The Development of Domestic Bond Markets:

Interpreting the Mexican Experience

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ABSTRACT

This paper deploys a risk-based approach to analyse the development of the government bond market in Mexico. This paper determines that the development of a market for local-currency government bonds has allowed the Mexican government to significantly enhance its debt profile by reducing and rebalancing the risk factors that contributed to previous crises, containing the possibility of future crises and slashing its debt costs. While this process of bond market development requires the government to develop the institutions that support the market, other factors such as the size of the economy and global market conditions also shape the process.

Contents

1 INTRODUCTION

In the time after currency crises, debt defaults, and celebrity-backed "drop the debt" campaigns, it can be expected that much of the development literature would highlight the perils of financial imbalances resulting from the habit of excessive borrowing by developing countries. But history does not end at crisis; the hard-learned lessons of the crises drove many developing countries to cultivate domestic financial infrastructure as a way to both manage the risks of future crises and channel domestic resources in a growth-maximising manner. The development of local bond markets often sits at the heart of this reform process, but its relevance is outweighed by a far larger body of literature on external debt. In fact, enhancing our understanding of the role of external debt in the development process requires examining its domestic counterpart, as the driving factor behind governments issuing external debt is typically their inability to borrow domestically at comparatively advantageous terms.

Having suffered two major financial crises directly and endured the indirect consequences of others in the past 30 years, the Mexican government punctuated the remarkable turnaround of its financial fortunes in October 2006 with the issue of a 30-year fixed-rate peso-denominated bond, effectively completing the peso yield curve and signalling investor confidence in the country's long-term macroeconomic stability. With an active government bond market and a growing market for corporate bonds, Mexico stands out from other Latin American countries that have generally exhibited mixed track records of bond market development.

Mexico's extensive experience and relative success in domestic government bond market development makes for an ideal case study; hence this paper interrogates the case

of Mexico with two main queries. First, how important or desirable has the cultivation of domestic government bond markets been in the case of Mexico? Second, what are the processes that shaped and continue to shape its domestic bond market? The analytical lens that this paper employs emerges from the work of Dattatreya and Fabozzi (2000), which expounds the risks of market involvement of both investors and borrowers. Theoretically, if some of the risks associated with holding local currency debt can be reduced, the government is allowed to redistribute other forms of risk to investors, which allows it to reduce its overall credit risk and shape government bonds as a stable yet high-yielding investment. The relative novelty of the risk-based approach to analysing the development of bond markets seems to reflect a disconnect in the literature: Fabozzi's work is used extensively in the financial sector and heavily reflects an investor's perspective, but his work is surprisingly unreferenced in the bond / financial market development literature. Hence, by employing a component of his work—albeit a superficial one--this paper hopes to make a small step in bridging the gap, and possibly enhance the analytical perspectives of both sides in the process.

This paper first intends to show that in the Mexican government has successfully reshaped its risks through the development of the government bond market, diverging sharply from the behaviours that contributed to previous financial crises and slashing the costs at which the government can borrow domestically. The process of bond market development allowed the government to reduce systemic inflation, political, and liquidity risks associated with holding local currency government debt, permitting the issuance of debt that transfers market and reinvestment risks (and currency risk in the case of foreign investors) to investors who demand such securities, thus decreasing the government's

credit risk. Regarding the second aim, this paper finds that while institutional reforms drove the reduction and rebalance of risks that facilitated bond market development in Mexico, they did not represent the only factors in the process: the growth of the economy has likely contributed to the reduction of risks that has facilitated the growth of the market, though to what extent is inconclusive. Further, a confluence of exogenous events in the global financial system also aided the process by reducing the relative costs of participating in the local bond market.

The next section interrogates the history of financial crisis in Mexico, specifically those of 1982 and 1994, using the analytical lens to ascertain the patterns of risks that these episodes exposed and the contribution of debt structure to the crises. The third section analyses the literature on bond market development, first laying out the theoretical case for domestic bond market development and how it could alleviate the risks revealed in the first section, then assessing the impediments to bond market development. The fifth section comes full circle by returning to the empirical case of Mexico in the present day, to assess the process by which the country has progressed bond market development by overcoming the risks outlined in the first section. We conclude by summarising and qualifying our findings, and proposing further areas of research.

2 REVEALING RISK THROUGH THE CRISIS NARRATIVE

This section offers a brief examination of recent financial crises that have affected Mexico directly, the 1982 Latin American debt crisis and the 1994 "Tequila" crisis, with

the aim of deploying our analytical lens to understand the risk factors leading to the crises, and how the borrowing patterns of government fed these risks.

2.1 Falling down: the crisis of 1982

Foreign currency borrowing by developing countries from international banks or markets was once deemed to be critical to the development efforts of countries, as such borrowing would inject financial resources into the developing world and compensate for its low savings rates. Domestic currency borrowing by governments can "crowd out" borrowing by other economic actors in the short term, as local interest rates rise in response to increased demand for local currency resources. Foreign currency borrowing does not present such effects in the short term, but implies repayments into the future, acting as a deflationary drag on the economy over time (Turner 2003, 8). Furthermore, as foreign currency debt is typically denominated in currencies that have exhibited a much longer record of stability than currencies of developing countries, such as the U.S. dollar or the euro, it is typically offered at more attractive terms than domestic currency debt, with lower rates of interest and longer maturities. Thus, heavy international borrowing stemmed from the relatively low cost of international funds and the relatively high risk of borrowing domestically in the local currency, which incorporated **inflation risk** that quickly eroded the value of the cash flows emerging from local currency investments, and **liquidity risk**, or the risk that low market activity levels would force an investor to sell an investment at a value much lower than that of a recent transaction of the same security (Dattatreya and Fabozzi 2000, 24-25). Liquidity risk can emerge because the lack of local market development limits trading activity, or because of the lack of international interest in exotic currency instruments.

These borrowing patterns by Latin American countries (including Mexico) during the 1970s tremendously increased the levels of foreign currency debt on their books and set the stage for a debt crisis in the region during the early 1980s, after which the rapid change of terms of borrowing made such high debt levels unsustainable. The occurrence of the crisis laid bare the reality that the aforementioned risks now seem far outweighed by the various risks that the crises exposed within the pattern of borrowing.

The most obvious risk is **credit (default) risk**, or the risk that the borrower becomes unable to make timely payments on the investment to the creditor; like any risk, perception of increased credit risk can shift the value of the investment more than the actual likelihood of default (Dattatreya and Fabozzi 2000, 24). Shadlen (2006) describes four events whose confluence triggered the crisis, which can be tied to other risk factors that fed the credit risk of Latin American countries. First, the rise of the LIBOR rate that determined the interest rate on the floating debt hugely increased debt servicing costs, indicating that borrowing countries bore unmanageable levels of **market (interest-rate) risk**, or the risk that an investment's value will change due to a possible future change in interest rates over the course of its life (Dattatreya and Fabozzi 2000, 22). Debt that carries fixed interest rates eliminates this risk for the borrower by transferring it to the creditor, who is typically unwilling to shoulder such risk over an extended future time horizon for a borrower with uncertain credit prospects. The implied trade-off for borrowers is that floating-rate borrowing would allow them to extend the maturity of debt to the maximum possible extent with the aim of reducing **reinvestment risk**, or the risk that the future interest rate at which the government would need to borrow to pay off previous borrowing—or "roll over" the debt--would rise to unaffordable levels

(Dattatreya and Fabozzi 2000, 22). Though the fact that much of Latin America's debt at the time was characterised as long-term (with terms up to ten years) indicated that reinvestment risk had been partially mitigated, the proportion of Mexico's short-term debt quickly rose from 7.4% in 1978 to 29.9% of total debt in 1982 (Corbridge 1993, 36-37). Another contributing factor to the crisis was the inability of developing countries to borrow new funds to pay off loans coming due (Shadlen 2003, 3), indicating that developing countries could not fully alleviate reinvestment risk to overcome the rise in interest rates.

Finally, the overvalued exchange rate regimes in place in Latin America both masked and exacerbated considerable **currency risk**, or the risk that arises when the relative price of the local currency changes (Dattatreya and Fabozzi 2000, 27). The fixed currency overvaluation masked the underlying economic weaknesses of the economy that undermined the ability of borrowers to repay the debt, by creating a mismatch between governments' dollar-denominated loan liabilities and local currency-denominated assets (Eichengreen, Hausmann, Panizza 2003, 13); this situation is further exacerbated by the fact that the government's primary income stream, tax revenue, is also denominated in local currency (Turner 2003, 8). Shadlen's third event is a drop of dollar income through the fall of commodity prices, squeezing the value of Latin American exports and severely denting the dollar-denominated income streams that countries needed to service external debts (Shadlen 2003, 3).

The fourth event, a flight of capital from Latin America toward investments in financial and real estate assets abroad that drained the country's foreign reserves, was encouraged by the relatively cheap valuation of foreign assets enabled by the overvalued

exchange rate and, in cases such as Mexico, a relatively open capital account (*ibid.*, 3). The sum result of these two factors undermined the ability to repay debts denominated in foreign currencies, as maintaining the overvalued exchange rate caused a depletion of dollar reserves that could service debt. The inevitable subsequent devaluation of the local currency strongly magnifies the relative cost of external debt, further eroding the ability of borrowers to repay their loans.

2.2 Failing to resolve risk: one crisis leads to another

Faced with all of the above factors, Mexico was the first of the indebted Latin American countries to default on its debt in August 1982. Economic stagnation and high levels of inflation dominated subsequent years, and the effective severance of foreign lending forced the government to seek domestic sources of credit. Seeking to avoid further stoking inflation levels through monetary expansion, governments raised the sale of local-currency treasury bills called CETES to the banking system (Buffie 1989, 160). Here is where the story of the domestic bond market in Mexico originates: CETES were first issued in 1978, but lack of quantity inhibited liquidity in the secondary market, further constrained by government-controlled interest rates (Sidaoui 2002, 151). By 1985, large issuance of these securities to banks (reflecting stubbornly high deficit levels) effectively crowded out lending to the private sector: the yield on 3-month CETES in December 1985 reached 74.1%, exceeding the average cost of bank funds at 65.7% (Buffie 1989, 160-161).

By the time of the next major financial crisis in 1994, the composition of domestic government debt had diversified to include issuance of CETES to terms of up to 1 year, floating-rate securities known as Bondes, and short-term dollar-linked bonds

called Tesobonos. Calvo and Mendoza (1996) describe the instrumental role of these securities in the 1994 crisis, explaining that in the context of massive credit expansion and fixed exchange rates during the years before the crisis, foreign investors directed huge amounts of volatile capital towards these securities, particularly CETES. The assassination of a presidential candidate shocked investor confidence and sparked a sell-off of CETES that severely dented foreign reserves, which reveals the heightened perception of **political risk**, or the risk of a political action affecting the value of the investment (Dattatreya and Fabozzi 2000, 27). Dattatreya and Fabozzi use the definition of political risk to point to specific political decisions that affect valuation, such as the introduction of a withholding tax on the security. No specific political action was threatened in this event, but the possibility of such actions emerging from an uncertain presidential succession shook investor confidence.

Believing that reducing the currency risk of its debt for investors would restore confidence, the government attempted to restore confidence in the market by raising its own currency risk, increasing the share of Tesobonos on the government debt market rose from 4 to 75% between the ends of 2003 and 2004 (Calvo and Mendoza 1996, 244). But the haemorrhage of reserves continued, and the diminishing attractiveness of Tesobonos left the government unable to roll over its debt. The embryonic debt market that emerged in the wake of the previous debt crisis allowed the Mexican government to finance its debt domestically, but had not yet developed to a level that allowed the country to reduce its currency and reinvestment risk, which was particularly heightened due the existence of the fixed exchange rate regime and high exposure to volatile foreign capital flows. The crisis confirmed to the Mexican government that management of the

public debt needed to extend beyond fiscal reforms to address the weaknesses of its debt profile that left the country vulnerable to the volatility of foreign investment (Jeanneau and Verdia 2005, 96).

3 ASSESSING THE LITERATURE ON BOND MARKETS

This section assesses the literature on developing the market for local currency government bonds. Section 3.1 outlines the case for developing market with the aim of understanding how bond markets can alleviate the risk factors described in section 2. Then section 3.2 assesses the determinants of market development to identify the factors that inhibit its development and pursuit of the alternative option, borrowing abroad.

3.1 Sketching the ideal: why bond markets?

The development of domestic bond markets benefits the economy by providing a wide-ranging set of financing options to domestic borrowers in an efficient manner, and correspondingly providing lenders with a wide range of investment options; critically, borrowing and lending activity within a well-developed market should mitigate risks to levels that do not portend future systemic crises. Developing the local bond market facilitates borrowing in local currency at terms that are comparably attractive to those available via international markets, without exposing the issuer to potentially destabilising currency risk. A well-developed bond market also facilitates the possibility of government borrowing at fixed rates across the maturity spectrum, allowing the government to pass reasonable levels of both market and reinvestment risk to private sector investors without facing an extreme trade-off between the two.

This ideal of funding deficits via the markets contrasts starkly with the previous patterns of domestic borrowing, which involved repression of the financial system that contributed to macroeconomic instability. Before the wave of liberalizing financial markets that began in the 1980s, governments often forced banks to finance the public deficit by lending at below-market rates, typically by instituting high reserve requirements that forced banks to hold government debt, or mandating ceilings on interest rates in order to direct credit towards favoured sectors or parties (Fry 1997, 69). Monetisation of the deficit by borrowing from the central bank, which leads to a rise of inflation, represented another prevalent method of deficit financing otherwise known as the "inflation tax" (Fry 1997, 3-5). By issuing local currency bonds via a competitive process, governments borrow at market-determined rates without resorting to financial market repression that increases inflation risk for the whole market. Competitive determination of interest rates to accurately reflect the cost of funds is one of the most important reasons to develop a bond market (Jeanneau and Tovar 2008b, 47).

Local bond market development presents further potential for reducing inflation risk by improving the conduct of monetary policy. As governments retreat from financing deficits through market repression and monetisation and turn to the market for borrowing, central banks will typically use government securities to implement monetary policy; thus a well-functioning money market assures the smooth transmission of monetary policy to the market (Turner 2003, 5).

Furthermore, the development of a domestic government bond market is imperative for the development of a domestic corporate bond market, which expands the financing options for corporations. Beyond the mitigation of risk for governments

themselves, the creation of a government bond market has almost always been a precondition of the development of a corporate bond market. One reason is alluded to above: government borrowing on the bond markets, rather than reverting to repression of the financial sector to fund deficits, means that more financial resources should be available to firms. Another reason relates to the informational function of government bond markets: a liquid government bond market generates trading activity on government bonds that produces "risk-free" yields across a wide maturity spectrum within a particular country, forming a yield curve used to price corporate debt (IMF 2005, 104). A third reason is that the costly institutional and technical infrastructure required to operate a government bond market, as well as the experience gained in running the market, ease the way towards operating a corporate bond market (World Bank 2001, 374). Finally, corporations bear many of the same borrowing risks as governments such as currency risk from mismatches (IMF 2005, 104), implying that the steps taken to broaden the domestic financing options for governments would open the same risk-reducing possibilities for firms.

Systemic improvements to the terms received by borrowers should have concurrent positive effects for investors by reducing credit risk. The whole domestic investment environment improves if borrowers can better manage their risks by borrowing on terms that reduce balance sheet mismatches, and increase the likelihood that they will repay the investor in full. The end of financial repression further means that domestic investors' money is not being channelled towards the government at disadvantageous terms; investors face returns determined by the market that fairly reflect the risk that they face, and the outflow of wealth from the developing country that

searches for fair returns in other markets of the world should fall. For the same reason, foreign investors in search of high yet fair returns are more likely to invest in the developing country. The availability of longer-term securities encourages foreign investment towards more stable and durable investments that tend to have longer-lasting positive economic effects, and mitigates the destabilising tendencies of volatile capital flows. Creation of the bond market should reshape the relationship between borrowers and investors in positive ways that allow the participation of foreign investors in the economy without introducing unsustainable levels of foreign currency debt.

3.2 Towards the ideal: determinants of bond market development

Eichengreen and Hausmann (1999) term the reliance of developing countries on foreign currency debt resulting from their inability to use the domestic currency to borrow abroad as "original sin." This section expounds the determinants behind the domestic version of this original sin, the inability to borrow from local bond markets at reasonable terms.

3.2.1 Redirecting policy

Stabilising the value of the currency by implementing a sensible monetary policy to combat inflation generally represents the first step towards establishing the credibility of local currency government paper. Burger and Warnock (2004) determine that stable historical inflation rates contribute to the development of local bond markets and reduced dependence on foreign currency debt by attracting investors to the local currency. These results echo those of Jeanne (2005), who states that a lack of monetary credibility leads to the dollarization of debt in the developing world. The idea of credibility implies that the government must maintain inflation at low levels for an extended period in order to

convince investors of its sustained commitment to low inflation well into the future. Cowan and Do (2003) point out a potential "dollarization trap," in which excess dollarization of debt that results from original sin itself hinders the ability of the government to build credibility, as it cannot demonstrate anti-inflation behaviour if its liabilities were denominated in local currency and the temptation to monetising debt was at its highest.

Claessens et al. (2003) expound on a related viewpoint, stating that exchange rate policy affects the currency denomination of bonds, as the implied guarantee that governments will expend international reserves to defend the valuation induces firms to borrow in foreign currency, while governments will tend to borrow more in foreign currency to demonstrate commitment to the exchange rate regime. Thus, a free floating or managed exchange rate regime that removes the moral hazard arising from the implied guarantee should have the effect of increasing borrowing in local currency and reducing currency risk. Assessing against Cowan and Do's point, a trade-off seems to exist between the government demonstrating its commitment to monetary stability through issuance of local currency debt and commitment to the fixed currency regime through the issuance of dollarized debt.

3.2.2 Institutional approaches

However, the distance is vast between a one-time policy change that reduces inflation, and a permanent reduction in inflation risk (real or perceived), suggesting that permanently cementing an anti-inflation stance as part of the "rules of the game" require institutional changes. Reinhart *et al.* (2003) outline the argument of debt intolerance, which describes the inability of developing countries to handle external debt at levels

than is otherwise indicated by the quality of their credit rating when compared to borrowers in the developed world that carry similar ratings, as evidenced by a history of relatively numerous crisis and defaults. Their work theorises that a history of default creates institutional weaknesses within a country that greatly increases credit risk; thus, in order to avert subsequent default, institutions must be strengthened to fortify the country's ability to digest larger debt burdens. While their concept is initially applied to external debt, they state that domestic debt intolerance shares the common cause of institutional weakness, which contribute to dollarization and weak maturity structures of debt that enhances vulnerability to crisis (Reinhart *et al.* 2003, 50). Reinhart and Rogoff (2008) extends this work by theorising that inclusion of domestic debt in the analysis of sovereign default episodes helps to explain why so many countries default on their external debts at relatively low levels. For example, Mexico's debt level of 48% of GDP in 1982 (Panizza et al. 2006), itself well below the 60% Maastricht treaty threshold considered safe enough to enter the Euro zone, was comprised of only 2/3 external debt (*ibid.*). The paper also points out that domestic debt tends to increase in the build-up to debt crises concurrently with increases in external debt (Reinhart and Rogoff 2008, 15); the increase of inflation resulting from the monetisation of domestic debt would exacerbate the problem of capital flight mentioned above as a contributing factor to the 1982 crisis.

In sum, debt intolerance arises from the inability of developing countries to issue domestic debt that mitigates their risk to manageable levels, which traces its roots back to institutional weaknesses. It follows from the debt intolerance literature that the weakness of the domestic debt market, which forces borrowers towards debt

characterised by high and underestimated levels of currency, reinvestment, and market risk, arises from institutional weaknesses.

What are the institutions that most affect bond market development? Burger and Warnock (2004) find that countries with strong legal systems have more developed local bond markets; in particular, the rule of law broadens local bond markets, while stronger creditor rights (as enacted into law) facilitates reduced dependence on foreign currency bonds (Burger and Warnock 2004, 8) by encouraging the participation of foreign investors in the market. The rule of law is particularly critical, as strong and efficient courts and clearly defined property rights are needed to support the negotiation of bonds as contractual arrangements (de la Torre and Schmukler 2006, 89).

The literature on the determinants of institutions branches off in two directions (Girma and Shortland 2007, 1). One branch takes a "deep institutional" perspective on financial development focusing on predetermined and mostly unchangeable institutional characteristics that shape the legal structures and property rights that underpin financial markets--specifically the relative inability of civil law systems (such as Mexico) to evolve advanced financial markets when compared to common law countries. Acemoglu *et al.* (2001) fall within this group, stating that settler mortality in European colonies directly affected institutional depth in the colony, which creates "path dependence" in the evolution of future institutions. Another set of literature takes a "political economy" approach to the institutional question. Rajan and Zingales (2003) theorise that financial underdevelopment emerging from financial repression stems from a lack of political goodwill for developing the infrastructure of the market. Incumbent economic actors with established positions in a constrained economy benefit from the privileged access to

finance implied by financial repression, and tend to oppose creation of a market for finance that would open access to new competitive players in the economy. Haber (2005) extends this line of thinking to the Mexican context, explaining that the institutions that govern the financial system are inherently linked to institutions that limit the authority and discretion of the government, hence depend on the overarching process of political reform and democratisation. The government designs the institutions that support the market and structure prudent behaviour in the banking system, but it is not a disinterested party in the process. As the biggest single borrower in the country, the government is probably the incumbent that benefits the most from financial repression and has the incentives to control finance as a means to distribute favours to its business supporters or underline electoral support among key constituents for the ruling party, as the ruling PRI did beginning in the 1960s when it increased social spending for industrial workers and other powerful supporter groups before elections (Haber 2005, 17). The shaky institutional structure that emerges under this arrangement, with weak property rights at its core, fuels expropriation risk as a component of political risk, not by its typical mode of asset seizure, but through borrowing below market rates, onerous reserve requirements, or expansion of the money supply. Banks are incentivised to operate in this environment of heightened expropriation risk with lucrative privileges and restrictions on new entrants to the system (Haber 2005, 11).

3.2.3 The importance of size and scale

The work of Eichengreen *et al.* (2005), while acknowledging the importance of institutions, presents a fundamental challenge to the above explanations of original sin. The authors question the relevance of a government's anti-inflation credibility, as

issuance of inflation-indexed debt would create bonds free of inflation risk; nor does the regression on the determinants of original sin attribute significance to monetary stability (Eichengreen *et al.* 2005, 236). More boldly, they contradict much of the prevailing institutional literature by arguing that their regressions show no statistically significant correlation between institutional quality and original sin, using multiple measures of institutional quality such as the rule of law drawn from Kaufmann *et al.* (1999) and Acemoglu *et al* (2001) data on settler mortality (Eichengreen *et al*. 2005, 241). Instead, they find country size (measured using total GDP, total domestic credit, and total trade) to be the only robust determinant of original sin (*ibid.*, 250), suggesting that concentration of international debt issuance in a few currencies cannot be shifted by reforms within the developing country (*ibid.*, 252). Given the transaction costs associated in dealing in multiple currencies, the benefits of diversifying currencies in a portfolio fall faster than the costs. Further, as the opportunities for diverse investment are much more numerous in larger countries than in smaller ones, the world will tend to invest in the currencies of a few large countries (Eichengreen et al. 2005, 249). In other words, network externalities affect demand for currencies, since the value of using a currency internationally can depend on the number of traders and investors who also use it (de la Torre and Schmukler 2007, 95). For a foreign investor, exposure to an exotic currency brings a package of inflation, currency, liquidity, and even political risk that may far outweigh the potential investment opportunities in the currency.

The relevance of market size also points to the role of economies of scale in market development: quantity of issuance drives the liquidity of a security and will tend to be bigger in larger economies, while it is difficult to share the substantial fixed costs of

developing the technical infrastructure to operate the domestic market if the market is very small (IADB 2006, 141). These results imply that smaller economies may actually find it more effective to issue bonds in foreign currency (de la Torre and Schmukler 2007, 96).

4 THE RISE OF MEXICO'S BOND MARKET

4.1 The state of the government bond market

As in other areas of the development field, concepts of bond market "development" and "underdevelopment" are inevitably normative judgements of the status of the market that can be measured along a number of dimensions. Figure 2.1 displays a common measure of the size of the market--market capitalisation as a percentage of GDP.

Assessing the development of the bond market using this measure can be counterintuitive, considering the fact that overly burdensome levels of government debt could destabilise the economy. However, a critical mass of government debt is required to generate the trading activity that produces market rates along the local currency yield curve used to price other issues on the market.

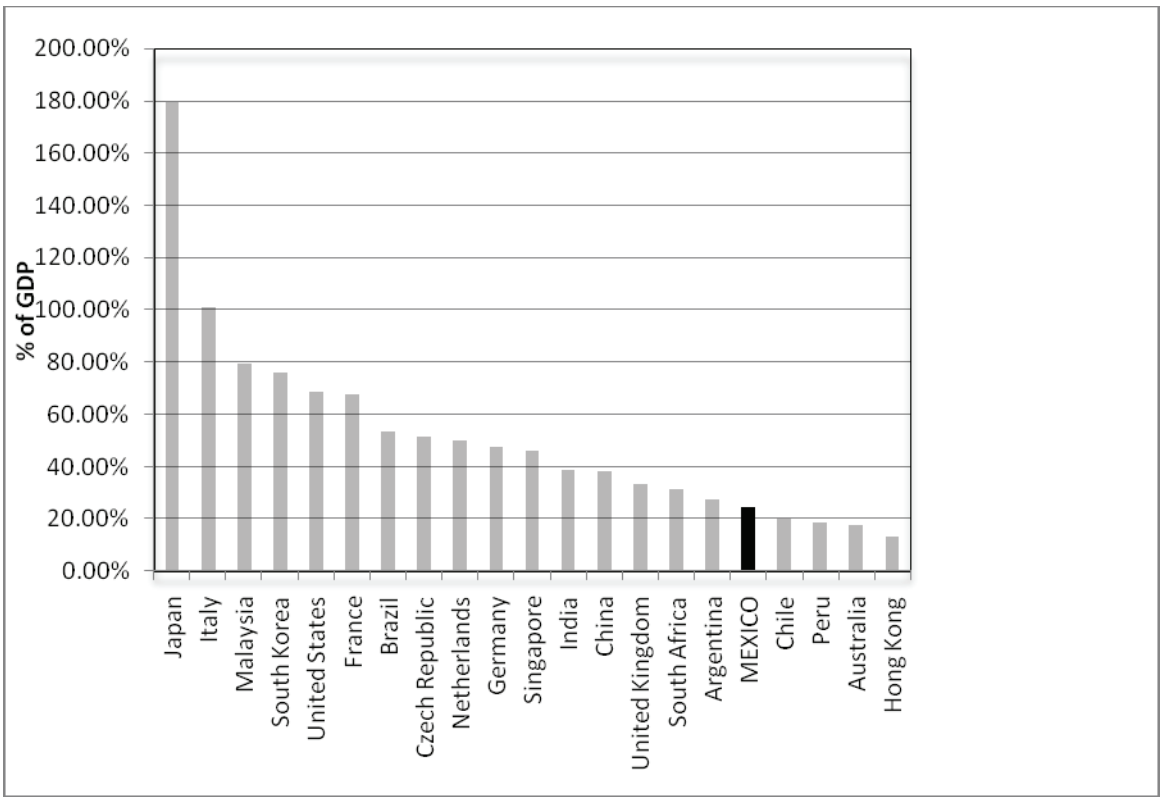

Figure 4.1 Market capitalisation of domestic government bond markets for select countries (% of GDP), December 2007
Source: Calculated from Bank of International Settlements (BIS), IMF data

In terms of its regional peers, Mexico's relative size exceeds that of Chile at almost the same level of economic development as measured by GDP per capita, but lags behind less-developed Brazil due to that country's proportionally higher share of government debt to GDP. Globally, its market appears to be slightly smaller than South Africa's in relative terms, though South Africa's total GDP is less than half as small as Mexico's. Perhaps the most striking disparity is the relative size of Mexico's market to South Korea's, whose market capitalisation of 76% of GDP far outstrips Mexico's at 24%.

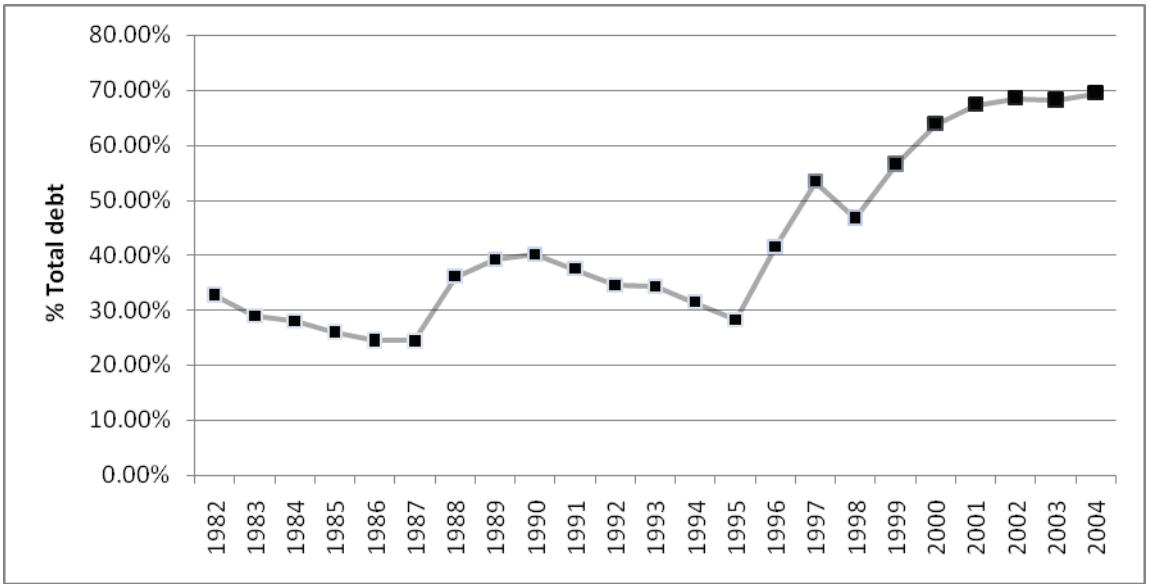

Figure 4.2 Ratios of domestic public debt to total public debt
Source: CLYPS database

Figure 4.2 considers the relative size of the domestic government debt market. The government has largely contained its exposure to foreign currency debt: the proportion of local currency debt within total debt has risen from more than 30% in 1982 to around 70% in 2004, with the downward swing leading up to the 1994 crisis reflecting the government's swap of local currency debt to dollar-linked Tesobonos. Total debt levels have been constrained below 40% of GDP, well below the high of near 80% in the aftermath of the 1982 crisis (IMF), meaning that the government has not simply increased the share of domestic debt simply by adding on to the debt pile. At the same time, increasing holdings of local currency debt has not necessarily implied a trade-off between currency and reinvestment risk: the average maturity of outstanding domestic government debt has increased from 0.8 years in 1995 to 5.9 years in 2007, which is even higher than the 2007 average of 5.1 years for a sample of industrial countries (BIS 2008).