

# Debt Management

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*The views expressed in this paper are those of the authors and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.*

*This chapter will explore the role of debt managers in reducing risks to debt sustainability discussed in Chapter 4. The chapter will begin with the primary objective of debt management, i.e. the minimization of cost of debt, subject to an acceptable level of risk; but then cover bigger picture motives, such as the allocation of risk between the public and private sector, especially in the context of an economy-wide shock (such as the Global Financial Crisis). It will also discuss how the composition of sovereign debt can have important macroeconomic implications, such as via the monetary policy transmission mechanism. The chapter will detail the risks from maturity, currency and residency, including the 'original sin' problem faced by some countries. It will conclude with a discussion of the role of benchmark instruments in furthering financial deepening.*

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## A. Debt Management Objectives

### From a Portfolio Perspective (Cost vs. Risk)

The main objective of public debt management is to ensure that the government's financing needs and its payment obligations are met at the lowest possible cost over the medium to long run, consistent with a prudent degree of risk. Prudent risk management to avoid risky debt structures and strategies (including monetary financing of the government's debt) is crucial, given the severe macroeconomic consequences of public debt default and the magnitude of the ensuing output losses. These costs include business and banking insolvencies as well as the diminished long-term credibility and capability of the government to mobilize domestic and foreign savings.

Minimizing cost, while ignoring risk, should not be an objective. Transactions that appear to lower debt servicing costs often embody significant risks for the government and can limit its capacity to repay lenders. Managing cost and risk therefore involves a trade-off. Judgments will have to be made based on the risk tolerance of the government, keeping in view other policy objectives and policy buffers. Developed countries, which typically have deep and liquid markets for their government's securities, often focus primarily on market risk, and, together with stress tests, may use sophisticated portfolio models for quantifying and measuring this risk. In contrast, emerging market and low-income countries, which may have only limited (if any) access to foreign capital markets and which also may have relatively undeveloped domestic debt markets, should give higher priority to refinancing risk. Where appropriate, policies to promote the development of the domestic debt market should also be included as a prominent government objective. This objective is particularly relevant for countries where market constraints are such that short-term debt, floating rate debt, and foreign currency debt may, in the short run at least, be the only viable alternatives to monetary financing.

Poorly structured debt portfolios, in terms of maturity, currency, or interest rate composition and large contingent liabilities, have been important factors in inducing or propagating economic crises in many countries throughout history. For example, irrespective of the exchange rate regime, or whether domestic or foreign currency debt is involved, crises have often arisen because of an excessive focus by governments on possible cost savings associated with short-term or floating rate debt. Issuance of large volumes of such debt instruments has left government budgets seriously exposed to changing growth and financial market conditions, including changes in the country's creditworthiness, when this debt has to be refinanced. Excessive reliance on foreign currency debt poses particular risks as it can lead to exchange rate and/or monetary pressures if investors become reluctant to refinance the government's debt. By reducing the risk that the government's own debt portfolio will become a source of instability for the private sector, prudent government debt management, along with sound policies for managing contingent liabilities, can make countries less

susceptible to contagion and financial risk. Further, a debt portfolio that is robust to shocks places the government in a better position to effectively manage financial crises.

### **From a Policymaker's Perspective (Who is Best Suited to Bear Risks, the Government or Private Sector?)**

Sound debt management strategies can be instrumental in ensuring financial stability, by creating a liability structure for public debt that sustains low levels of refinancing risk for the sovereign throughout the business cycle and by securing the sovereign's ability to issue the necessary volume of debt at a reasonable cost in a downswing. Debt managers have a broad range of responsibilities, such as in determining the instruments that will be offered to the market and their timing; and handling institutional matters and interaction with investors, taking into account investors' risk constraints and appetites at every point in time, all of which affect financial stability.

Financial institutions typically hold a significant share of public debt in most countries. Debt managers must recognize that their actions can have a very major impact on the balance sheets of these institutions. Moreover, given the usually high level of interdependence of financial institutions, the effects can have potential systemic implications. This impact is relevant not only when discussing possible sovereign liability management and debt restructuring operations but also when thinking about the targeted composition of the debt, e.g., short-term debt involves higher refinancing risk, which could pose a higher risk to the financial stability of the country. However, longer-term debt may represent higher value at risk (VaR) for the debt holder. Fixed rate bonds pose less risk to the government but may represent a higher risk to the investor. If individual investors, in search of higher profits, increase their exposure to interest rate risk and there is a hike in interest rates, the market as a whole may suffer, because the unwinding of positions by some institutions may trigger VaR thresholds for others. Debt managers should be aware of and try to monitor this risk.

## **B. Maturity and Interest and Exchange Rate Risk**

### **Cross Country Stylized Facts**

Globally EM LCBMs continued to grow in 2017, with significant issuance of domestic debt across a range of economies. EM total debt grew by 6.2 percent year-over-year in nominal U.S. dollar terms, to an estimated US\$21.9 trillion in 2017. The increase in total debt was driven by growth in local currency debt, with its share of total debt rising from 85.5 percent in 2016 to an estimated 87.1 percent in 2017. As a share of GDP, local currency debt fell slightly, by an estimated 0.8 percentage points. Over the past year, general government debt in EMs increased from US\$9.4 trillion to an estimated US\$10.3 trillion. EM total nongovernment debt increased more slowly, from US\$11.2 trillion in 2016 to an estimated US\$11.6 trillion in 2017.

Geographically, LCBMs have remained largest in the Asia Pacific region. From 2016 to 2017, government local currency debt outstanding in the region grew by US\$1.1 trillion, mainly driven by increases in debt in China and South Korea. However, there have been significant pockets of growth in LCBMs in several other EMEs, including Brazil, Mexico, Slovakia, and South Africa.

With the dollar appreciating against many currencies over the course of the last year, the cost of external borrowing for a number of EM issuers with significant U.S. dollar exposure has risen, crystallizing the foreign exchange (FX) risk embedded in debt portfolios and illustrating the importance of deepening LCBMs as a tool for reducing FX risk. Developing the LCBM is, however, not a panacea since nonresident investors continue to maintain large positions in several EM government bond markets, with substantial holdings in local currency bonds. For example, in 2017 the share of nonresident investors in local currency government bond markets was above 30 percent in Indonesia, Mexico, Peru, Poland, and South Africa. However, in some EMs, including Brazil, Hungary, India, and Ukraine, nonresidents' market share fell last year. China and India, two of the largest issuers of local currency bonds, continued to have limited participation by nonresidents, reflecting restrictions to access in those markets. Participation of foreign investors in local currency non-government debt remains small, but growing as domestic markets develop and an increasing number of instruments in EM currencies are issued in international capital markets.

Several emerging and low-income countries are now benefitting from pursuing the development of their LCBMs by attracting non-resident investors and extending maturities. In Africa, for example, countries such as Cote d'Ivoire, Namibia, Senegal, and Uganda more than doubled the issuance of local currency government bonds between 2009 and 2014, with the stock of local currency bonds in these countries now on average equivalent to 8.5 percent of GDP. The maturity of bonds issued between 2009 and 2014 rose on average from 1.5 years to 6.4 years, with some countries such as Ghana, Kenya, Namibia, Nigeria, and Tanzania issuing local currency bonds in maturities over 15 years.

In addition to non-concessional domestic sources of financing a number of emerging and low-income countries are accessing international capital markets. Eurobond issuance has surged during a period of prolonged low global interest rates but experience has shown that the Eurobond market can be volatile and access conditions can be highly uncertain. Global interest rates are expected to move higher and capital flow reversals could coincide with the initial wave of Eurobonds reaching maturity. Refinancing risk could become acute, particularly for countries with macroeconomic imbalances.

Foreign investor positions remain large and are concentrated in local currency government debt instruments. For example, foreign participation in local currency government bonds was above 30 percent for Indonesia, Malaysia, Mexico, Peru, Poland, and South Africa compared to the average for EM countries of about 25 percent during 2015 and 2016. While the foreign

investor participation rate went down in 2016 in some EMs, including Brazil, Hungary, Mexico, Peru, Philippines, Poland, and Thailand, China, and India, two of the largest issuers of local currency bonds, continued to experience limited foreign participation.

### **Trade-Off with Uncertainty Over Risks and Myopic Governments**

Increasing the vulnerability of the government's financial position by increasing risk, even though it may lead to lower costs and a lower deficit in the short run. Debt managers should avoid exposing their portfolios to risks of large or catastrophic losses, even with low probabilities, in an effort to capture marginal cost savings that would appear to be relatively "low risk."

- **Maturity structure.** A government faces an inter-temporal trade-off between short-term and long-term costs that should be managed prudently. For example, excessive reliance on short-term or floating rate debt to take advantage of lower short-term interest rates may leave a government vulnerable to volatile and possibly increasing debt service costs if interest rates increase, and even the risk of default in the event that a government cannot refinance its debts at any cost. The resulting instability could also affect the achievement of a central bank's monetary objectives.
- **Excessive unhedged foreign exchange exposures.** This can take many forms, but the predominant one is directly issuing excessive amounts of foreign currency denominated debt and foreign exchange indexed debt without currency hedging. This practice may leave a government vulnerable to volatile and possibly increasing debt service costs if its exchange rate depreciates, and the risk of default if it cannot refinance its debts.
- **Debt with embedded put options.** If poorly managed, these increase uncertainty to the issuer, effectively shortening the portfolio duration, and creating greater exposure to market/rollover risk.
- **Debt with early cancellation clauses.** Early termination events or rating trigger clauses can pose risk for debt management and need proper consideration.
- **Derivatives other than plain vanilla swaps.** Swaptions are sometimes used to alter current financial costs at the expense of higher future volatility.
- **Contingent liabilities.** If contingent liabilities, such as implicit guarantees provided to financial institutions, are poorly managed, they tend to be associated with significant moral hazard.

#### *Managing Contingent Liabilities*

Risks do not arise only from the interaction between debt structures and economic shocks. Governments are also exposed to risks arising from both contingent liabilities—often in the form of a guarantee, i.e. the promise to service the debt of a beneficiary if it fails to do so—and assets whose servicing is contingent, usually stemming from on-lending by government to a beneficiary. This credit risk exposure flows from the beneficiary’s inability or unwillingness to service its debt, whether to a third party (in the case of a guarantee) or government (in the case of on-lending). There are other contingent liabilities, both explicit and implicit; they include the potential costs to the central government flowing from public private partnerships (PPPs<sup>1</sup>), the debt of state-owned enterprises (SOEs) or lower levels of government, (natural) disasters, and financial sector crises. A sound and prudent risk management framework includes well-defined risk management objectives, an analysis of risks in particular the assessment of credit quality, and the design and implementation of a risk management strategy incorporating monitoring, reporting, and reassessment procedures.

Requests for guarantees must be individually assessed and all contingent liabilities individually identified, analyzed and monitored; but the aggregate exposure also needs to be assessed in the context of the structure of the government’s balance sheet as a whole. Even though contingent liabilities are not recorded on the balance sheet, they can still pose a huge threat to government finances and should be included alongside other sovereign exposures arising from both assets and liabilities, in order to systematically identify the interaction between the different risks and how they might be differentially affected by different shocks.<sup>2</sup> Debt sustainability analysis (DSA) should normally include, as one of the potential shocks, how the crystallization of contingent liabilities might affect debt/GDP ratios or the path of debt service over time. But the debt management strategy (DMS) analysis should take this a step further by considering how the balance sheet, as a whole, might be affected by different shocks and the scope for hedging the residual risks.

Sovereign debt managers use different risk management tools. Some operate at the level of the individual proposals, with an assessment of the risk and budget exposure, measured against the benefits. Credit risk fees should be charged for the guarantee, both as a way of mitigating the government’s risk and ensuring that the project is properly assessed (and they can also ensure a level playing field where the market is competitive). The fees may flow to the budget or be retained in a fund (which may have earmarked assets or be retained in the general ledger) to meet the cost of guarantees being called. Initially, such fees may not be based on thorough credit risk analysis, but be applied at a flat rate whatever the beneficiary’s

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<sup>1</sup> Some PPPs have more explicit debt-like qualities. If a government has guaranteed a regular purchase, e.g. of electricity from a build-own-operate supplier, some part of which will be remunerating the supplier’s capital investment, in economic terms this is not very different from interest on the bond that the government might have issued had it itself constructed the plant.

<sup>2</sup> For example, even if the central government has reduced its foreign currency liabilities, it might still be exposed to an exchange rate depreciation if SOEs are heavy external borrowers.

or project's creditworthiness. Over time, however, risk managers may aim to refine risk mitigation and management tools and differentiate fees based on beneficiaries' credit quality.

Similarly, there are different techniques for managing the aggregate risk from contingent liabilities. The crude but simple—and commonly applied—approach is to set a limit on the issue of guarantees, reflecting risk appetite. Several countries have adopted a fiscal target or indicator that is defined in terms of central government debt plus government-guaranteed debt. Although the contingent liabilities are not recorded as debt unless and until they crystallize, the aggregate is reported alongside debt data. As sophistication grows, so do the tools. The limit might be set on expected exposure, rather than on the nominal value of the guarantee. Some countries have built econometric models that identify the expected losses in any one year and include provisions for losses in the budget accordingly.

### **Sudden Stop: Case Study – Mexico Tequila Crisis**

During the 1970s, oil price spikes stemming from the OPEC embargo boosted revenues from Mexico's state-owned oil industry. Near-zero real rates on short-term loans due to rising global inflation made it attractive for the Mexican government to take on greater debt. For their part, creditors in the United States were eager to lend. Low real rates at home made the yields from investing in developing countries like Mexico attractive. However, this began to unravel quickly in the early 1980s where the Fed began to aggressively raising its policy rate to combat inflation, which raised the cost of Mexico's debt as U.S. banks also increased rates on loans. Higher rates at home also made the relatively riskier investments in Latin America less attractive to American investors, and Mexico's access to funding dried up. By August 1982, Mexico's finance minister told officials in the United States and at the International Monetary Fund (IMF) that the country could no longer manage payments on its \$80 billion debt.

### **C. Domestic and External Debt**

#### **Original Sin: The Different Dimensions (Currency, Residency, and Jurisdiction)**

As in 1990s, the recent spike in international bond issuance has in many instances been preceded by debt relief operations. Debt relief operations that had improved sustainability indicators, reduced the debt overhang, and improved growth prospects have enabled many countries to tap international markets for the first time this decade. Likewise, debt relief operations in the 1990s (the Brady Plan) had a similar effect and led to a rapid accumulation of external debt following the temporary relief.

Issuers, just as EMs of the 1980s and 1990s have issued international bonds in foreign currencies (mostly U.S. dollars). This can be partly explained by issuers having revenues in foreign currency and hence having incentives to match these revenues with foreign-currency cash outflows in order to balance the foreign-exchange exposure. Second, there might be limited appetite for government securities in the local currency market, and issuers may wish



to tap broader and more liquid markets in the major international currencies. The domestic currency markets are often too thin and shallow, or virtually absent, in particular for long-term maturities. Third, they may have some opportunistic reasons and attempt to lower the cost of servicing their debt by exploiting lower interest rates in a foreign currency.

Borrowing in foreign currencies can also be a result of the “original sin.” These sovereigns might be willing but unable to borrow in local currency in the international markets due to investors’ lack of trust in the sovereign based on their past transgressions—their “original sin.” This problem (described in the seminal work by Eichengreen & Hausmann (1999)) leads to external debt accumulation and currency mismatches on the balance sheets down the road. If the country’s external debt is denominated in foreign currency the real exchange rate depreciation will make it more difficult to service this debt. Another explanation for the difficulty in borrowing in one’s own currency is limited benefit to portfolio diversification faced by investors. The established practice in the international financial centers is to operate in a limited number of major currencies. As a result, developing countries, which are latecomers to the international financial game, face an uphill battle when attempting to add their currencies to the international portfolio.

### **Advanced Economies –Investor Base Risk Index**

As noted earlier, it is not news that emerging markets can be vulnerable to bouts of market volatility. Investors often pull sudden stops—they stop buying or start selling off their holdings of government bonds. But what has become apparent in recent years is that advanced economy government bond markets can also experience investor outflows, and associated runs. At the same time, some safe haven countries have seen their borrowing costs drop to historic lows as they experience rising inflows from foreign investors.

Several strands of research show that advanced economies’ sovereign borrowing costs also depend on who is holding the bonds—the demand side for government debt. Tracking who owns what, when and for how long can shed some light on potential risks in advanced economies’ government debt markets.

Regardless of their level of debt, some countries are more at risk of sudden investor outflows, and associated spikes in government borrowing costs, based on the risk characteristics of their investor base. Aside from standard measures of sovereign risk, such as debt-to-GDP ratios, we need to understand better the investor base for government debt, and why and how investors change their allocations.

In that context, Arslanalp and Tsuda (2014a, 2014b) has developed a risk index that focuses on stability of investor demand, called the investor base risk index. The index runs from zero to 100, based on the composition of the investor base and the risk scores assigned to different investors given the way they tend to change their holdings. By this metric, countries with a

high share of domestic investors, such as domestic banks and central banks, as well as foreign central banks in their investor base receive lower scores. In contrast, high scores are assigned to countries whose investor base has a high share of foreign private investors, as empirically, they are the most skittish in times of trouble.

The index is especially useful when used in combination with a supply-side risk indicator of government debt to assess the overall sovereign risk of a country. We summarize our thinking in a two-by-two table in Figure 2. The best of all worlds is represented by Quadrant III (low debt and low investor base risk), while the worst is represented by Quadrant II (high debt and high investor base risk).

**Figure 2. A Stylized Framework for Sovereign Risk Analysis**

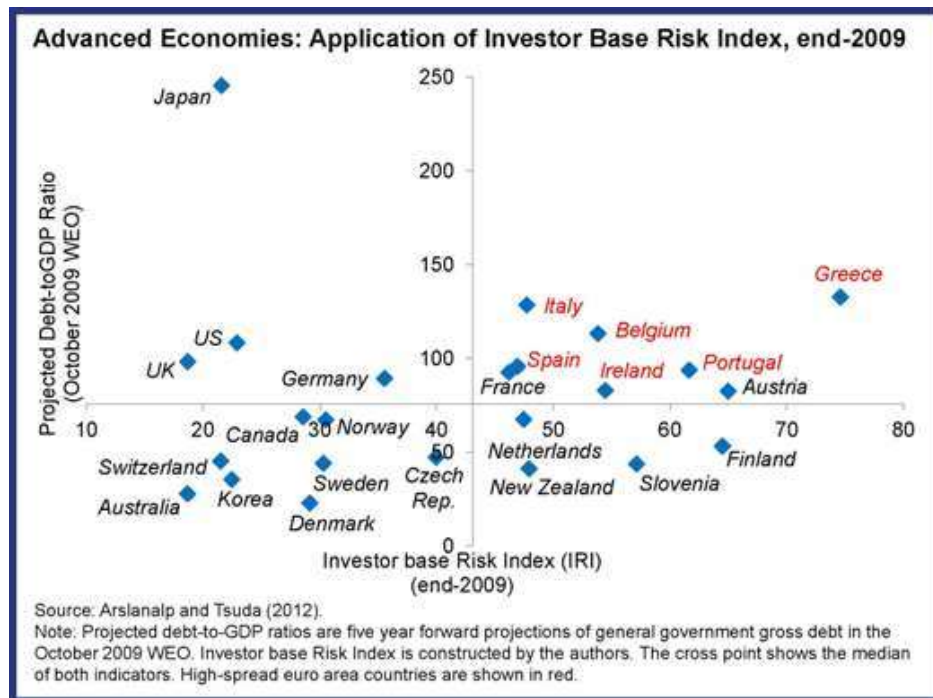
		Demand-side Risk Indicator	
		Low	High
Supply-side Risk Indicator	High	<b>Quadrant I</b> High Debt but Resilient to a Run	<b>Quadrant II</b> High Debt and Prone to a Run
	Low	<b>Quadrant III</b> Low Debt and Resilient to A Run	<b>Quadrant IV</b> Low Debt but Prone to a Run

Source: Arslanalp and Tsuda (2012).  
 Note: Supply-side risk indicators could include gross debt-to-GDP ratio, net debt-to-GDP ratio, projected debt-to-GDP ratio or other measures of the supply of government debt. Demand-side risk indicators could include the investor base risk index constructed by the authors or any other measure that captures the refinancing risks inherent in the sovereign investor base.

Arslanalp and Tsuda (2014a) tests this idea by looking at how countries fared in terms of investor base risk at end-2009 before sovereign risk emerged as an issue for some advanced economies in 2010. The risk index shows several euro area countries were prone to a sudden

stop as early as the end of 2009, before the current euro area debt problems fully came to light (Figure 3, Quadrant II). At the same time, countries with high debt and low investor base risk, which include Germany, Japan, and the United States, did not face similar market pressures despite their high projected levels of debt, while countries with low debt and low investor base risk, which include Australia, Canada, and Sweden, became the “new safe haven” countries during this period. Although hindsight is perfect, this classification is remarkably close to how markets ended up differentiating these countries in terms of sovereign risk after 2009.

**Figure 3. Advanced Economies—Application of the Investor Base Risk Index, end-2009**



The also helps explain the high debt, low yield puzzle. Both supply and demand dynamics are driving trends on sovereign bond yields—and likely to continue to do so in the future. We generally understand trends in supply of government debt, often measured by projected debt-to-GDP ratios such as in the IMF’s World Economic Outlook. But demand factors are more difficult to track and anticipate. Also, supply factors alone do not explain well recent changes in government bond yields. For instance, highly indebted governments like Japan still experiences some of the lowest government bond yields among advanced economies.

Our index can explain why some countries are able to sustain much higher levels of debt without pressure from financial markets. For example, despite continued worries about Japan's fiscal outlook, demand for Japanese government bonds, in particular from domestic investors, has been strong and bond yields have been stable—a fact captured by our risk index. That suggests that in cases where the investor base risk is low, high debt-to-GDP

levels may matter less, as the likelihood of a run by sovereign investors is also less. In that respect, our index suggests that Germany, the United Kingdom and the United States may be in the same category as Japan, although for a different reason: those countries rank low in the index mainly because of the high share of foreign central banks in their investor base.

### **Home Bias Case Study – Japan and Advanced Economies**

By late 1920s Japan had seen an active issuance of corporate bonds, the government only reorganized its financial system into an indirect finance system—a bank-centric system—to concentrate its financial resource on war activities. After the war, the government kept the war-time financial system to effectively finance the reconstruction of the national economy. The government carried out so-called policy finance with commercial banks under generous protection and tight control. In mid-1950s, a bank debenture market flourished. The country issued bonds to finance capital investments in 1966 for the first time after the war. The Oil Shock in 1973 threw the country into a severe recession, which ultimately caused the government to issue bonds in 1975 to finance current budget deficits. The Japanese government's serious efforts to develop its debt market began at this time.

JGB market reforms started in mid-70s, with corporate bond market reforms beginning in the 80s and being substantially completed in late 90s. The Oil Shock erupted in 1973. This external shock sent the country the first negative growth in the post-war period in 1974. The government increased its spending to stimulate the economy by running a large budgetary deficit, which was financed by issuance of JGBs. The government initially placed JGBs with commercial banks which had a large pool of private savings in deposit accounts. The demand side of JGBs was also favorable for issuance of the government securities. The economic slowdown and growing surplus of balance of payments led to an increase of private savings. The increasing private savings fostered institutional investors such as insurance companies, trust banks, and investment trusts. They sought for better investment opportunities in JGBs.

## **D. Financial Markets**

### **Building Financial Markets in Developing Countries**

The development of domestic government bond markets has become a matter of growing policy interest in developing countries in recent years. Faced with growing budgetary deficits, a number of factors have forced governments to finance their deficit through increased reliance on tapping funds from their domestic markets. These factors include the limitations of banking sector financing, inadequate availability of foreign aid and concessional foreign loans from the official sector (i.e., foreign governments and multilateral institutions), and increasing awareness of the risks associated with borrowing in foreign currencies.

Benefits of a vibrant domestic debt market go beyond providing a reliable source of financing for government deficits, and include many other positive externalities. The pursuit of developing countries in building deep and liquid markets also stems from the positive spin-offs they have on the development of the financial sector, its efficacy, and its flexibility in terms of monetary policy conduct and resilience to financial stability. Experience of advanced and emerging market economies has shown that well-regulated, predictable, reliable, and liquid domestic debt markets can play a critical role in supporting economic growth, particularly in developing countries, at the macroeconomic and microeconomic levels.

The benefits of issuing longer-term Treasury bonds (T-bonds) are clear. By comparison with Treasury bills (T-bills) or shorter-term T-bonds, they minimize refinancing risk in the government debt portfolio and, by lengthening the average time to interest rate resetting, its exposure to interest rate risk. As the secondary market develops, it is the market prices of longer-term bonds that are the basis of the yield curve, against which corporate bonds can be priced and market risk hedged.

Establishing and developing domestic debt markets is a long and complex process that requires certain key preconditions to be in place. Many issues can inhibit the development of the market, such as macro or political instability; financial controls; low domestic savings rate; paucity of institutional investors; proliferation of government agencies issuing securities causing market fragmentation; unpredictable issuance policy; and absence of the required market infrastructure. Potential obstacles to the development of a domestic depend, therefore, on a country's overall degree and stage of development. Accordingly, to build a deep and liquid bond market, each country must develop its own reform plan suited to its conditions. Debt managers are not responsible for ensuring that preconditions for the macroeconomic environment are met. Instead, an inter-agency consultative process is required for establishing the preconditions within the scope of a plan for overall macroeconomic reforms. Experience has shown that interventions are effective and reforms are best-enacted in countries where commitment begins with top leadership and is conveyed to the ministerial level, particularly when key ministers are enlisted as partners to champion and implement reforms.

#### *Essential Preconditions*

Initially, the government's main (if not only) concern is to obtain the needed funding; after this, it can begin focusing on minimizing the funding cost and risks. Minimizing risks requires issuing longer maturities (for the refinancing risk) at a fixed rate (for the interest rate risk), and minimizing cost requires increasing the breadth and depth of the secondary market. Both objectives are linked. Investors are willing to buy longer maturities only if they are confident in their ability to sell the securities if they need cash. Investors are also willing to

pay a higher price for a security with this advantage. In this case, the cost of funding the government is lowered, because the yield of a security always declines when its price rises, *ceteris paribus*.

### *Credibility of the Government as an Issuer of Securities and Rational Policymaker*

The political environment should be secure and the government should be credible before it issues securities. The legal framework should clarify the authority to borrow and issue new public debt, and to undertake transactions on the government's behalf. Investors and dealers need assurance that the debt office has legal authority to represent the government and that the government will stand behind the transactions into which it has entered. With this assurance, the market will focus on more advanced issues, such as if the law adequately protects investors' rights; if the regulatory environment ensures the safety of securities transactions; if dependable legal procedures for dispute resolution provide for fair treatment; and if the tax system is fair.

Initially, however, the investors concerned (i.e., those in banks) will be local investors who are already doing business in the country; their main concern will be to ensure that they effectively acquire a claim against the government by virtue of acquiring an instrument. Government credibility also implies that the size of the public debt allows investors to be confident about the government's ability to meet its financial commitments (i.e., to service and to repay its borrowings). Consequently, the market will want to assess whether the government can repay its borrowings without having to make a significant adjustment to fiscal policy. A prudent fiscal policy with appropriate fiscal consolidation measures supported by a fiscally responsible stance will then mitigate concerns about debt sustainability.

Uncertainty about future macroeconomic conditions—particularly about the course of inflation—will prevent the government from extending the yield curve beyond very short-term securities. If inflation is rapidly increasing and interest rates are high and volatile, investors will at best buy only very short-term securities with maturities no longer than a few weeks. High inflation and high interest rates are indicators of economic and/or political problems, just like fever is an indicator of an underlying illness. Extension of the yield curve under persistent inflationary conditions may require issuance of inflation-indexed bonds or variable-rate bonds in the initial stage. Though a market can begin with a relatively high inflation rate, to develop, it needs government commitment to contain inflation.

### *Commitment of the Government to Pay Market Interest Rates*

The market cannot develop if the government enacts regulations to create a captive investor base by compelling some institutions to buy debt instruments (i.e., by obliging banks to invest in instruments a certain percentage of their deposits), thereby enabling the government

to issue at artificially low rates. Similarly, the market cannot develop if the government issues smaller amounts than announced or altogether cancels a scheduled auction because of its subjective perception that asked yields are too high. The level of the yields applicable to market instruments should be market-determined, not administratively set. The government should be committed to developing the market, financing itself through the market (not through captive investors), accepting market rates, and not manipulating auctions.

### *Guidance to the Debt Manager and Transparency to Stakeholders*

The debt management strategy (DMS) guides the government's financing choices, set out in the annual borrowing plan (ABP); and for all but the poorest or most fragile countries, a key component of the ABP will be the issuance of domestic securities. The targets of the DMS for the main portfolio risk indicators are an important guide to developing the issuance plan, i.e. the mix, size, and timing of the securities to be issued to meet the gross borrowing requirement implied by the annual budget. Conversely, market constraints on the design of the issuance plan will inform the periodic review and update of the DMS.

The debt manager as issuer of government securities must therefore juggle many variables:

- Objectives for the liability portfolio as expressed in the DMS;
- The need to meet the government's financing requirement, taking account also of its profile across the year;
- The trade-offs between cost and risk implied by different instrument choices interacting with the trade-off expressed in the DMS;
- The structure of demand, and investors' preferences as evidenced by the yield curve; and
- The importance of developing the domestic market.

Central to these decisions is building liquidity in government securities. The issuer benefits from greater investor demand and potential cost-savings. Investors benefit from reduced risk, and the ability to build a portfolio with the desired cost-risk characteristics. The wider market benefits from the great transparency of prices and yields, and the associated yield curve that is essential to pricing and the hedging of market risk.

### *Developing Secondary Market Liquidity*

Building liquidity has often proved a challenge. Many domestic government debt markets in EMEs have grown impressively; but performance in the primary market has greatly outstripped that in the secondary market, which has often remained illiquid, with low turnover and little price transparency. Liquidity often suffers from a narrow range of investors and too many small (and therefore illiquid) bonds, which fragment the market. Even where the government is able to issue long-maturity bonds, they are often held by long-term saving institutions that are interested only in holding the bond to maturity to match

known liabilities. The result is that EME governments pay a premium to investors for the risk of their holding relatively illiquid securities.

Not all these factors are outside control of the debt manager. The need for coordination between the different agencies involved has already been stressed. But the debt manager has a direct role through the design of the issuance plan, and of the primary market. Central to this is the issuance of benchmark securities: large lines of T-bonds at key tenors. The large size improves the potential for wider distribution of the security among different types of investors with different incentives to trade, thereby increasing trading opportunities; it reduces search cost for those who want to buy; and it makes it less likely that any one transaction will change the market price. All these characteristics reduce the liquidity premium demanded by the market. EME government issuers are increasingly adopting a benchmark issuance policy to build sufficiently large lines of T-bonds as a necessary first step to foster secondary market activity. That in turn usually requires the being able to issue successive tranches of the same bond; and it brings into relief the ability to deploy liability management operations (LMOs). LMOs, whether buybacks or bond exchanges, can be used to build up a liquid bond of the chosen tenor; and also manage the cash management challenges as the larger bonds comes to maturity (see below).

Predictability and transparency are the other essential characteristics of the issuance plan. The plan should be published—typically as part of the ABP and published with other documents supporting the annual budget. Investors will in turn be able to plan their own portfolios; and intermediaries their marketing strategies. Once it is published the issuer should try and keep to the plan—otherwise the benefits of publishing it are vitiated. Plans sometimes have to be changed, not least if the government’s borrowing requirement changes in the course of the year. But it should be done in a way that is predictable – in the sense of consistency with previous policies. Indeed, “predictability” should be interpreted as predictability of policy responses: markets do not like surprises and the debt manager’s decisions should be anchored back to well-defined and transparent objectives. Some countries also indicate at the start of the year the direction of any changes that might be necessary during the year.

### *Well-Functioning Money Market*

The money market is the cornerstone of a competitive and efficient system of market-based financial intermediation and plays several important roles. It facilitates monetary policy operations, with market-based instruments anchoring the short end of the yield curve and supporting the development of the foreign exchange market. It stimulates an active secondary bond market by reducing the liquidity risk attached to bonds and other term financial instruments, and by assisting financial intermediaries in managing liquidity risk. This latter aspect is especially important in supporting the development of primary dealers or market makers in government bonds: liquid short-term instruments are essential for financing their



holdings of government bonds, which in turn underpins their functions of warehousing bonds—and reducing government’s execution risk—in the primary market, and market-making in the secondary market.

#### *Diversified Investor Base*

A large and heterogeneous investor base with different risk preferences, investment maturity horizons, and trading motives ensures a strong and stable demand for government debt securities in a range of market conditions. It also gives more depth and liquidity to the market. This is, however, not a precondition for a domestic debt market at inception. At the initial phase, only banking institutions participate; yet, at minimum, the country should have a sound banking system that provides adequate appetite to invest in securities. Subsequently, contractual savings vehicles (institutional investors) such as pension funds, insurance companies, and mutual funds will provide a natural market for medium- and longer-term government debt.

#### *Sound Banking System*

The soundness of the banking system also has important implications for development of the government securities market. Domestic and foreign investor concerns about the soundness of the banking system will adversely affect the ability of the government to roll over or issue new debt. It is essential that a sound banking system be subject to prudential regulations (including capital adequacy, lending standards, proper asset classification, income recognition, and reserving policies) that meet or approach international standards and provide for competent supervision and adequate enforcement capacity. At another level, lack of financially healthy intermediaries will cause secondary market liquidity and efficiency to fall. A banking system in crisis will further complicate development of a government securities market because important related markets, such as those for interbank and repurchase transactions, are unlikely to function properly.

#### *Appropriate Technical and Regulatory Infrastructure*

In its initial phase, a securities market is merely a primary market. As a result, establishing the market basically requires only designing rules for auctioning securities and putting in place an elementary technical organization (e.g., a registry to give a legal title to instrument holdings, a central depository for the custody of instruments, and a clearing and settlement system aside a cash payment system so that instruments can be transferred). At inception, few transactions will be done in the market, and they will all be dealt with by banks that are assumed to be sophisticated investors. Thus, there is no need for a sophisticated, high-capacity technical infrastructure (e.g., delivery versus payment system) or detailed regulations protecting non-bank participants. As the number of transactions increases and the number of market participants diversifies, a more efficient system for the registration,

custody, clearance, settlement of, and payment for debt instruments must be put in place to ensure further development of the market. The systems used to settle and clear financial market transactions must be cost-efficient and easy to use. They should offer delivery versus payment, and final registration of ownership. They will need to have a clear legal basis, be subject to regulatory oversight, and have the capacity to process required trading volumes within the chosen settlement cycle.

### **The Interplay Between Cash and Debt Management in Safeguarding Access to Liquidity**

The overriding objective of cash management is to ensure that the government is able to fund its expenditures in a timely manner and meet its obligations as they fall due. However, cost-effectiveness, risk reduction and efficiency are also important, and specifically:

- Minimizing the costs of holding cash balances in the banking system
- Reducing risk: operational, credit and market risk
- Adding flexibility to the ways in which the timing of government cash inflows and outflows can be matched.
- Supporting other financial policies and in particular debt management policy, monetary policy and the development of domestic financial markets.

There are distinct phases in the development of a modern cash management function:

- Developing the Treasury Single Account (TSA) – the integration of government bank accounts, and the sweeping of overnight balances into a single account or a network of linked accounts held by the Treasury at the central bank.
- Building a cash flow forecasting capability – the development of capacity within the Treasury to monitor and forecast flows in and out of government – i.e. changes in the balances in the TSA.
- Moving to more active cash management – borrowing and lending in the money market to a pattern deliberately designed to smooth or recue the volatility of net daily cash flows.

T-bills are the usual instrument of choice in moving to more active cash management. Net T-bill issuance will be higher or lower in any week depending on whether outflows are expected to be higher or lower than inflows in that week. The forecast should also guide the maturities of the securities to be issued, as well as the volumes (and potentially also the volumes and maturities of any investments of temporary cash surpluses), with a view to smoothing the cash flow across the TSA. A smoother cash flow means lower average cash balances with reduced net borrowing costs and also less pressure on the central bank's monetary policy operations (because, other things equal, the mirror image of fluctuations in the TSA is fluctuations in banking sector liquidity).

T-bills are a core instrument in domestic financial markets. As a risk-free instrument they are important to banks, to meet risk and liquidity requirements; to asset managers, to facilitate achieving the chosen cost-risk trade-off; and to the authorities, to meet debt management, cash management, and monetary policy objectives. They are in demand as collateral. Government cash management is focused on a much shorter time period than debt management. Short-term T-bills are more useful than T-bonds or longer-term bills. It may be possible to issue T-bonds to refinance maturing T-bonds; but the underlying primary balance will have a profile linked for example to the quarterly or monthly timing of tax receipts, salaries or transfers. Many countries use one-month T-bills for cash management, or T-bills with odd maturities linked to days of future inflow; the USA uses two-week T-bills. The volume of issue can be more readily varied to offset peaks and troughs in the cash profile. T-bills with a maturity of three months or more are less flexible and the stock outstanding is more often held steady in line with investors' demand and portfolio requirements.

Whatever the debt management strategy requires in terms of lengthening average debt maturities, the management of cash and market demand require a continuing T-bill issuance program. Note, however, that that does not mean jeopardizing the strategy objectives. Modest year-on-year changes in the T-bill stock can be consistent with sharp movements in the stock within the year, providing the T-bill market is fairly liquid and there is good underlying demand from financial institutions.

As active cash management develops, the Treasury or Debt Management Office will try to "fine tune" the government's cash flows to smooth more fully short-term changes in the TSA balance at the central bank. This "fine tuning" is more detailed and precise, with the focus on the day, rather than the week or month of "rough tuning", which relies on T-bills. But T-bills, which are usually issued only every week or second week, are usually not sufficient for fine tuning. Cash managers must draw on a wider range of instruments. Fine tuning is also more intensive in terms of time and system requirements and relatively few countries, most of whom are in northern Europe, accurately fine tune their TSA balances.

Repo<sup>3</sup> is the instrument of choice for fine tuning or for borrowing and lending outside the normal T-bill issuance schedule. Repo has the great advantage that the lending is collateralized, reducing any credit risk concerns. It is also very flexible, in both the speed of execution and the range of maturities available. Many settlement systems are able to settle transactions on the same day, also handling the collateral automatically. For the same reasons, repo has a central role in the development of the financial market.

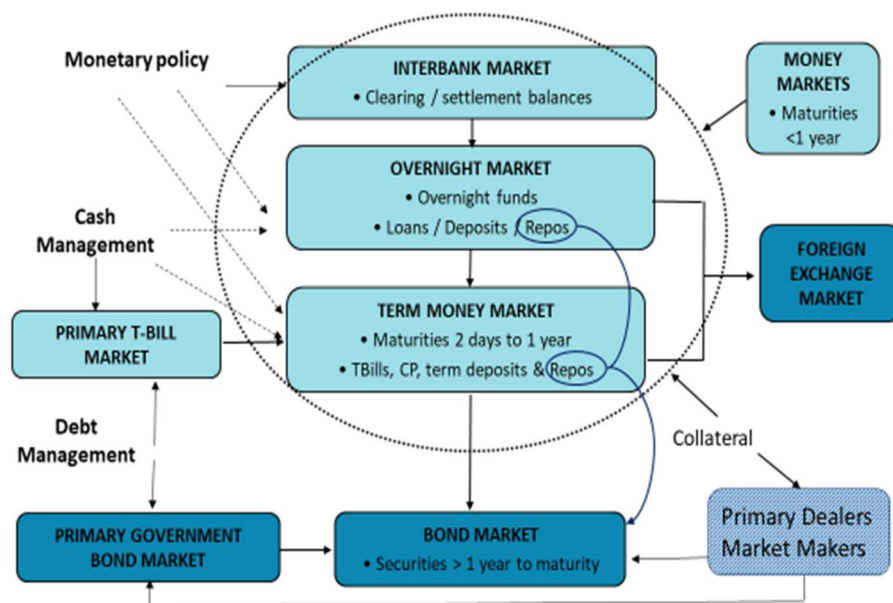
Central banks rely heavily on it for liquidity and short-term interest rate management. It can boost the interbank market by removing credit risk concerns. Primary dealers can repo out

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<sup>3</sup> A "repo" (short for sale and repurchase agreement) is the sale of securities tied to an agreement to buy them back later. A reverse-repo is the purchase of securities tied to an agreement to sell back later. A repo is best thought of as a collateralized loan. T-bills or T-bonds (or central bank paper) are the dominant collateral for repo transactions, particularly in the early development of the market.

securities to finance purchases of the same securities. It can support short-selling, another characteristic of efficient market making, with the security sold repoed in ahead of settlement. More active cash management will itself be a stimulant, including of the T-bond market, since domestic T-bonds are normally the preferred collateral. These linkages are illustrated in Figure [ ].<sup>4</sup> This benefits the debt manager who, as well as issuing T-bonds, may also need to lend or repo bonds temporarily to the market makers to ensure that they are always able to provide a two-way market.

**Figure 1: Money Market: Interaction with other Financial Markets**



### Importance of Cash and Debt Management Coordination

Debt and cash managers must work closely together; indeed, in many countries the functions are now integrated, whether in a fully-fledged debt management office, of the kind in many eurozone countries, the United Kingdom, Sweden, Hungary, and Australia; or through merger or integration between treasury and debt management directorates, as in Peru, Colombia, Turkey, and South Africa. The government’s annual borrowing plan will be developed taking account of the objectives set out in the debt management strategy. But the choices during the year will depend on market appetite, market volatility, interest rate prospects and the immediate need for cash.

Thus debt managers have to juggle the full range of instruments in making decisions about issuance. They have to trade off from day to day, week to week, and month to month, the demands of the strategy and the demands of the market, with issuance choices, of both T-

<sup>4</sup> Modified from: Mike Williams “Government Cash Management: Its Interaction with Other Financial Policies” (IMF Technical Notes and Manuals, 2010) [www.imf.org/external/pubs/ft/tnm/2010/tnm1013.pdf](http://www.imf.org/external/pubs/ft/tnm/2010/tnm1013.pdf).

bills and T-bonds, made taking into account demand, supply, and price information. In relation to demand, intermediaries and/or end-investors may need a steady flow of T-Bonds to meet their obligations, or shorter-term instruments for liquidity management. Their needs will change across the year with their own cash flows and market developments. [The rest of this para and the next para can probably be deleted depending on what is said above] From the supply perspective [discussed above], government financing choices have to be made in the context of the profile of financing flows, whether it reflects the profile of the primary deficit or of debt servicing payments. For prudential reasons, some countries frontload debt issuance to build a cash buffer. This is not always possible and it can be costly when the interest earned on surplus cash is much less than the cost of additional borrowing.

Price considerations are summarized by the yield curve, which is the representation of the yield on different government debt instruments by their outstanding maturity. The yield curve's shape is determined by a mixture of liquidity preference, interest rate expectations, and preferred investor maturity ranges. If these price considerations are to feed into financing decisions, it is important that the relevant decision makers have an understanding and control of the policy interactions across the whole yield curve.

*Other day-to-day coordination requirements between debt and cash managers include:*

Linkage of issuance dates with redemption dates, to maximize the opportunities for investors to roll over into a new issue.

- Maturity dates should also be chosen to avoid weeks, and especially days, of heavy cash outflow (e.g., salary payments); and indeed, should target days of cash inflow (the due date for tax payments).
- Debt managers can, through liability management operations, mitigate the cash management problems that potentially arise when large bonds come to maturity.

The potential strain between debt and cash management objectives over whether to issue T-bonds or T-bills when faced with an imminent cash shortage is lessened as the scope for active cash management develops. Debt managers prefer to issue bonds with a stable and predictable pattern. Regular issuance reduces market uncertainty and intermediaries and investors can better plan ahead. With a liquid money market, the timing of bond sales can be separated from the profile of the government's net cash flow. It is left to T-bills and other money market instruments to deal with the short-term fluctuations. That in turn greatly improves the transparency and efficiency of debt management.

One implication is that some flexibility should be retained in the T-bill issuance program. There are many advantages in announcing the T-bond program some months ahead; but the benefits are weaker for T-bills, where the risks to both issuer and investor are much less. Although T-bill ranges and issuance dates can be announced in advance, debt and cash managers are advised to keep open the final volume until shortly before the auction when it can be geared to the latest cash flow forecasts. The market will generally accept this, not least

because the mirror image of a government cash shortage will be excess cash in the banking system (and vice versa), other things equal.

As this interaction with the market develops, the integration of debt and cash management functions becomes especially important. It ensures that the government presents a consistent face to the market. Where two parts of government are interacting with the market, there are risks of giving conflicting signals, adding to uncertainty, and also potentially distorting the money market. Front office staff directly managing the transactions in the market may also need to intervene in the money market for debt management reasons, or in the debt market for cash management reasons.

### **Role of Debt as a Safe Asset for The Financial Sector; *Case Study – Impact of Regulation***

Debt plays an important role as a safe asset and has policy relevance on several levels: (i) provide a benchmark yield curve for the corporate debt market; (ii) support liquidity management operations of the central bank; (iii) provide an investment alternative with little or no risk of default for investors; (iv) maintain and develop smooth functioning and efficient financial markets; and (v) provide market infrastructure through a robust payment and settlement system and a strong legal framework (i.e., collateral and bankruptcy laws).

Safe assets are used as a reliable store of value and aid capital preservation in portfolio construction. They are a key source of liquid, stable collateral in private and central bank repurchase (repo) agreements and in derivatives markets, acting as the “lubricant” or substitute of trust in financial transactions. As key components of prudential regulations, safe assets provide banks with a mechanism for enhancing their capital and liquidity buffers. As benchmarks, safe assets support the pricing of other riskier assets. Finally, safe assets have been a critical component of monetary policy operations. These widely varying roles of safe assets and the differential price effects across markets make it difficult to gauge the overall price of safety.

A tightening of the market for safe assets can have considerable implications for global financial stability, including an uneven or disruptive pricing process for safety. As investors scramble to attain scarce safe assets, they may be compelled to move down the safety scale, prompting the average investor to settle for assets that embed higher risks.

Safe assets have several broad-based roles in international financial markets. Their characteristics—including their steady income streams and ability to preserve portfolio values—are key considerations in investors’ portfolio decisions. Safe assets serve as high-quality collateral critical to many transactions, including those in private repo, central bank repo, and OTC derivatives. They are integral to prudential regulations, influencing, at least in part, the amount of safe assets on banks’ balance sheets. Safe assets are widely embedded in portfolio mandates and often act as performance benchmarks. Yields on government bonds

are reference rates for the pricing, hedging, and valuation of risky assets. Finally, safe assets—at least in the case of advanced economies—have been a part of central banks' liquidity operations in response to the crisis.

Implementation of the Basel III capital and liquidity framework also has important implications. The weighing of assets and risk weighing of government securities will have an impact on the level of capital adequacy. The Basel III liquidity framework, which defines high quality liquid assets, may not fully reflect financial market structures in Emerging and Developing Economies, impacting the functioning of domestic financial markets and raising the need for national discretion to, e.g., adjust for lack of market liquidity.

In response to the global financial crisis, authorities in many jurisdictions are encouraging greater use of CCPs for OTC derivatives transactions. In particular, the G20 has agreed that all standardized OTC derivatives should be centrally cleared so as to lower counterparty credit risk through multilateral netting. The global nature of OTC derivatives markets has also highlighted the need for international coordination to establish minimum cross-border risk management standards and avert regulatory arbitrage in cases where CCPs compete with each other. The expected changes in OTC market infrastructure will likely increase demand for safe assets via higher demand for collateral.

While a shift toward central clearing of standardized OTC contracts will eliminate some of the need for bilateral collateralization, the move of a critical mass of OTC derivatives to CCPs is expected to increase the demand for collateral. The higher demand would arise from an upfront initial margin that typically is not posted on bilateral interdealer trades, and from contributions to guarantee funds at the CCP, with the size of contributions depending on the amount of cleared contracts. Moreover, a proliferation of CCPs without mutual recognition may raise total CCP collateral requirements even further. The lower estimate is associated with exemptions of certain types of OTC derivative counterparties (such as sovereigns and “hedgers”) or types of contracts (such as foreign exchange derivatives) from the central clearing mandate. More importantly, restrictions on the market reuse (rehypothecation) of collateral posted with CCPs may lower the effective supply of collateral in the market and hence increase the liquidity risk premium (Singh, 2011).