market transactions with government securities are carried out through repo operations. Although the repo market is very liquid, there are hardly any operations maturing beyond seven days. Overnight repos represent the most liquid segment of the market, with an average daily volume close to \$6 billion. Banks and brokerage houses use repos as the main source of funding for

their positions in government securities. They are the most important players and holders of government securities in the fixed income market. However, in recent years, institutional investors, particularly pension funds, have been gradually growing in importance.

The government's commitment to finance itself through the market even during periods of stress has been essential to developing a secondary market. In this regard the Mexican government has seldom made use of its right to reject bids at the primary auction. The last times bid results were rejected were in early 1995 during the Mexican crisis and in September 1998 at the peak of the Russian crisis.

Secondary trading of government securities is almost exclusively conducted in over-the-counter markets. Liquidity in the secondary market increased substantially when foreign investors were allowed to purchase peso-denominated government securities at the end of the 1980s. However, the participation of foreign investors in Mexico's peso-denominated markets has been continuously decreasing from its record 48% of the outstanding stock of government securities reached in 1994. Foreign participants have found it more convenient to hold long positions in peso interest rates through the use of foreign exchange forward contracts instead of direct investment in government securities.

Liquidity in secondary markets also improved with the participation of voice and electronic inter-dealer brokers in 1994-95, which facilitated price discovery. Around 90% of outright operations in the secondary market are now executed through brokers. Finally, the opening of the financial system to foreign banks at the end of 1993 and their increasing participation in the secondary debt market further improved liquidity. Foreign banks, especially smaller ones, derive their revenue from actively trading securities rather than from holding them, so their participation increased securities turnover substantially.

Liquidity in other securities is relatively small and it is highly concentrated in specific maturities. While zero coupon bills (Cetes) and fixed coupon bonds (Bonos) have the highest turnover, inflation-indexed securities (Udibonos) hardly trade (Table 2). This behaviour is related to the fact that inflation-indexed securities are usually held until maturity by participants such as pension funds, which seek to hedge their balance sheet's liability side. On the other hand, floating rate coupon bonds (Bondes) are purchased by brokerage houses, which finance their positions through the use of relatively short-term repos, and thus have more liquidity than Udibonos.

Table 2

Secondary market in government securities

(average daily turnover in millions of dollars)

	2000 Q1	2000 Q2	2000 Q3	2000 Q4	2001 Q1	2001 Q2	2001 Q3
Cetes	1,272	1,493	762	680	1,299	503	591
Bondes	163	51	67	70	53	80	121
Udibonos ¹	13	6	4	3	6	7	5
Bonos	51	155	204	864	945	906	1,062

¹ Inflation-indexed bonds.

Source: Banco de México.

The volume of operations differs significantly between Cetes and Bondes and between short-term and long-term maturities. The market activity in Cetes is concentrated on 90-day maturities. On the other hand, the most liquid Bonos are those maturing in 2003 despite their relatively short duration. The liquidity behaviour indicates that secondary market participants are reluctant to trade along the fixed rate yield curve, even though volume has increased.

Linkages of government securities

The development of government securities markets generates important positive externalities for the development of securities markets in general as it provides a benchmark for pricing private securities

and facilitates the introduction of new financial products for risk management. Non-government debt markets in Mexico are small, short-term in nature and comprise commercial paper, development banks' bonds, financial institutions' medium-term notes and corporate medium- and long-term bonds.

In the last two years, corporations have increased the amount of medium/long-term issues. However, most of the bonds issued are floating rate and inflation-indexed bonds. Fixed rate bonds represented only 25% of total issuance during the same period. A large proportion of bonds issued is rated AA or higher² as access to the domestic bond market is restricted to the most creditworthy Mexican firms such as large exporters and conglomerates. Large corporations have found it more convenient to tap the international markets for funds.

The investor base for marketable securities

Financial markets in Mexico, as in the majority of Latin American countries, are still dominated by banks, despite their decline in importance over the last few years. However, to ensure high liquidity and a stable demand for fixed income securities, it is crucial to have a diversified investor base in terms of time horizons, risk preferences, and trading motives.

Table 3
Major holders of government domestic debt securities
(billions of dollars)

	Cetes		Bonos		Bondes		Udibonos	
	2000	2001	2000	2001	2000	2001	2000	2001
Banks and brokerage houses	8.5	9.1	1.3	5.9	25.2	17.1	2.0	3.7
Mutual funds	3.0	3.7	0	0	3.8	3.0	0	0
Pension funds	0.7	0.9	1.2	3.4	9.6	14.8	2.5	2.4
Insurance companies	0.4	0.9	0.1	0.1	0.8	0.4	2.6	2.6
Foreign banks	1.2	0.5	0.2	0.8	0.6	0	0	0
Other	5.1	6.9	0.7	1.8	3.4	2.5	1.9	1.2
Total	19.0	21.9	3.5	12.0	43.3	37.8	8.9	9.9

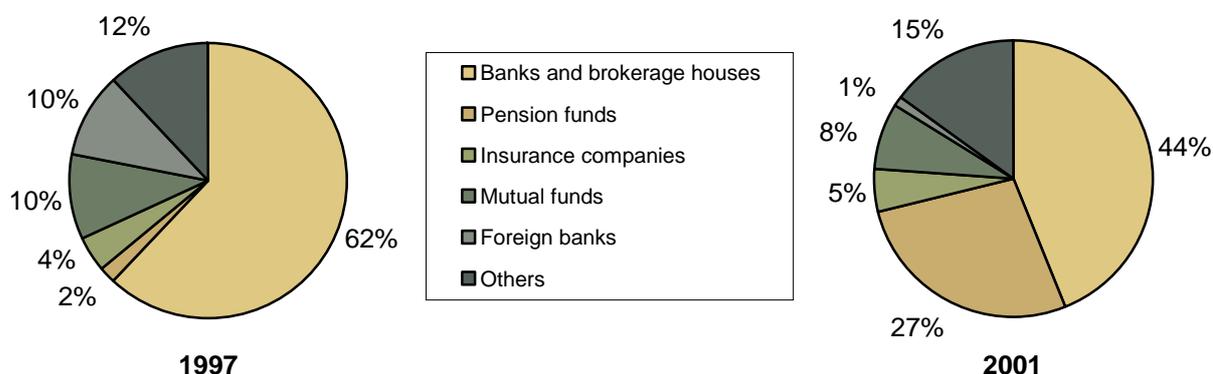
Note: Figures include securities sold by BM for monetary policy purposes.

In the last few years, Mexican institutional investors such as pension and mutual funds, as well as insurance companies, have increased their participation in debt markets, helping to create a more stable demand for fixed income securities (Graph 4). However, the institutional investor base in Mexico remains underdeveloped. Funds held by private institutional investors (insurance companies, privately administered mandatory pension funds, voluntary occupational pension plans, and mutual funds) are estimated at the equivalent of about 10-11% of GDP. This represents about \$60 billion, smaller than most of the larger countries in Latin America and not substantially above countries such as Argentina, Chile and Peru with substantially smaller populations.

² BBVA-Bancomer (2001).

Graph 4

Government domestic debt, by type of investor



Note: Figures include securities sold by BM for monetary policy purposes.

Source: Ministry of Finance.

3. The role of the central bank in developing debt markets

Over the years, BM has made different and important contributions to the development of efficient debt markets. A major contribution has been conducting its monetary policy through open market operations with government securities. However, some others have extended beyond monetary policy, and are related to the different mandates the law accords BM, such as financial agent for the government, guarantor of payment systems and promoter of financial stability. In this section the most important measures adopted by BM to improve the development of debt markets are discussed: its monetary policy instruments; its effectiveness as fiscal agent of the government; the legal and regulatory framework; the transparency of markets; and the development of derivatives markets in Mexico.

Monetary policy and the development of the government debt market

Since the early 1980s, the central bank took different measures to move gradually away from fixing interest rates and banks' reserve requirements to the implementation of monetary policy through open market operations. In this respect, banks' interest rates were liberalised (1987) and high reserve requirements for commercial banks were substituted by a liquidity coefficient (1989) which later on was suppressed (1991). Notwithstanding, the most important changes came after the float of the peso at the end of 1994. Under a flexible exchange rate regime, BM had to look for new intermediate objectives to anchor and conduct its monetary policy. At that time, in an environment characterised by high volatility in exchange and interest rates, it was considered technically impossible to set official rates.³ Thus, Mexico's central bank decided to set quantitative targets consistent with its inflation objective.

Central banks exert an enormous influence over short-term interest rates by shaping the characteristics of key interbank settlement systems and determining the conditions that equilibrate supply and demand for bank deposits at the central bank.⁴ Hence, BM decided to introduce a policy framework known as "zero average reserve requirement" to influence short-term rates without sending signals about any specific level.

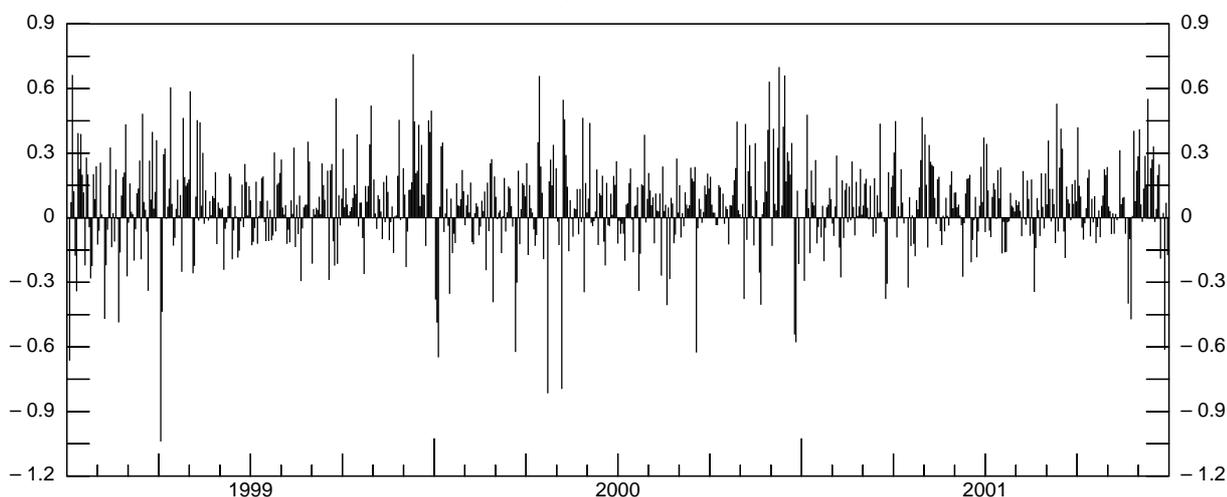
³ Marcos (1999).

⁴ Borio (1997).

Central banks' liquidity management represents a key element not only for the process of monetary policy implementation, but also for the development of efficient money markets. In this regard, BM has been making continuous efforts over the years to improve its ability to provide the appropriate amount of liquidity to banks so that each day the demand for the monetary base is satisfied at market-determined interest rates. The success of this policy has allowed interest rates to be dissociated from the liquidity level in the money market and hence reflect fundamental factors, such as current and expected changes in monetary conditions. The most important policies include: an active participation in the money market to add and subtract liquidity on a daily basis; the implementation of an end-of-day market for funds settlement;⁵ and policies to eliminate two of the three "autonomous" sources of liquidity.

Autonomous sources of liquidity are movements in the monetary base caused by operations outside the direct control of the central bank. The three main autonomous operations that can generate liquidity are: purchases and sales of foreign currency by the central bank to maintain a fixed or pegged exchange rate regime;⁶ movements in the Treasury's account at the central bank; and commercial banks' demand for notes and coin from the central bank to satisfy the public demand for currency.⁷

Graph 5
Liquidity forecasting errors¹
In percentages



¹ Daily liquidity forecasting error/monetary base.

In Mexico, the first two sources of autonomous liquidity have been eliminated with the adoption by the authorities of a free floating foreign exchange rate regime and by requiring the Mexican Treasury to give BM 24-hour prior notice of any movement in its account at the central bank. BM has only to estimate the expected change in the public's demand for notes and coin. As part of its liquidity management policy, the central bank compensates every day for the expected changes in base money through open market operations. The forecast errors from estimating the demand for notes and

⁵ The end-of-day market for funds settlement permits transfers of funds between the banks' current accounts at the central bank once the different payment systems (cheques, large-value payments, securities) have been cleared. In addition, in this market the central bank can conduct an extra round of open market operations in case there is an important error in forecasting the monetary base demand. This facility is very useful since, by the time it opens, both the market participants and BM have perfect knowledge of their liquidity position, and so they have the opportunity to square off such positions.

⁶ Very often, foreign exchange regimes are outside the control of the central bank. In Mexico, the Exchange Commission, in which the Ministry of Finance has the upper hand, determines the foreign exchange regime.

⁷ O'Dogherty (1997).

coin on a daily basis are relatively small and follow a random pattern (Graph 5).⁸ The zero reserve requirement mechanism also has the advantage of removing banks' incentive to maintain reserves, thus facilitating the central bank's control over liquidity.

Government's financial agent

In recent years, the Mexican government and BM, as its financial agent, have made significant changes to the government issuance process. One notable change is the opening of primary auctions of government securities to more participants such as mutual and pension funds and insurance companies. It is also worth mentioning the reduction in the time span between the auctioning process and the announcement of results to just 90 minutes. The launch of an electronic system to conduct the primary auctions made the bidding process more efficient and enabled the central bank to process and publish the auction's results faster.

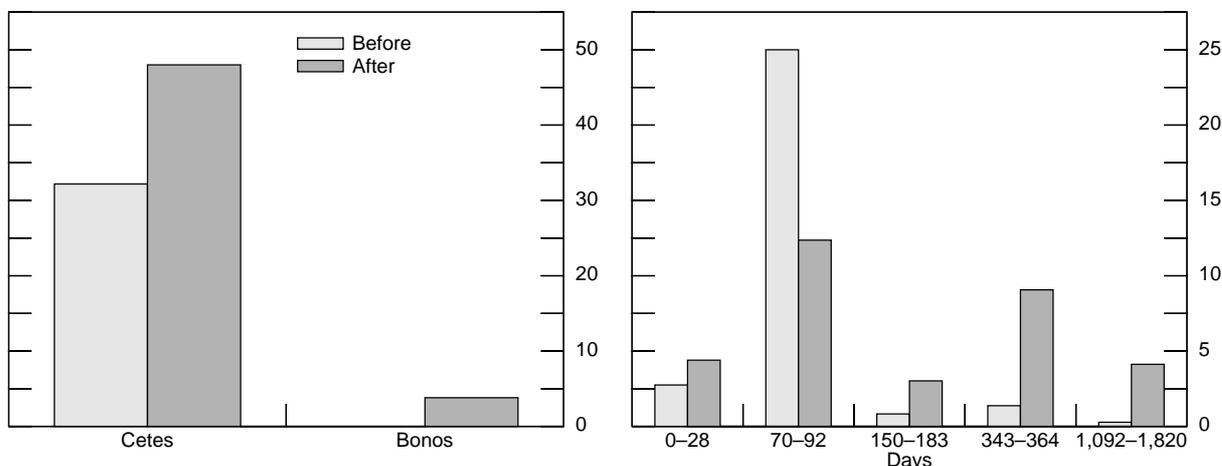
To give more certainty to market participants, the government announces its issuance programme on a quarterly basis. This announcement lists the securities to be auctioned each week, during the next quarter, and the minimum amount tendered by each type of security.⁹ Primary auctions take place on a weekly basis, and the settlement and clearing two working days after.

With a view to increasing liquidity, the government introduced in 2000 the figure of "primary dealer or market-maker". The objective of "market-makers" is to enhance the liquidity of fixed rate securities in secondary markets by making continuous bid-ask offers in exchange for certain privileges, such as bidding for additional securities at the auction's average price results once they are known. Liquidity in short-term zero coupon bills (Cetes) and fixed-coupon bonds (Bonos) consequently increased substantially after 2000.

Graph 6

Government domestic debt turnover and the introduction of market-makers

Weekly turnover in billions of pesos



Source: Ministry of Finance.

⁸ Alfaro (1997) provides a detailed description of methodologies for forecasting changes in the public's demand for notes and coin.

⁹ The exact amount to be offered in each auction is announced on the last working day prior to the week of the auction.

Legal and regulatory framework

BM has been continuously modifying its regulations according to market developments and needs. At the same time, the central bank has actively participated in working groups aimed at changing legal frameworks and adopting new ones. One of the main changes was the authorisation in 1990 of commercial and development banks to negotiate securities in secondary markets without the intermediation of a brokerage house. Previously, banks were required to operate in secondary markets through brokerage houses as it was considered that intermediaries should specialise in different market activities.

The characteristics of systems and mechanisms used to clear and settle securities transactions constitute basic elements for the development of debt markets, as they play a crucial role in the distribution of the risks borne by market participants. In Mexico, as in many other countries, the central bank is responsible for the functioning of the payment system. During the last eight years BM has been working to comply with international standards and the industry's best practices.¹⁰ Among the changes promoted, it is worth mentioning the electronic linkage between banks' accounts at BM and the National Depository Institute (Indeval) to allow the settlement of securities transactions under delivery versus payment (DvP). To facilitate securities settlement with DvP, BM issued regulations for securities lending in 1994. Recent amendments to the securities markets law introduced the central counterparty for the future settlement of securities using a clearing house. Currently, BM is working on a new law that will address payment finality among other issues.

As mentioned above, most of the secondary market transactions in government securities are carried out through repo operations. However, recent reforms approved by Congress limited the protection by IPAB, the deposit insurance agency, of bank liabilities after the year 2003. It was necessary to provide more certainty for counterparties' operations in case of bank defaults, as repos will no longer be protected by deposit insurance. A new bankruptcy law, approved in 2000 permits holders of repo collateral to terminate in advance their repo operations by netting their rights and obligations with the defaulting counterparty. Prior bankruptcy laws required market participants to first settle their obligations and then collect their rights out of the bankruptcy proceeds.

The central bank has also made major efforts in developing an efficient and well regulated domestic derivatives market. In fact, a derivative market for foreign exchange products in Mexico has existed for the past 15 years. On the fixed income securities side, such markets started to develop at the beginning of the 1990s, with the creation of an interbank non-regulated forward market for inflation-indexed securities. However, the experience was not successful as the lack of regulation and internal controls of financial institutions led some of them to take large positions, causing large losses to some banks and brokerage houses.

With this background in mind, the central bank decided to regulate and monitor derivative markets more closely and to issue regulations for banks and brokerage houses. These regulations envisage, among other things, obligations to have middle offices reporting directly to top management, adequate risk measurement systems, risk committees with clear guidelines, and procedures and risk limits. Only banks and brokerage houses that comply with these regulations can trade derivatives in Mexico. Almost all of the major institutions in Mexico have complied with these regulations and are authorised to trade derivatives. Currently, there is a liquid market for foreign exchange forwards and options. In addition, a forward rate agreement market for the 28-day interbank equilibrium interest rate (TIIE) has started to develop as well as a small swaps market (fixed for floating) that goes up to 10 years.

The growth of mutual funds has been constrained by the dominance of banks and by regulatory restrictions limiting the percentage of assets that mutual funds could invest in short-term instruments. Financial regulators considered that mutual funds should specialise in holding long-term securities and thus they imposed limits on short-term investments. However, this restriction impaired the ability of mutual funds to compete against banks for customers. In a financial environment characterised by a high degree of interest rate volatility, investors tend to move away from funds invested in long-term securities as they will be exposed to sharp changes in the value of their investments. Moreover, mutual funds were not able to adjust the duration of their portfolios in response to expected increases in interest rates, since they faced restrictions regarding their investments in short-term instruments.

¹⁰ One example is the Principles for Systemically Important Payment Systems.

During periods of stress, fund investors moved their savings to banks that offer shorter-term maturities.

To promote the development and growth of these funds, the central bank has been gradually making regulation more flexible. Financial authorities are also working on regulations that will allow the creation of families of pension funds subject to different investment requirements to satisfy the different risk-return appetites of their customers.

Recent changes in the laws that regulate mutual funds move substantially in this direction, permitting the development of a wide variety of collective investment vehicles that must make clear in their prospectus the structure and investment objectives. The new laws open the door to the existence of short/long funds, hedge funds and funds of funds (umbrella funds). The new regime will also permit a single mutual fund to charge different fees to different classes of investors and opens the possibility for financial and non-financial entities to obtain authorisation from the Banking Commission to be distributors of funds. The ability to differentiate the pricing of products will help the industry to market customised products to the more sophisticated investors, and the existence of more distribution channels will increase competition.

Transparency and information

Important elements for the development of sound secondary markets are the existence of market-determined prices and the enforcement of the valuation to market prices of financial intermediaries' securities positions. BM has been active in developing schemes to provide participants with easy access to market information. To enforce regulations that oblige financial intermediaries to mark to market their security positions held for trading purposes, the central bank made some early efforts in conjunction with the Mexican Stock Exchange to publish daily market prices for all tradable fixed income securities. The enforcement of mark-to-market standards for securities valuation eliminates incentives to hold securities whose prices have decreased in order to avoid registering losses. This early effort to provide the market with prices failed because, very often, published data were unreliable as they depended on information supplied by financial intermediaries themselves.

More recent efforts, by a working group comprising BM, the Banking Commission and industry representatives, led to the creation of private "price vendors". These recently created entities are in charge of compiling market information from intermarket brokers and selling it to market participants. Price vendors should receive the approval of the Banking Commission to operate. However, the methodologies, models and inputs used to obtain prices along the yield curve are determined entirely by each price vendor. Currently, banks, brokerage houses, mutual funds, pension funds and insurance companies are required to obtain the services of a price vendor. Since 1999, BM also publishes on a daily basis information on government securities prices through its website to serve as a benchmark to evaluate the performance of price vendors.¹¹

Determination of reference-market rates

Before the introduction of voice and electronic interbank brokers, transactions among banks in the money and debt markets were mostly carried out by phone. Market participants, other than banks and brokerage houses, did not have access to any information regarding prevailing market interest rates. Information available to financial institutions was frequently incomplete and often not timely. Thus, market participants could not use any interest rate other than those determined, once a week, at government securities auctions as a reference rate for the different financial operations such as credits, futures, forwards and swaps. As part of the central bank's effort to develop market references for participants, BM developed a mechanism to determine day to day a market-based interbank interest rate. This market reference rate, known as TIIE, has become a benchmark for bank loans, security yields and underlying rates for futures and swap markets.

Currently, BM determines a 28-day TIIE every day, and once a week a 91-day TIIE. In particular, the 28-day TIIE has become a very important benchmark for the market. For instance, almost all private

¹¹ BM also publishes the methodology used to estimate the prices.

floating rate debt is related to it, as well as a large proportion of bank loans and the most liquid interest rate derivatives. The methodology to determine the TIIE uses bid-ask quotes presented by financial intermediaries to BM. Intermediaries know that BM can either borrow money from, or lend it to, them at those rates. Participation in these sessions is voluntary, but is open only to commercial banks.

Recently 14 of the major banks in Mexico launched their own reference rates. These new rates, known as Mexibor, are determined directly by the participating banks, based on market conditions, and include the yield curve up to a year. It is foreseen that, in the near future, Mexibor rates will substitute the TIIE as the basic reference.

In addition to the TIIE, in 1999 BM started publishing a daily weighted average of both the overnight interbank rate and the overnight repo rate for government securities. The figures are generated using data from operations settled in the DvP system operated by BM and Indeval. These reference rates have also become important as some issuers use them to price floating rate notes. In addition, some intermediaries are working to develop an overnight index swap market using these rates as market references.

4. Final remarks

Over recent years, Mexican domestic government debt markets have experienced remarkable growth, as macroeconomic stability has been consolidated. In particular, the decline of inflation has enabled the government to increase the duration of its debt, creating a yield curve in fixed rate instruments that goes up to 10 years. In addition, the creation of “market-makers” has provided liquidity to the market, making it more efficient. The Mexican securities market now has prices for the complete yield curve. However, there is still work to be done and the authorities are concentrating on the following issues:

- *Operating the repo market under international standards.* This would include working with the financial intermediaries in designing master agreements, and changes in regulations to facilitate haircuts and margin calls for these operations.
- *Facilitating short selling in the market.* Although short selling is allowed, it is seldom used because of difficulties in borrowing securities in the market. In fact, only market-makers have access to a securities-lending window at the central bank. To facilitate short selling, it is important to work on regulations to permit institutional investors to lend their securities. Finally, it is also important to work with the large custodian banks and with the clearing system (Indeval) on operational mechanisms that can make securities lending an active market.
- *Increasing the liquidity of government securities.* The increase in liquidity has concentrated on certain sectors of the yield curve. In addition, inflation-linked and floating rate government bonds continue to be illiquid instruments. In this respect, there are two main areas where additional work needs to be done. First, to increase the liquidity over the complete yield curve, the rules pertaining to the measurement of the activity of the market-makers should be changed so as to create incentives for trading in all of the important nodes of the yield curve. Secondly, international experience has shown that is very difficult to create a liquid market for floating rate and for inflation-indexed bonds. Therefore, the government and the central bank should look for strategies aimed at relying less on these securities.
- *Developing a corporate debt market.* In developed financial markets, corporate debt has proven to be a very efficient way to fund the private sector. For investors, corporate securities have been an important means to increase the yield of their investments. For the economy, these instruments have contributed to market efficiency, since they represent a transparent mechanism that determines the interest rate levels that are consistent with different credit risks. In Mexico, the development of this market has been extremely slow. In fact, in 1995 the market almost disappeared. Many important issuers ended up either defaulting or restructuring their debt without any previous advice for investors casting doubts about the reliability of credit ratings.

Over the last three years this market has started to reappear, due to the emergence of the major credit rating agencies in Mexico.¹² In addition, regulators have indirectly forced issuers to rate their instruments by obliging institutional investors such as mutual and pension funds to invest only in corporate securities that are rated by one of these major agencies. Notwithstanding, primary placements have been sporadic, usually from companies with high credit ratings, and geared towards a specific segment of the market, mainly the pension funds. One reason for this has been the lack of investment grade companies willing to fund themselves in this market. Another has been a very restrictive regulation oriented to institutional investors and financial intermediaries, in part as a consequence of the experiences of 1995.

Regarding the development of the corporate securities market, the basic framework has been established through reliable credit ratings and improved risk management performed by institutions. As long as this process of gradually building a well thought-out corporate securities market continues, some relaxation of the current regulation could be considered. In particular, there are proposals to allow institutional investors to invest in lower credit quality securities. Banks and brokerage houses could be authorised to conduct repo operations with these securities, in order to increase the liquidity of these instruments.

- *Asset securitisation* appears to be not only an alternative method of funding but also a necessary step in the development of a more liquid Mexican debt market. Mexican banks¹³ and non-bank banks have already successfully issued asset-backed securities, mostly through private placement operations or through their foreign branches. Securitised assets in these operations range from credit card receivables to mortgages. However, international experience shows that mortgages are the primary source of these transactions. In Mexico, the mortgage market is still small and fragmented.

Mexico does not have the complete legal infrastructure required to promote the development of securitisation schemes. Moreover, at present, asset sales from the originator to the vehicle are taxed, unless the originator retains the right to buy back the assets. This conflicts with prudential issues such as the convenience of a legal and economic separation of assets between the originator and the vehicle as advocated by the Basel Committee's new draft Capital Accord. Additionally, it appears essential to establish disclosure requirements in the prospectus about the most relevant features of the asset-backed securities.

Asset-backed paper can promote the development of longer-term issuances in the Mexican debt market. Institutional investors with long-term liability structures have traditionally favoured equity and government bonds. Their appetite for unsecured long-term corporate risk can be satisfied by issuance of securitised assets.

- *Consolidating a more sophisticated and liquid derivatives market.* Derivatives have been a natural complement for the spot fixed income markets, since they enhance their liquidity. In Mexico, although a liquid foreign exchange derivatives market operates, interest rate derivatives have been developing very slowly. This has partly been due to the lack of credit that the economy has experienced in the last seven years, which has inhibited the demand for hedging instruments. However, now that a fairly liquid yield curve in pesos exists, and credit is starting to reactivate, it is important to promote forward rate agreements referenced to longer-term interest rates as well as to increase liquidity in the interest rate swap market.

¹² Standard and Poor's, Moody's and Fitch-IBCA operate in Mexico.

¹³ Banamex has been particularly involved in several asset securitisation schemes. In 1999 this bank issued through its Nassau branch \$250 million in certificates backed with credit card merchant receivables. More recently, in March 2001, Banamex issued through a private placement scheme \$150 million of certificates backed with e-commerce receivables.

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