

Developing Government Bond Markets

Jorge Castellanos

Washington, D.C.
March 1998 - No. IFM-111

Jorge Castellanos (former Superintendent of Banks, and Manager of the Public Debt for Colombia) is currently a member of the Emerging Markets Sovereign Advisory Group at J. P. Morgan in New York City. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author and should not be attributed in any manner to the IDB.

Contents

Executive Summary	i
Introduction	1
Government Bonds: Advantages and Linkages to Other Securities	3
Beneficiaries of Government Bond Markets	8
Some Practical Considerations for Developing Government Bond Markets	12
Conclusions and Recommendations	17
References	19

Executive Summary

This document reviews alternatives to promoting financial development in Latin America. Specifically, it concentrates on the role that government bonds can play in the development of capital markets.

The government bond sector forms the backbone of a modern securities market. It is the sector that contributes most to transforming savings into investment, disseminating information, managing risk, and supporting activity in other securities. Government bonds serve to implement the most important transfer of savings in an economy. The yield curve of government securities provides the paramount guide to the future behavior of inflation and interest rates. Moreover, it establishes the benchmark for the valuation of all other fixed-income securities. Government bonds mitigate domestic financial risks, allowing firms to concentrate on their advantages in production. Their superior liquidity and absence of credit risk makes government bonds an efficient proxy for trade in other securities. Superior liquidity and absence of credit risk. They are therefore excellent surrogate instruments to hedge, speculate, or arbitrage interest rates. This flexibility helps to increase liquidity in other securities. Government bonds also act as a catalyst that accelerates the development of new financial products and techniques. For these reasons, government bonds increase financial efficiency and thus the competitiveness of the economy.

The benefits of government bonds accrue to all economic agents, but especially to the government and the central bank. Public enterprises and local governments, financial institutions, businesses, and households also benefit from government securities. With these benefits come additional responsibilities. For example, if the government does not implement sustainable economic policies, bond markets will warn the public and help exercise control. Government bonds—and financial innovations in general—may in some instances reinforce the actions of the central bank, but they create a more challenging environment for the conduct of monetary policy.

The institutional changes that have taken place in the region over the last decade indicate that financial innovations in banking and securities may accelerate over the next few years. Governments can contribute to this process by modernizing financial regulations, and strengthening financial infrastructure. As this paper will show, government bonds provide a means for channeling government efforts in this respect. Indeed, that seems to be the course followed in industrial countries in recent years.

Introduction

During the last decade, many countries in Latin America and the Caribbean have opened up their economies to international competition, liberalized the financial sector, and reduced the role of the state in the economy. As part of the process, governments are gradually dismantling elaborate mechanisms to allocate credit to preferred sectors, selling state enterprises, and leaving the construction of new infrastructure projects to the private sector.

In domestic markets, newly independent or strengthened central banks focus now on controlling inflation, rather than on financing government deficits or development projects. Financial institutions have become more competitive. The changes introduced have also affected long-standing financing arrangements in the region. On the external finance front, sovereign and private sector bond issues in international capital markets have once again replaced international bank lending syndicates.

These shifts have made the deficiencies of financial markets more evident. Even major domestic banks lack the capacity to finance the large infrastructure projects needed. Financial institutions in the region are not well prepared or inclined to finance the small companies and new ventures needed to generate employment, expand exports, and fuel economic growth. Competition is still unsatisfactory in many financial sectors, and intermediation costs have not decreased as much as could be expected. The volatility of economic aggregates remains high, and adequate arrangements to mitigate these risks do not exist. The privatization and reorganization of financial

institutions has concentrated their ownership in the hands of major economic groups, a process that augments systemic financial risk and undermines popular support for the reforms.

Furthermore, the region has continued to depend on external sources of finance. The opening of trade in previously constrained economies has encouraged increased consumption, thus resulting in reduced savings in most countries. The aftermath of the Mexican crisis has shown that external finance may be scarce during relatively prolonged periods. In countries that have experienced temporary turbulence in economic aggregates, the specter of large capital flight reversing the inflows of recent years looms large.

This evolution of events has generated an increasing awareness of the importance of having complete and efficient domestic financial markets. Efficient financial markets could increase savings, reduce dependency on external funding, and increase access to financing and risk management services. In most of the region, however, financial sector policies are a simple exercise in consistency with the intermediate goals of macroeconomic programs. Governments have devoted little attention to creating an environment conducive to financial development.

The challenge for policy makers in the region is therefore, to foster a financial climate that allows innovation and growth in domestic financial markets. Only in this manner will regional economies attain the level of competitiveness that the current trend toward more open trade regimes requires.

The main objective of this document is to present the issues that impart an urgency to the advancement of capital markets in the region. It rests upon the premise that there is ample scope for changes in existing public policies to include actions to modernize financial infrastructure. The paper thus examines how the creation of a government bond market can expedite this process of financial modernization, and generate benefits for all participants that extend well beyond its advantages as the government's key funding tool.

The document analyzes the benefits of government bonds, and examines the impact that the

introduction of a government bond market would have on the different economic actions. The paper also presents a brief overview of the practical issues that policymakers are likely to encounter in their efforts to create a government bond. Finally the report addresses the broader issue of designing policies to advance financial development in the region, examining how government bonds contribute to the functioning of capital markets, and to economic activity in general. It emphasizes the importance of considering the interdependence that exists among different instruments in modern securities markets, in the design of financial policies.

Government Bonds: Advantages and Linkages to other Securities

There exist many different forms of government borrowing, and specifically, numerous types of government bonds. A detailed description of their and of their potential relevance for each country in the region is beyond the scope of this document. Nonetheless, to analyze the advantages and disadvantages of government bonds, it is necessary to maintain the discussion within the framework defined by a specific type of bond. The exposition that follows focuses therefore on the bonds that have become the workhorses of government financing in developed capital markets.

In their most general description, these are medium-and long-term bonds, issued by the central government, that pay fixed-rate coupons, and return the capital invested in a single amortization at the bond's final maturity. There is abundant evidence that these contracts provide an efficient funding vehicle, and establish a foundation for the rest of the fixed-income market. There are other funding instruments that may provide convenient solutions to specific problems, or that may constitute a necessary step in the evolution toward this form, but that do not offer as many benefits as the simple fixed-rate bond. The desirable characteristics of government bonds, and the rationale that underlies them will be explored in more detail below. The basic description offered here serves to keep the arguments at a more general level.

Government bonds are the most important instrument for savings transformation. They permit

a voluntary transfer of excess savings from the public to the government, and their subsequent repayment. In terms of the volume of resources involved, and its implications for public welfare, this exchange constitutes the most important financial transaction in an economy.

The prices revealed in a deep and liquid government bond market are arguably the best source of information on market expectations of future inflation and interest rates. Market participants use the yields of the most liquid government bonds at each maturity to derive interest rates specific to each future date covered by the government yield curve. These are the *zero coupon* or *spot* rates, which together form the *term structure of interest rates*.¹

To appreciate the value of such information and the mechanics of its dissemination, it is convenient to conceptually separate the yield offered by any fixed income instrument into three different components or premiums. These premiums constitute the reward that the lender obtains for the loss of purchasing power and the uncertainty associated with future prices (inflation premium), the willingness to wait for payment (term premium), and other risks specific to the financial instrument used (credit spreads). The latter arise from the borrower's credit quality or from the specifications of the contract used to effect the loan.

¹ Most of the books on fixed income securities offer an introduction to the theories of the term structure. See for example Fabozzi (1991).

Inflation and term premiums reflect two of the most fundamental parameters in an economy: the expectations of all economic agents about the future evolution of prices, and the value that society attaches to the transfer of monetary resources across time periods. These two premiums are common to all financial transactions of the same maturity. Credit spreads, by contrast, are specific to the issuer and the financial contract used to execute the loan. Knowledge of inflation and term premiums is important for all economic decisions that extend into the future. Unfortunately, the yields observed in financial markets provide a single measure, the sum of all three premiums, not the separate individual components.

Under certain conditions, an issuer of debt may be capable of almost eliminating the third component, credit spreads. If the issuer is of the strongest credit quality, the secondary market for the issuer's securities has enough liquidity, and the bond's contract conforms to certain standards, the premium specific to the issuer then becomes negligibly small.

Governments can meet these conditions better than any other issuer because they have the strongest credit standing in an economy. The magnitude of their funding needs makes them the most prolific issuers of long-term debt, a fact that translates into sizable outstanding volumes of standardized securities. This, in turn, attracts a large number of financial professionals willing to trade them at very small differences between their buy and sell prices, the definition of liquidity. In industrial economies, national debt offices usually reinforce these advantages by issuing bonds that have the format preferred by most investors. They also concentrate their funding on a few large volume issues, that become the *benchmark* or standard for all other fixed income securities of similar maturity. These features create unparalleled

liquidity in the secondary markets for government bonds.

As a result, fixed rate government bonds have come to enjoy an informational advantage over other fixed-income securities. Their prices do not carry the noise introduced by credit spreads, and thus reflect inflation expectations and term premiums more clearly than any other security. Moreover, under the plausible assumptions that term premiums are relatively small or remain constant, changes in inflation expectations translate into observable movements in the term structure of interest rates. In this manner, the subjective expectations of all market participants become measurable quantities.

When compared to other alternatives to finance the government, bonds *disseminate information more efficiently*. Government bonds are by nature the most public of debt contracts. In contrast to private arrangements to fund government—such as syndicated bank loans, or direct borrowings from the central bank or from large institutional investors—bonds generate information for third parties not directly involved in the transaction.

From the standpoint of financing its expenditures or manipulating public opinion, the government may prefer to maintain the confidentiality of its financial dealings. This is especially the case when the cost of financing reflects an appreciation of government policies by knowledgeable investors that may contradict the official rhetoric. Likewise, once the government's financiers have invested efforts and resources in assessing the financial value of its obligations, they may not be willing to share this information with the rest of the market, because it grants them a degree of monopoly power over their client.

The temptation to keep this information confidential arises naturally in a relationship guided by the sole purpose of financing public expenditures. It neglects, however, the value to all other economic agents of having the best possible forecast available about the future evolution of inflation and interest rates for their own economic decisions. To perceive the critical importance of the information provided by bond markets it is instructive to consider, hypothetically, the extreme case of an economy where all financing transactions are confidential, and their terms depend on the participating parties' individual assessments of future economic prospects. The resources devoted to producing such forecasts and the negotiations required to reach agreement on them would severely increase the cost of financing arrangements, thus impairing the economy's competitiveness.

Fixed-rate government bonds provide the most important *standard for valuation* of all financial contracts: the discount factors that account for the time value of money. The most basic discount factors are a combination of inflation and term premiums, without the disturbance introduced by credit spreads. The term structure of interest rates provides this fundamental collection of discount factors for most relevant maturities that serve to value each individual cash flow offered by other financial instruments.

Government bonds make financial markets more *complete*² because they create new financial products that improve financial efficiency and, hence the economy's productivity. By contrast, it would not be feasible or cost effective to

² In the sense of increasing the number of Arrow-Debreu primitive securities, and thus expanding the range of financial strategies available. See Chapter 5 in Huang and Litzenberger (1988).

combine private loan contracts with the ease and flexibility offered by government bonds. To further explain this assertion, it is convenient to resort to the traditional classification of financial transactions in three categories according to their motivation: arbitrage, speculation, and hedging.

The central insight of modern financial theory is the observation that the prices of different financial instruments obey certain underlying relationships. Sometimes these linkages may not be apparent, but they govern financial market prices. Whenever an instrument's market price departs from its theoretical value, it is possible to realize a sure profit by undertaking some trades in other related instruments. This possibility of arbitrage keeps the prices of different financial contracts in line with their theoretical values. Arbitrageurs exploit price misalignments until their actions restore equilibrium and arbitrage profits disappear. In the process they obtain substantial rewards that motivate them to perform this essential service for the operation of financial markets.

The existence of connections between the prices of different financial instruments also means that the payoffs of any instrument can be mimicked with trades in related instruments. Therefore, the financial outcome produced by some instruments can be replicated without having to use them. In other words, it is possible to take a speculative position using a related instrument as a proxy. Although at first this may appear a convoluted manner of attaining the desired result, it is often more effective because it can reduce transaction costs, control credit exposure, or sidestep regulations. An extension of this reasoning shows that the risk of price changes in any instrument can be offset by undertaking the opposite position in another instrument with similar price behavior. In this manner the original price risk created by most instruments can be hedged.

Government bonds are one of the *most versatile instruments* available to execute a wide range of financial strategies. Unsurprisingly, they are efficient surrogate instruments to arbitrage, speculate in, or hedge interest rates. Their absence of credit risk and their superior liquidity make them ideal proxies for other securities. Some strategies, that would be difficult or expensive to execute with original instruments, become feasible with government bonds. Moreover, government bonds make it possible to execute some trading strategies in ways that would not be possible if the government funded itself with private loans. The new products that arise from these combinations expand the financial opportunities open to all agents, and increase the efficiency of the economy. Moreover, these possibilities also add crucial depth and liquidity to government bond trading.

What is surprising, though, is that government bonds also *increase liquidity* in related market sectors, rather than draining it from them. This apparent paradox occurs because government bonds can initially serve to hedge the risk of securities that do not have liquid markets. This capacity to shape and control risk is of fundamental importance to potential users of any security. In particular, such flexibility is critical to *market makers* whose business is to permanently buy and sell financial instruments. When market makers offer products to their clients, they often become exposed to interest rate risk. Since government bonds make it possible to hedge this risk, the original instrument becomes more easily available, and its liquidity improves. At a certain point, the market for the instrument may become so liquid that hedging proxies may no longer be necessary.

An example helps to further illustrate this point. Banks and other financial intermediaries make

markets in financial products such as swaps. At the request of their clients, banks enter into interest rate swaps with them. From this moment on, changes in interest rates can inflict heavy losses on the market value of the swap. A temporary hedge with government bonds can protect market makers from this risk. Eventually, a new client who needs the opposite swap will come along, and the intermediary would then be able to substitute the temporary bond hedge with a new swap.

Some aspects of this process deserve attention. The bond hedge allows the bank to undertake the first swap and wait for the second one to materialize without being exposed to interest rate risk in the interim; or for that matter, to offer the first swap even if the opposite transaction never becomes available. In other words, intermediaries advance from the elementary stage of matching the opposite needs of their clients—brokering—to the more advanced stage of manufacturing new financial products—position taking. Entering into temporary hedges to be reversed later requires a liquid hedging instrument, one that carries low transaction costs. Otherwise, hedging expenditures would make swaps too expensive. Government bonds are flexible, easily available, and have low trading costs, hence their appeal for temporary hedges.

It is also important to point out that the existence of an initial hedge fosters the *evolution of financial technology*. In the capital markets of the industrial world, the initial existence of government bond hedges has made it possible to develop new hedging instruments such as futures and options on interest rates. Financial market participants can then use these new tools for other purposes. Likewise, new and more advanced hedging techniques such as swap portfolio hedging have replaced the dedicated cash flow matching

used in elementary bond hedges. These developments would not have been possible without the initial existence of a basic hedging instrument. This example illustrates the virtuous spiral generated by government bonds, and hence their ability to expedite innovation in financial products and techniques.

To summarize, the government bond market is probably the single sector that contributes most

to transforming savings, disseminating information, and managing risk. These bonds make it possible to execute a gamut of financial strategies that are fundamental to the operation of capital markets, chief among them the transfer of risk to those entities more capable of bearing it. The yield curve of government securities also provides information on the future evolution of interest rates and inflation that is fundamental for most economic transactions.

Beneficiaries of Government Bond Markets

In addition to these direct benefits, government bonds stimulate the advancement of capital markets and financial technology. Government bonds act as a catalyst that increases liquidity in the trading of other securities, and accelerates the evolution of new financial products and techniques. For these reasons, the creation of a government bond market ought to be the first stage of any financial development plan.

In the traditional view that prevails among policy makers in the region, government bonds are simply the basic funding mechanism that allows the government to distribute public expenditures across time. While this function is undoubtedly of critical importance, such a narrow view neglects the potential of these instruments to generate many positive externalities that benefit—directly or indirectly—all other agents in the economy. This section looks at how those benefits accrue to the different beneficiaries.

Government

The privileged beneficiaries of government bonds are central governments, who obtain an efficient tool to smooth the path of economic aggregates over time, fund their expenditures, and minimize the welfare cost of financing them. Government bonds also provide a key barometer of the markets' reaction to governments' actions, one that encourages them to pursue sustainable policies.

When short-term bills are the only available debt instrument and there is no recourse to printing

money, the government has to refinance its entire debt every year, and is thus bound by a single period budget constraint. In this situation, all exogenous shocks or cyclical oscillations in output translate into fluctuations in consumption or investment, i.e., these variables fully absorb output risk. The possibility of long-term borrowing allows the government to undertake countercyclical policies or other actions to attenuate the effects of temporary shocks. The result is smoother consumption and investment paths that increase the welfare of the economy. This possibility is particularly valuable in a region as volatile as Latin America.³

Another benefit of an active bond market is allowing the government to repay its debt in periods of relative abundance, thus reducing the welfare cost of debt financing.

For the government, the flexibility gained to finance expenditures comes at the price of increased accountability and fiscal discipline. For political reasons or more lofty goals, governments sometimes choose to follow profligate policies. In economies with limited financial choices and little information, they can carry on for extended periods, postponing the adjustment. At the extreme, irresponsible governments leave a crisis for future administrations to manage.

³ Hausmann and Gavin (1995) present evidence of high macroeconomic volatility in the region, and argue that deep financial markets would act as “shock absorbers.”

The bond market facilitates the exercise of public control over government policies. An efficient bond market makes it more difficult (although not impossible) to postpone the adjustment. It becomes a watchdog that has great monetary incentives to obtain and process information on government actions and their implications. Its responses are easily observable, and more reliable than any poll, because investors put their money at risk to back their beliefs. In sum, by disseminating information and increasing the cost of financing, the bond market makes it more difficult for governments to follow unsustainable policies.

However, the bond market itself does not provide a guarantee that the government will follow sound economic policies. It is often difficult to discern the underlying causes of changes in interest rates. More importantly, there is an unsettled debate over the complacency of bond markets with apparently flawed policies in some instances, and their extreme negative reaction in other seemingly less serious cases.⁴ For these reasons, bond markets are more the additional instrument that facilitates public control over the government, rather than the antidote against unsound policies.

Central Banks

The benefits that accrue to central banks rival those of central governments. The term structure of interest rates provides the paramount guide to the underlying structure of inflationary expectations. The shape of the yield curve is especially important in assessing the markets'

⁴ *The Economist* (1995) provides a clear and entertaining description of the influence of bond markets on government policies.

reaction to monetary policy, and hence a fundamental input in its design.⁵

There is a growing tendency in the region to implement monetary policy through open market operations. The regulation of liquidity takes place mostly with obligations of maturities under a year. Nonetheless, active markets for longer dated instruments also improve the liquidity of the short end of the government curve, and thus facilitate the conduct of monetary policy.

Bond markets make the central bank's conduct of monetary policy a more challenging affair. Bonds are part of the general process of financial deregulation and innovation that has made it harder to measure monetary aggregates, and has altered their relationships to other economic variables. Likewise, as banks increasingly provide a smaller proportion of total financing, the traditional channels for the transmission of monetary policy have lost some of their effectiveness. Conversely, increases in long-term bond rates brought about by bond markets can reinforce the effect of increases in short-term interest rates, and thus increase the efficacy of anti-inflationary policies.

Public enterprises and Local Governments

The existence of a deep market for central government securities facilitates the issuance of debt by other public institutions. Government interest rates establish a benchmark for the borrowings of all public institutions, facilitating the timing of their borrowings, and the management of their debts.

⁵ See Breedon (1993) for an illustration of how to extract inflation expectations from the term structure of interest rates.

The evolution of the cost of funds for these issuers can be expressed as a spread over government bond rates of the same maturity. This spread provides the market's opinion of the entity's credit quality, and thus an assessment of the soundness of its policies. This also helps to prevent public institutions from pursuing unsound policies.

In some countries, central governments borrow a volume superior to their own funding needs, and then lend the excess funds through a special facility to other public institutions. This arrangement has the advantage of producing the economies of scale associated with issuing a large volume of bonds, regulating the supply of securities according to demand conditions, and increasing their liquidity. It also gives central governments some leverage over the investment decisions of other public entities. Its chief disadvantages are the very distinct possibility of non-repayment, and the difficulty of enforcing loan contract terms on borrowers with enough political leverage.

Financial System

To financial institutions, the term structure provides essential information on interest rates. It offers the best estimate of their future behavior, the primary determinant of the demand for loanable funds. Moreover, the term structure allows financial institutions to evaluate the relative worth of financial contracts with very dissimilar cash flows. Moreover, the information embedded in the term structure of interest rates is precisely the most important element in the asset and liability management operations that intermediaries do for themselves or for their clients.

Government bonds also provide an efficient tool to execute many trading strategies. As discussed above, government bonds are an important surrogate instrument that allows the financial sector

to execute transactions that would be impossible or too expensive to carry out directly in other instruments. This includes hedging, speculative, and arbitrage transactions that span the spectrum of interest rate strategies.

In addition, the comparison of the market yields of individual issuers with government rates produces the credit spreads of those issuers. These provide the market's assessment of the credit quality of individual borrowers or economic sectors, information that is important for the operations of the banking sector.

Businesses

The term structure of interest rates provides the basic criterion to evaluate business investment. A firm considering an investment project has an approximate estimate of its absolute payoffs under different economic conditions. The crucial question then is whether such returns provide enough compensation to cover the cost of financing or the opportunity cost of the capital invested in the project. The term structure of interest rates sets the minimum standard for fixed rate financing that allows potential investors to judge the worth of the project.

In the absence of a long-term market of fixed-rate bonds from which to infer the term structure of interest rates, firms would have to forecast the future evolution of interest rates to determine whether project returns are acceptable. There is no reason for an otherwise efficient producer to have economic forecasting skills. For that matter, there is not much evidence that even professional forecasting firms are clearly superior at this task. The yield curve of government obligations provides an easily observable benchmark to evaluate investment projects, and obviates the need for forecasting.

The yield curve is also important when the investor chooses to finance the project with a variable rate loan. Fixed interest rates provide a reasonable, although imperfect, estimate of the likely cost of variable rate financing over the life of the project.

Households

Government bonds are an indispensable instrument to meet the investment needs of households. These bonds entail a minimum amount of credit risk, a source of uncertainty that households do not assess or diversify well due to their limitations.

Most households, when buying fixed-income instruments directly, lack the size needed to attain diversification. As a result, they do not receive adequate compensation for the risks incurred. The credit risk present in the obligations of most issuers consists of components related to the economy,

the sector where the issuer operates, and the characteristics of the specific borrower. It is usually possible to mitigate some of these risks in a sufficiently diversified portfolio. Market yields do not provide compensation for diversifiable risks.

In developed capital markets individual households can pool their investment funds in vehicles such as money market or mutual funds to obtain the desired diversification and economies of scale. That is not the case in small capital markets where the actual liquidity of these funds in the secondary markets, fees and transaction costs, or regulatory constraints make it very expensive for small investors to effectively obtain their benefits. Thus, government bonds better compensation for the risks assumed by small investors. As other agents, households also use the information embedded in the term to make their own economic decisions.

Some Practical Considerations for Developing Government Bond Markets

This section offers a basic guide for policymakers trying to create or advance a government bond market, based on recent experience in more developed capital markets. The exposition uses simplified arguments. Some recommendations may not be directly applicable in all countries in the region, or may require important qualifications.

Over the last decade, many industrial countries have seen the ratio of government debt to GDP increase markedly. In response, the governments of these nations have come to rely on issuing bonds to meet most of their financing needs. As a result, national debt offices have placed increasing attention to the promotion of their bond markets, undertaking reforms to improve their liquidity and transparency, and reduce the cost of government financing. Government bonds have converged toward a standard type of instrument that shares some common features across different economic and financial systems.

These measures include the adoption of auctions to sell the bonds, appointment of primary dealers, allowing position financing through repurchase agreements, concentration of issuance in a few *benchmark* bonds, predictable calendars of issues, clearing and settlement systems, futures contracts on government bonds, and elimination of withholding taxes on government debt.⁶

A *caveat* is necessary, however. All the financial technicalities of modern debt programs may give the impression that it is possible for every government to place long-term debt. It is worth keeping in mind that an investment in government securities is nothing more than a vote of confidence on the strength and consistency of the government's economic policies, and particularly, on the outlook for inflation. If the fundamental elements of economic policy are not correct, investors will not be persuaded to buy long-term securities.

Objectives

The first step in the creation of a government bond market is to define its objectives and establish priorities among them. The key objectives of government bond programs can be classified in three broad categories: funding official expenditures, developing local capital markets, and facilitating the conduct of monetary policy. In addition there may be a host of secondary goals that respond to economic realities, or to temporary needs.

For the purpose of evaluating the results of any program, it is important to assign specific responsibilities to the different state entities that participate in the bond program, all within the flexibility afforded by institutional arrangements in each country. The overriding mandate of the outfit charged with direct responsibility for the conduct of the program (the national debt office, the directorate of public credit, or a unit within

⁶ See Folkerts-Landau and Ito (1995).

the central bank) should be to minimize the long-term cost of funding. Having such a clearly spelled out purpose will facilitate the evaluation of its performance, and protect it from lobbying attempts or political manipulation.

A higher decision-making level, the minister of finance or other official, should temper the operational goal of cost minimization with considerations about the benefits that a well functioning capital market would create for the entire economy. It would be convenient to assign responsibility for generating recommendations to this effect to an institution such as the national securities board, or to an advisory panel that includes private sector representatives. This type of arrangement would make such recommendations more transparent, and help ensure that they respond to general concerns, rather than to narrow interests. Nonetheless, government should keep the standard of cost minimization to evaluate the program's results, and assess the cost of measures to develop capital markets.

Depending on the existing institutional arrangements for conducting monetary and fiscal policy, monetary policy considerations may influence government funding decisions. This is particularly the case when the central bank, for historical reasons or other considerations, plays one or several roles as the government's financier, underwriter, or fiscal and paying agent. The debt program should be independent of these considerations. The potential for confusion and institutional friction can be magnified when there does not exist an agreed upon macroeconomic program that balances fiscal and monetary policy goals, and establishes the rules for resolving conflicts.

There is a trend in the region toward granting independence to central banks, and making them responsible for the conduct of monetary and exchange rate policies. Central governments are concentrating on fiscal, trade, and financial policies. In this context, the depth and breadth of the bond market determine the degrees of freedom that the government has to optimize the allocation of expenditures. Moreover, this division of responsibilities makes it more clear that, from the perspective of the national debt office, the goal of debt management should be the minimization of long-term interest costs.

Marketing Strategy

A long-term marketing strategy should guide the funding program. As a first step, the national debt office should identify the core group of investors that offer the best prospect of being a long-term source of demand for bonds. Institutional investors such as mutual and pension funds, insurers, and other long-term investors are the most likely candidates. The debt office should identify the needs of these investors, and design the features of government bonds to increase their appeal to them.

In addition, other sources of demand of a more transitory nature are also important, as they are likely to trade the bonds more actively and thus provide liquidity in the secondary market. Short-term investors, money market funds, speculators, and other transient investors are likely to integrate this segment of demand. The debt office should explicitly consider and court foreign demand. It provides a diversified source of demand that helps to stabilize market conditions when the domestic market is depressed. One of the interesting

developments in government funding over the last few years has been the increasing internationalization of government bond holders in the most developed capital markets of the world. The proportion of domestic bonds held by these investors has increased substantially in the last few years.⁷

Government should exploit its advantage as the premier quality issuer to establish its bonds as the fixed-income benchmark. To achieve this goal, the debt office should seek to offer a differentiated product with a secondary market as liquid as possible. A basic bond with fairly standard characteristics usually accounts for most of the government's issuance, and secondary market activity in both developed and developing capital markets.

The Basic Instruments

The basic instruments are usually local currency bonds that extend to the longest maturities accepted by the local market, pay fixed rate coupons, and return the principal in a single installment at the bond's final maturity.

Bonds denominated in other currencies do not generate the information about inflation and interest rates that constitutes one of the crucial benefits of government bond markets. Coupons tied to variable interest rates provide forecasts of inflation that extend only over the short period to the next interest reset date. In addition, variable rate bonds

make it more difficult for the government to capitalize on its credit quality to differentiate its issues from other alternatives such as local financial institutions' debt. Likewise, bonds with amortizing obligations lack the appeal of simplicity, and are the refuge of weaker credit quality issuers.

Some experts have proposed that governments issue inflation indexed bonds, that would be attractive to investors who cannot effectively predict or hedge against inflation. Savers could then protect themselves more effectively from inflation than with the means available today (stocks, real estate, commodities) that expose them to other risks. These bonds pay in arrears a fixed real interest rate plus a variable payment to compensate for realized inflation in the interest period. Real interest rates can then become directly observable. The economic arguments in favor of indexed bonds are persuasive, and several countries have issued or are planning to issue them.

Inflation indexed bonds complement the information provided by fixed-rate bonds. Indexed bonds provide the exact value of real interest rates. Therefore, the difference between nominal and real yields is the premium that covers inflation expectations and the uncertainty related to them. Changes in inflation expectations can then be derived more precisely from shifts in the term structure. Note, however, that the real interest rate paid by indexed bonds themselves does not provide information about inflation expectations. Moreover, indexed bonds are not a surrogate for other securities linked to nominal interest rates. As explained above, this fact is largely responsible for the trading appeal of government bonds. It is perhaps for these reasons that indexed bonds have failed to produce liquid markets in the countries that have issued them.

⁷ In 1992, foreigners held 40% of government bonds in France and Sweden. This proportion ranged between close to 20% and 30% in the U.S., Canada, and Germany. The increase was particularly marked in France where in 1980 foreign investors were a negligible proportion. See Montgomery (1994).

Government bonds come in registered form, rather than as bearer documents. This feature makes them safer to trade, and facilitates the imposition of taxes and money laundering controls. A prerequisite for having registered bonds is the existence of a secure and efficient settlement system that permits book-entry registration. The government or central bank can develop these systems to increase the marketability of their financial obligations, or the private sector can create a system for settling all types of financial contracts.

By contrast, governments of industrial countries have tended to eliminate withholding taxes on government debt. These levies have a markedly negative effect on trading, and have not proven to be very efficient in terms of their yield to the tax collector. In effect, to the extent that it is almost impossible to prevent some institutions from enjoying an exemption from this charge, withholding taxes almost invariably serve only to generate an economic rent for these favored institutions. In practice, investors avoid withholding taxes by having the favored institution hold the bonds for the short period when the tax is due to be collected, a procedure called “coupon washing.” As long as the cost of this transaction is substantially lower than the tax charge, it will be widely used.

In recent years, governments have come to rely on auctions to place their bonds, rather than on syndicated issues. There are many ways of conducting such auctions, but the most common are the bid or uniform price mechanisms.⁸ In the former procedure, every bidder obtains the

⁸ For an introduction to Treasury auctions, see Chapter 3 in Sundaresan (1996).

requested amount of bonds at the price offered, as long as this price is above a minimum established by the auctioneer to determine the total amount of bonds placed. In the latter, the auctioneer fills all offers that exceed the established minimum, but charges the minimum price accepted, and not the actual price offered by the bidder. There is evidence that in a bid price auction the threat of the “winner’s curse” (aggressive bids that end up paying much more than the rest of the market) leads bidders to shade their offers. For this reason, under certain conditions, a uniform price auction can stimulate more aggressive offers, and thus produce higher revenue for the government. Two of the largest markets the United States and Britain, are moving from bid pricing to uniform pricing.⁹

Auction mechanisms have resulted in increased predictability and transparency of the government’s issuance methods. It is now common for governments to announce funding requirements in advance, providing information on total volume of bonds to be issued, number of auctions, maturity ranges, and some indication of the volume to be placed in each auction. In incipient bond markets, however, governments must strive to provide clear indications to potential buyers, but stop short of stipulating in advance most of their actions. In the imperfect capital markets that exist in the region, such level of disclosure would create strong incentives for collusion or other forms of market manipulation.¹⁰

⁹ Since 1992 the U.S. Treasury has used uniform pricing for its two-year and five-year notes.

¹⁰ Not even the deepest markets are safe from these maneuvers. See *The Wall Street Journal* (1991) for a description of a recent “short squeeze” in the U.S. Treasury market.

Additional Features

Governments have also taken a number of additional measures to improve the liquidity of their bonds in secondary markets. In the largest markets,¹¹ governments have appointed a group of institutions as *primary dealers* with the responsibility for making active markets in government bonds in all conditions. In exchange for this obligation, primary dealers receive special privileges that vary from country to country. Moreover, in fully developed markets, *inter dealer* brokers have appeared to protect the confidentiality of transactions and specialize on processing demand and supply information. Governments also improve the liquidity of their bonds in the secondary market by concentrating their issuance of debt in a few benchmark bonds that attract most of the attention of securities traders.

Another major development in government securities has been the adoption of position financing. Holders of government securities can pledge them as collateral for loans. In practice, this transaction takes the form of a short-term sale of the security together with the commitment to buy it back at a price established in advance, a trade known as repurchase operation, or *repo* for short. Securities dealers use them extensively to finance their own positions, or to obtain a

spread acting as intermediaries between customers with opposite needs. They also use repos to speculate on interest rates by mismatching the maturities of trades undertaken with their customers.

Many institutional investors use repos to obtain temporary liquidity, or to derive trading profits. Repos allow highly leveraged positions and facilitate short sales, both of which have been historically associated with market turbulence and crises. For these reasons, authorities have regarded them with mistrust and limited their application. Nonetheless, financial markets have come to reevaluate such perceptions and to appreciate the value of the liquidity that it generates in the securities used as collateral.

More recently, governments have allowed buyers of their securities to *strip* them, that is to create individual securities with the individual cash flows that make up a government bond. The new securities are zero coupon bonds, that serve to execute more precise asset and liability management strategies than would be possible with standard bonds. In addition, the prices of these securities estimate more precisely the intermediate points of the yield curve where bond maturities may not exist, or the existing bonds may not have enough liquidity.

¹¹ For example, France, Italy, the United Kingdom, and the United States have such arrangements.

Conclusions and Recommendations

This document started from the premise that the future development prospects of the region's economies depend on uninterrupted access to financing and to the tools needed to manage financial risk by local producers. Domestic financial systems have the potential to meet these needs, and should be allowed and helped to fulfill them.

There are a number of indications that the region may be on the verge of experiencing major changes in financial technology and customs. In the traditional financial systems that prevail in most Latin American and Caribbean countries, financial intermediaries such as banks have had an advantage in evaluating prospective borrowers' credit quality, monitoring their loan portfolios, and renegotiating loans when they experienced difficulties. With their markets closed to competition, financial intermediaries could afford to remain complacent for many years. Financial liberalization, and the privatization of state-owned financial institutions are rapidly changing the manner in which banking is conducted in the region.

The experience in industrial economies over the last two decades also points to the potential of securities markets to advance financial technology and improve the efficiency of savings transformation. In this respect, there have been some encouraging developments in the region's capital markets, and the possibilities of further advancement are promising. The appearance of new methods to screen and monitor debt

issuers signals a shift in comparative advantage from financial intermediaries to capital markets. Special regulations that reduce the cost of providing information for sophisticated buyers of securities reinforce this advantage.

Better disclosure rules have improved the quality of available information. In some countries, credit rating agencies now grade the safety of financial obligations. Issuers have turned to credit enhancement mechanisms, such as securitization, to improve the quality of their paper. New types of securities have stimulated the evolution of the legal framework and ancillary services for capital market transactions. For example, credit enhanced issues depend on structuring counterguarantees such as fiduciary trusts or special purpose vehicles. These techniques, once perfected, have been put to creative uses that benefit all financial activities.

Institutional investors, the foundation of long-term demand for securities, have grown more numerous and sophisticated in the region. Several countries have reformed their social security regimes. Fully funded pension funds, private and public, have replaced pay-as-you-go systems, and form the core of a growing class of investors with an appetite for long-term debt. When considered together, these developments indicate that over the next few years, financial activity in the region may experience the most profound change in decades. Capital markets, and government bonds in particular, have a crucial role to play in this process.

These conclusions have major implications for the design of national financial policies. As the first step, governments should modernize financial regulations. For equity and efficiency reasons governments have a clear responsibility to enact regulations that encourage competition, improve disclosure, and protect borrowers and savers. In other words, governments should promote a level playing field for all participants. In this manner, the comparative advantages of different financial institutions can guide them toward specialization in market niches. This would foster financial development and bring about the desired expansion in financial services.

Once governments attain a neutral regulatory framework, they should strengthen the infrastructure of domestic financial markets. It is relatively easy to find conceptual support for eliminating regulatory distortions. The more challenging question, though, is whether efforts to promote financial markets should go beyond this first stage and include adjustments to other government policies to accommodate financial development goals. In particular, the challenge is to establish priorities for government actions in support of those elements of financial infrastructure that determine the efficiency of savings transformation.

There is one area where governments' fiscal interests coincide with the broader objective of promoting financial systems; namely, long-term government bond markets. These bonds not only allow governments to optimize their expenditures across time, but also generate positive externalities that bolster financial markets for the benefit of all economic agents. In particular, the dissemination

of information that government bond markets facilitate is central to the operation of the economy.

To reduce the cost of financing their expenditures, governments should exploit their tactical advantages as issuers. Because of their credit quality and volume of financing needs, governments are the leading candidates to establish the standard for valuation of all other fixed-income instruments. This advantage translates into savings in the cost of financing that governments should not neglect. In addition, the experience of being an extensive user of capital markets imparts knowledge that helps to design and implement better financial policies.

Financing government expenditures with long-term bonds is consistent with current trends in economic policy toward smaller, more efficient, and accountable government programs. There does not exist a theoretically ideal design for government borrowing programs, but the most advanced capital markets have been converging toward a common standard. This proven format emphasizes long-term cost minimization as the foremost objective, a quantifiable guideline that facilitates government accountability. These programs also encourage competition among distribution agents, and rely on auctions to place the bonds. The provision of private sector services under highly competitive conditions keeps overall costs and official bureaucracies to a minimum.

In summary, government bonds have unparalleled capacity to generate benefits for all economic agents, and to accelerate the development of financial markets. For these reasons, they should receive the highest priority in national financial policies.

References

- Breedon, F. (1995) Bond Prices and Market Expectations of Inflation, *Bank of England Quarterly Bulletin* 35, 160-166.
- Fabozzi, F. (1991) *The Handbook of Fixed Income Securities*, Homewood, Illinois: Business One Irwin.
- Folkerts-Landau, D. and T. Ito (1994) *International Capital Markets: Developments, Prospects, and Policy Issues*, Washington, D.C.: International Monetary Fund.
- Giles, M. (1996) "A Survey of International Banking," *The Economist*, (April 27), 1-37.
- Huang, C. and R.H. Litzenberger (1988) *Foundations for Financial Economics*, Englewood Cliffs, New Jersey: Prentice-Hall.
- Hausmann R. and M. Gavin (1995) Securing Stability and Growth in a Shock-Prone Region: the Policy Challenge for Latin America, in R Hausmann and H. Reisen (eds.) *Securing Stability and Growth in Latin America: Policy Issues and Prospects for Shock Prone Economies*, Paris: OECD.
- Montgomery, J. (1994) The Changing Nature of Government Debt Markets, *Finance and Development* (December), 40-41.
- Sundaresan, S. (1996) *Fixed Income Markets and their Derivatives*, Cincinnati, Ohio: South-Western College Publishing.
- Mitchell, C. (1991) Precise Role of Salomon Brothers in May Sale Probed, *Wall Street Journal*, (August 19).
- Woodall, P. (1995) Who's in the Driver's Seat?: A Survey of International Bond Markets, *The Economist*, (October 7), 1-37.