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A Framework for Developing Secondary Markets for Government Securities

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[1]Abstract

This paper consolidates previous work on the development of secondary markets for government securities, and focuses on the sequencing of measures necessary for their development. Six main lessons are identified: (i) a commitment to achieving and maintaining a stable macroeconomic environment, especially prudent fiscal policy, should underpin market development; (ii) a sound and transparent public debt management strategy supports secondary market activity; (iii) a deep and diverse investor base is required; (iv) poor market infrastructure leads to high transaction costs, slow order execution, and excessive operational risk, which all inhibit trading; (v) secondary market growth is facilitated by effective monetary policy implementation; and (vi) reforms should be sequenced to ensure even development of all the structures supporting the secondary market.

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ACRONYMS

CCIL	Clearing Corporation of India limited
DLGSM	Deep and Liquid Government Securities Market
DVP	Delivery versus payment
AKK	Államadósság Kezelő Központ (Government Debt Management Agency)
LAF	Liquidity Adjustment Facility
LIC	Life Insurance Corporation
MMTS	Multi Market Trading System
MoF	Ministry of Finance
NDS	Negotiated Dealing System
NSE	National Stock Exchange
OTC	Over the counter
PD	Primary Dealer
RBI	Reserve Bank of India
RTGS	Real-time gross settlement
SGL	Subsidiary general ledger
WDM	Wholesale debt market
ZCYC	Zero coupon yield curve

I. INTRODUCTION

Recurrent international financial crises have highlighted the need to develop domestic debt markets to reduce dependence on foreign financing and vulnerability to volatility in international capital markets. The development of local sovereign debt markets is becoming a priority for many emerging and developing countries as highlighted by the rapid growth of these markets. Improved macroeconomic fundamentals, structural reforms, better debt management practices and investor outreach, growth of asset management industry in emerging market countries, and global liquidity conditions have helped improve the debt profile and diversify investor base.

Despite the considerable progress many emerging and developing countries have achieved in establishing domestic primary markets for government securities, the development of deep and liquid secondary markets has proved more challenging.

This paper draws on a broad range of country experiences to determine the overall framework and preconditions necessary for the development of deep and liquid government securities markets (DLGSMs).[2] Therefore, the paper focuses on the sequencing of reforms, emphasizing the need for a balanced approach to implementing reforms across various areas, including legal and market infrastructures, monetary policy implementation and government debt management. Wherever necessary, technical references are provided relating to specific issues.

Since one of the main aspects of secondary market development is promoting liquidity in the market, it is useful to highlight the different dimensions of market liquidity, namely tightness, depth, and resiliency.[3] Tightness refers to the cost of executing transactions in the market, its most frequently used indicator being the bid-ask spread. The depth dimension indicates the extent to which the market can absorb large volume transactions without affecting the prices prevailing at the time of the transaction. One proxy for market depth is the average turnover for a given period (e.g., daily or weekly); other candidates are the size of trades that market makers are willing to accept and the volume per trade.[4] Resiliency usually denotes the speed with which price fluctuations resulting from trades are dissipated.

The paper is organized as follows: The following section summarizes the main lessons arising from the study of country experiences. Section III briefly discusses the benefits of secondary government securities markets in the areas of monetary policy, financial market development and resiliency, as well as government financing. Section IV describes the main impediments to secondary market development. The impediments are grouped into six categories, namely macroeconomic environment, regulatory framework, market infrastructure, debt management, investor base, and monetary policy and monetary

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[2] In drafting the paper, a broad range of country experiences have been reviewed, drawing from the Fund's technical assistance program and discussions of IMF staff with country authorities. For the sake of brevity, only three representative case studies that provide illustrations of different paths of development have been included. In Section V, we provide references to further specific country cases from which lessons are drawn.

[3] See for example, Borio (2000), Sarr, and Lybek (2002), and Bank for International Settlements (1999).

[4] See BIS (1999).

operations framework. Section V presents stylized facts of stages of government debt market development and gives a proposal for the sequencing of reforms. The Appendix provides three case studies based on the experiences of Hungary, India, and Mexico with government securities market development.

II. Lessons Arising from Country Experiences

Several key lessons for secondary market development emerged from the review of country experiences:

A commitment to achieving and maintaining macroeconomic stability, particularly by pursuing prudent fiscal policy, should underpin the development of the secondary market. It is important that macroeconomic reforms move forward in parallel with improvements in market infrastructure. Macroeconomic volatility and concerns regarding the government's ability to service its debt deter investors from holding government securities. In these conditions, there may only be a captive market for government securities resulting from excessive liquid asset ratios[5] imposed on banks, and no secondary trading will occur. Further, a sharp deterioration in macroeconomic circumstances could lead to a collapse in existing secondary market activity, as happened in Mexico during the 1994–95 crisis.

A sound and transparent public debt management strategy facilitates secondary market activity. Prudent debt management increases demand for government securities, as issues become more predictable and are better designed to meet investors' preferences (maturity, fixed versus floating rate). Reduction in the fragmentation of outstanding issues by rationalizing primary issues and by reopening and buyback schemes increases market depth, encouraging market making and increasing liquidity. Announcement of primary issuance calendars allows market participants to develop their investment strategies and market securities to retail investors. This reduces the government's execution risk by increasing participation in the primary market.

Secondary market trading requires a deep and diverse investor base, and the government should encourage individual and institutional investors to participate in the market for government securities. This allows greater amounts of government securities to be issued, which in itself increases the liquidity of the market. In addition, having a range of investors that differ in risk preference and expectations results in rapid price discovery from trading and reduced vulnerability to shocks that would otherwise destabilize the market. This also supports the emergence of market makers, further improving liquidity. The most important measure that can be undertaken to broaden the investor base is to develop a contractual savings sector, including pension and provident funds.

In countries with poor market infrastructure, trading activity is often stymied by high transaction costs, slow order execution, and excessive operational risk. In India, improvements in market infrastructure, particularly depository and settlement systems, have led to increases in secondary market turnover. Such measures should be supported by a legal

[5] Liquid asset ratio: requirement for a bank to hold minimum amounts of specified liquid assets, typically as a percentage of the bank's liabilities.

and regulatory framework that clearly defines title over and settlement of securities and supports good practices among market participants.

Growth in the secondary market is facilitated by effective monetary policy implementation that results in adequate liquidity to market makers and stable short-term rates. The central bank should aim to reduce day-to-day fluctuations in short-term rates, while credibly signaling its policy stance. The reduction in volatility of short-term rates increases investor confidence in longer-term securities, and promotes maturity transformation by financial intermediaries. The imposition of high liquid asset ratios and other administrative controls for monetary policy purposes discourages the active use of government securities for liquidity management purposes.

Reforms should be sequenced to ensure the even development of all the structures underpinning the growth of the secondary market. Weaknesses in one area, for example, the lack of a broad investor base, will hinder secondary market growth despite progress in improving market infrastructure and debt management. Many of the factors that support secondary trading, such as the money market and investor demand, should evolve in parallel with the government securities market. In this regard, there should be close coordination between the relevant government agencies [usually the central bank, ministry of finance (MoF) and securities regulator] as well as consultation with market participants.

III. Benefits of Deep and Liquid Secondary Government Securities Markets

DLGSMs are generally agreed to provide benefits for government financing, financial deepening, and monetary policy.[6]

A. Government Financing

DLGSMs help ensure stable government financing and budgeting by providing for a broad range of government security maturities. Market financing of government deficits usually begins with the issuance of short-term government bills. Frequent rollover of government securities creates uncertainties regarding the cost of deficit financing, which in turn makes formulation of the government budget more uncertain. As secondary markets develop, transaction costs are lowered and liquidity increases, so investors gain the confidence needed to invest in long-term government securities. The lengthening of the maturity of the government debt stock reduces the frequency of new issuance and assists in the budget planning process.

In the long run, the debt-servicing cost of government financing can be lowered by DLGSMs, since investors will be willing to accept lower yields if they are able to easily unwind their positions when they wish. Market depth and liquidity reduce transaction costs and improve risk allocation, and result in a lower liquidity premium on government securities. For example, competition created by deeper markets will result in lower broker fees and other transaction costs. Greater market depth helps bring about economies of scale

[6] The benefits of DLGSMs have been examined by several studies. Fry (1997) provides a comprehensive review of benefits and supporting policies.

that reduce the costs of the fundamental elements of market operation, including clearing, settlement, book entry, and registry functions. In the short-run, reliance on captive investors may provide cheaper financing, but it prevents market development.

DLGSMs can enhance fiscal discipline by providing signals of the market's views on government policy. For example, the market's reaction to a newly announced government budget is almost instantly conveyed by the change in secondary market prices of government securities. These price signals provide an ongoing disciplining device for government policies.

Finally, the ability of government to quickly finance large deficits in response to unexpected developments is enhanced by DLGSMs. Unexpected events that quickly require large government expenditures, such as banking crises or natural disasters, necessitate the rapid issuance of government paper to the private sector if the government wants to avoid inflationary monetization. Rapid financing is facilitated by government security markets sufficiently liquid to absorb large new issues at relatively low cost.

B. Monetary Policy

DLGSMs enhance central bank independence by reducing the need for monetization of government deficits. By smoothing the issuance of government bills and bonds, they also reduce the incentive for governments to tap direct central bank financing, thus allowing central banks more institutional leeway. Experience has proven that central bank independence is crucial for effective monetary policy.

Moreover, such markets facilitate the implementation of monetary policy. If markets are liquid, outright secondary purchases and sales of government securities for liquidity management purposes may be executed quickly without unduly moving yields on these instruments. The development of an interbank repo market allows the central bank to use it for monetary operations.

As previously noted for fiscal policy, DLGSMs also improve the transparency of monetary policy, in that changes in policy or expectations of policy changes are quickly reflected in government security yields. Policy transparency is becoming ever more important as the deepening of financial markets speeds the conveyance of investor approval or disapproval of government policies.

The yield curve arising from DLGSMs provides information on the public's expectations regarding future interest rates and inflation, which is a key input into the setting of the stance of monetary policy. The development of the yield curve also strengthens the transmission of policy, by linking expectations of future short-term rates to current long-term rates.

C. Financial Market Development and Resiliency

Aside from the benefits to monetary policy, DLGSMs facilitate financial market development and enhance the resilience of the economy to adverse shocks. There is a

growing consensus that financial market development reduces the costs of financing, increases savings and thereby investment, while boosting economic growth.[7] Broad-based capital markets, aside from acting as backup to the credit process in times of stress, compete with the banking system to lower financing costs for all borrowers in more normal circumstances.

DLGSMs yields provide a reliable benchmark for private financial markets. They serve as a starting point for the pricing of a variety of bank and nonbank securities because they are market determined and, under ordinary circumstances, are free of default risk. They also provide reference yields that can facilitate marking to market of securities, thereby improving transparency and risk management.

DLGSMs provide the institutional infrastructure for capital markets. The same institutional foundations that make for deeper and more liquid secondary markets for government securities also make for deeper and more liquid markets for commercial paper, corporate bonds, and private securities. Examples of these institutional factors common to government security and private markets include a large number of experienced dealers and brokers, dealer financing, futures and options markets, clearing, settlement, book entry, and registry functions, as well as oversight and regulation.

Another benefit to financial market development is that DLGSMs improve risk allocation and management by fostering the development of derivative markets in several ways. Often the first derivative markets to develop are those which employ government securities as the underlying security. Examples of such products include interest rate futures and options, and futures on foreign currency denominated government securities. Second, government securities usually are the collateral for repurchase agreements. Finally, by boosting the development of private market instruments such as corporate bonds DLGSMs indirectly enhance the development of derivatives on these instruments.

IV. Impediments to Secondary Market Development

Despite the numerous benefits of deep and liquid secondary markets for government securities, most developing and emerging countries have struggled to create markets comparable to those in most developed countries. It is important to note that not all countries might be able to develop domestic currency government securities markets. The fixed costs that market players or the government must pay to set up the infrastructure may be broadly similar across countries, but the benefits increase with the size of trading volume, which itself will largely reflect the size of the economy. Indeed, Claessens, Klingebiel, and Schmukler (2003), find that more sizeable economies and economies with proportionately larger domestic investor base tend to have larger government securities markets, suggesting that there are economies of scale in securities market development.[8]

[7] For example, see Levine (1997).

[8] The development of regional exchanges and infrastructure for clearing and settlement may allow smaller economies to take advantage of economies of scale. This would also be facilitated by adoption of regional standards on regulation of these markets.

The objective of this section is to discuss the main obstacles to secondary market development. The impediments have been divided into six groups based on their origins: macroeconomic environment, legal and regulatory framework, market infrastructure, debt management, investor base, and monetary operations framework.

A. Macroeconomic Environment

One of the most fundamental impediments to secondary market development is the lack of confidence in debt repayment by investors due to a highly unstable macroeconomic environment and inconsistent government policies. Fiscal dominance[9] and the lack of fiscal discipline are the most common macroeconomic weaknesses hampering the development of government securities markets. Fiscal dominance is often accompanied by a lack of firm commitment to market-based financing of the public sector borrowing requirement. In an effort to contain the costs of budget financing, the authorities exert control over interest rates, which prevents the market-based determination of yields, deters investors, and distorts the allocation of financial resources. Lack of commitment to market funding often takes the form of imposing high liquid asset ratios. They are also a major deterrent of secondary market development, as financial institutions tend to hold securities until maturity to meet the liquid asset ratio instead of trading them actively in the secondary market.

A high level of uncertainty about the future course of inflation is a major obstacle to the development of fixed-rate instruments. It not only raises longer-term yields, but may also prevent the authorities from extending the yield curve beyond short-term securities. A low level of domestic savings reduces the scope for secondary market trading, both by limiting the overall demand for government securities and by restricting the development of a broad and diverse investor base (see section IV.E below). Finally, a small stock of public debt due to a history of fiscal surpluses is an obvious obstacle for a deep and liquid secondary market.

B. Legal and Regulatory Framework

An inadequate legal and regulatory framework is a common phenomenon in developing and emerging markets. There should be clear and well-defined rules for the issuance of government securities and borrowing authority. The secondary market should be supported by effective regulation through a securities regulatory authority and rules related to market participants, market conduct, transparency requirements, and clearing and settlement procedures. These rules should reduce informational asymmetries and ensure a level playing field within each class of market participant. This is particularly important for attracting international investors.

[9] Fiscal dominance occurs when the scale of the government's financing requirement undermines the effectiveness and credibility of monetary policy. The extent of fiscal dominance may be mitigated by statutory limits on central bank financing of the government or by other measures that enhance the independence of the central bank.

Regulatory restrictions on investment, portfolio allocation and the trading of government securities by market participants all lead to distortions in the market and in the financial system as a whole, as well as limit the ability of investors to assume or hedge risks**.** Regulatory restrictions on asset maturities and types are widespread.[10] Transaction taxes and tax withholding can have significant negative implications for market development, as they reduce the demand for government securities and may affect the allocation of savings in the absence of tax neutrality. The prevalence of transaction taxes has been declining, but in some countries financial transaction taxes are still considered an effective revenue source given the high volume of financial transactions and the fact that in many developing countries financial markets are one of the few organized sectors.

C. Market Infrastructure

Without a sound and efficient market infrastructure connecting the counterparties in securities transactions, secondary market development is unlikely to proceed. A slow and inefficient securities settlement structure is a fundamental impediment to secondary market development since it raises settlement and operational risk[11], increases transaction costs, hinders price discovery, and may restrict the range of participants in the market. [12] International trading and settlement systems may allow smaller countries access to sound market infrastructure, by reducing fixed costs.[13] The development of secondary markets will also be hampered by an interbank market that lacks liquidity, suffers from excessive volatility, or cannot be accessed by major market participants.

D. Debt Management

In the absence of sound and effective public debt management with a market-oriented, long-term strategy[14] and appropriate instrument and operational design, primary and secondary market development will remain insufficient. Issue fragmentation and the lack of benchmark securities are a recurring problem for secondary market depth and liquidity. Issue fragmentation may result from several causes, for example, a multitude of agencies issuing public debt or a substantial stock of nonmarketable debt. It also may result from the issuance of too many different types of instruments, such as securities that are floating-rate, inflation-linked, foreign exchange-linked, and fixed-rate, or simply those that arise from a proliferation of maturity dates resulting from a frequent opening of new issues at primary

[10] The explanation given for the restrictions is usually prudential, but in most cases regulatory limitations are too pervasive to be warranted by prudential reasons.

[11] Settlement risk arises from the possibility that one side of a transaction is executed, but the other side is not. Operational risk arises from the possibility that breakdowns in internal controls, corporate governance or computer systems could lead to losses on securities transactions.

[12] For recommendations on the design, operation, and oversight of securities settlement systems, see BIS (2001).

[13] E.g., the Euroclear settlement system has made cross-border settlement cheaper and more efficient for small countries, such as Ireland, the Netherlands and Belgium.

[14] For a detailed discussion and recommendations on debt management, see IMF and World Bank (2003).

auctions. Secondary market development can be further hindered by too frequent primary auctions, since the high frequency of auctions creates disincentives for market participants to engage in secondary market trading. Finally, a lack of transparency and communication between the authorities and market players increases uncertainty for investors and reduces participation in both primary and secondary markets.

E. Investor Base

The lack of a diversified investor base and heavy reliance on captive sources of funding contributes significantly to shallowness and insufficient liquidity in secondary markets. Commercial banks have been the largest captive source of government financing in many countries, mostly due to excessive liquid asset ratios. Because of these requirements, banks tend to hold the securities until maturity instead of trading them in the secondary market.[15] Participation in contractual savings schemes, such as pension funds and individual retirement accounts, is much lower in developing and emerging countries than it is in major industrial countries (and hence the role of institutional investors).[16]

Other reasons for a lack of domestic institutional investors include a history of predominance of the banking sector often dominated by state-owned banks, unfavorable or missing legal and regulatory framework for institutional investors, and lack of stimulating measures such as pension reform. Banks and institutional investors may find it difficult to attract funds from individuals and firms if the government is offering retail government securities, particularly if these pay yields above market rates. Barriers to foreign participation in the government securities market may also contribute to insufficient depth and liquidity in the market, especially in the absence of a strong and diversified domestic investor base. The sequencing of the entry of foreign investors, however, has to be carefully considered, as there might be some risk associated with participation by nonresidents, who have access to alternative investments and thus may have more volatile demand. In addition, consideration should be paid to whether controls prohibiting the participation of foreign investors have already been circumvented (by proxy or offshore methods), in which case it would make sense to lift these controls quickly.

F. Monetary Operations Framework

Because the central bank plays a unique role in the financial system, its decisions can have significant influence on the development of the financial sector (see Box 1). A highly accommodating monetary policy that leads to surplus liquidity may discourage active liquidity management and participation in the interbank and repo markets by banks. Similarly, the design of monetary instruments may make it easy and cheap for banks to obtain funds from the central bank, or if the central bank offers easily available instruments with attractive interest rates for the placement of banks' excess funds, then banks will have less incentive to transact with each other. Inadequate coordination between debt management and monetary policy, as well as monetary operations can significantly impede market

[15] An excessive liquid assets ratio leads to a discontinuity in the demand curve for government securities, implying that banks would suffer a significant loss by selling them in the market.

[16] The main institutional investors are pension funds, insurance companies, and mutual funds.

building. One strategic issue that often arises—especially in emerging and developing countries with structural liquidity surpluses—is whether the central bank should issue its own bills or the government should issue a higher amount of securities than would be required for budget financing purposes. In cases when both government securities and central bank bills are issued, ideally, the central bank operates at the short end of the yield curve, while the fiscal authorities raise funds at the long end. In many countries, however, the authorities are unable to issue long-term securities, and operate in the same area of the market as the central bank contributing to debt fragmentation. In these cases, it is even more important that government cash management be coordinated with central bank liquidity management. This coordination is especially difficult in countries where liquidity forecasting and liquidity management are at an early stage.

V. Sequencing of Secondary Market Development

Though countries may face different sets of impediments, some common characteristics allow for distinguishing different stages of secondary market development. This section identifies three main stages of secondary market development and provides guidance on the proper sequencing of measures to build a deep and liquid secondary market.[17]

A. Stylized Description of the Market and Sequencing of Measures to Develop the Government Debt Market

Country experiences with government debt market development indicate that three main stages can be identified:

- **Stage I—initial stage** of government debt market development: negligible liquidity in the secondary market, focus on establishing the primary market and creating the preconditions for secondary market development.

- **Stage II—deepening stage** of government debt market development: basic elements of the primary market and secondary market are established and functioning, focus on improving liquidity in the secondary market.

- **Stage III—maturing stage** of government debt market development: well-functioning primary market, liquid secondary market in normal times, focus on the development of sophisticated instruments and segments such as derivatives, and making the market internationally competitive.

A country's government debt market may be at different levels of development in different areas. It is important to emphasize that reforms should be sequenced to ensure the even development of all the structures underpinning the growth of the secondary market. Weaknesses in one area, for example the lack of a broad investor base, will hinder secondary market growth and the move to the next stage despite progress in other areas, including improving the areas of market infrastructure and debt management.

[17] For discussions and recommendations on the sequencing of financial sector reforms and capital account liberalization, see Karacadag, Sundararajan, and Elliott (2003) and IMF (2002).

In what follows, we briefly describe the most common problems characterizing the government securities market at the three stages, and make specific recommendations to facilitate market development. One has to bear in mind that a country may not exhibit all the shortcomings listed at a given stage of development.

Basic conditions

- There are some basic conditions which are critical for every stage of market development and the lack of which will halt sustainable market development despite improvements in the other five main areas. These conditions are: (i) stable macroeconomic environment or sustained implementation of macroeconomic stabilization if a country is at an early stage of economic development; (ii) the minimization of fiscal dominance, and (iii) liberalized interest rates as well as firm commitment to market funding of government borrowing requirements.

Box 1. The Central Bank's Role in Developing Secondary Markets

The central bank can assist the development of the secondary market for government securities in several ways:

- If it is responsible for conducting primary auctions on behalf of the government, it should ensure that the resulting yields are market clearing and that auction design and issuance strategies encourage investor demand. Central bank operations for monetary policy and debt management purposes should be clearly distinguished and the central bank should operate on the short end of the yield curve.

- The central bank or the treasury can establish a primary dealer (PD) system whose members would be required to have a minimum level of participation in the primary market, act as market makers in the secondary market, and provide transaction data to the central bank. In return, the central bank or the treasury may grant special access to its open-market operations and liquidity facilities.

- The central bank can use repurchase agreements for its open-market operations and standing facilities. This will make treasury securities more attractive to banks as a liquidity management instrument and spur the development of the market infrastructure required for an interbank repo market.

- In this regard, the central bank can develop the depository and settlement systems required for secondary trading, which may then be devolved later. Many central banks are responsible for the settlement system.

- It should ensure that major participants in the treasury securities market have adequate access to the money market for liquidity purposes. Further, money market rates that are not too volatile will foster repo activity, and anchor the yield curve as trading develops in longer maturities. Of course, excessive intervention by central banks may take away the incentive to trade.

- Liquid asset ratios should not be set so high as to result in a captive market for government securities among banks. High liquid asset ratios are a major deterrent for secondary market trading of government securities. Liquid asset ratios should be calculated using market prices rather than face values.

- When the central bank is the regulator of commercial banks and other financial institutions, it can require them to mark their portfolios to market. This reduces the incentives to hold securities to maturity to avoid booking capital gains and losses.

Stage I—Initial Market Development

The initial stage of government debt market development is characterized by severe shortcomings in the functioning of the primary market and negligible liquidity in the secondary market. Countries in Stage I generally have fragile macroeconomic fundamentals. Fiscal dominance and the lack of a firm commitment to market-based financing of government borrowing requirements are also common problems in many countries. These underlying impediments are in most countries coupled with serious shortcomings in the other five main areas of market development.

Primary market

The average maturity of government debt tends to be short at this stage (usually less than a year), as authorities generally have difficulties issuing securities beyond the very short term due to the high degree of macroeconomic uncertainty which significantly raises the term premium required by investors. In a highly unstable macroeconomic environment, there might be no demand for long-term securities at all, even at very high rates of interest.

- *The issuance of short-term securities needs to be firmly established before moving on to medium- and long-term securities. It is not recommended to spread issues thinly in an environment of low demand for longer-term issues and to compel the holding of long-term fixed-rate securities at below market rates.*

- *If the small stock of domestic debt is combined with a significant share of external debt, increasing the share of domestic debt in the context of the overall debt strategy may be considered, carefully evaluating the costs and benefits, as well as risks.*

The experience of several countries (mainly in Latin America) suggests that securities indexed to inflation, short-term interest rates or foreign exchange rates can be helpful in lengthening the average maturity of government debt. Inflation-indexed securities can be useful complements to fixed-rate bonds even in a low-inflation environment for certain types of investors such as pension funds. However, as these investors often hold them until maturity, many countries have found that indexed-bonds tend to have lower liquidity in the secondary market.[18] There are costs to develop this market, among others that debt indexation may be hard to reverse and the low liquidity of these securities may imply higher government financing costs.

- *If persistent high inflation or refinancing risk is a problem, the authorities may want to carefully evaluate the option of issuing inflation-indexed or floating rate bonds, bearing in mind that in an unstable macroeconomic environment they entail considerable risks.*[19]

[18] See Price (1997) on the issue of inflation-indexed bonds and IMF (2004a) on indexed bonds.

[19] As Mexico's experience in the run-up to the 1994/95 crisis shows, indexed debt can substantially increase a country's vulnerability.

Debt fragmentation is a typical problem at the initial stage of market development. Even if there are only a few maturities, the number of issues can be high if the authorities open a new issue at every auction, which is the case in many countries. The multitude of agencies issuing public debt is another common reason for debt fragmentation. The stock of nonmarketable government securities often paying below-market rates is a source of debt fragmentation in several countries. The central bank and captive domestic investors are usually the main holders of this type of debt, which cannot be used for open-market operations or traded in the secondary market given its unfavorable characteristics. Because of the short average maturity and debt fragmentation, securities markets in the initial stage tend to lack benchmark securities and have a yield curve that spans only over the short term.

- *Debt issuance should be consolidated to one agency in order to reduce the number of public debt instruments and increase their size.* [20]

- *The issuance of nonmarketable debt should be scaled back. Any nonmarketable debt should be issued at market rates and have provisions for early redemption, especially in the case of retail products.*

- *The authorities should refrain from opening new issues at every auction.*

The frequency of auctions is also a problem in a number of countries. In the early stages of government securities market development, the authorities often try to facilitate primary market development by holding frequent auctions. This practice creates disincentives for market participants to engage in secondary market trading as they can do their portfolio management through the primary market.

- *The authorities should gradually decrease the frequency of primary auctions as the market develops.*

Lack of transparency and communication between the authorities and market players increases uncertainty for investors and reduces participation in both the primary and the secondary market. The lack of timely information is especially prevalent where the government relies mostly on captive investors and its policies are not continuously judged by investors.

- *The authorities should provide timely information on the government's finances, debt portfolio, borrowing strategy, as well as data on primary and secondary market activity.*

- *Reference rates for government securities need to be collected and published.*

- *An auction calendar (usually monthly or quarterly in this stage) needs to be published, but the authorities should consider retaining flexibility to fix the amounts and/or maturities of instruments until one or two weeks prior to the auction.*

[20] For a detailed discussion and recommendations on debt management, see IMF and World Bank (2003).

- *Regular consultations with market participants about the borrowing strategy, market preferences and market situation are essential.*

Particular attention should be paid to transparency and predictability of the primary auction process in cases where there has been a previous default on domestic government debt. This is important for restoring confidence in a revived government securities market. Auction volumes should be gradually increased in line with a preannounced calendar, and cut off yields should be avoided to allow the auction to fully reflect market prices. This strategy proved successful in reestablishing the Georgian government securities market during 2003-4.

Investor base

Creating a diversified investor base is a complex task and a lengthy process. It goes hand in hand with financial market development and diversification that has more far-reaching objectives and implications than widening the investor base. It is also related to fundamental fiscal issues such as pension reform. Therefore, generating significant changes in the composition of the investor base will depend on overall economic policy decisions, and requires concerted structural and fiscal reforms besides regulatory incentives and debt market development strategies.

The lack of a diversified investor base and heavy reliance on captive sources of funding are usual characteristics of government securities markets in the initial stage. In most emerging and developing countries, commercial banks have been the largest investors in government securities, sometimes reflecting some fundamental shortcomings in the commercial banking environment, for example, lack of creditworthy borrowers and projects. They have also been the largest captive source of government funding in many countries due to high reserve and liquid asset requirements. Because of these requirements, banks tend to hold the securities until maturity instead of trading them in the secondary market.

- *The first step to build a diverse investor base is to eliminate the reliance on captive sources of funding. Interest rates should be liberalized and no investor group should be required to hold government debt at below market rates. High reserve requirements and liquid asset ratios should be reduced.*

The institutional investor sector (pension funds, insurance companies and mutual funds) is generally undeveloped. Institutional investors may become captive investors if they are required to hold government securities at negative real rates of return, as in the case of provident funds in some developing countries. Even in the absence of such requirements, the development of institutional investors can be stifled by strict quantitative investment limits, which are prevalent in emerging and developing countries. Mutual funds tend to play a marginal role at this stage in collecting the savings of households, often due to inadequate legislation and regulation.

- *If the financial system is dominated by a few banks, it is critical to promote competition in the banking sector and to eliminate privileges of state-owned banks, if applicable.*

- *The authorities should start building a domestic institutional investor base by creating a favorable legal and regulatory framework for mutual funds and the contractual savings sector.*[21]

In many countries, the government offers retail instruments to individual investors in order to promote savings behavior and mobilize resources for the budget. While there are various arguments for and against this practice from a debt management perspective,[22] retail instruments divert funds from banks and institutional investors that may have otherwise supported secondary market activity. This is particularly true if these instruments provide above market yields.

- *Any retail securities offered by the government should have yields that reflect market rates less marketing and administration costs. Early redemption penalties should also reflect these factors.*

- *Disincentives for trading, such as requirements to invest in nonmarketable securities and other restrictions on portfolio allocation, have to be removed. Strict quantitative limits on asset holdings are not recommended, as they discourage optimizing behavior and often lead to conservative valuation policies.*

Another reason for the weakness of the institutional investor base is an underdeveloped contractual savings sector (pension funds and life insurance companies), which is the main source of investment in longer-term securities. Most emerging and developing countries have pay-as-you-go pension systems and have not implemented pension reform that would create private pension funds, one of the most significant investor groups.

- *As part of broader economic policy considerations, pension reform could be considered.*

At the initial stage, the share of foreign investors in the outstanding stock of government securities and in secondary market trading is very low in most countries. In some cases, this can be explained by the lack of interest from foreign investors given unfavorable macroeconomic, regulatory or market infrastructure conditions, in other cases, capital account restrictions prevent potential nonresident investors from entering the government securities market. Nonresident investors are also reluctant to enter if liquidity in the secondary market is negligible as it can make exit from the market potentially costly.

- *The participation of nonresidents in the domestic government securities markets is generally not advisable in this stage due to the risk of sudden or large-scale reversals in capital flows that can result in a boom-bust pattern in asset prices if secondary markets are shallow and illiquid.*[23]

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[21] See Chapter 6 in World Bank and IMF (2001).

[22] See Chapter 6.4.2 in World Bank and IMF (2001) for a discussion of the benefits and disadvantages of retail instruments.

[23] See IMF (2002) on the sequencing of capital account liberalization.

Market infrastructure

Most countries in Stage I are characterized by a slow and inefficient securities settlement structure which involves considerable systemic risks. Dematerialization of securities is under way in most countries replacing paper certificates, but the central depository is still under development. Securities settlement often takes several days, and at this stage of market development, both payments and securities settlement are usually done on a multilateral net basis. Real-Time Gross Settlement (RTGS) systems and Delivery-versus-Payment (DVP) are generally not developed at this stage.

- *The main task in this stage is to establish the foundations of adequate depository and settlement procedures for cash and securities.[24] As a first step, government securities should be dematerialized through the establishment of a registry of securities accounts. A depository system has to be set up to handle the settlement of transactions between the securities accounts in the registry.*

Dematerialization improves liquidity in the secondary market by reducing transactions costs and settlement times. In addition, the move from bearer to registered format reduces the risk of forgery and other operational risks, thereby further promoting trading.

- *A strong and transparent legal and regulatory framework needs to be developed for the issuance, trading and settlement of government securities to ensure investor confidence and to reduce systemic risk.*

- *The authorities may want to promote organized trading facilities and market microstructure arrangements that are most suitable for the stage of securities market development and financial system structure.[25]*

The interbank market tends to lack liquidity, suffers from excessive volatility, or cannot be accessed by major market participants, thus hampering the ability of government securities traders to fund their positions and facilitate maturity transformation. In addition, if interbank rates (which underpin interest rate expectations) are excessively volatile, there may be no anchor for the short end of the yield curve. It is common that the necessary infrastructure for repo markets, including master repurchase agreements and adequate settlement and trading procedures, is missing.

- *The development of the necessary infrastructure for the interbank market is of vital importance.[26] Special emphasis has to be placed on repo markets. The authorities could play a crucial role in promoting the use of master repurchase agreements and facilitate adequate settlement and trading procedures. The central bank can foster repo activity by*

[24] See Chapter VIII in World Bank and IMF (2001) on developing a government securities settlement structure.

[25] See Chapter VII in World Bank and IMF (2001) for details on market microstructure.

[26] Monetary policy and operations also have substantial influence on the development of the interbank market. See recommendations related to monetary policy implementation later in the chapter.

using these instruments for its open-market operations, rather than using unsecured facilities or issuing central bank paper.

Regulatory environment

Absent or poor legal and regulatory framework for government debt securities and their markets is a common phenomenon in Stage I. There might be no clear rules on the government borrowing authority or the terms of the instruments. Effective secondary market regulation may also be missing. Harmonization between different authorities with regulatory functions may be inadequate resulting in different treatment of market participants undertaking the same activities, which may give rise to regulatory arbitrage and a distortion of market activity.

- *Clear borrowing authority for the government needs to be set forth that includes internal procedures for debt management, transparency and accountability requirements and disclosure procedures.*[27]

- *A regulatory body for secondary market activity has to be established. Effective regulation of the secondary market should include (i) regulation of market intermediaries, (ii) market conduct regulation and market surveillance, (iii) transparency requirements.*

- *A clear legal and regulatory framework for the payment and settlement process has to be established for government securities.*

Without mark-to-market requirements, investors may be reluctant to engage in trading of government securities, since this would require them to book capital losses that otherwise would not have to be recognized. Even in countries where some degree of mark to market practices is in place, full mark to market obligation is rare, as most countries have regulations that differentiate according to the type of instruments or their holders. Indeed, institutions with long-term liabilities would experience excessive volatility in earnings if only their assets are marked to market. A common constraint for imposing mark-to-market requirements is that large public sector pension funds and insurance companies often lack adequate risk management and accounting practices. It is important that reference rates be promoted and published to facilitate marking to market.

Inadequate tax policies are also likely to be one of the characteristics in the early stage. Although transaction taxes are becoming less widespread, in some countries they are still considered an effective revenue source. When imposed on money market transactions, they hinder the development of repo markets, which mainly use government securities as collateral. Tax withholding has been a notable trend in the past two decades because of its ease of implementation, low compliance cost, and effectiveness in preventing tax evasion, but it has shortcomings as well. The most common problem is that the application of a withholding tax to nonresident investors can severely reduce foreign participation in the secondary market.

[27] See Chapter IX in World Bank and IMF (2001).

- *Tax policies need to be reviewed in the context of their effect on market development. The authorities should seek tax neutrality, and as a first step eliminate transaction taxes for government securities trading.*

Monetary policy and operations

Though the use of liquid asset ratios is declining, there are still many countries imposing them, predominantly in the initial stage of market development. Liquid asset requirements provide the government with captive investors for government debt especially for securities that have less attractive terms. The main implication of high liquid asset ratios for secondary markets is that financial institutions subject to them tend to hold securities until maturity to meet the liquid asset ratio instead of trading them actively in the secondary market.

- *Liquid asset ratios should be removed and high reserve requirements should be reduced.*

At this stage of development, monetary policy mainly operates through rules-based instruments—reserve requirements, standing facilities and liquid asset ratios—as most of the conditions for money market based operations— among them the existence of sufficiently developed and liquid interbank markets and a sufficient volume of available government securities—are usually lacking.[28] Monetary policy operations are in many cases highly accommodating, thereby discouraging active liquidity management and active participation in the interbank and repo markets by banks. If the design of monetary instruments makes it easy and cheap for banks to obtain funds from the central bank, or the central bank offers easily available instruments with attractive interest rates for the placement of banks' excess funds, then banks will have less incentive to transact with each other. This practice also inhibits the development of liquidity management skills in banks.

- *The central bank should gradually move away from conducting monetary policy through rules-based instruments, and it should work on creating the conditions for money market-based instruments, such as a liquid interbank market. As the interbank market develops, monetary instruments should be less accommodating to encourage more active liquidity management by banks and more reliance on the interbank market.*

[28] See Laurens (2004) for the implementation of monetary policy in an environment of insufficiently developed money markets.

Box 2. Country Examples of Major Shortcomings in Stage I

The fragmentation of the small stock of domestic government securities has been a major problem for secondary market development in some countries, e.g., Ukraine, where in early 2004 almost 60 different issues were outstanding with their number expected to increase in the short-term, partly because of the shift to issuing longer maturities. The small size of outstanding individual issues generally makes trading difficult, as there is not a "critical mass" in any one security. Another aspect of debt fragmentation, nonmarketable debt, has hindered market development in cases where nonmarketable government securities made up a significant share of the total stock. These securities were placed with captive investors.

Besides the dominant role of the banks in most countries in the initial stage, the development of a strong institutional investor base can be hampered by strict restrictions on investment possibilities—for example, requirements to invest only in nonmarketable government securities, as has been the case with some national provident funds. Institutional investors became captive investors in several African countries, where provident funds were required to hold government securities at negative real rates of return. As far as foreign investors are concerned, only a few countries have experienced active participation by nonresidents in the domestic market in the initial stage of market development due to capital controls and/or the lack of foreign interest. One of them is Mexico, where nonresident investors acquired a significant share of government securities in the run-up to the 1994-95 crisis. Excessive risk taking on the part of foreign investors and domestic banks accompanied by weak prudential regulation and supervision played a major part in the crisis, which led to a reversal of capital inflows. Despite considerable progress in market development and the stabilization of the macroeconomic environment, foreign participation in the government securities market remains below pre-crisis levels in Mexico.

One aspect of weak market infrastructure is shallow interbank money markets. In a number of cases, it is due to the reluctance of banks to deal with each other because of credit risk or the reluctance to reveal commercial interests to each other. Unwillingness to engage in transactions with other banks reflects fundamental weaknesses in many banking systems. One way to address concerns about the financial soundness of banks is to develop the repo market with the use of government securities as collateral. Thus, the development of the interbank market and government securities market has to go hand in hand to address the problems plaguing both markets. The emergence of interdealer brokers in money and securities markets may also facilitate the secondary market in cases where banks are reluctant to deal bilaterally.

A poor legal and regulatory framework is a problem in almost all countries in Stage I., The plurality of contenders for the title of "government bond" has complicated the development of a benchmark yield curve in Malaysia despite the efforts of the authorities.1/ In another country, the debates about the requirement to register long-term government securities with the securities supervisor led to an uncertain legal situation and delayed the introduction of treasury bonds by several months. The absence of proper mark to market regulation for banks in Saudi Arabia had led to large unhedged interest rate exposures and low incentives to trade, as a large part of banks' government securities holdings was booked in investment accounts that were marked at cost.2/ Though taxes imposed on money market transactions are losing importance, they hinder the development of repo markets, which mainly use government securities as collateral. In Thailand, a Special Business Tax was imposed on money market transactions on a gross basis.2/

Central banks can do a lot to further the development of government debt markets (see Box 1). Nevertheless, the monetary policy and operations framework in some countries impedes secondary market development. In Zambia, the secondary market for government securities is virtually nonexistent, since investors prefer to hold government securities until maturity. Commercial banks typically purchase the securities first to meet the liquid asset ratio, and second, as an alternative to low quality private sector lending. Highly accommodating monetary frameworks can also stifle interbank market and indirectly government securities market development. As an example, the Tunisian central bank's readiness to systematically meet banks' requests through its standing facilities, combined with a narrow corridor for interbank rates had prevented the development of the interbank market. Credit policy considerations in the conduct of monetary policy and weak liquidity forecast capacity also made active liquidity management difficult for the central bank and led to a de facto reliance on the standing facilities to manage overall liquidity in the system and to the dominant position of the central bank in the interbank market.3/

1/ See IMF (2004b) and Moody's (2002).

2/ See BIS (2002)

3/ See Laurens (2004) for the implementation of monetary policy in an environment of insufficiently developed money markets.

B. Stage II—Deepening of Markets

By the time a country reaches the deepening stage, the basic elements of the primary and secondary market are established and functioning, but liquidity and depth in the secondary market are still inadequate.

The maintenance of a stable macroeconomic environment or continuing stabilization is needed to support development from Stage I to Stage II. A significant deterioration in the macroeconomic environment is likely to halt the development of government securities markets. Other fundamental conditions for Stage II are the minimization of fiscal dominance and a firm commitment to market-based funding of the borrowing requirements.

Primary market

By the deepening stage, several shortcomings of public debt management typical of the initial stage are addressed, and the composition of the debt portfolio is beginning to resemble that of more advanced markets. One of the basic prerequisites for proceeding from Stage I to Stage II is that the government should have a clear and consistent strategy for issuing government securities that provides a medium-term horizon for the investment strategy of market participants.

In many countries, one of the most important objectives of debt management in Stage II is to lengthen the average maturity of domestic debt. Naturally, the speed of this process is highly dependent on the macroeconomic environment. Most likely, the debt portfolio continues to include index-linked and/or floating-rate securities, but the public debt manager should adjust the composition and maturity structure of the debt portfolio in light of its debt management objectives.[29] Nevertheless, these securities may be offered to satisfy the preferences of a subset of investors (e.g., pension funds) even if uncertainty regarding future inflation subsides.

- *If short-term securities are well established and accepted, issuance can be gradually extended to medium- and long-term securities.*

Countries where debt fragmentation was a serious problem in the initial stage are expected to make significant progress in Stage II, though some aspects of debt fragmentation may take longer to resolve. The number of securities is being consolidated to a few maturities and authorities are building benchmark issues.

- *Building a benchmark yield curve[30] requires a well-defined strategy including: (i) discerning market preferences from close consultations with market participants; (ii) standardizing debt instruments to reduce debt fragmentation arising from the existence of different types of bonds, coupon rates, maturities, issue sizes and*

[29] See Guidelines for Public Debt Management IMF and World Bank (2003) for a detailed discussion of debt management and the choice of maturity profile, currency composition and type of the public debt portfolio.

[30] Chapter IV in World Bank and IMF (2001) is devoted to the detailed discussion of building benchmarks.

frequencies, and whether an issue is an on-the-run or off-the-run issue; (iii) developing the appropriate maturity distribution for benchmark issues; (iv) determining the appropriate size and frequency of benchmark issues.

- *Building benchmark issues should be further assisted by reopening and buyback operations. Buybacks in combination with reopenings can be used to build the size and lengthen the life cycle of issues targeted to be benchmark issues by eliminating inactive issues and standardizing current outstanding bonds.*

- *The problem of several public agencies issuing public debt has to be addressed and should be resolved before the country moves to Stage III. In this regard, the central bank should refrain from issuing its own securities unless it is necessary for liquidity management purposes, and in that situation should restrict issuances to the short end of the yield curve, say under a month.*

- *Nonmarketable debt should not be issued in Stage II anymore, and the outstanding stock of nonmarketable debt should be converted into securities bearing market interest rates.*

The transparency of the authorities' debt management strategy is expected to improve significantly in Stage II. Authorities in most countries in the deepening stage provide timely information on the government's finances, debt portfolio, borrowing strategy and data on primary and secondary market activity. Communication between the authorities and market participants is usually well established with regular meetings and consultations on developments in government securities markets and the authorities' debt management strategy.

- *The transparency of debt management needs to be further improved and regular communication with market participants remains essential. In Stage II, the authorities should further increase and refine the data and information provided to the public.*

- *Public debt management practices need to be further enhanced by using appropriate risk management techniques such as stress tests.*[31] *The authorities should evaluate the impact contingent liabilities have on the government's financial position, monitor the risk exposures to explicit contingent liabilities and be conscious of the conditions that could trigger implicit contingent liabilities.*

[31] See Guidelines for Public Debt Management IMF and World Bank (2003) for more details on the risk management framework.

Box 3. Primary Dealer Systems

A number of emerging and developing countries either have adopted, or are in the process of adopting PD systems. The market development level of countries adopting a PD system varies greatly; some countries introduce PDs in the initial stage of market development, while others generally wait until their markets reach the deepening stage. Some advanced economies introduced PD systems only in the maturing stage of their markets.

While not all countries with developed government debt markets have PD systems, a survey found that there was broad agreement among respondents that PDs are recommended—that is, they make a positive contribution to the development and liquidity of government securities markets. 1/ If a country decides to adopt a PD system after evaluating its costs and benefits, the end of Stage I or Stage II seems to be the level of development where PDs can be most helpful in market building. In addition, this is the stage of development in which the necessary conditions for a PD system to be successful are usually fulfilled. The most important of these conditions are the following:

- Interest rates should be liberalized.
- The government must also be committed to market-determined outcomes and PDs should not be seen as a captive group.
- There has to be an adequate number of participants in government securities auctions for the authorities to reduce the number further by establishing a PD system. Based on the survey, the typical number of PDs for a country with a successful PD system seemed to be approximately 15, and 5 to 7 among the minimum number of PDs cited by the survey respondents. There is a tradeoff between limiting the number of PDs, so that PDs make sufficient profits to participate, and having more PDs to ensure adequate competition.
- The authorities must have a strategy for issuing government securities: a government must accurately plan its debt issuance strategy to provide a medium-term horizon for the investment strategy of primary and secondary market agents.
- Arrangements between PDs and the debt managers in support of the auction system should be carefully designed.
- A minimum set of attractively designed securities should be available.
- The government must be committed to secondary market development.
- PD systems—the obligations, privileges and supervision—have to be designed carefully to avoid potential pitfalls such as promoting a less than efficient market structure or limiting competition and contributing to oligopolistic behavior.

Arnone and Iden (2003) finds that "On the issue of primary dealership across stages of development, there seems to be a degree of consensus related to the presence of primary dealers in various phases of a country's economic development: 38 percent of the answers indicated that it is recommendable to have primary dealers already in the early stage of economic development, and 15 percent indicated that it is always wise to have primary dealers." In addition, 5 percent of respondents of the survey answered that primary dealers are recommendable in the early or middle development stage, and 18 percent said middle development stage.

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[1] See Arnone and Iden (2003) for a cross-country survey on primary dealer systems and a discussion on the rationale of and necessary conditions for successful primary dealer systems.

Investor base

The investor base of countries in the deepening stage may differ significantly depending on the progress in developing the domestic institutional investor base and limits on nonresident participation in the domestic government debt market. A major difference between this stage and the initial stage is that reliance on captive funding is eliminated by Stage II.

Many countries in the deepening stage have a developed domestic institutional investor base, in particular if pension reform has been implemented. In this stage, the contractual savings sector is gaining significance, as insurance companies are growing and in many countries voluntary pension funds have been established even in the absence of a substantial reform of the pay-as-you-go system. Mutual funds account for an increasing share of government securities holdings in many countries where they offer competitive conditions and yields compared to traditional bank deposits. In other countries, the financial sector may still be dominated by banks and institutional investors are in a fledgling state, but efforts are made to increase their significance. The composition of the investor base depends largely on the regulatory environment and the incentives given by the authorities to develop the institutional investor base. The structure of the investor base changes only slowly and initiatives to increase the share of institutional investors take several years to show results.

- *The institutional investor base needs to be further strengthened. Since several obstacles typical of Stage I usually pose a problem in Stage II as well, the same recommendations apply to promoting pension funds, insurance companies and mutual funds as in the initial stage.*

- *Sound regulatory and supervisory practices for institutional investors have to be ensured. Since pension plans involve very long-term contracts, their regulatory and supervisory framework needs to be particularly strong and effective. Regulatory and supervisory authorities need to ensure that retail investors of mutual funds and insurance companies are fully informed and properly educated about the types of market risks associated with different instruments.*[32]

The level of nonresident participation also varies substantially among countries in Stage II. While it is not advisable to allow foreign investors into the market in the initial stage, many countries are ready for foreign participation in Stage II as their securities markets deepen. Most countries adopt a gradual approach to capital account liberalization, lifting controls on investment in longer-term securities first before allowing investment in short-term government securities. It is crucial that a country has adequate prudential regulation and supervision in place before capital account liberalization. Owing to this, few developing and emerging countries have significant foreign participation in their domestic markets.

[32] Retail investors often have the misperception that market risks associated with bonds are "similar" to those associated with term deposits. A reversal in the interest rate cycle in many countries led to vast redemptions, and bond funds were forced to sell assets to meet redemptions putting additional pressure on yields. See Chapter IV in IMF (2004b) for country examples.

- *The authorities should carefully consider easing limits on investment in foreign securities by institutional investors to achieve an appropriate degree of diversification of local investors' portfolios. Failure to allow foreign diversification may lead to local market bubbles and to excessive exposure to sovereign risk.*[33]

- *The authorities may consider liberalizing the capital account gradually.*[34] *The experience of countries that undertook either complete or very substantial capital account liberalization without suffering a systemic financial crisis shows that the common features in these countries are sustainable macroeconomic policies and a systematic approach to safeguarding financial stability.*[35] *Strong and effective prudential regulation and supervision of financial markets, as well as improving liquidity in the government securities market are main preconditions for allowing foreign investors into the market.*

- *It is advisable to adopt a gradual approach to foreign participation by liberalizing the sale of long-term securities first.*

- *Short-term flows should be liberalized based on a thorough analysis of (i) experience with foreign investors, (ii) macroeconomic policies and conditions affecting financial sector stability, (iii) state of development and risk exposures of institutions and markets, (iv) prudential and governance infrastructures, and the observation of relevant standards.*

Market infrastructure

The establishment of securities accounts (dematerialization of securities) is a prerequisite for moving from Stage I to Stage II. Countries are expected to improve their securities settlement system significantly in Stage II.

- *The authorities should focus on reducing the settlement period and work on introducing RTGS with DVP.*

- *As the market expands and becomes more sophisticated, the development of subdepositories is a key precondition for expanding the investor base and trading activity. Regulations should be developed to establish the status of clients' accounts in the event of subdepository bankruptcy; the ability to transfer accounts between subdepositories to encourage competition, separation of clients' accounts from the subdepositories' own business, reporting requirements, and a code of good practices.*

The interbank market usually develops in parallel with the government securities market. Thus, liquidity in the interbank market generally is increasing considerably compared to

[33] The macroeconomic consequences of liberalizing outflows need to be evaluated as experiences in mature and emerging markets indicate that they can be accompanied by large exchange rate depreciations. See Chapter IV in IMF (2004b) for recent issues related to foreign and local institutional investors in emerging markets.

[34] Box 7 in IMF (2002) provides a suggested sequencing methodology.

[35] See IMF (2002).

Stage I. Excessive volatility is not a problem during normal times, though it is not uncommon in turbulent times. The interbank repo market is generally well established at this stage mostly using government securities, which gives a further boost to the development of the government securities markets.

- *The development of the interbank market should be promoted and active trading in the repo market encouraged. Toward the end of the deepening stage, the establishment of derivatives markets and instruments may be considered.*

In some markets, interdealer brokers have played a significant role in the development of the secondary market. These include more advanced countries, such as the U.S. and U.K., as well as emerging markets such as India. These brokers can improve the efficiency of price discovery and provide anonymity to dealers.[36]

If there is significant trading of other securities on the stock exchange, it may be advisable to allow exchange trading of government securities, particularly retail issues. Dealers on these exchanges can provide liquidity for the small transactions of retail investors, while banks and institutional investors should continue to trade more efficiently off exchange.[37] It is crucial that dealers be adequately capitalized and supervised, since any collapse among bond dealers may lead to a broader crisis of confidence in government debt markets.

Regulatory environment

A coherent legal and regulatory framework is a prerequisite for advancing to Stage II. In particular, the legal framework should have the following principal elements at this stage:[38] (i) clear borrowing authority, (ii) rules for the issuance of government securities, (iii) clearing and settlement system rules, (iv) rules governing the organization and functioning of the primary and secondary markets, and (v) rules setting out the legal status of government securities.

By this stage, an effective secondary market regulation is usually established. Regulatory functions may reside with different authorities. A typical structure may involve the central bank or the MoF regulating the primary market and PDs, while the securities regulatory authority regulates market intermediaries in the secondary market. Harmonization and coordination of regulation between different authorities should improve significantly in Stage II compared to Stage I.

- *The legal and regulatory framework needs to be continuously adapted to changes in the primary and secondary market infrastructure, participants, instruments, payment and*

[36] See Dattels (1997) for a discussion of the role of interdealer brokers.

[37] In India, the National Stock Exchange established a separate Wholesale Debt Market, where most of the trading is conducted by interdealer brokers.

[38] See Chapter 9 in World Bank and IMF (2001) for details on the legal and regulatory framework.

settlement process. The authorities should promote industry bodies that deal with transaction conventions or business conduct standards.

By this stage, the main distorting elements of taxation tend to have been eliminated. Taxes on money market transactions have been abolished. Tax withholding policy varies among countries, and countries that are ambitious to attract nonresident investors generally eliminate tax withholding.

- *Adequate tax policy needs to be developed for new instruments. If active foreign participation in the government securities is deemed desirable, then the authorities should consider eliminating tax withholding for foreign investors.*

Monetary policy and operations

A major prerequisite for Stage II is the elimination of high liquid asset ratios, which are prevalent in the initial stage. In most countries, the development of the interbank market allows the central bank to rely more on money market instruments at this stage, that is, monetary policy is increasingly implemented through open-market operations and auction-based techniques. Standing facilities are also included among the instruments of the central bank, but their design is less accommodating than in many cases in the initial stage, which encourages the use of interbank markets for liquidity management by banks.

- *The central bank should further encourage active liquidity management by banks by widening the corridor for standing facilities and reducing the frequency of credit or deposit auctions.*

C. Stage III—Maturing Markets

In the maturing stage of government securities markets, the level of development approaches advanced country levels. This stage is characterized by a well-functioning primary market and a secondary market that is deep and liquid during normal times. The focus is on further deepening of the secondary market, the development of derivatives, and on making the market internationally competitive.

Primary market

By the maturing stage, the primary market is well established and underpinned by a sound debt management framework. The authorities have no difficulties issuing long-term securities and their share in the composition of outstanding government debt is increasing.

In most markets in Stage III, government securities are issued in a limited set of benchmark maturities and in a relatively large size. The number and size of benchmark securities varies across countries.[39] There might be minor problems with debt fragmentation due to irregular maturities. However, these securities are expected to be gradually retired, thereby increasing

[39] In G-11 countries, the number of benchmarks ranged between 1 (Japan) and 12 (Sweden) at the end of the 1990s. See World Bank and IMF (2001) p.124.

the average size and liquidity of outstanding securities. In the maturing stage, the authorities are engaged in regular reopening and buyback operations to increase the fungibility of benchmark issues.

Though the majority of respondents in the survey on PDs suggest[40] that the establishment of a PD system is advisable at the early or middle stage of economic development, there are several developed countries that only established a PD system in the late 1990s, in the maturing stage of their market development. Since markets are deeper and more liquid, there may be fewer incentives for PDs to participate in the primary market and to act as market makers. In these circumstances, the obligations and benefits from PD membership should be reviewed and revised if necessary.

The points to remember at this stage include the following:

- *The authorities should focus on eliminating any remaining problems from previous stages. The standardization of instruments needs to be completed if debt fragmentation has not yet been fully resolved.*

- *The authorities should continue building a benchmark yield curve.*

- *Building on the achievements in Stage II, debt management practices have to be further refined with special focus on the risk management framework.*

Investor base

The maturing stage is characterized by a diverse investor base. The domestic institutional investor base is developed, and nonresident investors are in most countries allowed to invest in both long-term and short-term securities in this stage. One of the potential issues in Stage III is the participation of foreign investors in derivatives markets. Due to the risks associated with the use of derivative instruments, adequate risk management practices by market participants have to be in place, and there has to be a sound and effective prudential regulation and supervision framework. Recent experience shows that compared with local entities, foreign investor participation in the emerging derivatives markets is fairly limited, because of their own internal risk management policies.[41]

- *The authorities should continue strengthening the domestic institutional investor base by further improving financial sector regulation and supervision.*
- *When considering allowing foreign investors into the derivatives markets, the same thorough analysis described above should be followed.*[42]

[40] See Arnone and Ugolini (2005).

[41] See IMF (2004a) Chapter IV.

[42] The key measures to minimize risks associated with derivatives and foreign participation in derivatives markets are described in the next section.

Market infrastructure

Countries in the maturing stage are expected to have established an RTGS system and DVP for securities settlement.

The interbank market is well functioning and liquid in Stage III. The focus should be on increasing the sophistication of financial markets by developing markets for derivatives,[43] since they can provide hedging vehicles for market participants and further enhance spot market liquidity. The use of derivatives and risk management instruments may involve considerable risks as well.[44] In some countries, aligning of coupon dates may provide the opportunity to set up a market for stripped bonds. While the framework for these more sophisticated markets is usually established toward the end of Stage II or in Stage III, liquidity in these markets is usually low even in the maturing stage.

- *In the context of market development, the authorities should bear in mind that risk management is carried out differently in organized exchanges and over the counter (OTC) markets. The authorities should follow the recommendations below to mitigate the risks associated with derivatives and risk management instruments:*[45]

  - *Strengthen supervision capacity to assess the risks associated with derivatives.*
  - *Promote the development of risk management capacity in financial institutions, including by mandating the hiring and training of skilled personnel.*
  - *Strengthen accounting rules to properly measure risks.*
  - *Strengthen reporting by financial institutions on derivatives risks, and disclosure of counterparty exposures.*

Regulatory environment

The legal and regulatory framework for the primary and secondary markets is fully established. Regulatory and supervisory authorities focus on improving the effectiveness of enforcement and developing regulation for the new instruments, techniques and markets. Full mark-to-market requirements are in force in this stage.

- *As in Stage II, the legal and regulatory framework needs to be continuously adapted to changes in the maturing stage. Regulation related to new risk management instruments and derivatives*[46] *needs to be developed and continuously improved (see section on market infrastructure).*

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[43] The main derivatives and risk management instruments are futures and options, forward transactions, swap transactions, short selling and strips.

[44] See IMF (2001) and Chapter VII in World Bank and IMF (2001) for more on derivatives markets and risk management.

[45] The adherence to the above recommendations is especially important in case of foreign participation in the derivatives markets, see IMF (2002).

[46] See IMF (2001) and Group of 30 (1993).

Monetary policy and operations

In Stage III, the central bank mostly relies on money market operations for the implementation of monetary policy, which gives an impetus to further deepening of the secondary market for government securities. By the maturing stage, the interbank market should be liquid and well integrated with the other segments of financial markets, including the secondary market for government securities and the foreign exchange market.[47]

- *If the central bank is issuing central bank bills for monetary policy purposes, it may consider closer coordination with debt management authorities to overfund the budget instead of issuing its own bills. This would allow the central bank to conduct monetary policy through the outright sales and purchases of government securities.*

D. Summary of Secondary Market Development Action Plans

	STAGE ONE **Initial Market Development**	**STAGE TWO** **Deepening of Markets**	**STAGE THREE** **Maturing Markets**
Debt management	Firmly establish short-term securities, start extending maturity gradually. Do not spread out maturities thinly. Issue indexed-debt if fixed-term debt is not accepted.	Continue extending the maturity structure to long-term securities. Move debt portfolio maturity and type structure in line with debt management strategy.	Consider overfunding the budget instead of issuing CB bills, if applicable. Continue building benchmarks; minimize issue fragmentation.
	Reduce issue fragmentation by consolidating debt issuance to one public debt issuer and standardizing issue terms. Do not open new issues too frequently.	Build benchmark issues and a yield curve. Use reopenings, buybacks and reverse auctions. If CB bills are issued, this should be only at shorter maturities.	
	In the context of an overall debt management strategy, consider reducing the share of external debt in total debt in favor of domestically issued debt, if applicable	Consult with market participants about market building strategies, for example, preferences about benchmark securities. Collect and publish reference rates.	
	Consider introducing a PD system if prerequisites are fulfilled. Improve transparency by announcing auction results immediately, and publishing an auction calendar. Consult with market participants.	Consider introducing a PD system if prerequisites are fulfilled. Reduce frequency of primary auctions.	Review conditions for PD system membership in light of improvements in market functioning.
Investor base	Eliminate reliance on captive sources (e.g., high liquid asset ratio).		

[47] See Chapter V in Laurens (2004) on the sequencing of interbank market reforms.

	STAGE ONE Initial Market Development	STAGE TWO Deepening of Markets	STAGE THREE Maturing Markets
	If financial system is dominated by a few banks, promote competition. Eliminate privileges of state-owned banks, if applicable.	Consider allowing foreign investors into the domestic market depending on the state of the financial sector. Gradual approach: first long-term securities.	Considering previous experience with foreign investors and potential risks, allow them to invest in short-term instruments, derivatives.
	Start building a domestic institutional investor base by adequate mutual fund, insurance company regulation, pension reform. Channel retail investment to institutional investors.	Strengthen the domestic institutional investor base by easing restrictions on portfolio allocation, for example.	
Market infrastructure	Establish a book entry system, depository and an efficient securities settlement system.	Reduce settlement time; establish an RTGS system and DVP.	
	Promote the development of the interbank market.	Promote the development of an interbank repo market that uses government securities as collateral.	Promote the derivatives market, short-selling of government securities. If stripped bonds appear, get involved in the development of the market.
	Establish organized trading facilities for government securities	Improve the efficiency of organized trading facilities. Facilitate the emergence of interdealer brokers.	
Regulatory environment	Establish legal framework and regulation related to debt management. Create securities regulatory authority for rules on market participants, market conduct, transparency and clearing and settlement.	Develop new regulation for new participants or instruments. Promote self-regulatory bodies that deal with transaction conventions or business conduct standards, for example.	Develop and refine regulation on derivatives and risk management instruments.
	Eliminate transaction taxes for government securities trading. Seek to achieve tax neutrality.	Consider eliminating tax withholding especially for nonresident investors. Develop adequate tax policy for new instruments.	Develop adequate tax policy for new instruments.
Monetary policy and operations	Gradually eliminate liquid asset ratios. Reduce high reserve requirements. Increase reliance on market-based monetary instruments.	Conduct monetary policy through market-based instruments, including repos of government securities.	
	Gradually eliminate highly accommodating monetary policy by cutting out easily accessible credit facilities, for example.	Encourage active liquidity management by banks by widening the corridor for standing facilities and/or reducing the frequency of credit or deposit auctions.	
	Improve coordination between the MoF and central bank.	Improve coordination between the MoF and central bank.	

APPENDIX: COUNTRY CASE STUDIES ON DEVELOPING SECONDARY MARKETS

Hungary

Hungary's experience with government securities markets is proof that small countries can achieve considerable market development if supported by a strong commitment by policymakers. The main lesson from the Hungarian case is that secondary market development can be greatly expedited by a consistent and integrated approach to market building, in which none of the five main blocks of market development are neglected. Macroeconomic reforms were implemented in parallel with sustained improvements in debt management, gradual market infrastructure building, the continuous adaptation of the legal and regulatory framework to the changing environment, and the monetary operations framework relying more on market-based instruments.

The development of government securities markets was motivated by both fiscal and monetary policy considerations. In the early phase of transition—in the first half of the 1990s—the deteriorating fiscal balance increased the need for domestic government securities issuance to complement central bank financing and bond placement sin international capital markets, which were the dominant type of financing at that time. Domestic issuance was augmented by the need to reduce rollover and exchange rate risks. At the same time, the pursuit of disinflation by the monetary authorities discouraged the monetization of the deficit and supported an increase in the share of market-based financing. At later stages of the transition process, monetary policy and financial market development considerations became more dominant, notably government securities market development made the use of indirect monetary instruments possible, provided information about market liquidity and inflation expectations, and improved the institutional infrastructure for nonbank financial markets.

The development of government securities markets in Hungary had two major phases. The approximate cutoff date was the start of the recovery from the transition-related recession and the significant fiscal adjustment introduced in March 1995:

Phase 1: 1989–96	The primary market is established and the preconditions for a liquid secondary market are created.
Phase 2: 1996	The primary market is well functioning and secondary market building makes considerable progress.

Phase 1 – Establishment of the primary market

Hungary started to issue treasury bills in 1988, and it took eight years to extend the maturity of fixed-rate government securities beyond 12 months. These years were also characterized by negligible secondary market activity. Between 1989 and 1992, treasury bill issues served as supplementary financing of the budget, the main source of funding was the central bank's direct credit line at preferential rates. This period was characterized by adverse macroeconomic conditions, notably by a recession, high budget and current account deficits (the latter from Q4 1992), high inflation and very low domestic savings (see Table 1 for main economic indicators). As Hungary was formerly a centrally planned economy, the challenges of overcoming the unfavorable macroeconomic situation were exacerbated by the need to

create the institutions forming the basis of a modern market economy and the implementation of comprehensive structural reforms. Another very important aspect of the economy was that Hungary entered the 1990s with a high level of public debt partly financed by foreign bond issues. As the government's borrowing requirement was rising steeply, relying on only private bond placements abroad was no longer feasible. There was a pressing need to create a domestic market for government debt even under severe macroeconomic conditions.

Table 1. Hungary: Main Macroeconomic Indicators

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Real GDP	1.3	4.6	4.9	4.2	5.2	3.8	4.4	4.2	4.8	4.2	3.9	1.3
CPI (eop)	19.8	18.4	10.3	11.2	10.1	6.8	4.8	5.7	5.5	3.3	6.5	7.4
In percent of GDP												
Current account balance	-2.5	-1.4	-4.7	-5.1	-6.2	-3.4	-7.0	-7.9	-8.4	-6.7	-5.8	5.0
Gross public debt	71.9	63.3	61.1	60.5	54.9	52.0	55.6	58.0	59.4	61.7	65.5	66
of which FX debt	n.a	26.0	25.2	23.9	20.6	17.5	14.3	14.3	15.7	18.3	18.5	18.6

Source: IMF, ÁKK and Magyar Nemzeti Bank.

A decisive elements of primary and secondary market development was the dedication of the Hungarian authorities to market-based financing of the deficit from early on in the transition process. Interest rates were liberalized in 1991, and the deficit has been financed exclusively by government securities since 1992. The limit on direct financing of the budget by the central bank was reduced to 3 percent of revenues by 1995. The central bank has not financed the budget deficit since 1997.

The first steps toward the establishment of government securities markets were directed to creating the legal basis for the operation of the market and its participants. Among others, legislation on the issuance and trade of securities, the stock exchange, mutual funds and pension funds, as well as the establishment of the Securities Supervisory Agency, the Central Clearing House and Depository, and the Államadósság Kezelő Központ (ÁKK or Government Debt Management Agency, a budgetary semi-autonomous institution) formed the basis of government securities market development in the first phase.[48]

Until Hungary's Treasury and the ÁKK became fully operational and the primary dealer (PD) system was set up in 1996, the National Bank of Hungary (MNB) acted as an agent for the government and organized the domestic issuance of government securities. In this period, the central bank also played a market making role in the government securities market. By 1997, it gave up all of its domestic government debt management activities and transferred them to the ÁKK. The NBH issued foreign currency denominated bonds in its own name until 1999, when, as a last step, the ÁKK took over bond issuance in international capital markets in the name of the Republic of Hungary. Subsequently, the Bank acted as

[48] Prior to the establishment of ÁKK, the Office for the Issuance of Government Securities (ÁÉKSZI) was set up in 1993.

intermediary when ÁKK concluded a hedging transaction. In this latter function the Bank – acting on an order from ÁKK – concluded the (swap) transaction with its own partner on a competitive basis, then concluded the same transaction wit ÁKK. This role had been terminated in 2004, since then ÁKK has concluded swaps with market participants in its own name and the central bank has only a consulting role on strategic issues.

In addition to creating the necessary institutions as well as the legal and regulatory framework, market development was further facilitated by broadening the investor base, introducing tax incentives for securities investments, and by adjusting the supply of government securities to accommodate the preferences of investors. To meet the demands of retail investors treasury notes were developed and distributed through the branches of the Treasury and the Post Office. However, direct purchases of treasury bills by households account only for a small fraction of financing. A more important step was to encourage the establishment of institutional investors: mutual funds, pension funds and insurance companies. Tax incentives were given to individuals to invest in government securities, either directly or through mutual funds.

Debt management was also flexible to accommodate changes in investor preferences. Though the longest maturity of fixed-rate securities was 12 months until 1996, variable interest rate instruments were also available at longer maturities in this period. The demand for variable rate bonds was motivated by high uncertainties regarding inflation. The share of variable rate bonds in the total stock was highest in 1995 (over 50 percent), and it has declined significantly since then.

Toward the end of 1994 the macroeconomic situation was worsening—the budget and current account deficit ballooned in 1994, the Hungarian forint was frequently devalued—and the country was approaching a currency crisis at the end of 1994. The authorities responded to the rapidly worsening situation by introducing sharp fiscal adjustment measures and a new exchange rate regime to halt the deterioration of the current account. The adjustable fixed exchange rate was replaced by a crawling band with a preannounced devaluation rate, and it was accompanied by a significant one-time devaluation of the forint. The stabilization measures were successful in preventing the imminent crisis, and by the beginning of 1996 the economy showed the signs of stabilization.

Phase 2 – Secondary market development

As a result of comprehensive structural reforms and the 1995 March stabilization package, macroeconomic conditions improved markedly by early 1996, which contributed to a significant fall in the risk premium on government securities. Heavy capital inflows from the beginning of 1996 signaled the increasing confidence of nonresident investors in the Hungarian economy. As the anti-inflationary commitment of the monetary authorities gradually gained credibility, the yield curve was extended considerably: two and three-year fixed rate bonds were introduced in 1996, and the first auction of the five-year bond was held in 1997. The next step was the introduction of the 10-year bond in January 1999, and the first auction of the 15-year bond—presently the longest publicly auctioned maturity—was held at the end of 2001.

Key policy and infrastructure-related measures are summarized below:

1995 – ÁKK established
1996 – Treasury established; ÁKK placed under the supervision of the Treasury.
1996 – PD system established.
1996 – Further capital account liberalization including sales and issues of securities to nonresidents with an original maturity of more than one year.
1997 – First benchmark bonds established, benchmark yields published on a daily basis.
1998 – Multi Market Trading System (MMTS) introduced on the Budapest Stock Exchange. The system also has a module to allow the Government Debt Management Agency to conduct primary auctions, subscriptions and part of its repurchase auctions via MMTS I.
1999 – All marketable bonds issued in dematerialized form.
2001 – Full convertibility of the forint, all capital account and restrictions lifted.

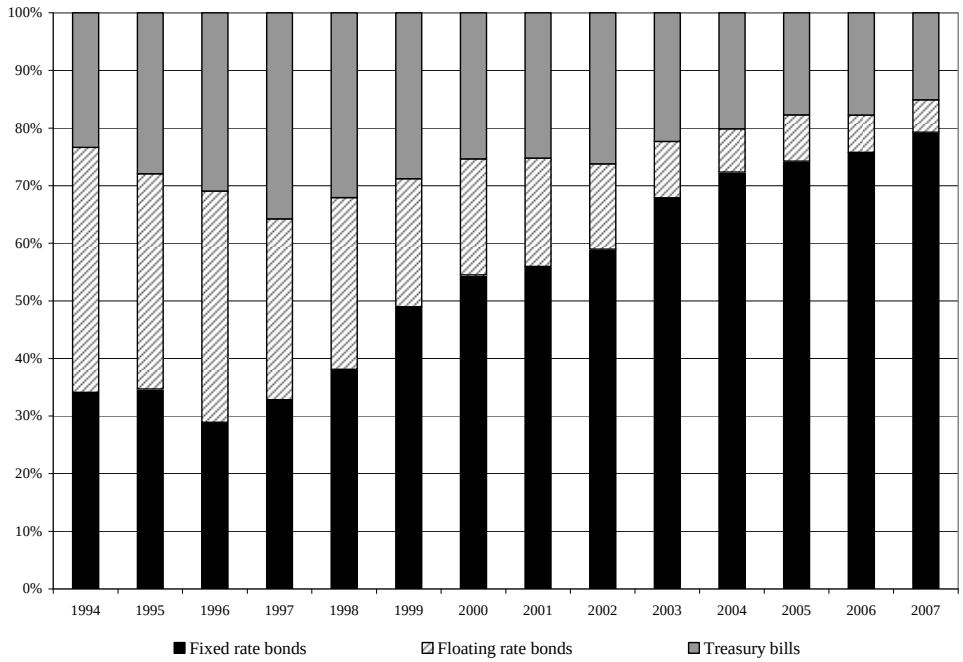
The introduction of the PD system in 1996 contributed significantly to the development of the primary and secondary markets. Both credit institutions and brokerage houses may apply to be PDs. One of the basic responsibilities—and exclusive rights—of PDs is to bid at the auction of government bonds and treasury bills. The other main obligation of PDs is to quote two-way firm prices on a continuous basis for government bonds and discount treasury bills with a maturity longer than 90 days on both the Stock Exchange and OTC market in order to ensure liquidity and transparency of the market. In addition to the obligations, PDs have some exclusive rights, including consulting and marketing privileges.

The ÁKK has implemented several measures in order to increase liquidity and transparency in the secondary market. To reduce market fragmentation, debt instruments were gradually standardized.[49] Benchmark securities have been gradually developed and their yields have been published daily since 1997. Another measure was to introduce reverse auctions of government bonds for PDs in January 1998 in order to smooth the redemption profile. The ÁKK further modified the system of government bond and treasury bill issues in 1999, and has been auctioning fewer but larger securities series since then. In this period, the share of domestic currency denominated debt was gradually increased by refinancing only the principal of maturing foreign currency denominated debt in the international capital markets in order to reduce the exchange rate risk. This strategy also had a beneficial effect on the liquidity of the secondary market.

The composition of domestic debt has undergone significant changes (Figure 1). Along with macroeconomic consolidation, the share of floating rate bonds has started to decline from 1997. By 2007, fixed rate bonds accounted for nearly 80 percent of domestic debt and floating rate bonds declined to 6 percent.

[49] Between 1997 and 2002, the central bank also issued securities with several maturities up to one-year, thus fragmenting issuance in the shorter end of the yield curve. This practice has been discontinued and the central bank is now only involved in the yield curve up to two weeks.

Figure 1. Composition of Domestic Debt



The ÁKK made considerable efforts to improve the transparency of the primary and secondary markets. The annual financing plan for the next year and the auction calendar are published in advance, the latter for six months ahead. PDs are required to submit detailed secondary market data to the debt management agency that are subsequently published in various media and on the ÁKK website. The most important information on yields and transaction volumes are published on a daily basis.

Significant changes in the ownership structure of government securities in the second half of the 1990s also contributed to faster secondary market development. For bonds, the share of nonresidents, domestic mutual funds, insurance companies and pension funds in the outstanding domestic debt increased substantially, while the share of commercial banks and specialized financial institutions as well as of the household and nonfinancial corporate sector declined (Figure 2). The composition of T-bill holdings has not changed significantly (Figure 3).

Figure 2. Hungary: Breakdown of Treasury Bond Holding by Investor Groups

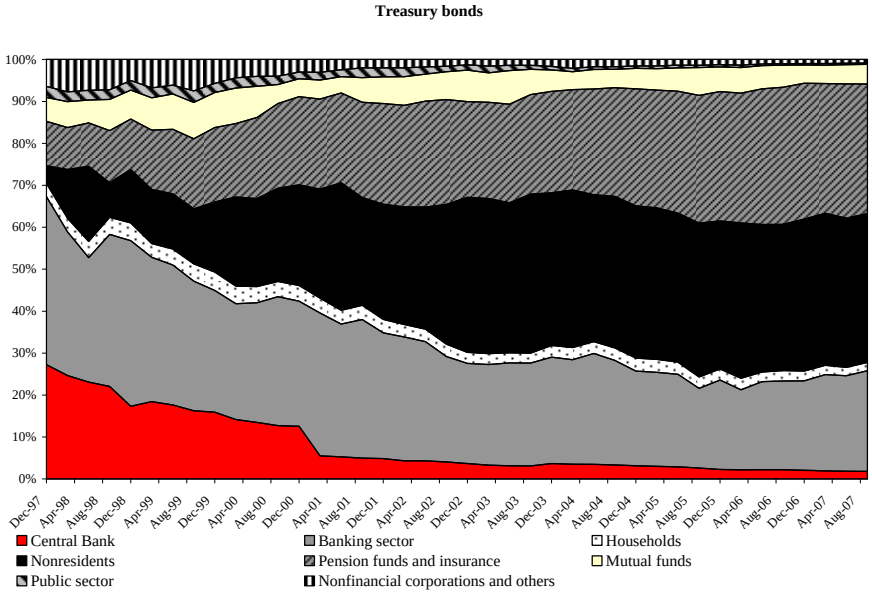
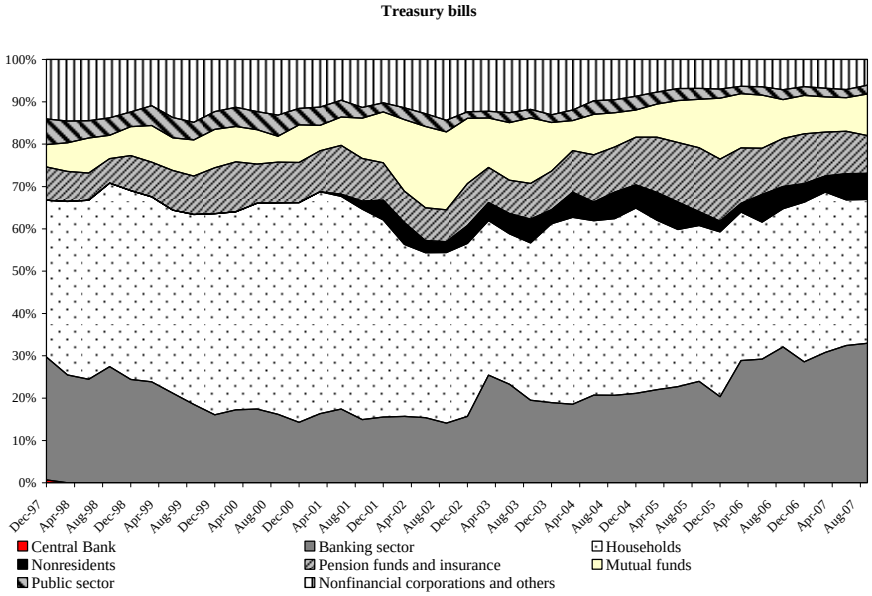


Figure 3. Hungary: Breakdown of Treasury Bill Holding by Investor Groups



Turnover in the secondary market received a boost following the decision in 1996 to allow nonresidents to invest in government securities with an original maturity of more than one year. In June 2001, Hungary lifted all foreign exchange restrictions including restrictions on short-term portfolio transactions. [50] As a result, the share of nonresidents in the outstanding local currency domestic debt rose from 3 percent at the end of 1996 to 27.4 percent at the end

[50] Before full liberalization, non-residents were not allowed to buy 12-month T-bills, issued with a tenor of 364 days until 2001. This led to a two-tier market: bonds that had less than one year until maturity were in demand with non-residents and commanded a price premium over T-Bills.

of 2003 and it has been around 27-31 percent since then (Table 2). Nonresident investments are concentrated on long-term maturities: in 2007, the share of nonresident holdings was around 6 percent and 36 percent in total outstanding securities for treasury bills and bonds, respectively. The importance of foreign investors is underscored by the fact that after having quickly built up their holdings of securities following capital account liberalization in 2001, they have consistently had the highest average transaction size in the past few years, and by 2003 Q2 the highest turnover in the secondary market had been achieved by foreign investors among the different investor groups (Figure 4).

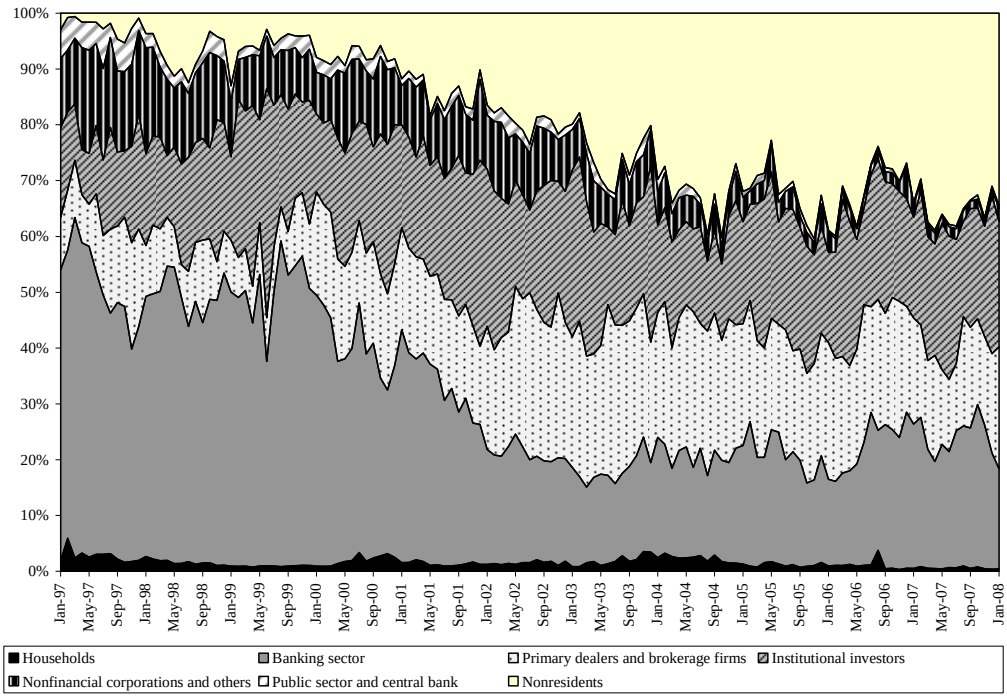
Table 2. Hungary: Nonresidents' Holdings of Government Securities at End-Year

(In percent of total)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
3.4	2.8	8.6	11.2	16.8	20.6	27.2	27.4	28.7	27.8	28.7	31.2

Source: ÁKK (www.akk.hu)

Figure 4. Hungary: Breakdown of Secondary Market Turnover of Treasury Bonds and Bills by Investor Groups



Source: ÁKK (www.akk.hu)

Nonresidents' participation in the government securities market has greatly contributed to the development and deepening of the market. It helped transfer financial know-how to the domestic market and contributed to the spread of more and more sophisticated financial techniques and the development of other segments of financial markets (such as derivatives). Foreign investors have been important also from a savings-investment balance point of view, as the financing capacity of the domestic private sector has been gradually declining along

with the pick-up of the economy after 1996 and with the growing indebtedness of the household sector.

However, the exchange rate and interest rates have undoubtedly been more volatile than they would have been without active nonresident participation in the government securities market. There were several episodes with increased volatility in the period under investigation. Contagion from the Russian crisis despite strong domestic fundamentals was an early test in the fall of 1998. Forced liquidations played an important part in the capital outflow, as the Hungarian secondary market for government securities at that time was more developed and liquid compared to others in the region, and nonresidents were more active in selling in the Hungarian market than in countries with weaker macroeconomic fundamentals.

The importance of foreign investors in the primary and secondary markets and high exposure to international financial markets were illustrated in the first quarter of 2008.[51] On the last day of February and in the first week of March 2008, yields on the government bond market rose significantly and liquidity in the secondary market declined drastically. Primary dealers stopped quoting prices on several days or if they did they used very wide bid-ask spreads (20 to 30 basis points as opposed to the six to eight basis points on ordinary business days). Several technical and fundamental factors were responsible for the severe disruption in the market. Among others, foreign investors' demand for Hungarian government bonds disappeared as a consequence of a new bout of global liquidity problems and increasing risk premiums that affected countries with weak fundamentals such as Hungary especially strongly. At the same time, Hungarian pension funds that in the past helped stabilize the price of government bonds did not appear on the buyer side despite the higher yields as they were in the process of restructuring their portfolios (replacing government securities with equities).

Despite recurring incidents of speculative attacks and contagion due to high nonresident participation, the overall experience with foreign investors in Hungary has been positive. Their presence has a disciplining effect on macroeconomic policies, as foreign investors are more sensitive to deteriorating economic conditions than more captive domestic investors. The proper sequencing of capital account and financial system liberalization has been crucial for the long-term development of the market.

At the end of 2007, total public debt amounted to HUF 15,600 billion (approx. US$90 billion, 60 percent of GDP), out of which nearly 29 percent was denominated in foreign currency. The OTC market accounts for almost all transactions, only a negligible share of total transactions took place on the stock exchange.[52]

While certain characteristics and the liquidity of the Hungarian government securities markets are still lagging behind most advanced markets, the primary and secondary markets can be considered well-developed among emerging market countries. The main task of market infrastructure development ahead is the further harmonization of Hungarian debt instruments with European Union standards in order to increase the attractiveness and competitiveness of the market. The harmonization measures conducted since 2001 include

[51] For a detailed description of this event, see Magyar Nemzeti Bank (2008) pp. 34-36.

[52] The low volume of trade on the stock exchange is due to high transaction costs.

yield-price calculation methods, interest payment frequency, standardized products, lengthening of the yield-curve, benchmark bonds, increased benchmark sizes (EUR 2-3 billion), liquidity management (repo auctions), buy-back auctions. The main steps to be implemented in the future include establishing a transparent electronic secondary market trading platform, introducing price quotation in price terms instead of yield terms, and introducing TARGET days.

The relatively small repo market (the outright market is three times larger than repo transactions) could possibly be further boosted by modifying certain strict accounting rules. Secondary market liquidity may also benefit from enlarging the pool of primary dealers by facilitating the entry of international investment banks as primary dealers.[53] Since investment banks in London are the major market makers for and manage the bulk of HUF interest rate swap turnover, their participation as primary dealers in the bond market would facilitate the connection between the swap and the bond market.

[53] See Magyar Nemzeti Bank (2008) pp. 34-36 and Csávás, Varga and Balogh (2008) on the segmentation of market makers on the government bond and interest rate swap markets.

India

- India has advantages of scale in the development of its government securities market. Outstanding government securities available for trading in the secondary market stood at about US$376 billion dollars as of March 2007, and the Indian economy generated over US$312 billion in gross savings in FY07, and attracted about US$44 billion in net capital inflows over the same period.

- An efficient primary market has underpinned growth in the secondary market. Key to this has been the shift from artificially low yields at the primary auction to market clearing rates, the development of a PD system and improvements in the functioning of money markets.

- The establishment of infrastructure for the secondary market—electronic trading and settlement systems, and a clearing house—has been critical in promoting trading in the secondary market.

- Efforts to broaden the investor base for government securities have been less successful, limited by the lack of pension coverage and widespread government ownership of financial institutions.

Introduction

As late as 1996, the secondary market remained very thin, about a dozen trades per day. There were several impediments to the development of the market at that time. First, primary auction yields were held below market clearing levels as the Reserve Bank of India (RBI) used cut-off rates at the auctions to limit the fiscal cost of the government's domestic borrowing. This was possible because banks faced a statutory liquidity requirement of 38.5 percent (this has been since reduced to 25 percent), thereby providing a captive market for government securities. Confidence in the primary market was undermined by high fiscal deficits in the 1980s, accompanied by monetary expansion and inflation as the RBI accommodated the government's borrowing requirements. Banks that had been compelled to purchase government securities at low yields were reluctant to resell them and suffer a capital loss that was not recognized in the absence of a mark to market requirement.

Although the RBI had broad authority for the supervision and regulation of the government securities market, few resources were directed to these tasks. The RBI was also responsible for the government securities registry and settlement process, which were mostly manual systems prior to 1995. Further, little information was available on secondary market transactions.

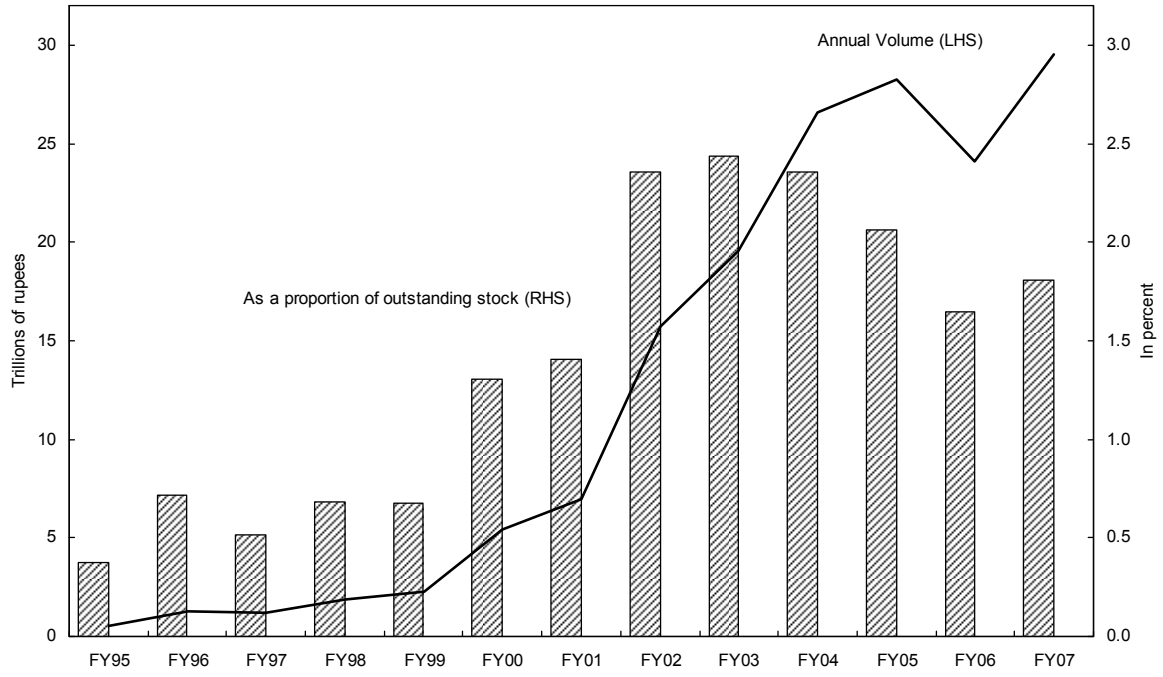
The RBI acted as the debt manager for the government, but little attention was paid to developing the market for government securities. Instead, the RBI relied on the captive demand of the banks and other state-owned financial institutions. Each auction of dated securities added another unique issue to the market. This led to issue fragmentation and a lack of benchmark securities. Taxes on realized gains on secondary transactions were required to be deducted at source. This complicated the pricing of secondary transactions, and the disbursement of coupon payments net of tax payments was cumbersome. Further,

market distortions arose because tax treatment varied by type of dealer involved in the transaction.

However, in the last half of the 1990s, macroeconomic performance improved, the government moved to market determined yields in the primary market and an extensive infrastructure for the secondary market was established. In the four years to FY03, turnover on the secondary market for government securities increased markedly, both in level terms and as a proportion of the outstanding stock (Figure 2). However, turnover ratios have fallen since then. This may be due that the SLR is now more binding for commercial banks. Commercial banks' average SLR ratio fell from 41 percent at end-FY04 to about 28 percent at end-FY07, compared with the requirement of 25 percent.

Figure 5. India: Government Securities Secondary Market Turnover, FY95–FY07

(at end-March)



Sources: Reserve Bank of India and National Stock Exchange

Reform of the Primary Market

Primary Dealer System

In 1996, the RBI introduced a primary dealer (PD) system to facilitate the development of both the primary and secondary markets for government securities. The main aim was to devolve the responsibility for making the market in government securities from the RBI to the PDs, in the process broadening the base and increasing the liquidity of the market. An associated goal was to make the PDs an effective conduit for the conduct of open-market operations.

All domestic commercial banks, and other financial institutions and incorporated companies engaged predominantly in the securities business are eligible to apply to the RBI for a Primary Dealership. Subsidiaries and joint ventures of foreign investors are also eligible. In addition, there is a minimum capital requirement.

Prior to April 2006, the RBI had standing arrangements with all PDs to ensure that they play an active role on both primary and secondary government securities market. The obligations of the PDs included bidding commitments, both on an annual basis and for each treasury bill auction, underwriting of primary issues and offering two-way quotes on selected issues. Bidding commitments were negotiated between each dealer and the RBI, and a minimum success ratio for bids of 40 percent is specified. In return, the RBI provided PDs with liquidity support. Initially, this was a standing facility, but this is gradually being withdrawn, since the PDs have access to the Liquidity Adjustment Facility (LAF).

When the RBI withdrew from participating in the primary market in April 2006, it also revised its guidelines for PDs. A new underwriting commitment scheme was introduced, which was based on mandatory coverage of 50 percent of each issue (split equally amongst PDs) plus competitive bidding for the underwriting the rest of the issue.

Initially, six PDs were selected. By end-FY07, there were 17 PDs, of which six are bank-owned, while the remaining 11 are standalone PDs. The share of PD activity in the primary market fell from 65 percent in FY02 to 40 percent in FY06, as banks and insurance companies became increasingly active in the primary auctions. PDs share of the outright secondary market has remained at about 30 percent over the same period.

In December 1996, the RBI introduced a system of satellite dealers that were intended to serve as a link between the PDs and the retail market. However, the satellite dealers were not given access to liquidity facilities. Satellite dealers served mainly as brokers in the market, and the system was discontinued in May 2002.

Government securities auctions

The RBI introduced a system of noncompetitive bidding in 2002 that allows small and medium investors to participate in the primary auction, by placing bids through banks or PDs. Up to five percent of each auction can be allocated to noncompetitive bidders at the weighted average auction yield. In May 2006, a “when-issued” market was introduced, and limited short-selling was permitted.

Consolidation and Lengthening of Outstanding Issues

Until the late-1990s, government security maturities were generally less than 10 years. There was little attention paid to developing a coherent structure of outstanding issues, leading to fragmentation of these issues by maturity and coupon yield. Since 1999, the RBI has been gradually lengthening the average maturity of its primary issues, and has pursued a policy of passive consolidation of the outstanding stock of dated securities by reissuing existing issues. Some legal issues are seen as inhibiting the active consolidation through the buyback or reverse auction of existing issues. As a result, the majority of issues still lack the volumes to be actively traded in the secondary market.

Developing Secondary Market Structures

The RBI has made significant improvements in the infrastructure supporting secondary markets in the past decade. To assist in this process it established a Technical Advisory Committee (TAC) on government securities and money markets. Its membership includes RBI staff, market participants, academics and other policy makers. Industry associations have also played key roles in liaising with the RBI, establishing self-regulatory frameworks, developing new benchmarks and providing training to members.

Under the Public Debt Act, the RBI is the sole depository for state and government securities, including treasury bills. All holdings are recorded by the RBI on its Subsidiary General Ledger (SGL). The major participants in the government securities market each have an SGL account at the RBI. A delivery versus payment (DVP) system was introduced in 1995. Under this system, the RBI checks that the seller has the securities in its SGL account and the buyer has the requisite funds in its current account with the RBI, and then transfers payment and the securities simultaneously. This has reduced operational risk and facilitated the growth of the secondary market.

In 1998, the RBI sought to expand access to electronic trading of government securities by introducing a constituent SGL facility. Retail investors have the choice of holding their stock in a physical form or opening a client account with an authorized SGL holder, who will then open a constituent SGL account on their client's behalf at the RBI. The client can then direct the authorized SGL holder to execute transactions using the DVP system and this account.

Around two-thirds of all secondary trading is done in the Wholesale Debt Market (WDM) segment of the National Stock Exchange (NSE). Members of the exchange broker deals among banks and other market participants, even though many customers have access to SGL accounts and can execute trades on their own behalf.

To facilitate pricing securities of differing maturities, NSE introduced in 2000 a zero coupon yield curve (ZCYC). The ZCYC is calculated daily from data on secondary trades of government securities in the WDM, by adjusting yields of traded issues by time to maturity and coupon yield, and then interpolating these yields to generate a yield curve. The ZCYC is used to price less frequently traded government issues and nonsovereign instruments.

The RBI introduced a Negotiated Dealing System (NDS) in 2002, which allows electronic bidding in primary and LAF auctions and provides straight-through processing.[54] This system is available to all primary market participants, and the RBI disseminates real-time data on all government security trades on its web site. At the same time that the NDS was introduced, the Clearing Corporation of India Limited (CCIL) was established to act as a central counterparty for outright and repo transactions in government securities. CCIL has direct electronic access to members' SGL and current accounts at the RBI. Settlements through the

[54] Straight-through processing refers to the seamless integration of systems and processes to automate the trade process from end-to-end trade execution, confirmation, and settlement without the need for manual intervention or the re-keying of data.

CCIL are guaranteed by a fund financed by the members of the CCIL. Currently all repo transactions and outright transactions of less than Rs 200 million (US$ 22,000) are conducted through the CCIL (larger outright transactions are handled directly by the RBI). CCIL also handles foreign exchange transactions between its members. The RBI introduced a real time gross settlements system in 2004, which further reduced the cost and risk of securities transactions.

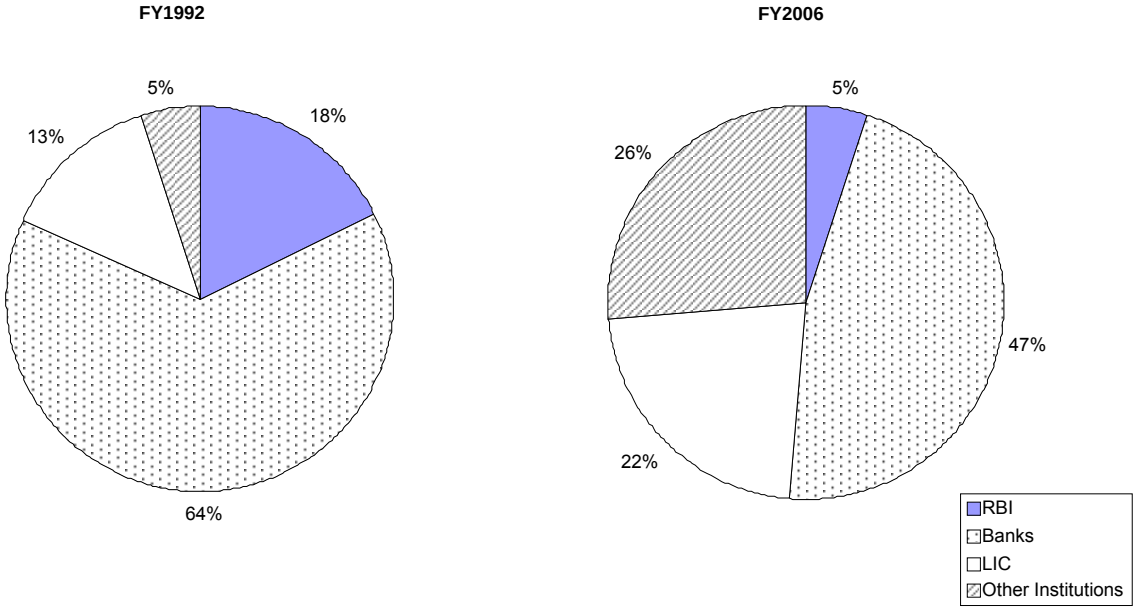
Broadening the Investor Base

In the past 15 years, some progress has been made in broadening the investor base (Figure 1). Commercial banks remain the dominant investors in government securities, at end-March 2006 holding 47 percent of the outstanding stock. The next most important investor is the state-owned Life Insurance Corporation of India (LIC), which had a monopoly in life insurance until 2000. Other investors include provident funds, mutual funds, other financial institutions and retail investors.

Various institutional factors have limited the development of a broader investor base for government securities. Foremost is the lack of pension coverage, with only 10 percent of workers covered by formal pension schemes. Another factor is the predominance of state-owned institutions in all financial sectors.

The mutual fund industry grew rapidly in the past 10 years. Mutual funds that invest exclusively in government securities, termed Gilt Mutual Funds, were first established in 1998. In light of the shallow repo market, some liquidity support was provided to these funds by the RBI. By end-March 2008, there were 76 gilt mutual funds operating, with net assets of Rs 39 billion.

Figure 6. India: Ownership of Government-Dated Securities, FY92 and FY06



Mexico

Mexico has achieved considerable success in developing its domestic debt market in the last decade. As in all successful cases, a stable macroeconomic environment and commitment by policymakers to market development were crucial for the substantial progress accomplished in recent years. Mexico has a long history of issuing domestic government securities: the first peso-denominated fixed rate treasury bills were issued in 1978. However, progress in primary and secondary market development was initially slow and only speeded up in the aftermath of the 1994/95 crisis. In what follows, we concentrate on the more successful period of primary and secondary market building after the 1994/95 crisis, and provide only a short history of the markets prior to that.

History of domestic debt market

Until the early 1990s, government securities market development was hindered by an unstable macroeconomic environment, recurrent debt crises and financial repression. In this period, the main source of government domestic funding was short-term zero coupon bills (Cetes), floating rate notes (Bondes), as well as inflation- and oil price-indexed bonds. The secondary market started to develop slowly after 1982, when banks and brokerage houses were allowed to bid for Cetes at public auctions. These markets, however, were shallow and illiquid for a long period. Mexico embarked on an ambitious and promising path of financial sector and macroeconomic reforms at the end of the 1980s, which was interrupted by the 1994/95 crisis.

Financial deregulation beginning in 1988 was one of the main prerequisites for primary and secondary market development. The major steps in this process included among others the abolishment of reserve requirements (1988), interest rate liberalization, and the elimination of selective credit controls (1989). Furthermore, in 1990 the private sector was again authorized to offer banking and credit services. The removal of the 30 percent liquidity requirement on bank liabilities and the abolishment of foreign exchange controls in 1991 contributed to the liquidity and deepening of secondary markets. The introduction of a Chilean-type pension reform broadened the investor base, but the private institutional investor sector is still relatively small compared to other major emerging economies. A comprehensive reform of the payment system was launched in 1994. In 1994, in the run-up to the crisis, short-term securities linked to the exchange rate of the US dollar (Tesobonos) were also extensively issued. Following their full repayment, the domestic debt market has been entirely peso-based since 1996.

Market development and characteristics after the 1994/95 crisis

Improving macroeconomic conditions since the second half of the 1990s provided the necessary background for the Mexican authorities' renewed efforts to develop the government securities market (see Table 3.). Public sector external debt was reduced from 42 percent of GDP in 1995 to 11.5 percent of GDP by the end-2006. With the repurchase of US$1.3 billion of Brady bonds in July 2003, Mexico completed the withdrawal of the total amount of Brady bonds that were due on December 31, 2019.

Table 3. Mexico: Main Macroeconomic Indicators

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Real GDP change	5.2	6.8	5.0	3.6	6.6	0	0.8	1.4	4.2	2.8	4.8
CPI (Dec.–Dec.)	27.7	15.7	18.6	12.3	9.0	4.4	5.7	4.0	5.2	3.3	4.1
					In percent of GDP						
Public sector balance	0.3	-1.0	-1.2	-1.1	-1.1	-0.7	-1.2	-0.6	-0.2	-0.1	0.1
Current account balance		-1.9	-3.8	-2.9	-3.2	-2.8	-2.2	-1.3	-1.0	-0.6	-0.2
Gross augmented public debt			54.9	50.8	49.3	47.9	49.7	50.0	46.0	44.0	43.5
out of which:											
domestic			33.0	31.6	31.7	32.1	33.6	32.5	28.8	29.9	32.0

Source: IMF.

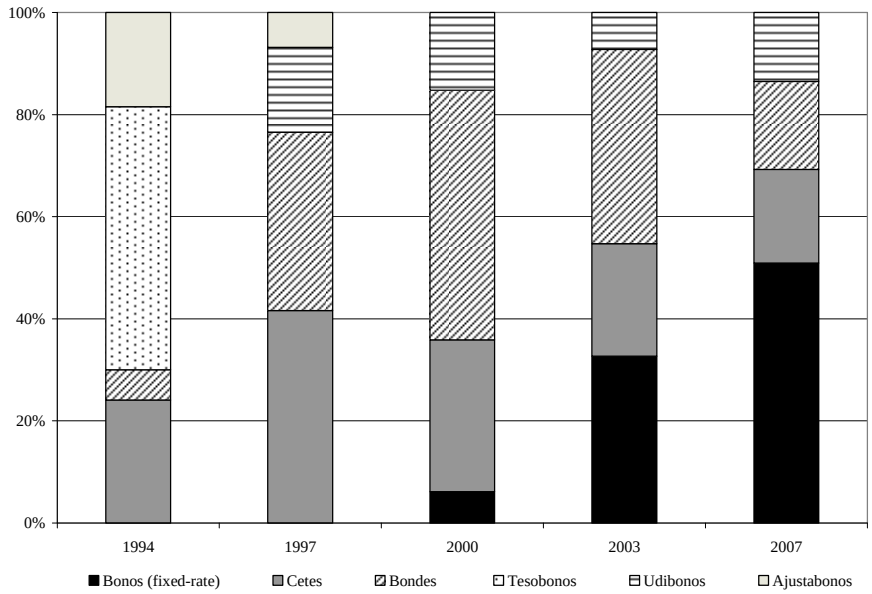
By the end of the 1990s and early 2000s, Mexico successfully created most of the preconditions for a developed primary market. In addition to the stable macroeconomic environment, market-determined interest rates, and the abolishment of reserve requirements and liquidity ratios, close coordination between the finance ministry and the central bank has also fostered market development. The central bank serves—as in the majority of emerging countries—as the agent of the government in auctioning government securities. Another prerequisite of well-developed government securities markets, a well-functioning and liquid money market is also in place in Mexico. The regulatory and supervisory framework has been strengthened considerably, and the legislation has been very active in recent years in enacting and amending laws related to the financial sector.

At end-2007, total gross domestic federal public sector debt amounted to 2000 billion pesos (approx.185 billion USD), out of which the domestic debt of the federal government accounted for 1900 billion pesos (approx. 176 billion USD). In 2007, 93 percent of domestic federal public sector debt was financed by securities issuance.

The composition of domestic securities changed substantially in the last decade. Stable macroeconomic conditions, the decline in external vulnerability, improvements in market infrastructure made it possible for the authorities to extend the average maturity of domestic debt by issuing long-term bonds indexed to inflation (Udibonos)[55] and short-term interest rates (Bondes), but fixed-rate bonds took longer to gain acceptance. After the issuance of the 1-year zero-coupon bond in 1990, 3- and 5-year bonds (Bonos) were introduced only in 2000. The issuance of long-term fixed-rate securities accelerated afterwards, 10-year bonds were introduced in July 2001, 20-year bonds were first issued in October 2003, and by 2007, the yield curve extended to 30 years. The share of fixed-rate securities in domestic debt has been increasing rapidly, and by end-2007 it reached 50 percent (Figure 4).

[55] Udibonos replaced Ajustabonos which were also long-term inflation indexed coupon bonds.

Figure 7. Mexico: Composition of Domestic Public Sector Debt



Source: SHCP, Mexico.

Mexico has made significant progress in extending the average maturity of domestic debt, which increased from 187 days in January 1990 to 908 days by end-2003 (with a slump in the middle of the 1990s) and to 2004 days by end-2007. Though rising rapidly, the share of long-term fixed-rate securities is still significantly lower than in developed markets. Mexico—as most Latin American countries—is characterized by a higher proportion of variable rate and indexed debt than Central and Eastern Europe or Asia. This is mostly attributable to the history of high inflation in Latin America, which for a long time hindered the placement of long-term fixed rate securities.

Investor base

Mexico's financial system is dominated by banks. The local institutional investor base (pension and mutual funds and insurance companies) is growing, but it is still relatively small compared to other major emerging economies**.** The size of the private institutional investor base reached about 11 percent of GDP in 2001 and 17 percent of GDP in 2006. The expansion of the domestic institutional investor base is crucial for the development of the government securities market, as it increases the demand for long-term instruments in particular. In addition to the dominance of banks in the financial system, the growth of mutual funds has been held back by regulatory restrictions. Regulation limited the share of assets that mutual funds were allowed to invest in short-term securities, which made mutual funds less competitive compared to banks in an environment of high interest rate volatility where the value of long-term securities is subject to sharp changes. Recent changes in regulation substantially relaxed restrictions on mutual funds, and allow—among others—the establishment of short/long funds, hedge funds and umbrella funds.

Financial deregulation was accompanied by gradual capital account liberalization starting at the end of the 1990s. Nonresident investors were allowed to hold Mexican government bonds from December 1990, which contributed to the increase in secondary market liquidity.

Liquidity increased further when foreign banks were allowed to enter the Mexican market at the end of 1993. As a result of financial and capital account liberalizations, the debt restructuring agreement, as well as other reform measures, private capital inflows surged during the period 1990–94. At its peak, the share of foreign investors reached 48 percent of the outstanding stock of government securities in 1994.

Following the currency crisis, nonresident holdings of Mexican government securities plunged. The Asian and Russian crises (in 1997 and 1998) led to a further decline in direct foreign participation in the Mexican market. The share of nonresidents in total holdings of government securities dropped from six percent at end of 1998 to 1.3 percent in 2000, and slightly increased to 2.3 percent at end of 2003, and by end-2006 it reached nine percent. This is relatively low compared to other major emerging economies. Nonresident investors have been recently exempted from withholding tax on government securities investment. Nonresident investors' access to the local market is further facilitated by the ability to trade Mexican domestic securities through international clearing and settlement systems. Nonresidents are very active taking positions in peso interest rates through derivatives contracts which may partly explain their relatively low direct participation in the government securities market. MexDer, Mexico's derivatives exchange is one of the largest among emerging market derivatives exchanges and boasts very high turnover in interest rate derivatives.

Measures to speed up secondary market development

In order to accelerate secondary market development and increase liquidity, the Mexican authorities introduced several measures in the last decade.

As an important step toward increasing market transparency, the government started to publish a quarterly issuance calendar in 1999, which informs the public about the auction dates and the minimum amount of securities to be auctioned.

It took several attempts to determine and publish reference rates for government securities by both market participants and the authorities. Since 1999, the Banco de México publishes price information on a daily basis, and the 28-day yield determined by the central bank has become an important benchmark. Major market participants also started to publish reference rates based on their own information collection, these rates (Mexibor), however, only covered the yield curve up to a year by 2003. Efforts to create fixed-rate benchmark bonds have intensified in recent years by maintaining large values at reference yields and reducing the number of bonds across the yield curve. In 2007, the Federal Government issued benchmarks at 3, 5, 10, 20 and 30 years. The average size of peso-denominated fixed rate bonds was approx. 40 billion pesos (3.7 billion USD) in 2007.

A primary dealer system was created in October 2000, which led to an immediate and significant increase in the secondary trading of Bonos. PDs[56] are required to place bids at primary auctions for each type of fixed rate instrument and for a minimum of 20 percent of the auctioned amount. They are also required to quote two-way prices for fixed rate

[56] There were six primary dealers chosen at the introduction of the system.

instruments and to provide the authorities with all the requested information. Market-makers have had the right to buy securities up to three hours following the primary auction and they can borrow a limited amount of securities from the Banco de México.

In order to increase liquidity and reduce fragmentation, the government reopened outstanding issues several times. Market fragmentation had been an impediment for many years, as there had been too many debt instruments (treasury securities, central bank bills introduced in 2000, and public agency papers) and issuers (federal government, central bank, IPAB,[57] and FARAC[58]), but in recent years significant progress has been achieved on this front. By end-2007, the Federal Government accounted for 95 percent of domestic federal public sector debt.

Securities lending was promoted under the market makers program, and eligible institutions were allowed to borrow government securities from the central bank.

The participation of voice and interdealer brokers since 1994 has also contributed to the increase in liquidity in the secondary market by facilitating price discovery. The overwhelming majority of outright transactions are now executed through brokers.

Inclusion in international clearing and settlement systems has increased the attractiveness of the Mexican market for foreign investors. Euroclear and Clearstream have arrangements with local banks in order to allow Mexican local market securities to be settled through their systems. The Mexican peso is in the progress to be included in CLS (Continuous Linked Settlement) that will allow settling foreign exchange transactions finally and irrevocably thus eliminating settlement risk, improving liquidity management, and reducing operational banking costs.

Mexican domestic government securities have been incorporated in major global fixed income indexes, such as JP Morgan Broad Index (January 2003), MerrillLynch Global Broad Market Plus Index (June 2003), and Lehman Global Aggregate Index (January 2005).

Recent developments and challenges for the future

The authorities have recently implemented several measures in the area of securities lending to promote further secondary market development. As a result, securities lending has been picking up.[59]

- As it seems that the central bank securities lending facility has become a disincentive for further market development, fees have been changed from fixed for all participants to variable depending on their activity outside the central bank facility.

[57] Instituto de Protección al Ahorro Bancario: the bank deposit insurance agency.

[58] Fideicomiso de Apoyo para el Rescate de Autopistas Concesionadas: a trust fund through which the public sector has taken over assets and liabilities of illiquid or insolvent private toll road operating companies.

[59] This section is based on a presentation titled “Improving Market Structure and Liquidity” by the Banco de Mexico at The Tenth Annual OECD-World Bank-IMF Bond Market Forum, April 29-30, 2008.

- The definition of foreign institutions was broadened to allow hedge funds and not only traditional foreign investors.

- Insurance companies have been allowed to lend securities.

- Tax treatment was updated: securities lending is no longer treated as an actual sale for purposes of calculating taxes on capital gains and fees coming for securities lending receive the same fiscal treatment as interest payments.

Based on the achievements of the past years, the Mexican authorities' focus is on further increasing the average maturity of domestic debt and to improve the debt amortization profile.[60] Another main objective is to further increase the issuance of fixed-rate bonds to reduce the share of variable rate bonds and to consolidate the long end of the yield curve. These measures would increase the liquidity in the secondary market as inflation-linked and floating rate bonds tend to be held until maturity and thus are less liquid than fixed-rate bonds.

The Mexican authorities aim at further developing benchmark securities. The target average size by 2012 is 75 billion pesos (6.9 billion USD at end-2007 exchange rate). A regular buyback program has been introduced and is expected to help in increasing the size of benchmarks. A bond exchange program is used to manage on-the-run and off-the run securities to add liquidity more rapidly to new securities. Although significant progress has been achieved in the area of streamlining the number of public debt instruments and issuers, further consolidation of issues would improve the efficiency of debt management and increase the liquidity of individual securities in the secondary market.

[60] The discussion on the Mexican authorities' plans is based on SHCP (2007).

REFERENCE

Arnone, M., and G. Iden, 2003, "Primary Dealers in Government Securities: Policy Issues and Selected Countries' Experiences," IMF Working Paper WP/03/45 (Washington: International Monetary Fund).

Arnone, M., and P. Ugolini, 2005, "Primary Dealer Systems in Government Securities," *Special Issues*, (Washington: International Monetary Fund).

The Bank for International Settlements, 2001, *Recommendations for securities settlement systems*, CPSS Publications No. 46, Basel.

The Bank for International Settlements, 2002, *The Development of Bond Markets in Emerging Economies*, BIS Paper No.11, Basel.

———, 1999, *Market Liquidity: Research Findings and Selected Policy Implications*, by the Committee on the Global Financial System, May (Basel: BIS).

Borio, C., 2000, "Market Liquidity and Stress: Selected Issues and Policy Implications," *BIS Quarterly Review*, November.

Claessens, S., D. Klingebiel, and S. Schmukler, 2003, "Government Bonds in Domestic and Foreign Currency: The Role of Macroeconomic and Institutional Factors," CEPR Discussion Paper No. 3789, (London, Centre for Economic Policy Research.).

Csajbok, A., and J. Nemenyi, 1998, "The Contribution of the Government Securities Market to the Development of Wider Securities Markets in Hungary," in: *Capital Market Development in Transition Economies, Country Experiences and Policies for the Future,* OECD Proceedings, (Paris: OECD).

Csávás, Cs., Varga, L. and Balogh, Cs, 2008, "The forint interest rate swap market and the main drivers of swap spreads," Occasional Paper No. 64, (Budapest: Magyar Nemzeti Bank)

Dattels, P., 1997, "Microstructure of Government Securities Markets," in *Coordinating Public Debt and Monetary Management: Institutional and Operational Arrangements*, (Washington: International Monetary Fund)

European Central Bank, 2003, *Bond Markets and Long-Term Interest Rates in European Union Accession Countries*, Frankfurt.

Fry, M., 1997, *Emancipating the Banking System and Developing Markets for Government Debt* (London and New York: Routledge).

Group of 30, 1993, *Special Report on Global Derivatives. Derivatives: Practices and Principles and Appendices*, (Washington: Group of 30)

International Monetary Fund, 2004a, *Emerging Local Securities and Derivatives Markets,* World Economic and Financial Surveys, (Washington: International Monetary Fund)

_____, 2004b, *Global Financial Stability Report*, World Economic and Financial Surveys, (Washington: International Monetary Fund).

_____, 2002, *Capital Account Liberalization and Financial Sector Stability*, By a Staff Team Led by Ishii, S. and K. Habermeier, Occasional Paper No. 211 (Washington: International Monetary Fund).

_____, 2001, *Modern Banking and OTC Derivatives Markets*, Occasional Paper No. 203 (Washington: International Monetary Fund).

IMF and World Bank, 2003. *Guidelines for Public Debt Management. Accompanying Document and Selected Case Studies* (Washington: International Monetary Fund).

_____, 2003, *Guidelines for Public Debt Management – Amended* (Washington: International Monetary Fund).

Karacadag, C., V. Sundararajan, and J. Elliott, 2003, "Managing Risks in Financial Market Development: The Role of Sequencing," IMF Working Paper, WP/03/116.

Laurens, B., (2004), *Implementation of Monetary Policy at Different Stages of Money Market Development*, (Washington: IMF).

Levine, R, 1997, "Financial Development and Economic Growth: Views and Agenda," *Journal of Economic Literature*, Vol. 35, pp. 688–726.

Magyar Nemzeti Bank, 2008, *Report on Financial Stability,* (Budapest: Magyar Nemzeti Bank)

Moody's Investor Services, 2002, "Malaysia's Debt Capital Markets Assume a New Importance," Special Comments, Global Credit Research, New York.

OECD, 1998, *Capital Market Development in Transition Economies, Country Experiences and Policies for the Future*, OECD Proceedings, Paris.

———, 2002, *Debt Management and Government Securities Markets in the 21st Century.* OECD, Paris.

———, 2002, *OECD Public Debt Markets, Trends and Recent Structural Changes,* OECD, Paris.

Price, R., 1997, "The Rationale and Design of Inflation-Indexed Bonds," IMF Working Paper, WP/97/12 (Washington: International Monetary Fund).

Sarr, A. and Lybek, T. 2002, "Measuring Liquidity in Financial Markets," IMF Working Paper, WP/02/232 (Washington: International Monetary Fund).

Schinasi, G.J. and Smith, R.T. 1998, "Fixed-Income Markets in the United States, Europe and Japan: Some Lessons for Emerging Markets," IMF Working Paper, WP/98/173 (Washington: International Monetary Fund).

Secretaria de Hacienda y Credit Publico, 2007, "The Development of Local Markets in Mexico", available at www.bundesbank.de/download/vfz/konferenzen/20070509_10_frankfurt/paper_huerta.pdf

Ugolini, P., 1996, *National Bank of Poland: The Road to Indirect Instruments,* Occasional Paper No. 144 (Washington: International Monetary Fund).

Vittas, D. , 1998, "Institutional Investors and Securities Markets: Which Comes First?," in *Banks and Capital Markets: Annual World Bank Conference on Development in Latin America and the Caribbean,* ed. by J. Burki and G. Perry, World Bank Policy Research Paper No. 1892, (Washington: World Bank).

_____2000, *Pension Reform and Capital Market Development: "Feasibility" and "Impact" Preconditions,* World Bank Development Research Group (Washington: World Bank).

World Bank, 2001, *Mexico – A Comprehensive Development Agenda for the New Era* (Washington: World Bank).

————, and IMF, 2001, *Developing Government Bond Markets: A Handbook* (Washington: World Bank)