

# IMF Working Paper

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## Managing Risks in Financial Market Development: The Role of Sequencing

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## **IMF Working Paper**

Monetary and Financial Systems Department

### **Managing Risks in Financial Market Development: The Role of Sequencing<sup>1</sup>**

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#### **Abstract**

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

This paper proposes an integrated and risk-based approach to the sequencing and coordination of reforms to develop domestic financial markets. The paper argues that there is a hierarchy of financial markets that reflects the complexity of risks in each market and the interlinkages among markets. On the basis of this hierarchy, a sequencing of market development and risk-mitigation measures is proposed to minimize both macroeconomic and financial risks. Capital account opening can complement (but not substitute for) domestic institutional and market reforms to support the growth of local financial markets. The paper also argues that domestic institutional investors are critical to market development and risk mitigation.

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## I. INTRODUCTION

Domestic financial markets are a critical pillar of a market-based economy. They can mobilize and intermediate savings, allocate risk, absorb external financial shocks, and foster good governance through market-based incentives. As such, they contribute to more stable investment financing, higher economic growth, lower macroeconomic volatility, and greater financial stability. The development of local financial markets also reduces the risks associated with excessive reliance on foreign capital, including currency and maturity mismatches (Prasad and others, 2003).<sup>3</sup> A key but heretofore largely unanswered question is that of the optimal path and sequencing of reforms to develop domestic financial markets, and how these reforms should be coordinated with capital account liberalization. While there is a rich literature on capital account issues, an attempt has not been made to provide an overarching framework for financial liberalization, with domestic financial market development at its epicenter.

Strategies to develop local financial markets must revolve around mitigating risks injected in the financial system as markets develop and become more sophisticated. The liberalization of financial transactions and capital flows aimed at deepening capital markets invariably increases risks that often result in financial distress and crisis. Domestic and external financial reforms thus need to be sequenced in a manner that ensures that the central bank and financial institutions (as well as the infrastructure that supports them) develop the capacity to manage the risks associated with a wider range of permissible financial transactions, investible instruments, and loanable funds. The goal of orderly sequencing is to safeguard monetary and financial stability during financial liberalization and market development.

Against this background, this paper presents five theses.

*First*, capital market development-cum-financial stability hinges on establishing the institutional infrastructure for controlling both macroeconomic and financial risks. Macroeconomic risk management requires effective instruments and institutions for monetary and exchange policy implementation, including well-functioning money, exchange, and government debt markets (Ishii and Habermeier, 2002; and Ingves, 2002). Financial risk management depends on high standards in corporate governance, accounting and disclosure, and prudential regulation and supervision. These institutional reforms are critical to fostering an environment in which capital markets can grow without undermining financial stability.

*Second*, financial liberalization and market development should revolve around the hierarchy and complementarity of markets and related institutional structures. Markets are hierarchically

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<sup>3</sup> Prasad and others (2003) note that developing economies have taken measures to “self-insure” against volatile capital flows and asset prices by improving sovereign external asset-liability management, modifying exchange rate regimes, strengthening banking soundness and the prudential framework, and developing local financial markets.

ordered starting with money markets, followed by foreign exchange, treasury bill and bond markets, and, ultimately, markets for corporate bonds and equity, and asset-backed securities and derivatives. The hierarchy reflects the degree and complexity of risks created by each market. The hierarchy also incorporates the interaction among markets that links the depth of one market to the depth of other markets.

*Third*, capital market development requires a careful sequencing of measures to mitigate risks in parallel with reforms to develop markets. Risks evolve into more complex forms and grow in magnitude as markets develop, especially as new instruments and institutions emerge. These risks cannot be effectively managed in the absence of well-functioning markets at earlier stages in the hierarchy. Thus, a critical mass of reforms encompassing both market development and risk mitigation at every stage of the market hierarchy is necessary to avoid increases in financial system fragility and macroeconomic vulnerability.

*Fourth*, institutional development is a critical component of building capital markets and financial-risk-management capacity. Financial institutions—both bank and nonbank—are the key counterparties in financial markets. They often create and transmit risks. As such, establishing good governance structures, including effective internal controls and risk-management systems, in financial institutions is among the most critical of market reforms.

*Fifth*, capital account liberalization can play an important role in deepening domestic financial markets. However, foreign capital complements, but cannot substitute for, a domestic investor base, which is critical to developing resilient local capital markets. Before capital from abroad can play a constructive role, critical mass must be reached in terms of the depth of domestic markets, the diversity of local investors, the effective oversight and governance of market institutions, and the length and distribution of instrument maturities.

Admittedly, there are trade-offs between having good domestic institutions in place before undertaking capital market liberalization, on the one hand, and opening the capital account to import best practices to strengthen domestic institutions, on the other hand (Prasad and others, 2003). Thus, ultimately, there is no single optimal speed and order of measures to promote local financial markets and their integration with global markets. The pace and sequencing need to be decided in the context of country-specific circumstances and institutional characteristics. This paper highlights some of the best practices and considerations on sequencing of institutional and operational reforms based on cross-country experience.

The remainder of the paper is organized as follows: Section II identifies the key institutional reforms needed to develop financial markets. Section III outlines the specific structural and operational steps to build different segments of financial markets, guided by the hierarchy and interdependence of markets. Section IV focuses on specific additional risks that need to be monitored and controlled when individual markets develop. Section V combines the analysis of market development and risk mitigation into a set of general principles of sequencing financial market development and capital account liberalization.

## **II. INSTITUTIONAL REFORMS FOR CAPITAL MARKET DEVELOPMENT**

The financial crises of the 1990s underscored the critical importance of institutional factors in determining countries' vulnerability to economic distress and crisis. Structural weaknesses—including those in prudential supervision, banking soundness, judicial enforcement, and accounting and disclosure—and market failures are among the key sources of financial instability (Box 1).<sup>4</sup> Structural weaknesses also relate to deficiencies in the institutional infrastructure for macroeconomic management and control, and in the functioning and integrity of financial markets.

A separate strand of literature on capital account liberalization also finds that its intended benefits—in terms of financial market development and economic growth—are realized in proportion to a country's level of institutional development.<sup>5</sup> The rule of law, shareholder protection, adequate prudential regulation and supervision, and financial transparency are significant determinants of whether capital account openness benefits or harms. The development and liberalization of financial institutions themselves can lead to the loss of macroeconomic control due to excessive credit expansion and large fiscal deficits (e.g., through the realization of contingent liabilities), underscoring the importance of those aspects of institutional reforms that reinforce fiscal and monetary control.

## **III. THE HIERARCHY OF MARKETS AND FINANCIAL MARKET DEVELOPMENT**

Financial markets are hierarchically ordered (Figure 1). The money market precedes all others, given its central role in price discovery, and in interest rate setting and transmission. The foreign exchange market's early place in the hierarchy stems from its unique role as the “entry” or “intermediate” market through which nonresidents must pass to enter all other local financial markets.<sup>6</sup> The money market is also critical to developing the market for government debt securities, first at the short end and then at the long end, given that the market for longer-term securities carries more complex risks than short-term paper and depends upon money markets to support the liquidity needs of market makers. A well-developed government bond market, in turn, is a necessary condition for developing markets in corporate debt and asset-backed securities. Finally, the derivatives market requires liquid and efficient markets in underlying fixed income or equity markets.

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<sup>4</sup> See Ishii and Habermeier (2002).

<sup>5</sup> See Arteta and others (2001), Chin and Ito (2002), and Edwards (2001). Also see papers cited in Prasad and others (2003), which provide evidence for the view that “countries need to build a certain amount of absorptive capacity in order to effectively take advantage of financial globalization” (p. 51).

<sup>6</sup> Foreign exchange market activity, more than other financial markets, is also a function of current and capital account regulations, which determine the permissible transactions and uses of foreign exchange.

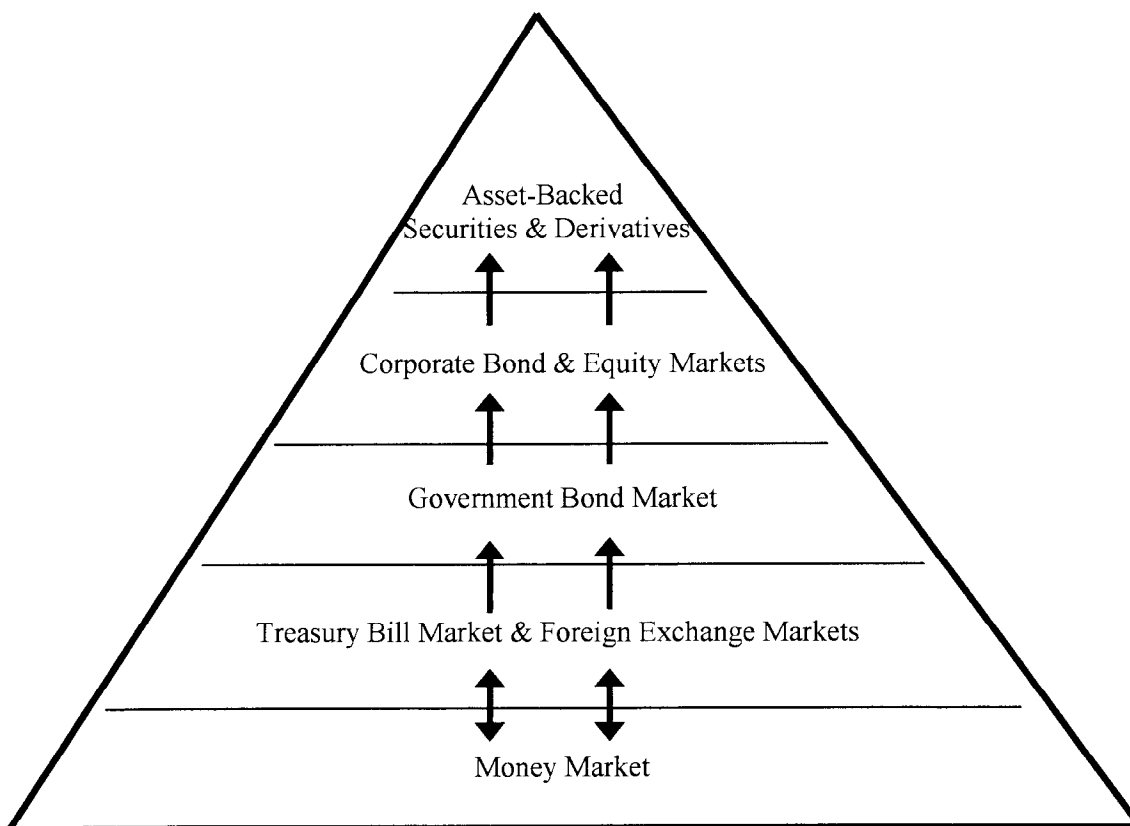
Box 1. Lessons from Recent Financial Crises

Some of the lessons learned from recent financial crises underscore the importance of:

- *Developing the instruments and markets for monetary control and sound public finances.* Shortcomings in monetary policy instruments and financial markets—including money, foreign exchange, and government securities markets—can impede monetary control by the central bank, price discovery and risk management by financial and nonfinancial firms, and lead to excessive government borrowing from the central bank.
- *Effective prudential regulation, supervision, and enforcement.* In particular, prudential regulation and supervision need to be strengthened in line with the growing complexity of financial markets and risks, and the diversity of financial institutions and products. Moreover, the supervisory framework and enforcement mechanisms are a critical source of external discipline on banks and essential to developing a credit and risk culture in the financial system.
- *Financial market infrastructure.* Adequate and well-enforced contracts, insolvency procedures, governance structures, and accounting and disclosure standards are necessary to the functioning of financial markets and building confidence in their integrity.
- *Monetary and financial policy transparency, clearly defined institutional responsibilities, and central bank autonomy.* Both the supervisory agency and central bank need the strength and independence to pursue their objectives of financial sector soundness and price stability rigorously and consistently. In this context, the specific rules and lines of accountability for central bank lending need to be established to avoid the loss of monetary control as occurred in some countries during the Asian crisis.
- *Robust payment settlement arrangements.* The absence of reliable and safe payment settlement arrangements can weaken monetary control and exacerbate systemic risks. Such arrangements are critical for ensuring liquidity and the smooth functioning of markets.
- *Reliable and timely information on the financial and nonfinancial sectors.* Central banks, supervisory agencies, and finance ministries rely on financial information to evaluate and monitor financial sector soundness. Similarly, banks and investors rely on financial information to assess and monitor the creditworthiness of counterparties, borrowers, and issuers of shares. Absent high accounting standards and good financial information, neither macroeconomic control nor financial market development can be achieved or sustained.



Figure 1. The Hierarchical Order of Domestic Financial Markets



Financial markets, particularly money and government bond markets, are also highly interdependent. A liquid money market, for example, helps the operation of the foreign exchange market and effective implementation of monetary policy; and the latter two have a strong bearing on the efficiency and depth of the money market itself. At the same time, a liquid money market depends on adequate depth in the government securities market and vice versa. Depth in one market cannot be achieved without depth in the other.

Policies to develop financial markets thus should be sequenced in a manner that observes these hierarchies and interdependencies and takes into account three additional key factors. First, measures that have long gestation periods, such as the development of a domestic investor base, restructuring of weak financial institutions, and building a robust financial infrastructure (including legal, accounting, and insolvency framework) need to be initiated early on. Bond and equity market development, in particular, depends on the presence of a domestic investor base. Second, the framework for prudential supervision and market conduct need to evolve in line with the pace and pattern of market development. Third, the overall strategy for capital market development must also take into account the size and wealth constraints of a country.

## **A. Money Market Development**

The money market is the foundation of all financial and capital markets. It is the medium through which the central bank injects and withdraws liquidity and steers short-term interest rates. It is also the medium through which financial institutions manage their liquidity by lending to and borrowing from one another. As such, it is critical to price discovery in a free interest rate environment and to the transmission of monetary policies through the credit channel. Countries that embark upon interest rate liberalization often start with freeing money market rates, followed by lending and deposit rates.

The central bank plays a key role in money market development (Mehran and Laurens, 1997). Early on in the process, the central bank should begin developing new monetary instruments (such as treasury bills, central bank bills, and central bank auctions), reforming the system of reserve requirements, and designing the terms and conditions of access to standing facilities (Bisat and others, 1999). Central bank policies and standing facilities should be designed and conducted in a manner that creates incentives for market participants to trade money among themselves before trading with the central bank. The central bank must also ensure that there is a two-way market in bank reserves and short-term funds by avoiding protracted periods of excess reserves and by alleviating systemic liquidity shortages. Similarly, it should avoid simply reacting to the initiative of financial institutions, but instead anticipate surpluses and deficits in the market and provide liquidity at its own initiative, leaving market participants to trade among themselves during normal times. To manage systemic liquidity effectively, the central bank must have the technical capacity to forecast liquidity and possess the instruments to inject and withdraw funds from the market.

Money market development depends on the soundness of financial institutions. In the absence of creditworthy counterparties, market participants would be reluctant to deal in the interbank market, but instead would transact solely with the central bank. Market participants, therefore, should be able to assess one another's creditworthiness on the basis of timely disclosure of reliable financial information, underpinned by high quality accounting standards and widespread use of external audits. In order to enhance liquidity, participation in the market can be broadened to include sound nonbank financial institutions.

Repurchase agreements (repos) are an essential instrument for money market development.<sup>7</sup> For central banks, repos are a key tool for indirect monetary control and daily liquidity management, especially before an active secondary market for government securities develops (Green, 1997). Whereas "outright" purchases and sales of securities by the central bank requires a secondary market in (government) securities, repos allow the central bank to adjust its balance sheet and

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<sup>7</sup> A repo is a collateralized loan that is effected through the sale and subsequent repurchase of a security at a specified date and price. It is a combination of an immediate sale of a security for cash with an agreement to reverse the transaction at a specified future date, typically from overnight to two weeks.

systemic liquidity without a secondary market. Repos also offer flexibility in terms of the duration and timing of central liquidity management operations, because they can be effected with little notice, for very short periods of time, and without the need to create treasury bills in shorter maturities than already issued. Reducing the issuance of new treasury bills in different maturities can help deepen secondary markets in existing securities.

Repos are particularly important in money market development, where counterparty credit risks are high. As collateralized instruments, repos facilitate interbank lending by minimizing the credit risk exposure of each counterparty, which reduces the dispersion of interbank lending rates and the segmentation of the interbank market.<sup>8</sup> If the cash borrower fails to repay its loan, the lending institution is already in possession of the collateral underlying the repo operation. Without secured lending, the interbank market would be adversely affected by bank-by-bank exposure limits. Repos also have the important advantage of facilitating the acquisition of credit and interest risk management skills by banks without exposing them to large (principal) losses. From the central bank's perspective, repos have the advantage of enabling liquidity management operations without triggering unwanted volatility in bond prices and the yield curve that outright operations are likely to cause (Mohanty, 2002).

Prudential supervision and payment settlement system regulations play important roles in developing the money market by guarding against risky market practices and fraud. For example, participants in the repo market should meet predetermined criteria such as minimum capital requirements, and the capacity to observe market practices and manage market risks. Moreover, regulations, particularly related to the book-entry system for "repoed" securities, should ensure that repo transactions are recorded and conducted in a supervised and transparent manner, and the ownership of the related securities are effectively transferred. The design and oversight of the payments system, particularly for settling money market and other large value transactions, can help contain systemic risks and foster market liquidity.<sup>9</sup>

An active money market is a prerequisite for the development of markets in foreign exchange and in government securities (IMF and World Bank, 2001a). The money market not only supports the bond market by increasing the liquidity of securities, but it also makes it cheaper and less risky for financial institutions to warehouse government securities for sale to investors and to fund trading portfolios of government securities. When the money market is illiquid and interest rates are volatile, investors in bonds face greater liquidity risks that limit their ability to

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<sup>8</sup> Repos may be based on any security, though in practice, most repos involve government securities. While the absence of a secondary market in government securities is not an impediment to using repos, this would impact the liquidation value of the underlying collateral, and may result in the application of a larger discount to the collateral by the lender.

<sup>9</sup> International standards for the functioning and risk management of systemically important payment systems have been developed by the Committee on Payment Settlement Systems (BIS Committee on Payment Settlement Systems, 2001)

invest in long-term assets (Mohanty, 2002). At the same time, however, money markets are interdependent with securities markets. Deeper money markets can be facilitated by the availability of a wide range of high-grade securities, which can serve as collateral in interbank lending and are easy to liquidate in the event of counterparty defaults.

### **B. Foreign Exchange Market Development<sup>10</sup>**

The foreign exchange market is similar to the money market, but differs in that each transaction involves the simultaneous exchange of local and foreign currency. The market consists of a wholesale interbank market, where authorized dealers (usually banks and other financial institutions) trade among themselves and a retail market where authorized dealers transact with final customers (usually households and firms). The interbank market, in particular, is where price discovery occurs through a decentralized allocation of foreign exchange by market participants on their own behalf as well as on behalf of their customers.

The efficiency and depth of the foreign exchange market hinges on several factors, including the degree of competition, the removal of impediments to price discovery, and the dissemination of information in the market. The introduction and development of a foreign exchange market requires that foreign exchange be freely available for various external transactions, and as such, have often moved in tandem with progress towards currency convertibility. At a minimum, exchange controls and regulations affecting foreign exchange dealings should be modified to ensure market-based allocation and pricing of foreign exchange. Structural features of foreign exchange markets, including market microstructure and prudential supervision, also affect the depth and volatility of these markets (Ishii and others, 2003).

As with money markets, the central bank plays an important role in the development of the foreign exchange market. This includes implementing transparent criteria for licensing dealers, delegating exchange control authority to authorized dealers, improving information technology to facilitate interbank dealings, abolishing taxes and surcharges on transactions and strengthening payments and clearing systems. In the early stages of development, the central bank could encourage banks to become market makers by limiting its trades to banks that provide firm two-way quotations for a set minimum amount. The requirement to provide two-way quotations may be imposed as part of the licensing process. Moreover, the central bank should not undercut the market-making function of authorized dealers by actively quoting buying and selling exchange rates when it enters the market.<sup>11</sup> Instead, the central bank should be a price taker. It should also buy and sell foreign exchange directly from the market, rather than acquiring it through surrender requirements or selling it directly to nonbank retail customers. More generally, the

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<sup>10</sup> This section draws from Kovanen (1996).

<sup>11</sup> The central bank may enter the market for a variety of reasons, which include buying and selling foreign exchange on behalf of the government, reducing exchange rate volatility, correcting exchange rate misalignments, and accumulating reserves.

central bank should shift its focus from directly controlling foreign exchange flows toward general oversight and supervision of the market.

Like all other financial markets, the soundness of market participants and the integrity of the payments and settlement systems are key to the development of the foreign exchange market. In many emerging markets, however, significant obstacles remain, including instability in foreign exchange flows, lack of confidence, inefficiencies in the payments systems, and lack of adequate communication technology and computer systems. These obstacles can prevent the emergence of continuous two-way quotations in the market. Market participants thus should be able to evaluate their counterparties' creditworthiness on the basis of reliable and timely information. Similarly, settlement risks should be minimized by improving domestic payments and clearing systems, where local currency—and sometimes foreign currency—transactions are settled.<sup>12</sup>

The dissemination of information is essential for the efficient pricing of foreign exchange. Information systems and trading platforms should enable the provision of real-time bid and offer quotations in the interbank market. The retail market should also be well organized to ensure buying and selling rates are set freely. Building the confidence of retail market customers is particularly important, because the retail market is the medium through which foreign currency inflows and outflows are channeled to the interbank market.

### **C. Government Bond Market Development**

The government bond market is the central pillar of domestic capital markets. It provides a market-determined term structure of interest rates that reflects the opportunity cost of money at each maturity (Herring and Chatusripitak, 2000). The term structure of interest rates, in turn, is an essential prerequisite for the development of derivatives markets that enable market participants to manage financial risks. Markets in financial forwards, futures, swaps, and options all depend on the bond market for pricing and for hedging positions. Interest rates along the yield curve also serve as the key link between spot and futures prices in futures and forward markets.

Fostering government debt markets also enhances the conduct of monetary policy operations by the central bank and liquidity management by financial institutions. Central banks increasingly manage liquidity through open market operations, which involve the outright sale and purchase of securities or through the use of repos, where high-grade debt securities serve as collateral. Trends in long-term bond yields, moreover, provide valuable information to the authorities on market expectations and on confidence in macroeconomic policies (Turner, 2002). Deep debt markets also facilitate liquidity management by financial institutions, which can more easily

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<sup>12</sup> Normally, only the local currency leg of foreign exchange transactions are settled in the domestic payments and settlements system, while the foreign currency leg is settled in the home country of the foreign currency through correspondent accounts. However, a growing number of central banks in developing countries serve as the settlement agent for foreign exchange, without taking on the risk of either counterparty.

convert their liquid assets into cash, when needed, in the presence of active secondary markets. Without liquid debt markets, banks may not be able to realize the liquidity of their liquid assets, especially in times of systemic distress.

More generally, the government bond market creates a wide array of positive externalities. An active market in government securities and a benchmark yield curve enables the introduction and development of new financial products, including repos, money market instruments, asset-backed securities, and derivatives, which can improve risk management and financial stability. Government bond yields and yield differentials also provide critical pricing information to the economy at large (Herring and Chatusripitak, 2000). Although equity market development is not strictly dependent on the bond market, in the absence of the latter, market participants will lack a benchmark discount rate needed to discount projected earnings to value listed company stocks. Moreover, the differential between risky and “risk-free” bonds reflects the market’s view on the risk premium, which can be used to price comparable bank loans.

Establishing a liquid government bond market hinges on several factors (APEC, 1999, and IMF and World Bank, 2001a). The government must be committed to financing its borrowing requirements at market-based prices, permanently moving away from the use of funding at below market rates from captive investor sources. Without credibility in the government’s financial policies, investors will be reluctant to invest and trade in government securities. Moreover, the government’s ability to borrow from the domestic bond market should be legally well defined and sufficiently broad to achieve a range of objectives. In the same vein, the contractual relationships between the government and underwriters or winning bidders and between primary and secondary market participants should also be well defined. The essential elements of market infrastructure, including securities settlement and registration, the use of market intermediaries, and the organization of trading in the secondary market, moreover, must be put in place (Ladekarl, 2002).

Bond design features and regulatory incentives also matter. The design of government securities should be standardized and their issuance concentrated in a limited number of popular, benchmark maturities.<sup>13</sup> Issuance on a regular basis at benchmark maturities can help create a benchmark yield curve, spur greater investor demand, enhance market liquidity, and lower issuance costs. Design should also take into account investor preferences in maturity, coupon and tax status (Schinasi and Smith, 1998). Governments can enhance market activity by removing legal and regulatory impediments to competition, rationalizing tax distortions on bond investments and trading, and encouraging transparency and disclosure to protect investors’ interests. Given the sensitivity of debt markets to disincentives, capital income taxation should treat incomes of all types of investments and savings, including bank deposits, equity, bonds, and other debt instruments, equitably. To the extent that bonds are disadvantaged in terms of tax treatment, they are less likely to become attractive investment and trading instruments.

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<sup>13</sup> Typical benchmark maturities are 10, 5, and 2-3 years, and in some countries, 30 years.

Measures to develop the government bond market should place first priority on developing an effective primary market in short-term maturities (IMF and World Bank, 2001a). Initiatives to deepen the money market, particularly through repos, can reinforce demand for and liquidity in the short end of the market. At the early stage of market development, the infrastructure for trading and settlement should be simple, secure, and capable of handling a sufficient volume of daily transactions. Priority should be accorded to building a safe spot trading system, leaving the infrastructure for more advanced transactions (e.g., swaps, futures, and options) for later. This can be achieved through a simple book-entry system for wholesale market participants.

Consideration should also be given to the use of primary dealers, which can help build a stable, dependable source of demand for securities. As a small group of committed players responsible for buying and distributing government securities, primary dealers can greatly facilitate trading, especially in countries where the technological infrastructure is weak and where investors are only accessible through intermediaries. In most of the countries in which they are used, primary dealers are required to actively participate in the primary market by fulfilling a minimum bidding commitment, underwriting issues, and in the secondary market, by providing two-way quotes (Mohanty, 2002). Primary dealers also build distribution channels, acting as intermediaries, and provide market information, including prices, volumes, and spreads (Arnone and Iden, 2002). In return, they are granted certain privileges for their market-making role, including exclusive or restricted access to auctions, access to non-competitive bidding, and liquidity support from the central bank. The use of primary dealers, however, may reduce market competition and pose the risk of collusion, particularly in countries with small markets which can be squeezed and cornered. Nevertheless, bond market turnover increased significantly in several countries after the introduction of primary dealers, suggesting that their benefits may outweigh their costs, at least until critical mass is reached in terms of the number of financial institutions with market-making capabilities (Turner, 2002).<sup>14</sup>

Policymakers should carefully consider other aspects of market structure and their impact on development, including the choice of trading system. For example, in more nascent markets limited participation can be effectively aggregated in a periodic market whereas in deeper markets and markets with wide-spread use of hedging strategies, a continuous market will be required. In countries where dealers are few in number and thinly capitalized, an auction market may be more successful. In countries where the market is dominated by large institutional investors, however, a dealer market (which provides immediacy and low-cost transactions) would be more appropriate (Dattels, 1997).

Once the market for short-term securities takes hold, efforts should focus on developing the market for long-term government securities. Making the transition from short-term to long-term instruments may not be easy, particularly for countries with a history of lax fiscal policies and high inflation. This may require intermediate steps, such as issuing floating rate debt or issuing

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<sup>14</sup> See Arnone and Iden (2002) for a more detailed discussion of the rationale, objectives, and operational issues related to the establishment of a primary dealer system.

debt indexed to inflation, the dollar, or short-term interest rates, a practice widely adopted by Latin American countries, including Chile, Brazil, and Mexico. A key goal at this stage is to achieve sufficient depth in benchmark maturities across the yield curve in order to create a term structure for “risk-free” interest rates as a basis for developing auxiliary markets in derivatives for hedging purposes.

Developing a liquid market in long-term government bonds, however, requires active participation by intermediaries and an efficient market infrastructure, including well designed securities settlement arrangements. Market intermediaries, including securities houses, investment banks, brokers, and commercial banks, should operate on a competitive and efficient basis, with adequate capital and risk-management practices (Ladekarl, 2002). As the principal underwriters and investors in bonds, and suppliers of credit to securities houses, banks are a particularly important market intermediary. Thus, a strong banking system can play a key role in deepening the government securities market (IMF, 2003). Common problems encountered with intermediaries, including the lack of competition, conflicts of interest, insufficient capital, and the scarcity of human capital, can be addressed by strict entry policies (i.e., fit-and-proper tests) and by permitting foreign entities to offer brokerage services.

#### **D. Corporate Bond and Equity Market Development**

Corporate bond and equity markets provide additional channels for the intermediation of savings and the transfer and diversification of risk. Diversifying the sources of investment financing and spreading risks more evenly, in turn, reduce firms’ exposure to financial system stress, thus bolstering an economy’s ability to withstand shocks (Stone, 2000). As Greenspan (1999) notes, in contrast to East Asia, which “had no spare tires,” nonbank financing cushioned the impact of the slowdown in bank lending precipitated by the collapse of collateral values in Sweden and the U.S. in the late 1980s and early 1990s. Greenspan also acknowledges that building a financial infrastructure is a “laborious process,” involving accounting standards that accurately portray firms’ finances, legal systems that protect property rights and enforce contracts, and effective insolvency regimes.

Developing bond and equity markets also avoids concentrating financial intermediation in banks (Turner, 2002). Banks typically lend for periods much shorter than the maturity of long-term bonds, which may bias firms’ investments toward short-term assets. As a result, firms may not adequately invest in long-term projects in infrastructure, utilities, and other capital-intensive industries. An overreliance on banks to provide investment financing also leaves the economy vulnerable to credit crunches that typically follow financial sector distress and crisis. The absence of bond markets in Asia, for example, deepened the recessions in crisis countries.<sup>15</sup>

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<sup>15</sup> A survey on Asian countries revealed that the main impediments to the development of domestic markets included the lack of reliable benchmark yield curves, a weak local institutional investor base, insufficient market liquidity, a lack of credible risk assessment, and underdeveloped securities trading, clearing and settlement systems (APEC, 1999).



To maximize their contribution to intermediation and risk-sharing, it is critical that corporate bond and equity markets develop in a balanced manner. Strong growth in corporate debt securities without matching equity market financing can otherwise lead to excessive leverage in nonfinancial firms and increase firms vulnerability to shocks. Equity markets facilitate the financing of high-risk and high-return projects, and help contain overall financial system risks.

The development of a corporate bond market builds on the presence of a strong government bond market and on the infrastructure created to support government securities. However, the involvement of private corporate issuers in the market introduces a wide array of new challenges. Market efficiency and integrity hinge critically on transparency in financial information and in market prices. Authorities responsible for regulating the market should ensure accurate and timely disclosure of financial information for investors to properly assess issuer creditworthiness, value debt securities, and make informed investment decisions. Similarly, pricing information should be widely available. A transparent market in which pre-trade and post-trade information is disseminated to traders and investors lowers spreads, improves efficiency, and attracts more participants by increasing their confidence in the pricing process (Mohanty, 2002). Moreover, market rules should deter, and provide effective recourse for investors against, misrepresentation and fraud.

Establishing a corporate equity market, particularly in emerging economies, is equally challenging. In many markets, it is difficult to find a sufficient number of companies that are large enough to warrant public status. As a result, only a few large stocks are traded on stock exchanges. The evolution of equity markets generally has followed the pattern of slow graduation from privately held status—that is companies owned by small groups, often family groups—to more widely held private corporations (with a few shareholders), then to widely held public companies with a broad base of shareholders.

The lack of “free float” capacity—companies that are unwilling to offer a significant portion of ownership to the public—impedes the development of quality public issuers. Until existing owners are willing to cede a meaningful level of corporate control, investors will be reluctant to invest. While public companies have access to a greater pool of capital because ownership shares are available to the public, they are faced with the risks and costs of public ownership, including greater accounting and legal and reporting costs and less flexibility in decision-making. In many transition economies, authorities have attempted to develop equity markets by privatization of state assets, with mixed success. In Hungary, for example, privatization of assets contributed to a relatively robust equity market. In Romania, privatization initially resulted in a very large number of companies being traded on a stock exchange, but without an adequate regulatory system, many of these companies became insolvent, and without a delisting process, the exchange suffered from a serious lack of credibility.

Equity markets require strong regulatory frameworks and supportive legal infrastructure—equity instruments are private property instruments, which require robust and efficient mechanisms to enforce legal ownership rights and facilitate ownership transfer. If shares are not fully transferable and questions of ownership arise, there will be a negative impact on liquidity and

companies' ability to raise financing. Further, if a court system is not sufficiently sophisticated in dealing with complex commercial claims or imposes delays in resolving disputes, property rights can be effectively impeded and this will deter investment.

The regulatory structure must adequately address corporate governance and disclosure, especially financial disclosure. The attractiveness of a market to investors is dependent on the quality of price discovery in the market—price discovery, in turn, depends on adequate information. As in bond markets, the accounting standards that underpin financial disclosure are crucial to building this credibility. The impact of improved corporate governance and disclosure standards can be illustrated by those large companies in emerging market countries that have achieved listings on the New York or London exchanges where these standards are thought to be very high. Companies such as Infosys in India or Gazprom in Russia, then have access to very liquid markets and cheaper financing.

The imposition of increased corporate governance, disclosure and accounting standards can be costly to corporations. A balance must be struck between the benefits of standards that establish credibility in the market and the cost of compliance with standards that may cause corporations to avoid the markets. In many countries, this challenge is addressed with lesser standards for small and medium companies than for large public issuers—often the over-the-counter market has fewer requirements than a listed market.

The protection of minority shareholders is a major issue in market development. Many of the minority shareholders' concerns relate to the quality of financial disclosure and corporate governance. The protection of minority shareholders also requires addressing the regulation of take-over bids and related party transactions, level of free float of ownership in the market, distribution of voting rights, and access to judicial arbitration of shareholder disputes. Because the introduction of minority shareholder protection is a challenge to the rights of existing shareholders, such rules can be difficult to introduce as has been the case in Chile and Brazil, for example, where the attempt to reform minority shareholder rights became a protracted battle.

The design of market infrastructure is a key consideration in developing markets. The design of trading systems must be carefully considered in the local context—appropriate designs can vary between continuous and periodic markets, auction and dealer markets, electronic and physical trading. In Poland, for example, where there was limited liquidity, the small stock market chose a periodic auction market rather than a continuous auction market as a means of bringing together all trades at one time—deepening the market for a short period rather than stretching liquidity through a day. This proved an effective way to enhance liquidity. The use of market makers in the trading system can also be used to improve liquidity because these traders take on obligations to meet orders up to certain prices and volumes. Because a market maker takes on risk in doing so, there must be a number of well-capitalized market intermediaries available in order to foster the development of market makers. Fragmentation of trading of the same security across more than one market can also impact liquidity—the market may be too small to support trading in more than one venue. A country can address this by supporting centralized trading or centralized information systems.

Equity markets have traditionally developed through stock exchange mechanisms; stock markets bring together investors temporally and therefore aggregate liquidity. The traditional stock exchange provided an auction market for market intermediaries who were usually also owners of the system. The globalization of investment has challenged the traditional model and many exchanges are faced with lowering liquidity and falling revenues, because trade volumes are mobile and consequently may centralize in major exchanges with deeper liquidity. Many exchanges cannot compete with international listings or alternative sources of liquidity. Policy makers today have some nontraditional options to consider in developing trading systems for publicly traded securities. Many emerging market countries have been reluctant to allow alternative trading systems because of concerns over further fragmenting liquidity and regulatory burdens. It is important, however, that market design be addressed in a way that does not protect trading systems from competition at the expense of the market as a whole.. Shielding local exchanges from both internal and external competition may stifle growth and innovation in the markets. The recent trend toward demutualization of exchanges may foster more competition in trading and listing services, but it also introduces its own governance challenges.

The design of clearing and settlement systems for securities is a crucial factor in market development: the system must be both safe and efficient. Inefficient clearing and settlement will impede development by driving up the cost of investment, and tying up capital in the settlement process. Unsafe systems will expose participants to settlement risk, one of the most important risks in the equity markets—the risk of loss can be enormous, especially in the case of derivatives where losses can be exponential. The design and risk management of clearing and settlement system recently has been the focus of standard setters. In 2001, the Basel Committee on Payment and Settlement Systems and the International Organization of Securities Commissions published a set of recommendations setting the international standard for clearing and settlement systems (the CPSS/IOSCO Recommendations on Securities Settlement Systems). These standards will enhance understanding of the role of regulators and markets in managing the risks of securities settlement.

### **E. Derivatives Market Development**

The development of derivatives markets is more difficult to discuss in broad terms and does not fit precisely into a hierarchy of market development. Derivatives markets range from interbank financial derivatives traded over the counter to commodity and financial derivatives traded on exchanges. Derivatives and their underlying markets are interdependent—derivatives require the existence of a liquid market in underlying products but they also enhance the liquidity and price discovery in those underlying markets (Schinasi and Smith, 1998). Certain derivatives markets, including interest rate swaps, foreign exchange swaps, and forward contracts, are critical to facilitate risk management for financial institutions, and hence foster liquidity and price discovery in markets for the underlying securities. At the same time, derivatives themselves raise other forms of risk. Managing the risks associated with derivatives requires additional infrastructure (for example, in the case of clearing systems for exchange-traded derivatives) and additional ability to understand more complex risks (for example, in the case of accounting for derivatives on bank balance sheets). We do not address these issues in detail but we raise

derivatives as a dimension of market development that must be considered in conjunction with the development of fixed income and equity markets.

### **F. Institutional Investors and Development**

Perhaps the most important dimension of domestic capital market development is the need to develop a diversified institutional investor base in the economy. Institutional investors—mutual and investment funds and other contractual savings institutions, such as pension funds and insurance companies—play a critical role in financial market development in a variety of ways (Impavido and others, 2003). First, they provide an institutional framework for long-term capital accumulation and act as a stable source of demand for long-term debt securities and equity investments. In an empirical analysis of the impact of contractual savings institutions on securities markets, Impavido and others (1993) find that an increase in the assets of contractual savings institutions relative to domestic financial assets has a positive effect on the depth of stock and bond markets.<sup>16</sup>

Second, institutional investors and contractual savings institutions compete with investment banks, contribute to more efficient primary markets, and enhance financial innovation and modernization of trading systems. For example, in highly developed capital markets such as in the U.S., they supported the development of asset-backed securities, structured finance, and derivatives products, the launching of index-tracking funds, and the proliferation of synthetic products designed to protect investors against market volatility (Vittas, 1999). Similarly, institutional investors exert pressure for efficient trading, clearing and settlement facilities. In several countries, they have promoted the use of block trading, the abolition of minimum commissions, and the automation of trading facilities.

Third, institutional investors enhance market discipline and corporate governance by promoting transparency and shareholder rights. As institutional investors become dominant shareholders of nonfinancial corporations, they collectively have the power to help strengthen governance structures and increase the accountability of top managers. In India, for example, which has a number of large institutional investors, there is a relatively active equity market. By contrast, Russia, which does not have the same strength and variety of institutional investors, has a small capital market and is often criticized for its corporate governance standards.

Fourth, the development of institutional investors and contractual savings institutions creates the need and strong incentives for the establishment of a robust regulatory and supervisory framework to minimize systemic risks.

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<sup>16</sup> For example, in Chile, private pension funds and insurance companies have been a crucial source of demand for corporate debt and stocks (Cifuentes and others, 2002). Following Chile's lead, many Latin American and more recently Central European countries have established private pension funds, which are contributing to local capital market development (IMF, 2003).

Notwithstanding the positive externalities associated with the development of a domestic institutional investor base, several obstacles stand in their way. Pension funds still face competition from pay-as-you-go systems, while both pension funds and insurance companies are subject to strict licensing requirements, or in some cases, excessive portfolio investment restrictions (Mihaljek and others, 2002). To the detriment of the growth and diversification of institutional investors, regulators in several countries have followed a rules-based approach to regulating investors, placing quantitative limits on their investments, and thus limiting their investment options and creating a bias toward investing in domestic or government debt. In particular, requiring institutional investors to hold a high share of their assets in government bonds undermines the integrity of the price discovery mechanism in the market and the credibility of the government's financial soundness and issuance strategy (Turner, 2002). Public pension funds, moreover, often come under political pressure to invest in certain types of assets, which compromise the rate of return earned for the pension holders.

For institutional investors to enhance market discipline and corporate governance in the economy, however, they themselves must be well run. This, in turn, rests on the degree of reputational risks faced by institutional investors themselves, rather than any particular type of governance structure (Buxton and Giles, 2002). Buxton and Giles argue that the key sources of discipline on institutional investors include competition, disclosure, and the ability of investors to exit funds; so long as these elements are in place, institutional investors will face real reputational risks and be held accountable for their investment decisions and risk management practices.

### **G. Promoting Sound Financial Institutions**

The development of active money and debt markets requires sound banking institutions, which can compete effectively in deposits and loan markets through adjustments in interest rates and efficient pricing of risk. In addition to their role in money markets, banks are key players in other financial markets, and their ability to cope with volatility in these markets can be crucial for both market development and sound banking.

The development of a sound banking system and robust supervisory framework thus should be phased in to support financial liberalization (Sundararajan, 1999). Where systemic weaknesses exist, the authorities must cleanse banks of significant stocks of nonperforming loans, close, restructure, or recapitalize them, and enhance the governance of financial and nonfinancial firms in order to develop financial markets. Sound financial institutions contribute to financial market development through their roles as market intermediaries, providers of back-up lines of credit, and holders and managers of a portfolio of traded securities. Inefficiencies in banking, reflected in part in the high cost of bank loans, for example, have spurred the development of debt and equity markets in some countries, but the market depth achieved under such circumstances is neither healthy nor sustainable.

#### **IV. RISKS IN FINANCIAL MARKET DEVELOPMENT AND RISK-MITIGATION POLICIES**

To reap the benefits of financial market development and maintain financial sector stability, the risks introduced by each market need to be effectively managed before other markets are developed and more risks are injected into the financial system (Figure 2). Market development strategy thus must accord high priority to mitigating the risks introduced by increasingly more sophisticated financial markets and the risks to macroeconomic control from institutional reforms. For example, central banking and money market reforms, including interest rate liberalization, can lead to the release of excess reserves and strong capital inflows, which can stimulate credit expansion, undermine monetary control, and lower banks' asset quality. Similarly, increased price volatility in equity and real estate markets, particularly in the context of capital account opening, can complicate monetary policymaking as well as the soundness of institutions. Thus, in the absence of regulatory and institutional capacities to measure, monitor, contain, and manage financial risks, they can accumulate over time and undermine the policy consensus and commitment to liberalize further.

Financial market development and capital account opening also create common exposures to macroeconomic risk factors such as increased volatility of asset prices, capital flows, and macroeconomic conditions, both locally and in global markets. The impact on financial system soundness could itself feedback into macroeconomic outcomes. Macroprudential surveillance monitors these linkages through an analysis of aggregate information on financial soundness of banks and nonbanks, and through stress testing of individual institutions' resilience to certain plausible, but exceptional, common shocks. Such top-down and bottom-up surveillance of vulnerabilities to macroeconomic risk factors are increasingly being recognized as a critical complement to prudential supervision of individual institutions, particularly in a globalized environment (Borio, 2003).

##### **A. Money Market Risks**

Money markets most prominently introduce additional dimensions of credit and liquidity risks into the financial system (Table 1). Lenders are exposed to the risk of nonrepayment by borrowers in the interbank market. Where interbank loans are securitized, the lender may realize losses from failing to seize posted collateral quickly and at low cost in weak institutional and legal environments. Moreover, even when collateral is seized, the lender may still suffer a loss from potential illiquidity in the market in which collateral is sold. By contrast, borrowers become susceptible to liquidity risks, where short-dated interbank loans may not be rolled over. Thus, the use of interbank loans to fund long-term assets leads to maturity mismatches, repricing gaps, and exposure to withdrawals of credit lines which, in turn, can precipitate failure or large losses on creditor and borrowing banks.

Figure 2. Financial Markets and Risks

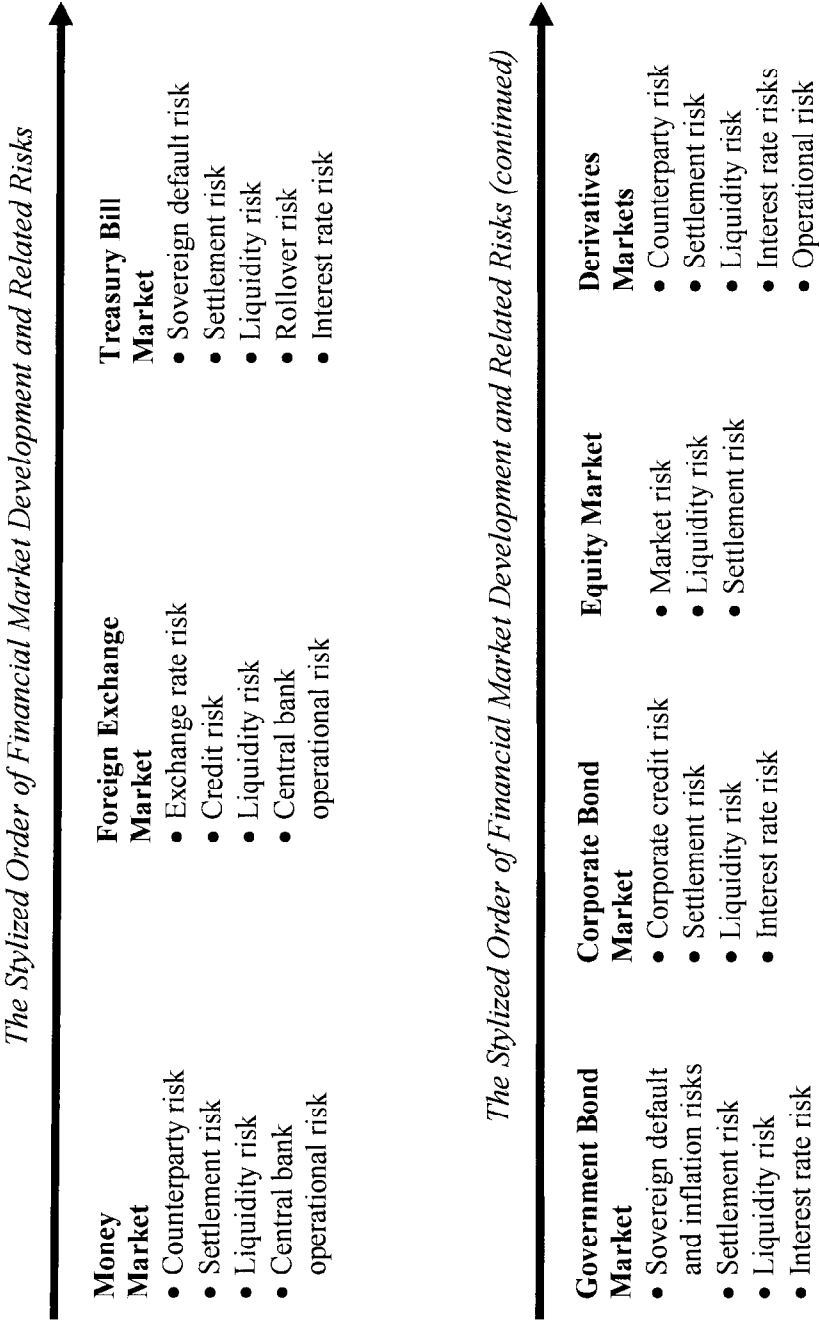


Table 1. Money Market Risks and Countermeasures

Source and Type of Risks	Measures and Instruments
Credit risk	<ul style="list-style-type: none"><li>• Detailed financial information disclosure on asset quality, capital adequacy, and liquidity position.</li><li>• Enhance credit risk analysis, and lend against high quality, liquid collateral.</li><li>• Strengthen framework for repurchase agreements and collateral seizure.</li></ul>
Liquidity risk	<ul style="list-style-type: none"><li>• Contain maturity mismatches and maintain a minimum level of liquid assets.</li><li>• Negotiate back-up credit lines in the event of market distress.</li><li>• Strengthen liquidity management skills and techniques.</li></ul>
Central bank operating risks	<ul style="list-style-type: none"><li>• Strengthen central bank operating procedures to manage market liquidity</li><li>• Reinforce risk controls and loss sharing arrangements in the payment settlement system.</li></ul>

Payment settlement arrangements and the central bank's liquidity management procedures also affect the depth and functioning of money markets. As the monetary authority and lender of last resort, the central bank manages systemic liquidity through the money market and itself faces credit risks through its regular and emergency lending facilities. The central bank's capacity to anticipate and offset shifts in interbank market liquidity is a crucial determinant of money market depth and banks' ability to manage their own liquidity. The parameters of risk control in the payment system (e.g., loss-sharing arrangements, size of collateral pool, bilateral exposure limits, and terms of access to the central bank credit to facilitate settlements) also affect market liquidity. Payment system design thus can amplify risks to financial stability and contagion in times of distress, if interbank exposures are not adequately controlled. This could lead to a loss of monetary control, depending upon the extent of access to central bank credit.

Risks in the money market and payment systems ultimately emanate from the soundness of market participants and their ability to monitor and evaluate their counterparties. Accurate and timely information disclosure by banks on their financial condition is thus essential. Equally important is the capacity of market participants to assess credit risks, avoid interbank loan concentration, and minimize maturity mismatches. Ensuring high standards in information disclosure and credit risk analysis, in turn, rests on a strong regulatory and supervisory framework and enforcement mechanisms for sound banking and payment systems. Various prudential and banking measures that should be taken against money market risks are summarized in Table 1.

## **B. Foreign Exchange Market Risks**

The development of the foreign exchange market introduces further risks in the financial system, mostly revolving around exchange rate risk, and to a lesser extent, credit and liquidity risks (Table 2). In particular, exchange rate risks can be enormous. As market makers, borrowers, and lenders in foreign exchange, financial institutions create net open



positions in foreign exchange both on- and off-balance sheet, which give rise to the risk of loss from adverse exchange rate movements. Exchange rate risk also heightens banks' credit risk exposure to foreign currency loans extended to unhedged borrowers. The foreign exchange market per se mainly involves settlement risks, which are increasingly being contained by the move towards real time settlement in many countries.

Table 2. Foreign Exchange Market Risks and Countermeasures

Source and Type of Risks	Measures and Instruments
Exchange rate risk	<ul style="list-style-type: none"> <li>• Establish internal limits and monitoring mechanisms for foreign exchange exposure, including off-balance sheet items.</li> <li>• Establish net open position limits.<sup>1/</sup></li> <li>• Set capital requirements against exchange rate risk.</li> <li>• Develop instruments for hedging exchange rate risk.</li> </ul>
Credit risk	<ul style="list-style-type: none"> <li>• Conduct detailed credit analysis on borrowers, with a special focus on foreign currency earning and exchange rate risk hedging capacities.</li> <li>• Apply high underwriting standards to foreign currency borrowers.</li> </ul>
Liquidity risk	<ul style="list-style-type: none"> <li>• Promote liquid market for foreign exchange transactions by fostering efficient and transparent trading and market conduct arrangements.</li> <li>• Establish limits against foreign currency maturity mismatches.</li> </ul>
Central bank operational risk	<ul style="list-style-type: none"> <li>• Establish transparent objectives for central bank intervention and specific criteria for its timing, amount, and operational modalities.</li> <li>• Avoid providing exchange rate guarantees.</li> <li>• Ensure that monetary and foreign exchange intervention policies and exchange system arrangements adequately support the exchange rate regime.</li> </ul>

<sup>1/</sup> See Abrams and Beato (1998) for various approaches to measuring net open positions and the types of internal and prudential limits that may be placed on them.

The potential magnitude of foreign exchange market risks is closely related to the openness of the capital account. An open capital account allows for the flow of capital through which foreign currency exposures are built. Thus, the benefits from the free flow of capital from abroad must be weighed against the capacity of the financial system to effectively manage foreign exchange market risks and withstand volatility in foreign currency flows.

Foreign exchange markets also involve operational risks for the central bank, particularly when capital market transactions are being liberalized. Central bank interventions, particularly in the forward market, can result in large reserve losses if the intended reversal in market expectations does not materialize and local currency selling pressure continues through the maturity of forward contracts. More generally, like any financial institution, the central bank faces operational risks stemming from potential misconduct or excessive risk-taking by traders, and the potential for misjudging the nature of financial shocks, the sources

of exchange rate volatility, and prospects for correcting exchange rate misalignments and reducing volatility. These, in turn, can result in the loss of foreign exchange reserves, impairing market confidence.

### **C. Debt Market Risks**

Debt securities markets introduce a whole new array of risks into the system, most prominently involving credit and market risks. While government debt securities pose minimal credit risk in normal times, investors in long term government bonds are exposed to the risk of high inflation and macroeconomic instability during times of economic crisis and distress, which can erode the value of the bonds, even if they are repaid in full and on time. In addition, sovereign credit risk could arise when debt is denominated in foreign currency and the macroeconomic policy mix leads to unsustainable debt dynamics. Corporate debt securities involve credit risks similar to those related to bank loans, but with one important caveat: Whereas bank loans tend to be concentrated in a small number of lending institutions, investors in corporate debt securities may be diverse, creating collective action problems during times of distress.

The single most important market risk involving debt securities is interest rate risk. Banks in particular are exposed to repricing risk—arising from timing differences in the maturity and repricing of banks' assets and liabilities—and yield curve risk, which arise from changes in the slope and shape of the yield curve (Sundararajan and others, 2002). This highlights the importance for the supervisory authorities to enhance monitoring and reporting requirements on the maturity structure of interest-sensitive assets and liabilities by asset class and currency and for financial institutions to actively manage maturity mismatches and conduct sensitivity analyses of balance sheets to changes in interest rates. In times of systemic distress or crisis, interest rate risks can quickly escalate, transform into substantial credit risks, and trigger large-scale defaults.

Governments are the largest issuers in the debt market in most countries and face a number of risks, including market, rollover, and liquidity risks (IMF and World Bank, 2001b) (Table 3). As the most important and most creditworthy issuer in the market, governments must manage their debt prudently to minimize their exposure to market volatility and potential shocks and to build investor confidence in the market. Market risks stem from potential changes in interest rates, which affect the cost of debt-servicing and new issuance. Short-term, floating rate debt is riskier than long-term, fixed rate debt. Debt denominated in or indexed to foreign currencies adds risks and volatility to debt-servicing costs related to exchange rate movements. Rollover risk is the risk that debt will have to be rolled over at an unusually high interest rate or cannot be rolled over at all, and is particularly important for emerging market economies.

There are a number of measures governments can take to minimize these risks (IMF and World Bank, 2001b). First, issuance of short-term debt, which is usually intended to lower the cost of funds, should be balanced against rollover risks. Overreliance on short-term debt can raise the government's exposure to shifts in investor confidence. Second, government

liabilities should not be concentrated in foreign currencies, and foreign currency debt issued should have an average maturity of a minimum of three or so years. Governments should also hold liquid reserves sufficient to comfortably cope with new foreign borrowing requirements over a short horizon (one year or so). Third, over time, governments should develop more sophisticated methods of risk management, including asset-liability management, stress testing, and value-at-risk techniques to measure its exposure to market, rollover, liquidity, interest rate, exchange rate, and operational risks. They should also make use of hedging instruments where necessary.

Table 3. Debt Securities Markets: Risks to Issuers and Investors, and Countermeasures

Source and Types of Risks	Measures and Instruments
<b><i>Risks to Investors</i></b>	
Settlement risk	<ul style="list-style-type: none"> <li>• Dematerialize securities.</li> <li>• Centralize depository.</li> <li>• Automate settlement on a real-time basis.</li> <li>• Monitor member on the basis of prudential requirements.</li> </ul>
Liquidity risk	<ul style="list-style-type: none"> <li>• Reduce fragmentation, develop benchmark securities, and use primary dealers.</li> <li>• Make available collateralized line of credit to support primary dealers.</li> </ul>
Interest rate risk and rollover risk	<ul style="list-style-type: none"> <li>• Comply with prudential requirements for risk management of portfolios.</li> </ul>
Market and credit risk	<ul style="list-style-type: none"> <li>• Improve credit pricing ability by standardizing bond contracts, requiring the use of rating agencies.</li> <li>• Achieve an adequate degree of transparency of large positions, trading data.</li> </ul>
<b><i>Risks to Issuers</i></b>	
Rollover risk (market and interest rate risks)	<ul style="list-style-type: none"> <li>• Use longer term instruments as part of balanced issuer portfolio.</li> <li>• Avoid concentration of debt in foreign currency.</li> <li>• Limit foreign currency debt to minimum maturities of 3+ years.</li> <li>• Establish liquid reserves to meet short term foreign borrowing requirements.</li> <li>• Develop risk management system including asset/liability management, stress testing, VaR measurement of exposures.</li> <li>• Develop hedging strategies.</li> </ul>

Investors in fixed-income instruments also face a variety of risks (Table 3). These include (i) credit risks (counterparty risk, borrower risk, sovereign risk); (ii) market risks (interest rate risk, price risk, currency risk); and (iii) legal, operational, and fiduciary risks. To minimize

the risk of financial market disturbances and instability, a core set of risk management practices ought to be implemented at the institutional level by the major private and public investors in bonds to effectively measure, monitor, and control risks. These practices should include the following (APEC, 1999):

- The board should be kept fully informed by senior management, and both the board and senior management should provide effective oversight of the institution's fixed-income investment portfolio.
- The institution should have a sound mechanism for assigning responsibility to different units in charge of implementing investment and risk management policies to ensure adequate checks and balances. The board should be responsible for approving all investment and risk management policies, which should assign clear responsibilities to the front office (dealing functions), back office (settlement and accounting functions), and the middle office (independent risk oversight and audit, and performance measurement and analysis). Risk management policies should also outline the stress-testing framework and frequency, and accounting guidelines.
- Institutions should develop robust risk measurement, identification, and reporting systems.
- Institutions should periodically conduct stress tests on their portfolio, identifying its sensitivity to various risks, including those related to interest rates, prepayment, risk premium changes, yield curve shifts, and adjust their asset composition.
- Institutions should establish strong internal control and audit systems, which maintain an appropriate segregation of duties, conduct independent reviews of the fixed-income management function, and enforce lines of authority. In particular, personnel responsible for measuring, monitoring, and controlling risks should be independent of the business units that take risks.

#### **D. Equity Market Risks**

Equity markets introduce additional dimensions of market risk and liquidity risk to investors that are strongly responsive to perceived macroeconomic and sectoral prospects (Table 4). Market risk is the risk that the book value of the instrument is suddenly unattainable in the market, causing loss to the holder. A sudden drop in asset value can be destabilizing to both financial institutions and nonfinancial corporations. Market risk is exacerbated where there is concentrated exposure to the particular market (as is the case where there are restrictions on investment outside the country or where risk management practices of inside investors are not adequate). Derivatives markets can help mitigate some of these risks, but they combine a variety of risks already present in the financial system and their inherent complexity

heightens operational risks in institutions as the widely known cases of Barings and Allied Irish Bank illustrate.

Table 4. Equity Market Risks and Countermeasures and Instruments

Sources and Types of Risks	Measures and Instruments
Counterparty and settlement risk	<ul style="list-style-type: none"><li>• Regulatory capital requirements, supervision of financial condition; early warning system.</li><li>• Membership restrictions in trading system/settlement system.</li><li>• Central counterparty.</li><li>• Supervision of clearing and settlement systems; detailed operational requirements.</li></ul>
Market and liquidity risk	<ul style="list-style-type: none"><li>• Accounting and auditing standards ensuring quality of financial disclosure.</li><li>• Market transparency (pricing, insider trading activity, market abuse).</li><li>• Valuation requirements for institutions.</li><li>• Restrictions on exposure and concentration.</li></ul>

Market risk is ameliorated through transparency in markets that improve price discovery and from active prevention of market abuse, including insider trade reporting, related party transaction rules, market manipulation rules, and through adequate disclosure requirements and enforcement. In some markets, regulators impose price bands on daily or weekly trading that prohibit large price movements. While this may have the effect of preventing a sudden drop in price, it is a mechanism that interferes with price discovery. At the institutional level, it is important to address market risk with accounting and valuation requirements, and concentration and exposure restrictions such as those listed above for corporate bond holders. In addition, a strong information infrastructure—notably listing, rating, and public disclosure requirements—backed by high quality accounting standards are needed to promote sound equity markets.

Equity holdings can also present a liquidity risk—institutions must be able to liquidate equities in order to meet liabilities. This will raise concerns during times of distress with downward price pressure in the markets, when institutions are forced to liquidate at low prices. Liquidity risks are managed through appropriate valuation standards (for example, requiring a mutual fund to mark its asset book value daily), and greater transparency in the market. In many emerging markets, equity markets are relatively illiquid and consequently financial institutions are prohibited from investing in them or have their investments restricted. This can present difficulties when such institutions are also restricted to domestic investment for capital account and other reasons. A pension fund, for example, that is restricted to the domestic market may have difficulty finding suitable investments and may hold much of its assets in cash, deposits, and government securities.

Equity markets also introduce more complex counterparty and settlement risks—there is wider participation in the market and participation may be financed by third parties. Counterparty risks are present in the clearing and settlement system and these become settlement risks. Settlement risks are dealt with in a number of ways. The clearing and settlement system is normally restricted to members that have met financial tests and whose financial condition is constantly monitored (by the system or another regulator). Ideally, clearing and settlement systems are directly connected to payment systems and large value transfer systems, enabling a quick transfer of funds for the cash leg of transactions. Similarly, for the securities leg, the system must be connected to a depository of securities. Ideally, this depository would be centralized and connected directly to the clearing and settlement system.

In some systems, a central counterparty is used so that the risk of failure is absorbed by a central system. Central counterparties are widely used in derivatives clearing and settlement. Settlement risk is further mitigated with the appropriate capital standards for intermediaries. In most systems, access to clearing and settlement systems is limited to those intermediaries that meet capital requirements. The strength of the enforcement of compliance with capital standards will have a direct impact on settlement risk.

In systems where capital requirements are not adequately enforced, the system may require up-front payment for trades, which is more expensive and less efficient and which will reduce liquidity since it ties up the intermediaries capital. In India, for example, the National Stock Exchange introduced a very effective clearing and settlement system which relies on up-front payment for trades (payment is made from cash in the intermediaries account). While this system is costly, it avoids reliance on capital standards for intermediaries. In contrast, the Bombay Stock Exchange once employed a settlement system known as badla under which settlement was rolling and no up-front payment was required. A crisis in investor confidence in March 2001 caused prices to drop and undercapitalized firms were unable to meet settlement obligations—the failures to settle drove market prices down much further, caused a number of failures of market intermediaries, spread to small banks that had financed these intermediaries, triggering losses and one bank failure, and ultimately resulted in client losses. The Bombay Stock Exchange is still recovering from this event. The National Stock Exchange, on which many BSE stocks are cross-listed, experienced price drops but no settlement failures (Joint Committee on the Stock Market Scam, 2002).

Counterparty risks also exist between market intermediaries and their clients. These are normally reflected in capital requirements and in margin requirements which restrict the amount of financing an intermediary can extend to a client. This counterparty risk can also be addressed through restrictions on activities between market intermediaries and related entities and conflict of interest rules governing relationships between the intermediary and customers (for example, mutual funds or banks).

Operational risks are also present in equity markets—these pervade all levels of the system including in market intermediaries, trading systems, and clearing and settlement systems. Operational risks are met by entry/licensing requirements governing management and

technological capacity, ongoing internal control requirements, inspections, and other means of ongoing supervision of institutions.

Finally, equity markets introduce market risks for the equity issuer. The issuer faces the risk that access to financing will be negatively impacted by market prices. Quality of disclosure and transparency to the market will help to ensure the issue is accurately priced in the market, but a single equity can still feel the effects of a general shock to the equity market.

## **V. CAPITAL ACCOUNT LIBERALIZATION AND SEQUENCING OF FINANCIAL MARKET DEVELOPMENT**

Capital account liberalization and domestic financial reforms need to be approached in an integrated manner (Johnston and others, 1999). Risks in developing specific types of markets, and the hierarchy of markets in terms of the demands they place on risk-management and information requirements provide certain benchmarks and principles on sequencing and coordination of domestic financial sector reforms (Box 2). These principles also apply to the strategy to liberalize capital account transactions, where the key challenge is to identify precisely how foreign capital can enhance market development and when. The market development measures outlined in Section III and measures to manage risks in developing each class of market discussed in Section IV provide a critical mass of reforms for each stage of market development (Figure 3). The matrix of reforms in Figure 3 illustrates several of the key principles of sequencing.

- Reforms in financial system infrastructure, including the insolvency regime, creditor rights, and accounting and disclosure, should start early in the process of market development, given the time needed to implement these reforms and their importance to financial institution restructuring and good corporate governance.
- A comprehensive approach to risk mitigation requires not only effective prudential supervision and payment system oversight but also adequate macro-prudential surveillance and the implementation of needed adjustments in macroeconomic and financial policies.
- Capital account liberalization should closely complement the domestic market development strategy. This implies that allowing short-term capital flows for certain instruments and sectors would be needed early on in order to support money and exchange market development.

Box 2. Selected Principles of Sequencing <sup>1/</sup>

Sequencing domestic financial liberalization:

- Liberalization is best undertaken in the context of sound and sustainable macroeconomic policies.
- Capital market development-cum-financial stability hinges on establishing the institutional infrastructure for controlling both macroeconomic and financial risks. Financial sector reforms that support and reinforce macroeconomic stabilization and effective conduct of monetary and exchange rate policies should be accorded priority. This entails giving priority to central banking reforms to develop monetary policy instruments and money and foreign exchange markets.
- Financial liberalization and market development policies should be sequenced to reflect the hierarchy and complementarity of markets and related institutional structures. Market development policies should be comprehensive. Technically and operationally linked measures should be implemented together, and linkages among markets should be taken into account.
- Capital market development requires a careful sequencing of measures to mitigate risks in parallel with reforms to develop markets. Policies to develop markets should be accompanied by prudential and supervisory measures as well as macroprudential surveillance in order to contain risks introduced by new markets and instruments.
- The pace of reforms should take into account the initial financial condition and soundness of financial and nonfinancial firms, and the time needed to restructure them.
- Institutional development is a critical component of building capital markets and financial-risk-management capacity. Establishing good governance structures in financial institutions, including internal controls and risk-management systems, is among the most critical of market reforms.
- Similarly, the operational and institutional arrangement for policy transparency and data disclosure need to be adopted to complement the evolving sophistication of financial markets.
- The pace, timing, and sequencing also need to take account of political and regional considerations that could strengthen ownership of reforms.
- Reforms that require long lead times for technical preparations and capacity building should start early.

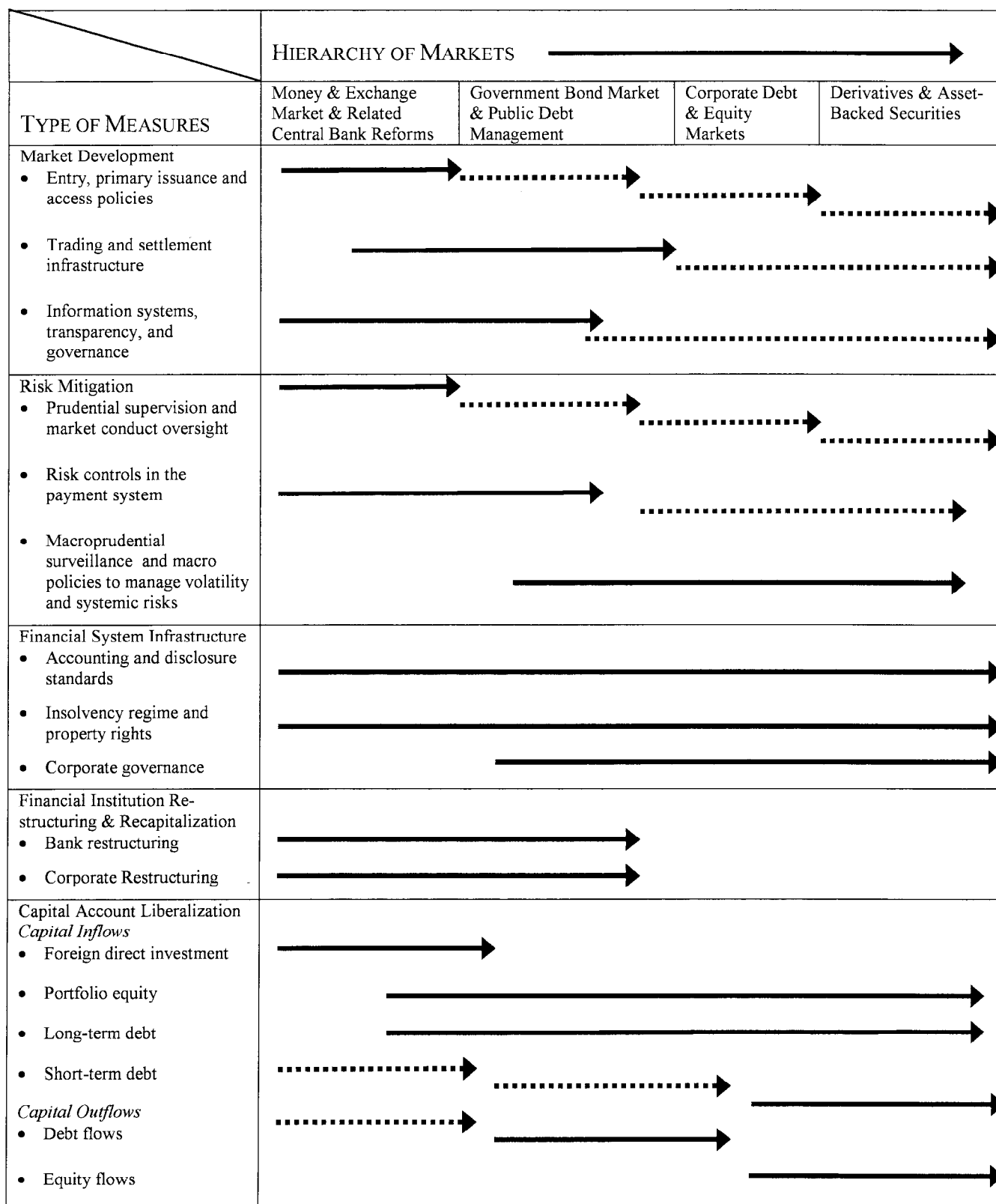
Additional principles for external financial liberalization:

- The liberalization of capital flows by instruments and sectors should be sequenced in a manner that reinforces domestic financial liberalization and allows for institutional capacity building to manage the additional risks.
- Reforms need to take into account the effectiveness of controls on capital flows in place or the implicit restrictions on capital flows due to the ineffectiveness or absence of markets.
- The transparency and data disclosure practices should be adopted to support capital account opening.

<sup>1/</sup> These principles are drawn in part from Ishii and Habermeier (2002), and Sundararajan and others (2002).



Figure 3. Financial Market Development: Stylized Sequencing of Reforms



In practice, countries are likely to be in the midst of various stages of market development and risk mitigation, which are out of synch with the hierarchy of markets and sequencing of reforms outlined here. Nevertheless, the proposed approach and principles to market development, risk mitigation, and sequencing can help countries prioritize future financial reforms, regardless of the pattern of market development in the past.

### **The Role of Foreign Capital**

Foreign capital can play an important role in developing local financial markets. The timing and use of foreign capital, however, should be selected in a manner that maximizes its contribution to domestic market development at the least cost in terms of additional risk. Accordingly, foreign capital first should be used to facilitate real sector and institutional reforms, including banking and corporate sector restructuring through privatization (Johnston and others, 1999). Thus, capital account liberalization should start with the liberalization of foreign direct investment, which can help import the superior technology and management expertise needed to implement operational reforms in financial institutions and corporations. Foreign technology and ownership also promote competition and export growth.

Foreign investors can serve also as an important source of demand for local securities (IMF, 2003). Liberalizing portfolio investment in debt and equity securities widens and diversifies the investor base for local markets and enhances market discipline on issuers and on macroeconomic management more generally (Sundararajan and others, 2002). Opening up to portfolio inflows, however, may increase volatility in market prices, at least for emerging market economies in the short run (Kaminsky and Schmukler, 2003).<sup>17</sup>

Well-developed risk-management capacities of local investors and financial institutions can help domestic financial markets benefit from foreign capital without subjecting markets to excessive volatility. Cross-border capital flows, in essence, amplify the wide array of risks already prevailing in liberalized domestic financial markets, including credit, liquidity, market, interest rate, exchange rate, and operational risks. For example, access to short-term borrowing by domestic banks within appropriate prudential limits can facilitate the development of foreign exchange markets and strengthen the links between interbank money and foreign exchange markets. The risk-management capacities of financial institutions and domestic investors, however, has to be strong and sophisticated enough to assess and manage higher degrees of risk in all areas. For example, in hindsight, financial institutions and corporations in Korea and Thailand did not adequately assess and manage the risks associated with foreign currency borrowing and lending which, in turn, were principally financed by capital flows intermediated through the banking system.

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<sup>17</sup> Kaminsky and Schmukler (2003) also find, however, that financial cycles become less pronounced as institutions improve.

Similarly, it is desirable to achieve some level of depth in domestic financial markets before exposing markets to potentially volatile capital flows (Ishii and Habermeier, 2002). In the presence of a domestic institutional investor base, local money, equity, and bond markets are likely to be more resilient against economic and financial shocks that may trigger capital outflows. Potential market volatility and high interest rates resulting from a withdrawal of foreign capital are more manageable and short-lived when domestic institutional investors act as counterparties to foreign investors. Thus, an adequate base of domestic investors can serve to cushion the impact of external shocks, particularly when the nature of the shock is contagion from abroad rather than domestic in origin, thereby fostering greater financial stability. This once again highlights the importance of developing institutional investors as a critical component in the sequencing of financial market reforms and development.

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