



WP/06/98

# IMF Working Paper

---

## Government Debt in Emerging Market Countries: A New Data Set

*Olivier Jeanne and Anastasia Guscina*



**IMF Working Paper**

Research Department

**Government Debt in Emerging Market Countries: A New Data Set**

**Prepared by Olivier Jeanne and Anastasia Guscina<sup>1</sup>**

Authorized for distribution by Paolo Mauro

April 2006

**Abstract**

**This Working Paper should not be reported as representing the views of the IMF.**

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

This paper presents a new database on government debt in 19 emerging market countries since 1980. The data set focuses on the structure of debt in terms of jurisdiction of insurance, maturity, currency composition and indexation. The paper presents stylized facts on debt structures and preliminary evidence on their determinants. We observe substantial cross-country variation in the structure of domestic debt and find it to be associated with countries' record of monetary stability.

JEL Classification Numbers: F34, F36, H63

Keywords: Debt Management, Sovereign Debt, Debt Maturity, Foreign Currency Debt

Author(s) E-Mail Address: ojeanne@imf.org; agushchina@imf.org

---

<sup>1</sup> The authors would like to thank Herman Kamil, Paolo Mauro, Anna Ilyina, Arnaud Mehl, Philip Turner, and Julien Reynaud for their comments on the first draft of this paper.

Contents	Page
I. Introduction .....	3
II. Description of the Database .....	5
III. Domestic Versus International Debt.....	7
IV. The Structure of Domestic Debt.....	8
V. Monetary Instability and Domestic Original Sin.....	9
VI. Conclusion.....	11
References.....	28
Tables:	
1. Country Coverage of the Data Set .....	5
2. Structure of Central Government Domestic Debt in Mexico in 2000 .....	7
3. Panel Regression of Share of Domestic-Currency Medium- and Long-term Fixed Interest Rate Debt on Past Inflation.....	11
Figures:	
1. Central Government Debt-to-GDP Ratio in Latin America, Asia, and Advanced Countries.....	13
2. Share of Domestic Debt in Total Central Government Debt.....	14
3. Ratio of M2 to GDP and Share of Domestic Debt in Total Government Debt .....	15
4. Stock Market Capitalization and Share of Domestic Debt in Total Government Debt.....	16
5. Private Savings Rate and Share of Domestic Debt in Total Government Debt.....	17
6. Structure of Domestic Government Debt .....	18
7. Structure of Domestic Government Debt in Latin America, Asia, and Advanced Economies.....	19
8. Share of Domestic Currency Medium- and Long-Term Fixed Interest Rate Debt in Domestic Debt.....	22
9. Structure of Domestic Government Debt in Selected Countries .....	23
10. Inflation and Domestic-Currency Medium- and Long-Term Fixed Interest Rate Debt .....	24
11. Impulse Response of Share of Domestic-Currency Medium- and Long-Term Debt to Three Years of High Inflation .....	27

## I. INTRODUCTION

It is widely acknowledged that “dangerous” forms of debt (especially short-term and/or foreign-currency debt) make emerging market countries prone to crises and render these crises more difficult to manage.<sup>2</sup> This raises the important policy question of how emerging market countries can develop debt structures more similar to the “safe” debt structures that prevail in advanced economies, such as long-term, domestic-currency debt.

As a contribution to the research on this question, this paper presents a new data set on the structure of government debt in emerging market countries. It is the result of a data collection project that was pursued by the two authors in the Research Department of the International Monetary Fund in 2004–05. The paper also presents—as a prelude to more extensive analysis—some stylized facts on debt structures, as well as preliminary evidence on their determinants.

Our data set focuses on the debt of the central government in 19 emerging market countries. It is the first database (to our knowledge) to include debt issued both domestically and abroad. The international community collects and publishes comprehensive data on the external debt of developing countries,<sup>3</sup> but data on domestic debt are much more difficult to come by. Thus, the main comparative advantage of our database is that it includes governments’ domestic debt, with detailed information on its structure in terms of maturity, currency composition, and indexation.

The recent literature on the debt of emerging market countries suggests that domestic debt is a more interesting object of inquiry than international debt. The debt issued abroad by most countries (including industrial ones) is of medium maturity and denominated in a foreign currency, mainly the U.S. dollar—a fact that has been emphasized and documented by Eichengreen and Hausmann (1999) under the name of “original sin.”<sup>4</sup> By contrast, we find major cross-country variation in the structure of domestically issued debt, a fact emphasized by Goldstein and Turner (2004) and Jeanne (2005). This opens an exciting area for applied

---

<sup>2</sup> See Isard (2005) for a recent review of the debates on what emerging market countries can do to reduce their vulnerability to financial crises, as well as a number of general directions for systemic reform. The various channels by which currency and maturity mismatches in balance sheets can generate or magnify crises are reviewed in Jeanne and Zettelmeyer (2005).

<sup>3</sup> The World Bank collects data on the external debt of the 136 countries that report public and publicly guaranteed debt under the Debtor Reporting System (DRS). These data form the basis for the Global Development Finance (GDF) data set.

<sup>4</sup> To be precise, this is what Eichengreen and Hausmann defined as the *international* dimension of original sin. Eichengreen and Hausmann and their followers have also defined a *domestic* version of original sin for which we see little evidence in the data. We shall come back to that point.

research: one would like to know more about the factors that led some countries to develop “risky” domestic debt structures, and conversely which policies might make them safer.<sup>5</sup>

There are unfortunately very few cross-country data sources on domestic debt structures that researchers can rely on. Missale (1999) reports detailed data on government debt structures for 18 OECD countries. The Bank for International Settlements (BIS) publishes data on the size of the domestic debt market for a larger sample of countries in its statistics on domestic debt securities, but with little detail on the structure of debt.<sup>6</sup> For emerging market countries, the main source of information on domestic debt structures has been JP Morgan’s *Guide to Local Markets* (1998, 2000, and 2002).<sup>7</sup> For each year, this report provides a snapshot of information on domestically traded public debt for 24 emerging market economies. Burger and Warnock (2003) use unpublished data on the country distribution of U.S. investors’ international bond portfolios that are collected by the U.S. Federal Reserve.

There have been efforts, more recently, to construct cross-country databases on the structure of debt in emerging market and developing countries. Mehl and Reynaud (2005) collected data on domestic debt structures in 33 countries from national sources, like we did, but over a shorter period (1994–2004) and with a less detailed breakdown. Christensen (2005) collected data on the domestic debt of 27 sub-Saharan African countries. A data collection project similar to ours has been independently pursued for Latin American countries, by the Inter-American Development Bank (Cowan and others, 2006). Kamil (2006) has collected data on the currency composition and maturity of corporate debt in Latin America.

In a nutshell, our database has the following advantages: (1) it puts together domestic and international debt in a way that is comparable across countries; (2) it starts relatively early (in 1980, except for the transition countries); (3) it provides an unprecedented level of detail on the structure of domestic debt, with a breakdown in 18 different categories.

---

<sup>5</sup> Although this paper is part of a research agenda that focuses on domestic reforms, we believe that reforming the international debt market could yield significant benefits, too. Our point is simply that the empirical research on international reform has a less diverse cross-country experience to rely on.

<sup>6</sup> The only information it provides on the structure of debt is a breakdown by residual maturity (more or less than one year). The BIS data have been used by Claessens, Klingebiel, and Schmukler (2003) and Eichengreen and Luengaruemitchai (2004) to study the development of domestic bonds markets.

<sup>7</sup> This source is used by Hausmann and Panizza (2003), Borensztein and others (2004), and Jeanne (2005).

The paper is structured as follows. Section II gives a broad description of the database.<sup>8</sup> Sections III and IV present some stylized facts about domestic and international debt. Section V looks at the link between monetary credibility and domestic “original sin.”

## II. DESCRIPTION OF THE DATABASE

Our data set covers the debt of the central government in 19 countries (6 in Latin America, 7 in Asia, 4 transition countries plus Israel and Turkey—see Table 1). Most of the countries are middle-income countries and are classified by the financial community as emerging market countries.<sup>9</sup> Our data set provides various decompositions of the outstanding stock of central government debt at different points in time. We focus on the *central government* rather than broader entities because data were difficult to find for local governments and public enterprises in most countries. We include the international debt of central banks but not their domestic debt, which is generally small.<sup>10</sup>

Table 1. Country Coverage of the Data Set

Latin America	Asia	Others
Argentina	China	Czech Republic
Brazil	India	Hungary
Chile	Indonesia	Israel
Colombia	Malaysia	Poland
Mexico	Korea	Russia
Venezuela	Philippines	Turkey
	Thailand	

We collected annual data on government debt starting in 1980. For international debt, we have annual data for all countries over the period 1980–2002. For domestic debt, the data were available only after 1992 or 1993 in the four transition countries (Czech Republic, Hungary, Poland, and Russia). Although we recorded the data at the quarterly or monthly frequency whenever we found them, the results presented in this paper are all based on annual data.

<sup>8</sup> The database and its construction are described in greater detail in Jeanne and Guscina (2006).

<sup>9</sup> They belong to JP Morgan Emerging Markets Bond Index Global (EMBIG), except India, Korea, the Czech Republic, and Israel.

<sup>10</sup> There is one exception to that rule: Chile. For that country, we included the domestic debt of the central bank, because the Central Bank of Chile has issued large amounts of debt on behalf of the government.

The breakdown that comes first in our decomposition is between domestic debt and international debt. We define these concepts in terms of jurisdiction of issuance: domestic debt is debt issued domestically, whereas international debt is issued under a foreign jurisdiction. This is different from the concepts of domestic and foreign debt as defined in the International Financial Statistics (IFS) or Global Development Finance (GDF) databases, where the criterion is the residency of the debt holder. Although the residency of the debt holder is a natural criterion from a balance-of-payments accounting perspective, it was not possible to obtain a breakdown by residency of the debt holder for the detailed categories of domestic debt that we consider in our data set. Moreover, the jurisdiction of issuance is also a meaningful aspect of debt structure.

The template, the collection, and the construction of the data were different for domestic and international debt. There is no existing cross-country data set on the structure of domestic government debt, so we had to rely on national sources. For each country in the data set, we listed all the debt instrument that were used by the government since 1980, and recorded the characteristics of each instrument in terms of maturity, currency composition, indexation, interest rate, and the outstanding stocks. Although most of this information was found on the authorities' web sites and in various publications, it generally had to be complemented with information that we obtained from the national authorities, directly or through the IMF's desk economists and resident representatives. The sources and some details about the construction of the data may be found in Jeanne and Guscina (2006). We focused on three characteristics of domestic debt structures:

1. *Maturity*: with a decomposition between short-term (original maturity of one year or less), medium-term (original maturity between one and five years),<sup>11</sup> and long-term (original maturity longer than five years).
2. *Denomination/indexation of the principal*: in local currency, foreign currency (generally the U.S. dollar), or a price index (generally a consumption price index). What matters for the classification is the unit determining the value of the repayment—for example, debt denominated in local currency but indexed to a foreign currency is counted as foreign currency debt.
3. *Fixed or variable interest rate*.

Crossing the different criteria gives us 18 different debt categories. This is illustrated in Table 2 for the case of Mexico in 2000. Each cell of the table gives the amount of Mexican government outstanding debt for any given combination of maturity, indexation/denomination of the principal, and the interest rate. Most of the cells are empty in Mexico this particular year. However, most cells are represented in the data when we look at the whole sample.

---

<sup>11</sup>Debt with a maturity of exactly five years was counted as medium term, with some exceptions that are explained in Jeanne and Guscina (2006).

Table 2. Structure of Central Government Domestic Debt in Mexico in 2000  
(in percent)

	Short Term	Medium Term	Long Term
Domestic Currency Fixed Interest Rate	24.93	4.86	0.00
Domestic Currency Variable Interest Rate	0.00	49.32	0.00
Foreign Currency Fixed Interest Rate	0.00	0.00	0.00
Foreign Currency Variable Interest Rate	0.00	0.00	0.00
Indexed Fixed Interest Rate	0.00	10.10	10.78
Indexed Variable Interest Rate	0.00	0.00	0.00

Source: Jeanne-Guscina Debt Database.

We did not focus on the same type of information for international debt as for domestic debt because, as mentioned in the introduction, it is well known that it is mostly medium-term and denominated in foreign currency. Here the focus was more on the distinction between private and official creditors, and between bank loans and bonds. The template was largely inspired by the GDF data set (which was also the main source of our data on international debt).<sup>12</sup>

### III. DOMESTIC VERSUS INTERNATIONAL DEBT

Our database reveals that the ratio of total central government debt to GDP does not differ much between Latin America, Asia, and the advanced economies (Figure 1).<sup>13</sup> By contrast, there are significant differences in the reliance on domestic debt (Figure 2). Latin America has relied on domestic debt to a lesser extent than Asia and developed countries and has borrowed mostly abroad. The difference between Latin America and the rest of our sample has decreased over time—the share of its debt that was domestically issued increased by 15 percent between 1988 and 2002—but remained significant at the end of the sample period.

<sup>12</sup> The World Bank publishes data on Public and Publicly Guaranteed (PPG) debt, an aggregate that is broader than central government debt, because it includes all the debt issued or guaranteed by the public sector. We were able to fill in most of our template on international debt by using unpublished data collected by the World Bank. (We thank Nevin Fahmy for providing us with those data.) There was one exception, Israel, which does not participate in the World Bank's Debtor Reporting System, and for which we had to rely on national sources.

<sup>13</sup> Our group of advanced economies is composed of Canada, Japan, France, the United Kingdom and the United States. The source of the data is Missale (1999).

One would like to understand why some governments tend to rely more on international debt than domestic debt to finance their deficits, especially because domestic and international debt tend to have different structures. A reasonable conjecture is that a government that needs to finance a given deficit will tend to rely more on domestic markets if domestic savings are high and the domestic banking and financial system developed.

This conjecture is partly confirmed by a rough examination of the data. First, we consider the correlation between the share of domestic debt and two different measures of domestic financial development. Figure 3 shows a positive correlation with the average ratio of M2 to GDP, suggesting that a large banking sector helps the governments to sell its debt domestically. Figure 4 looks at a different measure of financial development, the country's stock market capitalization as a share of GDP. Again, there seems to be a positive correlation. These results are consistent with Claessens, Klingebiel, and Schmukler (2003) who find a positive relationship between the size of domestic government debt and the domestic investor base.

The evidence is less convincing for the savings rates. Figure 5 plots the share of domestic debt in total central government debt against the private savings rate for each country in our sample, taking the average over the time period for which the data are available. We do not observe a clear positive correlation between the private savings rate and the reliance on domestic debt. The absence of correlation persists if we exclude official debt.

#### IV. THE STRUCTURE OF DOMESTIC DEBT

By contrast with international debt, whose structure is very homogeneous, we observe a great deal of variety in the structure of domestic debt. Figure 6 shows the breakdown of domestic debt in the categories of Table 2. This figure was constructed by computing the share of each category in domestic debt for each country year in our sample and then taking the average over all countries and all years. By construction, the 18 bars in Figure 6 sum up to 100 percent.

Several interesting facts stand out. The first striking fact is the importance of domestic-currency, long-term debt with a fixed interest rate. This finding is in flagrant contradiction with Eichengreen and Hausmann's (1999) domestic "original sin" hypothesis.<sup>14</sup> Emerging market governments not only *can* borrow long-term and in domestic currency, but they do—this is by far the most prevalent category of debt in our sample.

Second, although most categories of debt are represented in the data, some are quite rare. The only category that is not represented at all in the data is short-term indexed debt with a variable

---

<sup>14</sup> Which they defined as the fact that in emerging market countries "the domestic currency cannot be used to ... borrow long-term, even domestically." Hausmann and Panizza (2003) added a criterion involving the interest rate: for them, the domestic original sin is the fact that most countries "do not borrow in local currency at long maturities and fixed rates even at home."

interest rate. Short-term, foreign-currency debt with a variable interest rate would also be absent from the data if the Argentine government had not issued a floating rate Treasury bill indexed to the U.S. dollar in 1988.

We observe very little foreign currency debt, indexed debt, or variable interest rate debt with a short maturity (for example, less than 3 percent of the indexed debt is short-term). Most of the short-term debt consists of Treasury bills denominated in domestic currency and with a fixed interest rate. However, there are important exceptions, the most famous one being the Mexican Tesobonos, which were indexed to the U.S. dollar and in 1994 amounted to 70 percent of the Mexican government's short-term debt.<sup>15</sup>

Our data also reveal a lot of heterogeneity across regions. Figure 7 reports the same information as in Figure 6 for Latin America, Asia, and (for the sake of comparison) our small group of advanced countries. The structure of domestic debt in Asia is very similar to that in advanced countries, with an overwhelming share of domestic-currency debt of medium- to long-term maturity and with a fixed interest rate (hereafter, DLTF debt). The situation is different in Latin America. There domestic-currency, fixed-interest rate debt is less prevalent (although far from absent), and most of this debt is short-term. The share of DLTF debt in total debt is not only lower but has also declined over time in Latin America (Figure 8).

Figure 9 gives some information about the domestic debt structure of the countries in which the share of DLTF debt was less than 50 percent on average. We observe a variety of experiences, with some countries relying mainly on one form of debt (such as Israel on indexed debt, or Argentina on foreign-currency debt) and other countries diversifying more their debt structures (Brazil, Mexico, Turkey). An important question for future research is to understand the determinants of the choice between the various alternatives to DLTF debt.

## V. MONETARY INSTABILITY AND DOMESTIC ORIGINAL SIN

The lower share of medium- and long-term domestic-currency debt in Latin America could be due the monetary instability in this region. Monetary instability makes long-term domestic-currency debt risky, for both the lender and the borrower, by generating some uncertainty in the real value of the repayment. We investigate this hypothesis by looking at the correlation between inflation and the share of DLTF debt in domestic debt.<sup>16</sup> The share of domestic debt

---

<sup>15</sup> Other examples include Argentina (95 percent of its short-term debt was in foreign currency in 1987) and Brazil (54 percent of its short-term debt was indexed in 1986).

<sup>16</sup> From a theoretical point of view the volatility of inflation is more appropriate than the level of inflation as a measure of the risk associated with long-term domestic-currency debt (a high but constant inflation rate will not generate any uncertainty in the real value of the domestic monetary unit). However, the level of inflation is a good proxy for its volatility because the two variables are closely correlated.

that is *not* DLTF is one of Hausmann and Panizza's (2003) measures of domestic original sin (this measure is also used by Mehl and Reynaud, 2005).

Figure 10 plots the average share of DLTF debt in a given decade against the average inflation rate in the previous decade. We show two decades—the 1980s and the 1990s—and a third plot for 2000–04. We keep only the countries for which we have 20 years of data and exclude Indonesia (which had no domestic debt for most of the period). The experience of developed countries is summarized by taking the unweighted average of our group of industrial countries.

In the 1980s DLTF debt had virtually disappeared in the two countries that had more than 100 percent inflation on average in the 1970s, Argentina and Chile. Inflation was much higher in the 1980s than in the 1970s, especially in Brazil and Argentina, and to a lesser extent in Israel and Mexico, leading to the disappearance of DLTF debt in Brazil and Mexico in the following decade. In Turkey, where inflation was relatively high all the time (49 percent on average) but never reached the hyperinflationary peaks of Brazil or Argentina, the share of DLTF debt gradually declined from 66 percent in 1980 to 29 percent in 2004.

The return to monetary stability in the 1990s has not allowed DLTF debt to recover significantly in the countries where this debt had been previously curtailed by monetary instability. In 2000–04, the share of DLTF debt remained insignificant in Brazil, Argentina, Chile, and relatively small in Israel and Mexico, in spite of average inflation rates that were in the single digits in the 1990s. History-dependence in the dynamics of DLTF debt might explain why some authors have failed to find a robust relationship between monetary credibility and a country's capacity to borrow at home for long duration and in local currency (Hausmann and Panizza, 2003). However, the recent pick-up in the share of DLTF debt in Mexico and Israel, after one decade of low inflation, suggests that some recovery is possible.

We further investigate this matter with a panel regression of the share of DLTF debt in domestic debt on a lag and a dummy variable that takes value 1 if the inflation rate exceeded 100 percent in at least one year during the previous decade. Our results, reported in Table 3, suggest a statistically very significant impact of inflation. The coefficient on the lagged dependent variable is large, suggesting that the impact of inflation is relatively persistent, but the fact that it is lower than 1 also suggests that there is no hysteresis. The second regression in Table 3 introduces an interaction between the lagged share of DLTF debt and the dummy for past inflation to test for the possibility that DLTF debt could be more quick to disappear in response to high inflation than to reappear in response to low inflation. The regression results suggest that this is indeed the case.

To illustrate the quantitative impact of inflation, Figure 11 shows the impulse responses of the debt structure to an inflationary shock that raises the inflation rate above the 100 percent threshold for three years in a row, starting from a situation where DLTF debt amounts to 80 percent of total debt. The impact of inflation is quantitatively large, and persistent, especially with the second regression, which implies that DLTF debt virtually disappears 10 years after the end of the inflationary shock and remains at only half of its initial level after 30 years.

Table 3. Panel Regression of Share of Domestic-Currency Medium- and Long-Term Fixed Interest Rate Debt on Past Inflation  
 Dependent Variable: Share of DLTF Debt in Domestic Debt (in percent)

	Regression 1	Regression 2
Lagged share of DLTF debt	0.92 (0.025)***	0.96 (0.012)***
Dummy for inflation > 100% in previous decade	-7.03 (2.267)***	-2.01 (1.146)*
Lagged share times inflation dummy		-0.26 (0.095)***

Note: Standard errors in parenthesis. The data on DLTF debt come from the Jeanne-Guscina database. Inflation comes from IFS and GFD. Country fixed effects were not significant and were omitted from the regression.

Overall, the evidence suggests that the government’s ability to borrow in domestic currency at medium or long maturities was curtailed by monetary instability in some countries, and that the governments in those countries were left with a choice between borrowing short-term in domestic currency, or at longer maturities with some form of indexation. This result is broadly consistent with the findings of Burger and Warnock (2003), Claessens, Klingebiel, and Schmukler (2003), or Mehl and Reynaud (2005).

## VI. CONCLUSION

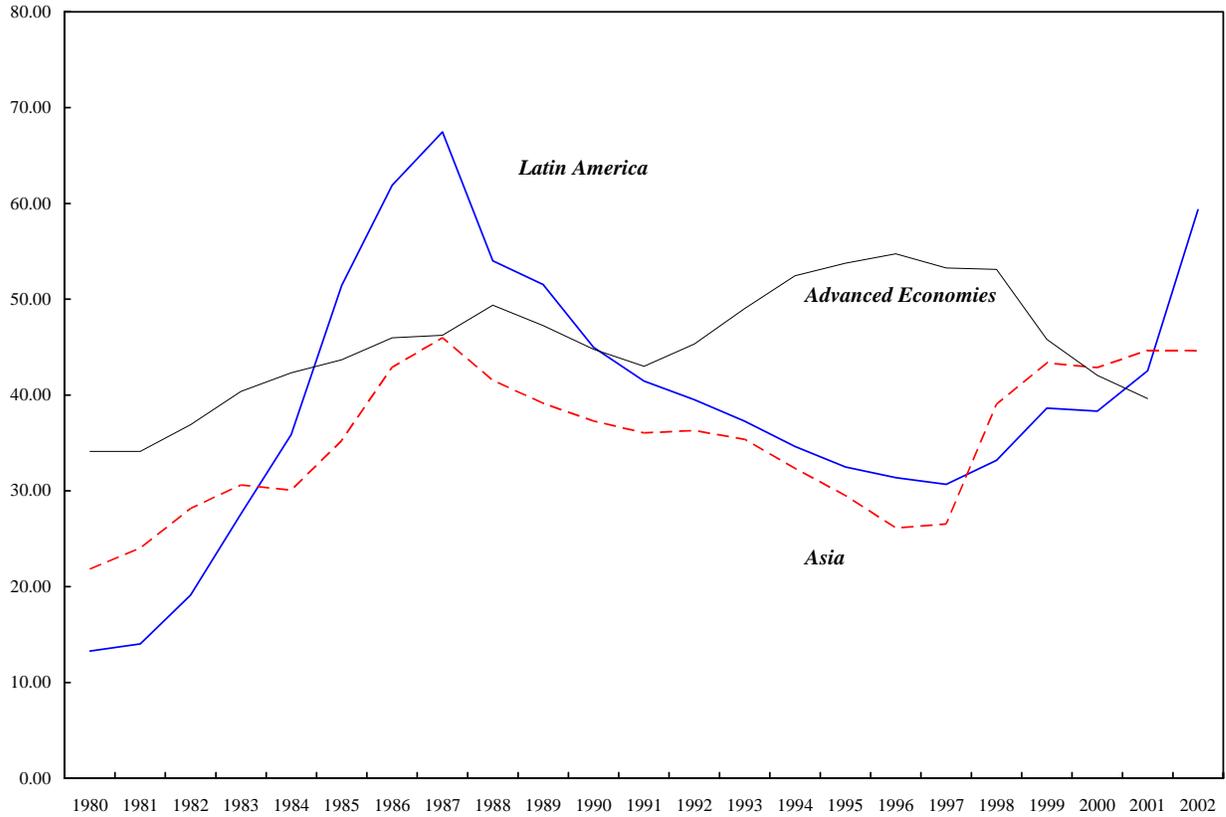
This paper has presented a new data set on the structure of government debt in emerging market countries. Our database puts together domestic and international debt in a way that is comparable across countries and provides an unprecedented level of detail on the structure of domestic debt. Hopefully this data set will help researchers understand why some countries develop “dangerous” debt structures, and what policies can make them safer.

To sum up our preliminary findings, we observe a great deal of variation in the structure of domestic debt, both across countries and over time. Some emerging market countries, especially in Asia, have debt structures that are very similar to those in advanced countries, with a high share of long-term domestic-currency debt. Other countries, especially in Latin America, have very low shares of long-term domestic-currency debt. We find evidence that this difference may be related to a history of monetary instability in the second group of countries.

We hope that this data set will help researchers to pursue other questions. One question that would deserve more research is the choice between CPI-indexed, short-term debt and foreign-currency debt, in the countries where long-term domestic-currency debt has been curtailed by monetary instability.

We also plan to augment our database with data on the interest rates at which different types of instruments were issued. Interest rate series would be useful from different perspectives. Data on quantities and prices could allow us to estimate econometrically a system of supply and demand for the different types of debt. This would also give us a measure of the interest rate premium that must be paid on new debt instruments, and of the benefits of large and liquid markets, potentially leading to some insights on the microeconomics of the development of domestic debt markets.

Figure 1. Central Government Debt-to-GDP Ratio in Latin America, Asia, and Advanced Economies (in percentage points)



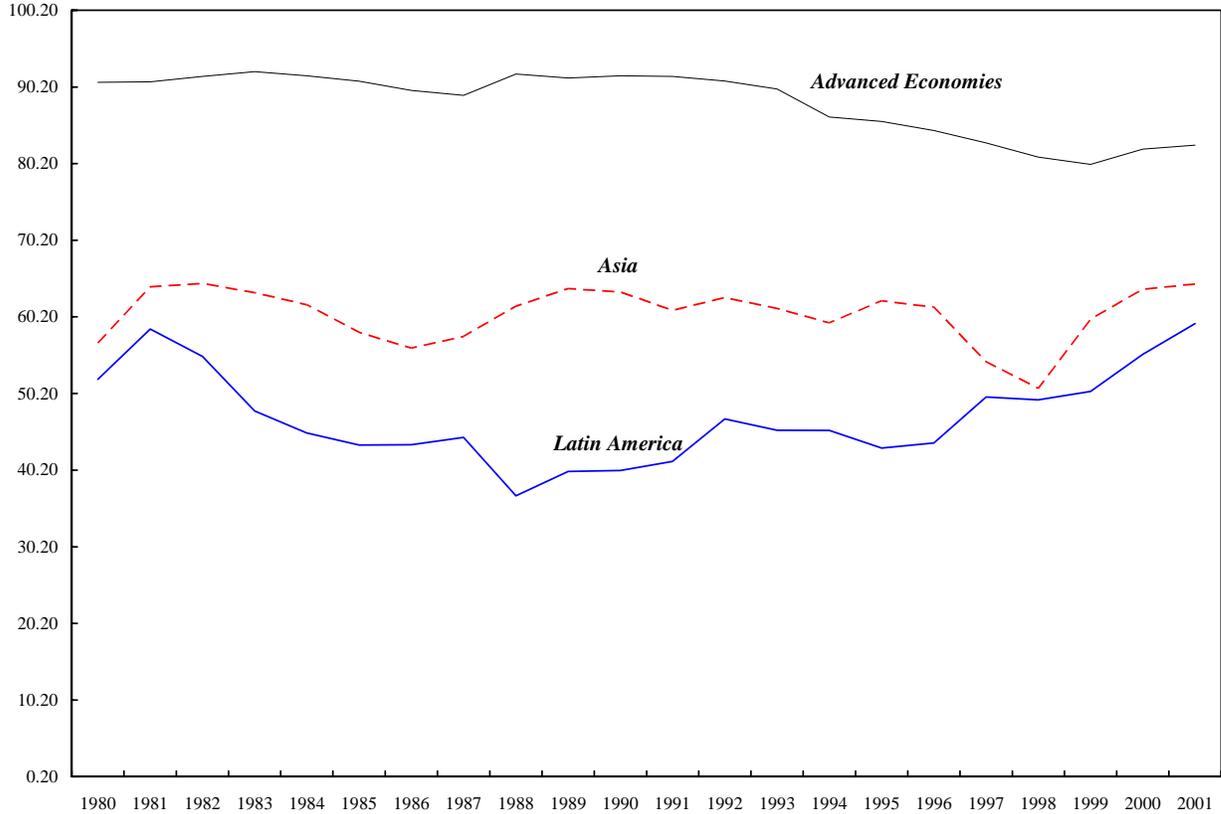
Sources: Jeanne-Guscina EM Debt Database 2006 and Missale (1999).

Note: Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela.

Asia includes China, India, Indonesia, Korea, Malaysia, the Philippines, and Thailand.

Advanced countries include Canada, France, Japan, United Kingdom, and United States.

Figure 2. Share of Domestic Debt in Total Central Government Debt  
(in percentage points)



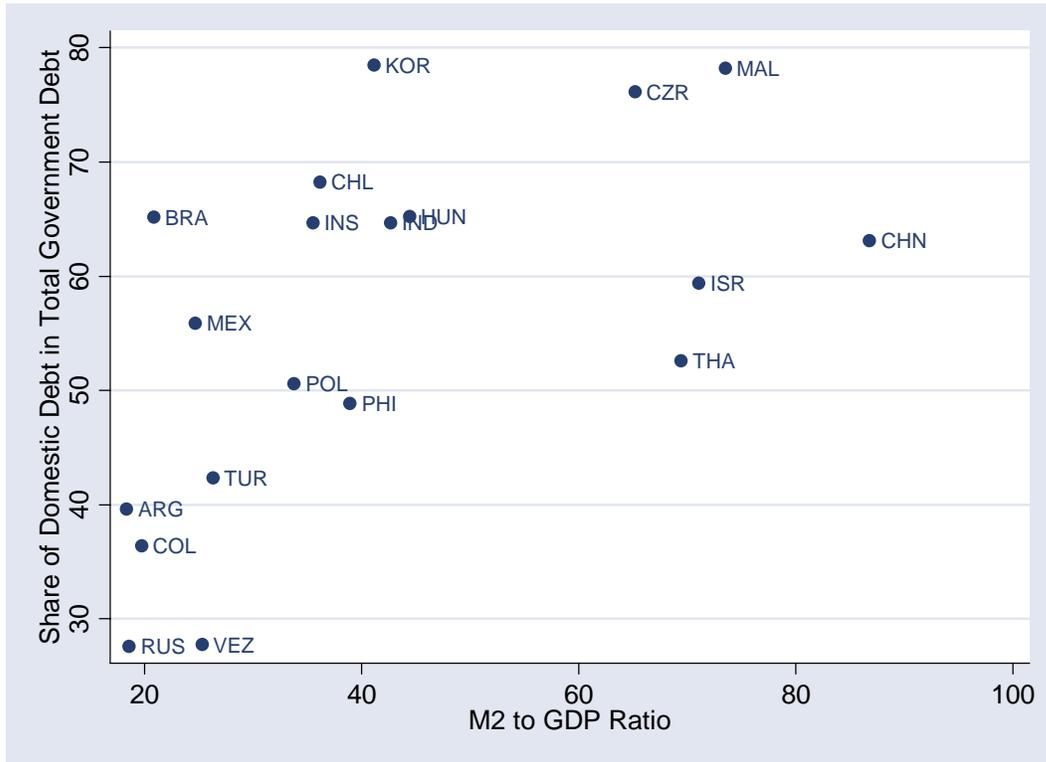
Sources: Jeanne-Guscina EM Debt Database 2006, IFS, and Missale (1999).

Note: Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela.

Asia includes China, India, Indonesia, Korea, Malaysia, the Philippines, and Thailand.

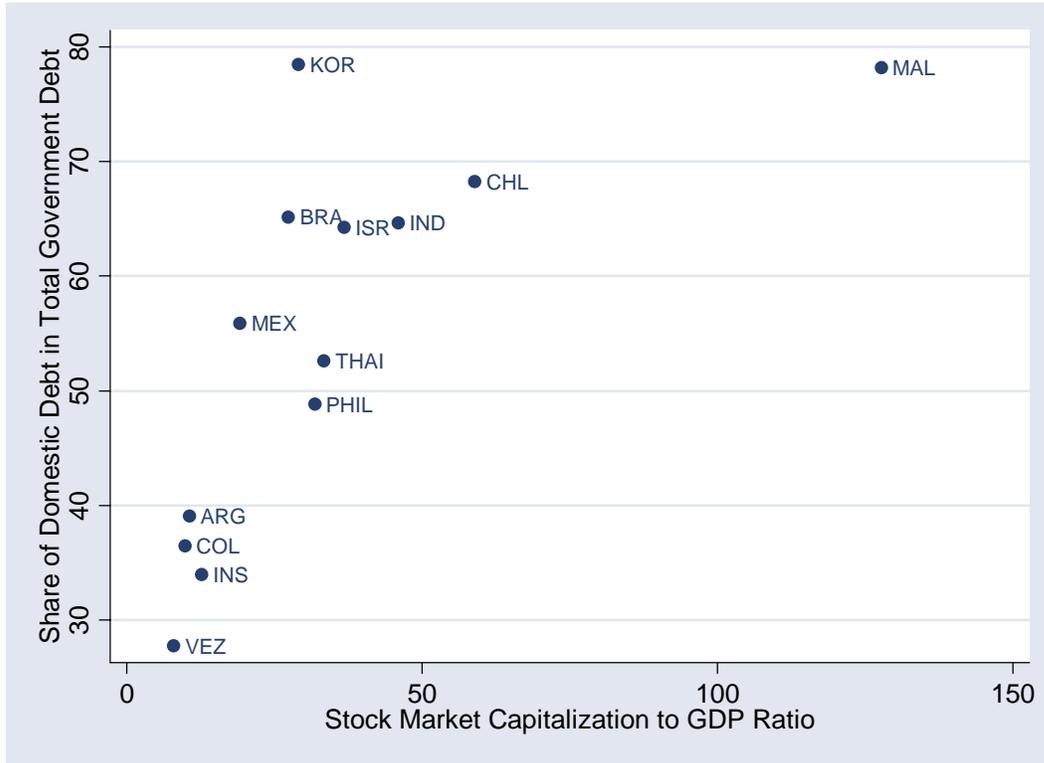
Advanced countries include Canada, Japan, United Kingdom, and United States.

Figure 3. Ratio of M2 to GDP and Share of Domestic Debt in Total Government Debt  
(in percentage points)



Sources: Jeanne-Guscina EM Debt Database 2006 and World Development Indicators database.  
Note: average M2-to-GDP ratios and shares of domestic debt in total debt was computed for 1980–2002 sample, with the exception of transition economies where the starting date was earlier, i.e., 1991 for Hungary, 1992 for Czech Republic, 1993 for Russia, and 1994 for Poland.  
Coverage: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, the Philippines, Poland, Russia, Thailand, Turkey, and Venezuela.

Figure 4. Stock Market Capitalization and Share of Domestic Debt in Total Government Debt in Total Government Debt (in percentage points)



Sources: Jeanne-Guscina EM Debt Database 2006 and Global Financial Data.

Note: Ratio of stock market capitalization to GDP and share of domestic debt in total government debt were computed based on 1980-2002 sample.

Coverage: Argentina, Brazil, Chile, Colombia, India, Indonesia, Korea, Malaysia, Mexico, the Philippines, Thailand, and Venezuela.

Figure 5. Private Savings Rate and Share of Domestic Debt in Total Government Debt in Total Government Debt (in percentage points)

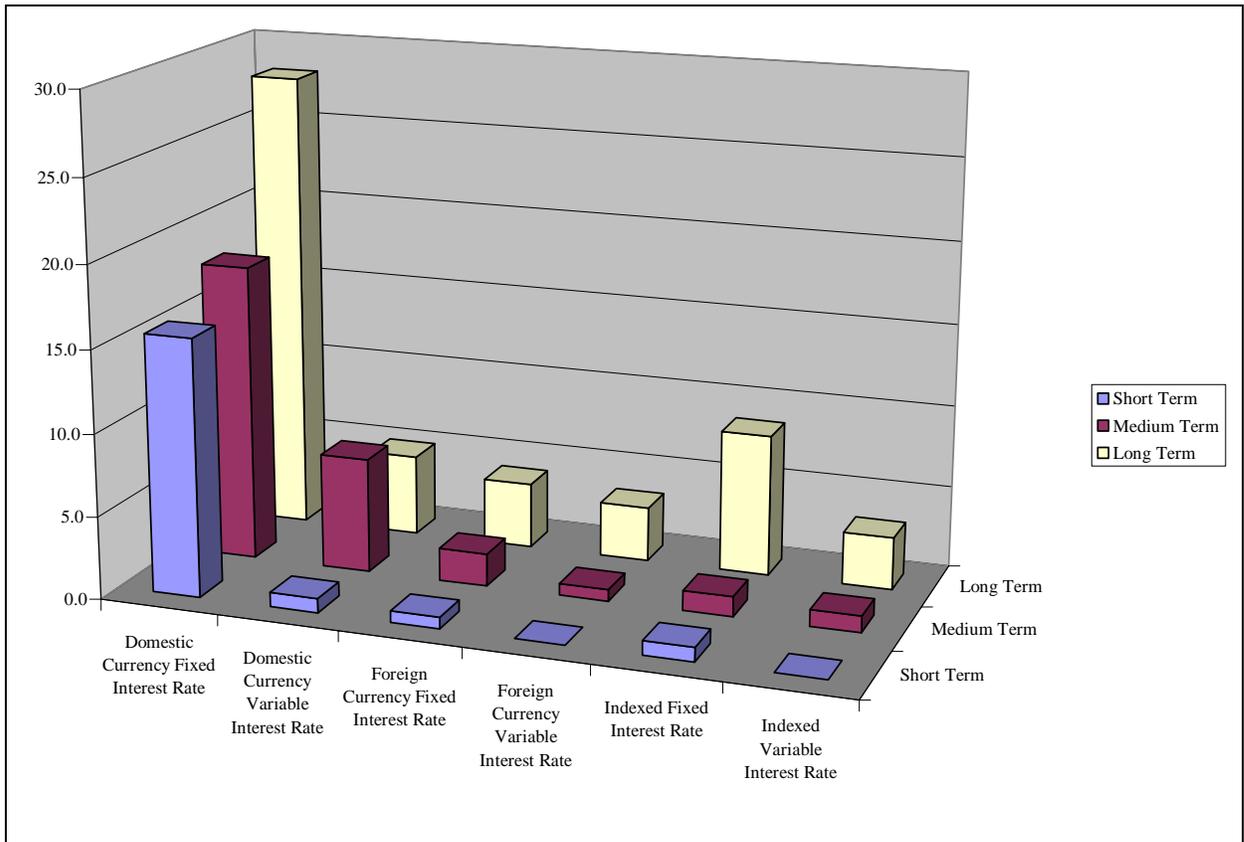


Sources: Jeanne-Guscina EM Debt Database 2006 and IFS.

Note: Private Savings Rate was defined as  $(Y-C-T)/Y$ , where Y is GDP, C household consumption, and T is Tax Revenues. Average private savings rate and share of domestic debt in total debt was computed for 1980–2002 sample, with the exception of transition economies where the starting date was earlier, i.e., 1991 for Hungary, 1992 for Czech Republic, 1993 for Russia, and 1994 for Poland.

Coverage: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, the Philippines, Poland, Russia, Thailand, Turkey, and Venezuela.

Figure 6. Structure of Domestic Government Debt  
(in percentage points)



Sources: Jeanne-Guscina EM Debt Database 2006 and Missale (1999).

Note: The figure shows the average share (in percent) of each debt category in domestic government over the period 1980-2002 (for transition countries the data are available only after the early 1990s; for advanced countries the average is taken over 1980-1996).

Coverage: Argentina, Brazil, Canada, Chile, China, Colombia, the Czech Republic, France, Hungary, India, Israel, Indonesia, Japan, Korea, Malaysia, Mexico, the Philippines, Poland, Russia, Thailand, Turkey, United States, United Kingdom, and Venezuela.

Figure 7. Structure of Domestic Government Debt in Latin America, Asia, and Advanced Economies (in percentage points)

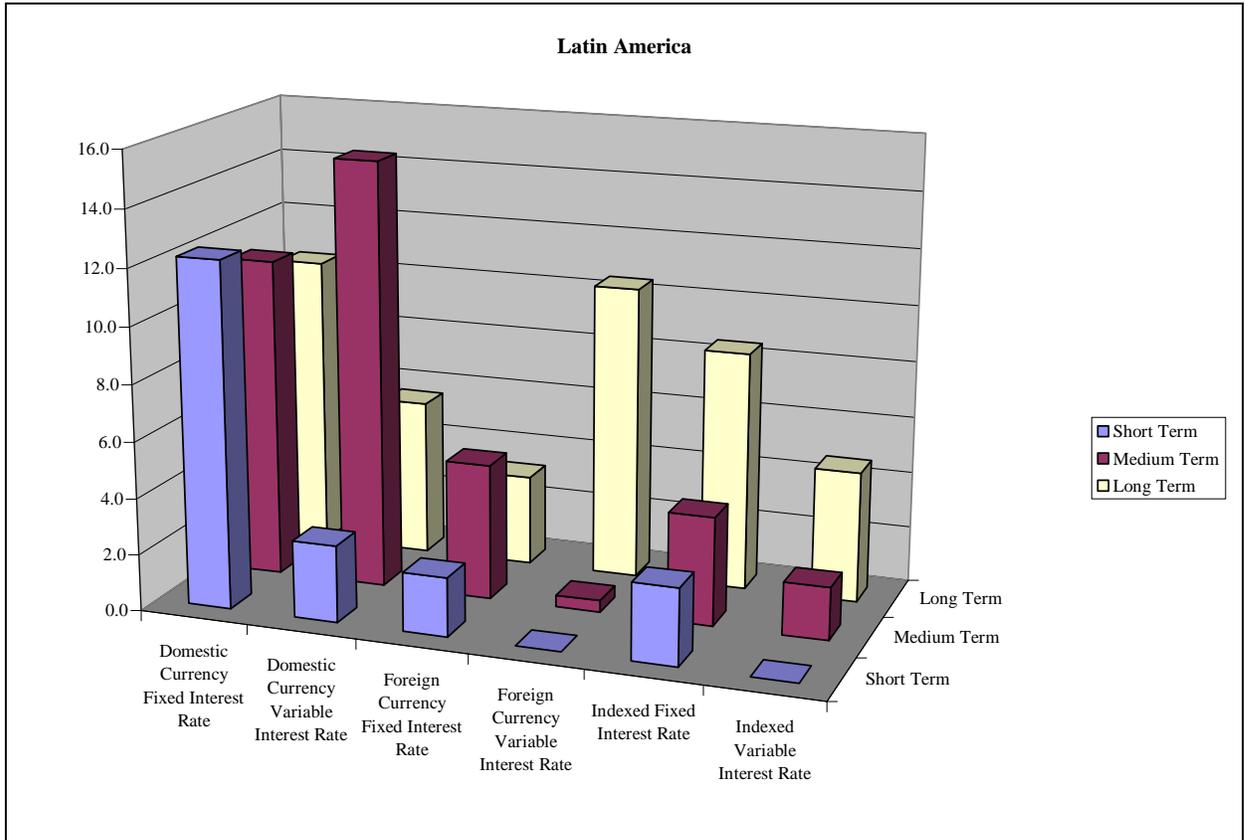


Figure 7 (Continued). Structure of Domestic Government Debt in Latin America, Asia, and Advanced Economies

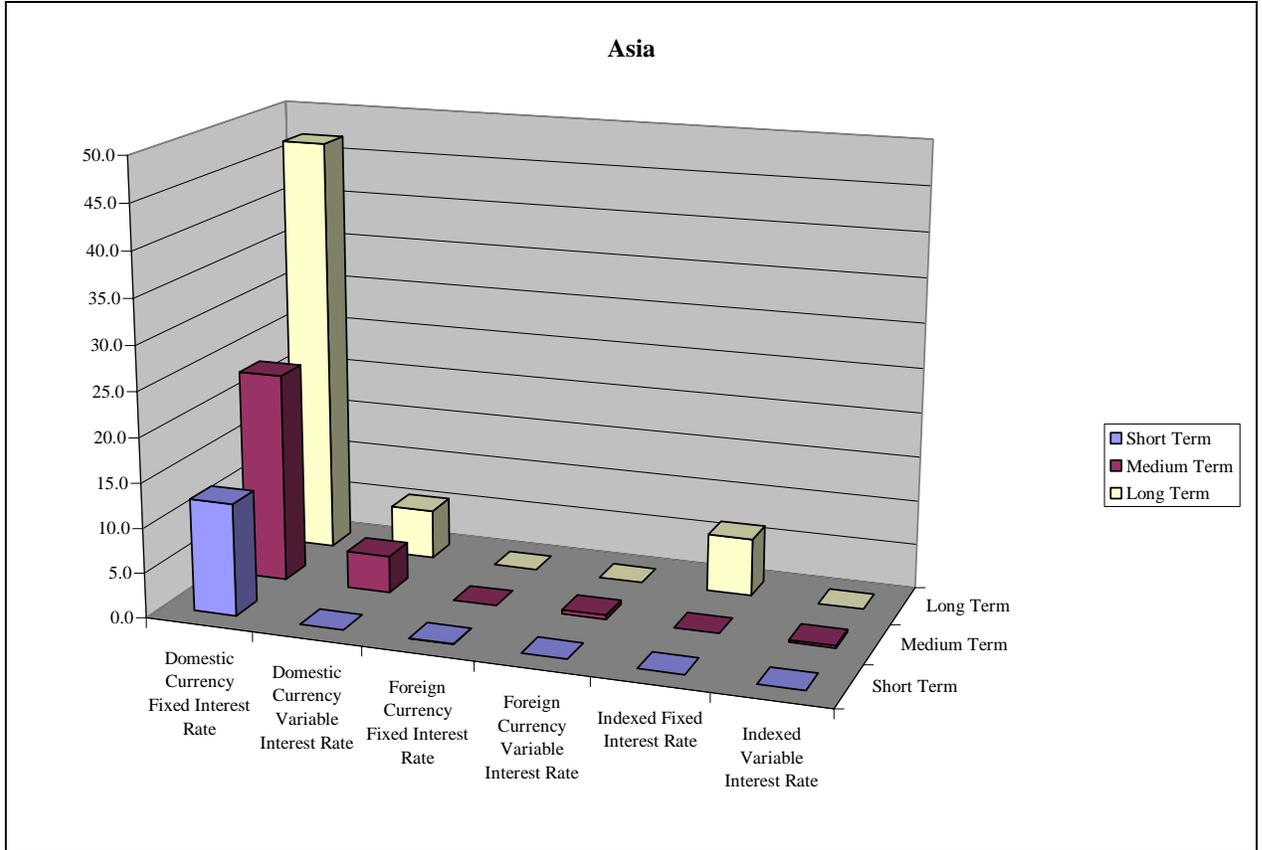
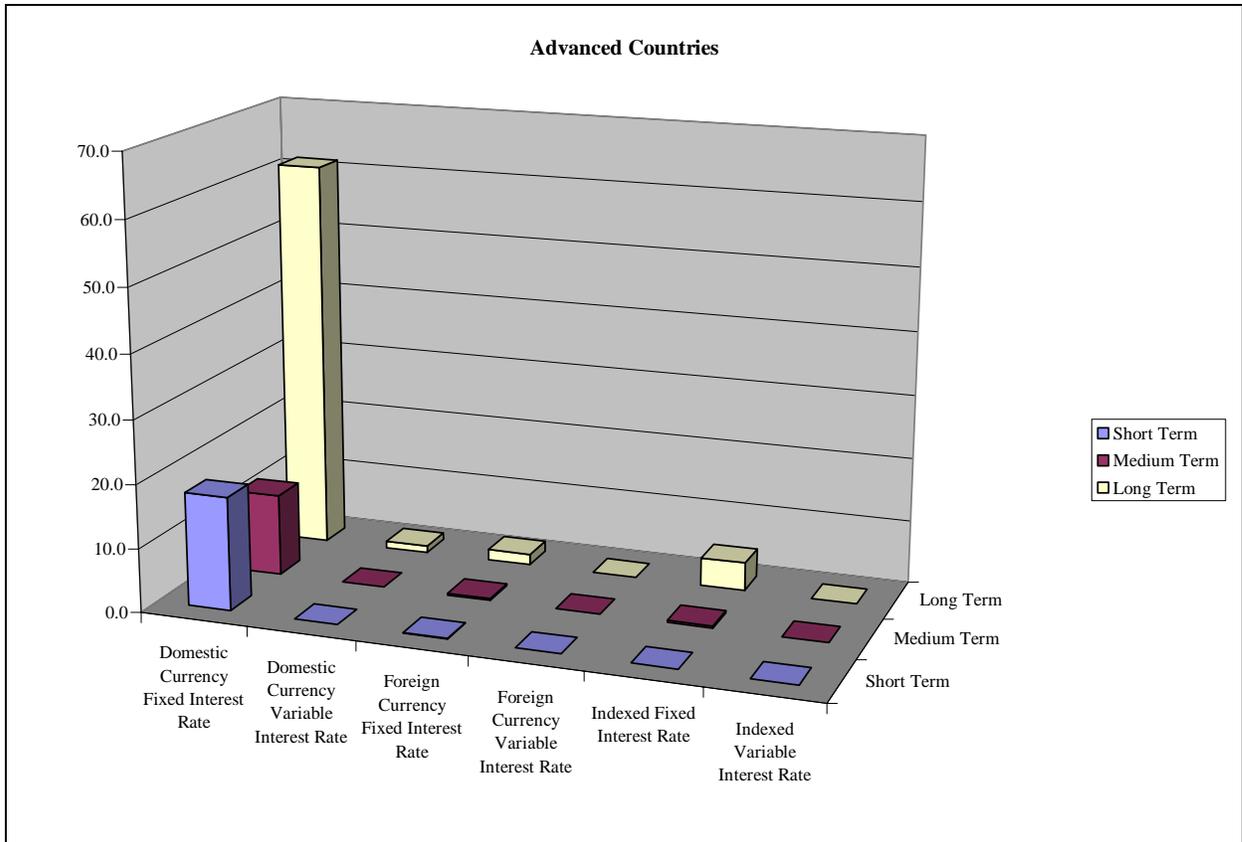


Figure 7 (Concluded). Structure of Domestic Government Debt in Latin America, Asia, and Advanced Economies



Sources: Jeanne-Guscina EM Debt Database 2006 and Missale (1999).

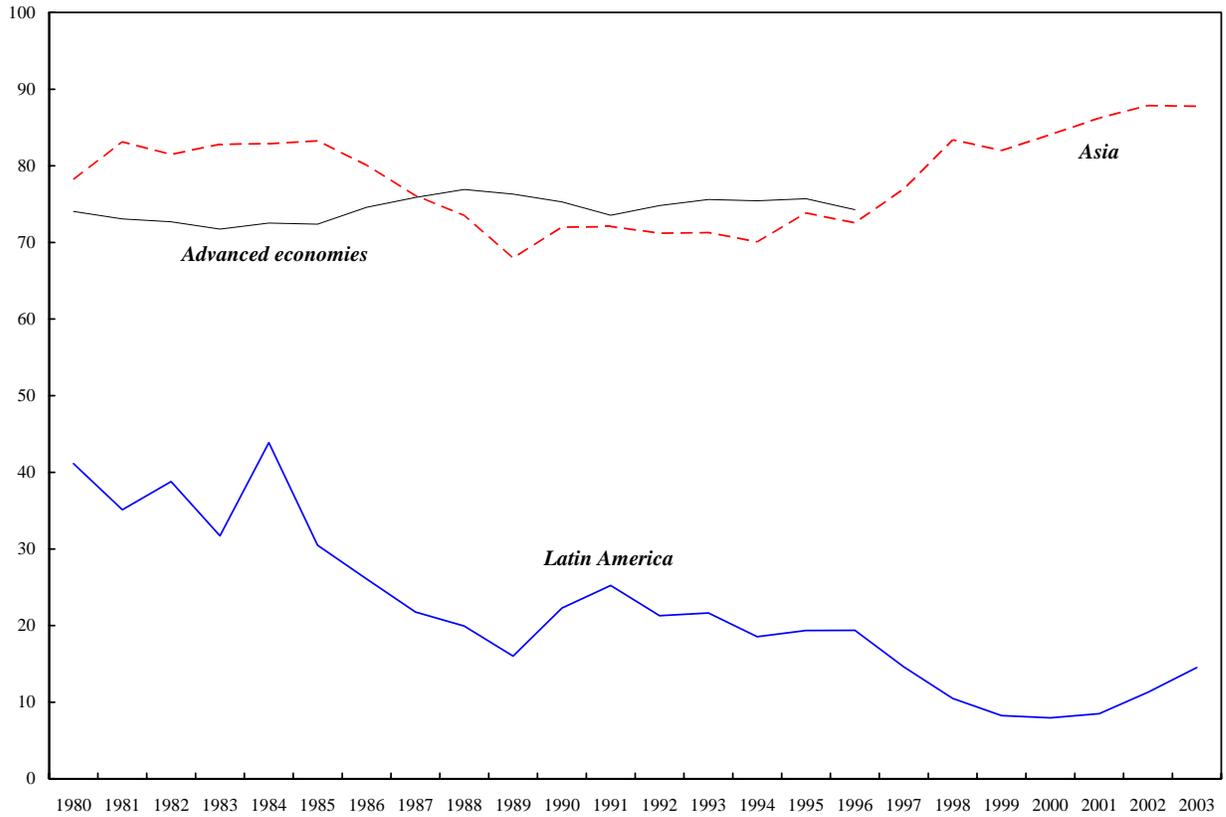
Note: The figure shows the average share (in percent) of each debt category in domestic government over the period 1980–2002 for Latin American and Asian countries, 1980-1996 for advanced countries.

Coverage: Latin America includes Argentina, Brazil, Chile, China, Colombia, Mexico, and Venezuela.

Asia includes China, India, Indonesia, Korea, Malaysia, the Philippines, and Thailand.

Advanced countries include Canada, France, Japan, United Kingdom, and United States.

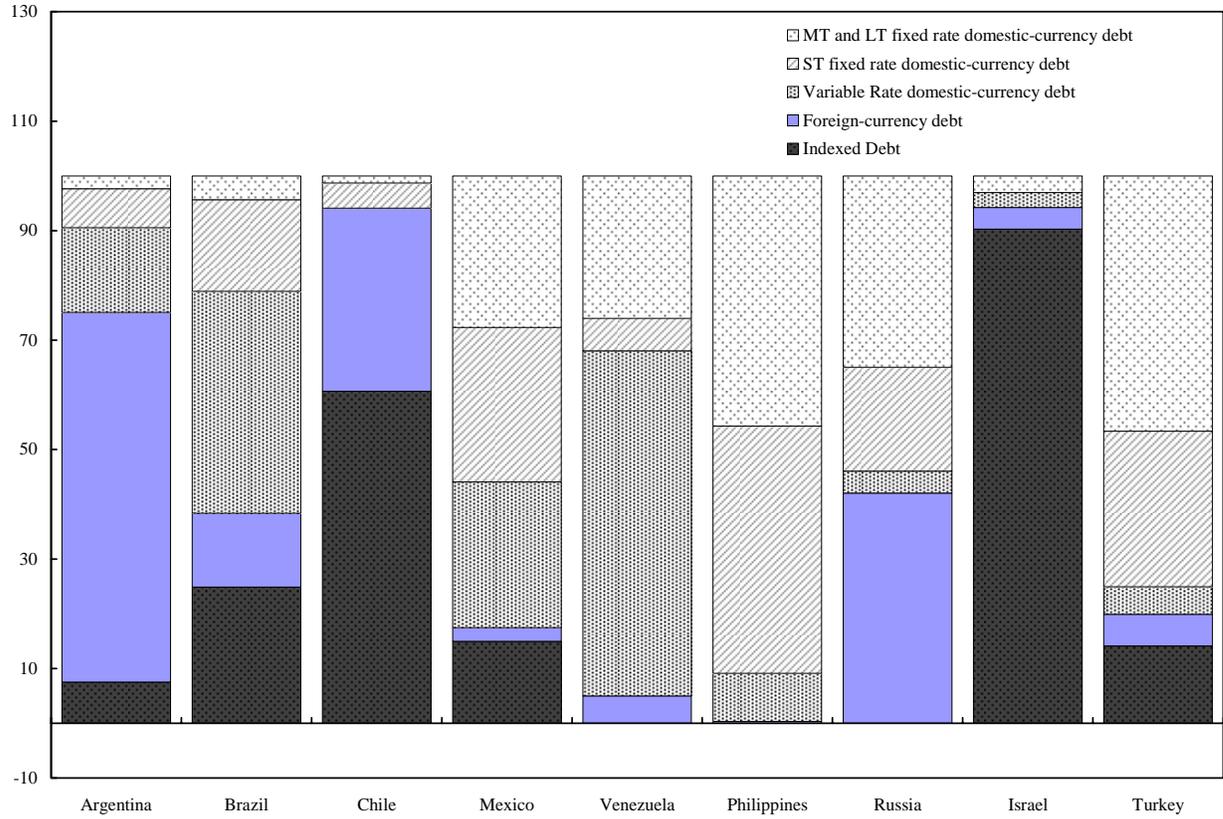
Figure 8. Share of Domestic-Currency Medium- and Long-Term Fixed Interest Rate Debt in Domestic Debt (in percentage points)



Source: Jeanne-Guscina EM Debt Database 2006 and Missale (1999).

Coverage: Argentina, Brazil, Canada, Chile, China, Colombia, France, India, Japan, Korea, Malaysia, Mexico, the Philippines, Thailand, United Kingdom, United States, and Venezuela.

Figure 9. Structure of Domestic Government Debt in Selected Countries



Source: Jeanne-Guscina EM Debt Database 2006.

Note: The figure shows the share of each debt category in total government debt (in percent).

MT = medium-term; LT = long-term; ST = short-term.

Figure 10. Inflation and Domestic-Currency Medium- and Long-Term Fixed Interest Rate Debt

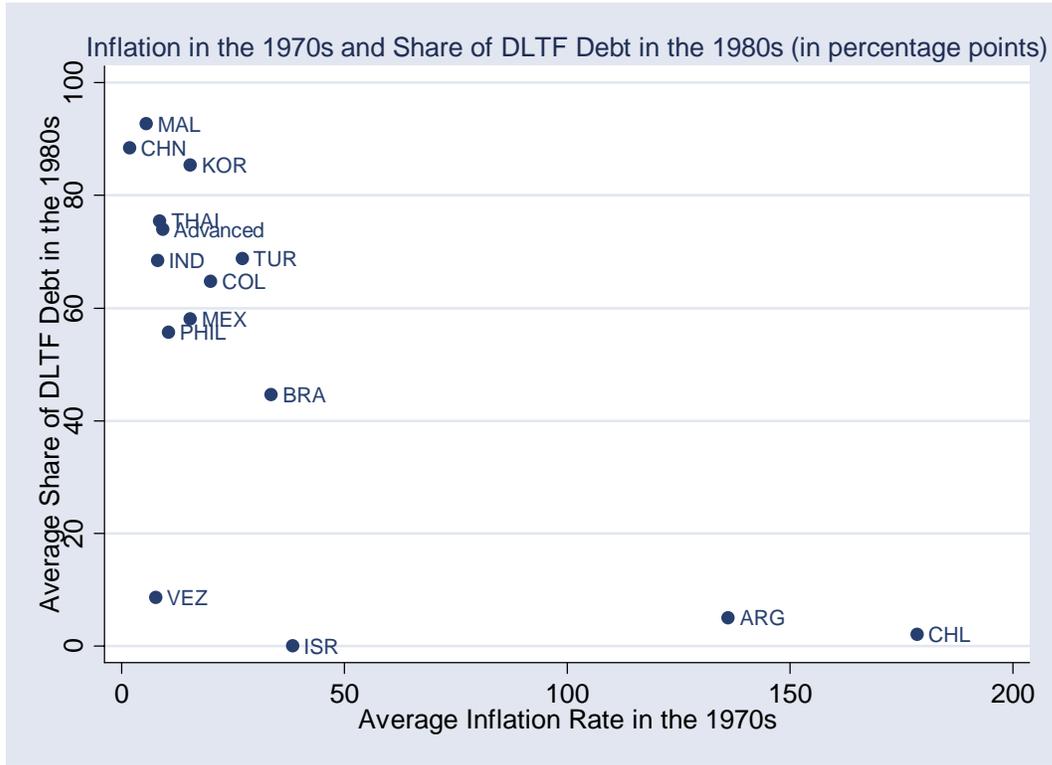


Figure 10 (Continued). Inflation and Domestic-Currency  
Medium- and Long-Term Fixed Interest Rate Debt

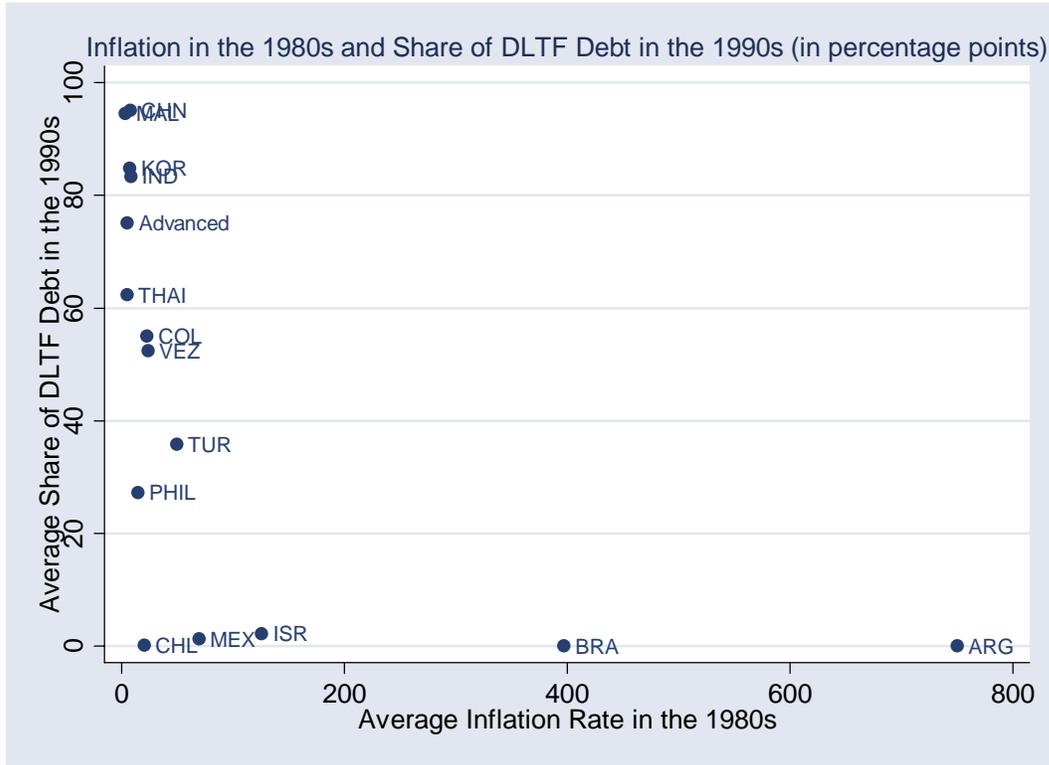
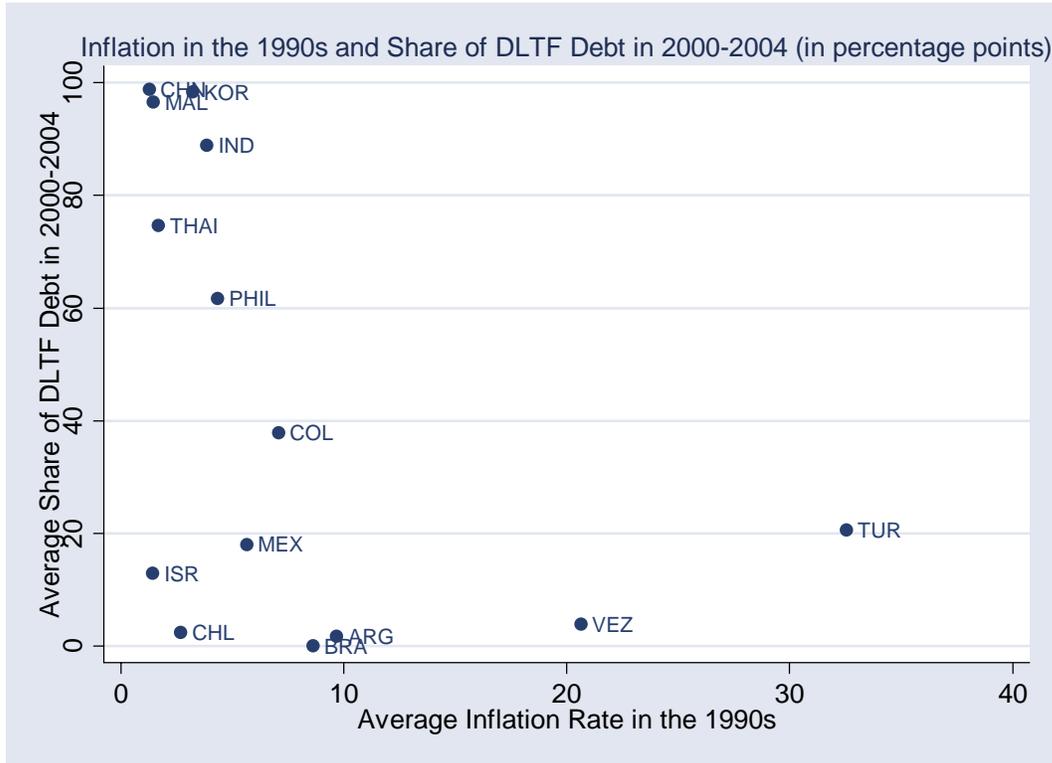
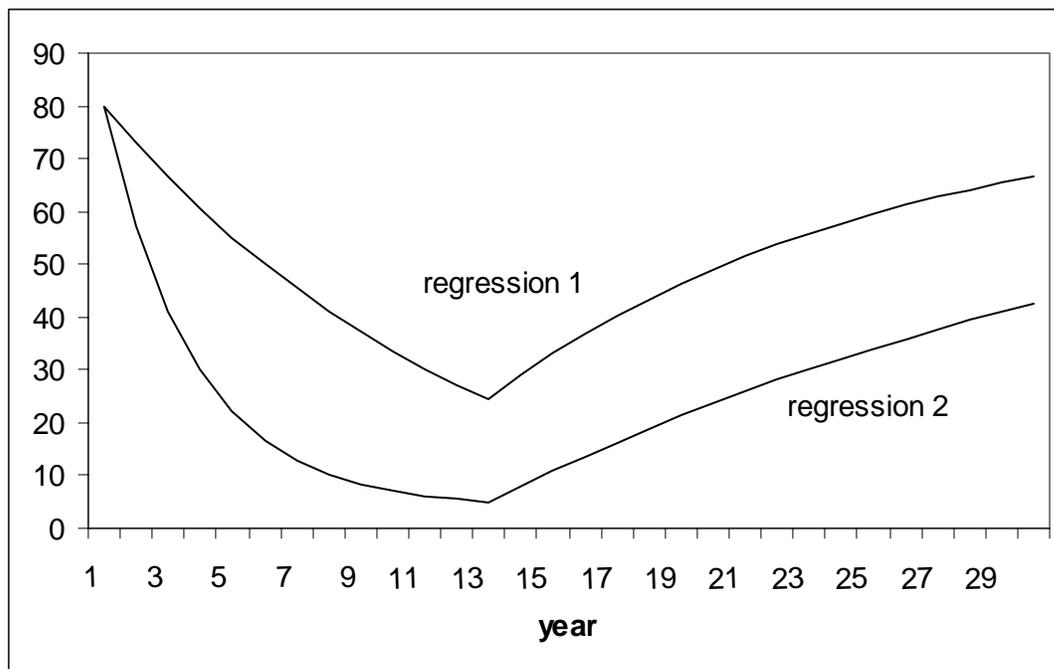


Figure 10 (Concluded). Inflation and Domestic-Currency Medium- and Long-Term Fixed Interest Rate Debt



Sources: Jeanne-Guscina EM Debt Database 2006 and IFS. The variable on the y-axis is the average share of domestic-currency medium- and long-term fixed interest (DLTF) rate debt in domestic government debt.

Figure 11. Impulse Response of Share of Domestic-Currency Medium- and Long-Term Debt to Three Years of High Inflation



Source: Authors' computations based on the panel regression results presented in Table 3. The figure shows the impulse response of the share of domestic-currency, medium- and long-term fixed interest rate debt in domestic debt (in percent) in response to three years of inflation in excess of 100 percent. Regression 2 allows the debt structure to respond more quickly to high inflation than to low inflation.

## REFERENCES

- Borensztein, Eduardo, Marcos Chamon, Olivier Jeanne, Paolo Mauro, and Jeromin Zettelmeyer, 2004, *Sovereign Debt Structure for Crisis Prevention*, IMF Occasional Paper No. 237 (Washington: International Monetary Fund).
- Burger, John D., and Frank Warnock, 2003, “Diversification, Original Sin, and International Bond Portfolios,” International Finance Discussion Papers No.755 (Washington: Board of Governors of the Federal Reserve System).
- Christensen, Jakob, 2005, “Domestic Debt Markets in Sub-Saharan Africa,” *Staff Papers*, International Monetary Fund, Vol. 52(3), pp. 518–38.
- Claessens, Stijn, Daniela Klingebiel, and Sergio Schmukler, 2003, “Government Bonds in Domestic and Foreign Currency: The Role of Macroeconomic and Institutional Factors,” CEPR Discussion Paper No.3789 (London: Center for Economic Policy Research).
- Cowan, Kevin, Eduardo Levy-Yeyati, Ugo Panizza, and Federico Sturzenegger, 2006, “Public Debt in the Americas,” (forthcoming; Washington: Research Department, Inter-American Development Bank).
- Eichengreen, Barry, and Ricardo Hausmann, 1999, “Exchange Rates and Financial Fragility,” in *New Challenges for Monetary Policy* (Kansas City: Federal Reserve Bank of Kansas City), pp. 329–68.
- and Pipat Luengnaruemitchai, 2004, “Why Doesn’t Asia Have Bigger Bonds Markets?” NBER Working Paper 10576 (Cambridge, Massachusetts: National Bureau of Economic Research).
- Goldstein, Morris, and Philip Turner, 2004, *Controlling Currency Mismatches In Emerging Markets* (Washington: Institute for International Economics).
- Hausmann, Ricardo, and Ugo Panizza, 2003, “On the Determinants of Original Sin: an Empirical Investigation,” *Journal of International Money and Finance*, Vol. 22, pp. 957–90.
- International Monetary Fund, 2003, “Public Debt in Emerging Markets: Is It Too High?” Chapter III of *World Economic Outlook*, September 2003 (Washington, International Monetary Fund).
- Isard, Peter, 2005, *Globalization and the International Financial System* (Cambridge: Cambridge University Press).

Jeanne, Olivier, 2005, “Why Do Emerging Economies Borrow in Foreign Currency?” in *Other People’s Money*, ed. by Barry Eichengreen and Ricardo Hausmann (Chicago: University of Chicago Press), pp. 190–217.

———, and Anastasia Guscina, 2006, “Guide to the Jeanne-Guscina Dataset” (unpublished; Washington: International Monetary Fund).

———, and Jeromin Zettelmeyer, 2005, “Original Sin, Balance Sheet Crises and the Roles of International Lending,” in *Other People’s Money*, ed. by Barry Eichengreen and Ricardo Hausmann (Chicago: University of Chicago Press), pp. 95–121.

Kamil, Herman, 2006, “A New Database on the Currency Composition and Maturity Structure of Firms’ Balance Sheets in Latin America” (unpublished; Washington: International Monetary Fund).

Mehl, Arnaud, and Julien Reynaud, 2005, “The Determinants of ‘Domestic’ Original Sin in Emerging Market Economies,” Working Paper 560 (Frankfurt: European Central Bank).

Missale, Alessandro, 1999, *Public Debt Management* (Oxford: Oxford University Press).