

Debt Denomination and Financial Instability in Emerging Market Economies:

Editors' Introduction

Barry Eichengreen and Ricardo Hausmann

Version of August 2003

One of the most momentous developments of the last ten years has been the liberalization of international financial markets. Much was promised on behalf of this policy. External finance was supposed to supplement domestic savings and support faster rates of capital formation in low- and middle-income countries, stimulating development and growth. Foreign borrowing was supposed to smooth consumption in the face of cycles and commodity price fluctuations. International portfolio diversification was supposed to allow investors to share risk more efficiently.

If much was promised, less was delivered. Rather than smoothing consumption and production, capital flows seem only to have accentuated the volatility of other variables. Models of the intertemporal approach to the balance of payments (e.g. Cole and Obstfeld 1991) are now supplemented by a darker literature on capital flow reversals and sudden stops (Calvo 1998, Milesi Ferretti and Razin 1998). In practice, capital flow reversals have been associated with disruptive crises in Mexico, Thailand, Indonesia, Korea, Russia, Brazil, Ecuador, Turkey, Argentina and Uruguay, prompting the development of a literature on how capital flows and their composition can be an engine of instability (Frankel and Rose 1996, Rodrik and Velasco 1999, Stiglitz 2002). The

markets have not comfortably digested these events. Rather than experiencing rising net flows of financial capital across borders in response to incentives to smooth consumption, encourage capital formation, and diversify risks internationally, we have now seen net private debt flows decline from an annual average inflow of \$95 billion in the 1992-1996 to an annual average *outflow* of \$88 billion in 1998-2002 (IMF, 2003).

It would be an oversimplification to suggest that these problems have a single source. The weakness of macroeconomic and financial policies and the underdevelopment of market-supporting institutions, both problems with multiple dimensions, undoubtedly constitute part of the explanation for the skittishness of international investors and the tenuous capital market access of developing countries. At some level, the volatility of capital flows is just a specific manifestation of the general tendency for financial markets to display high levels of volatility in an environment of insecure contract enforcement – which is necessarily the environment in which financial transactions between distinct sovereign nations take place. Problems in capital-exporting countries of the North, epitomized by the all-but failure of Long-Term Capital Management in 1998, led to a reduction in leverage and a flight to quality, which in many cases meant a flight away from emerging market debt.

But there is also another theme running through recent work on capital flows, their volatility, and their potentially destabilizing impacts that distinguishes it from previous research on this subject. That theme is balance-sheet effects. When international financial markets are liberalized and international debt transactions are deregulated, making it possible for countries to borrow and lend abroad, virtually all of these transactions turn out to be of a specific type. They take place in a world in which

the vast majority international debt obligations are denominated in the currencies of the principal creditor countries and financial centers: the United States, Japan, Great Britain, Switzerland, and the members of the euro area. Consequently, emerging market countries that effectively make use of international debt markets by accumulating a net foreign debt will necessarily assume a balance sheet mismatch, since their external obligations will be disproportionately denominated in dollars (or yen, euros, pounds and Swiss francs), while the revenues on which they rely to service those debts are not. Exchange rate changes will then have significant wealth effects. In particular, the currency depreciation that is the standard treatment for an economy with a deteriorating balance of payments may so diminish the country's net worth that the adjustment of the currency is destabilizing rather than stabilizing: the dollar value of its GDP declines, while the dollar value of its debt service does not. The realization that the normal adjustment mechanism has been disabled will alarm investors, heightening the volatility of capital flows and introducing the possibility of sudden stops, current account reversals, and self-fulfilling currency and debt-sustainability crises.

There is now a considerable literature on these factors (see for example Krugman 1999, Razin and Sadka 1999, Aghion, Bacchetta, and Banerjee 2000, Céspedes, Chang and Velasco 2002, and Jeanne 2002). But there is less than complete agreement on the mechanisms through which they influence the economy and less than full understanding of their consequences for economic outcomes.

In part, this lack of consensus reflects incomplete understanding of why so many international obligations are denominated in the currencies of a small handful of advanced economies. To put the point another way, we do not understand why emerging

markets find it so difficult to borrow in their own currencies. And as long as this understanding eludes us, we will not be able to limit this source of fragility, short of preventing capital-scarce developing countries from borrowing externally, which would seem perverse from the standpoint of the efficiency with which the global capital stock is allocated.

To some, why emerging markets cannot borrow abroad in their own currencies is self-evident. Foreign investors are reluctant to hold claims on countries with poor policies and weak market-supporting institutions: one should not expect foreigners to do things that even residents are unwilling to do. Indeed, there is something to this view. But as soon as one begins to probe deeper, one discovers that the nature of the problem is not so clear. The weakness of institutions of contract enforcement and the instability of macroeconomic and financial policies may help to explain why some countries cannot borrow at all, but this is not the same as explaining why many of those countries that can in fact borrow find it so hard to borrow in their own currencies. And while histories of high inflation and fiscal profligacy can explain the reluctance of international investors to hold claims denominated in the currencies of some developing countries, investors seem equally reluctant to hold claims denominated in the currencies of emerging markets with quite good records of fiscal and monetary performance. If the issue is fear that a borrower may be tempted to inflate away debt denominated in his own currency, then we should observe inflation-indexed debt, not dollar-denominated debt.¹ In fact, all countries that are able to borrow abroad in their own currencies are also able to borrow at

¹ Or short-term debt, which is harder to inflate away. Of course, relying on short-term debt creates other problems; effectively, it substitutes a maturity mismatch for the currency mismatch on the books of the country that cannot borrow abroad, long-term, in its own currency. Subsequent chapters explores this tradeoff.

long maturities and at fixed rates in their domestic markets. The converse, however, is not true: a significant number of countries are able to convince local savers to buy long-term obligations in nominal or inflation indexed terms but are still unable to get foreigners to hold these claims – consider for example India, Israel and Chile. This suggests that there may be something about the currency denomination of debt that is not just associated with fear of inflation and expropriation.

To put the point another way, while the quality of policies and strength of institutions vary enormously across countries, virtually all emerging markets must borrow in foreign currency. At end of 2001, according to the U.S. Treasury, Americans held \$84 billion of developing country debt, but only \$2.6 billion was denominated in the currencies of the developing countries in question. Of the \$648 billion in overseas debt held by Americans at the end of 2001, 97 percent was denominated in 5 currencies: the US dollar, the euro, the British pound, the Japanese Yen and the Canadian dollar. Of the \$434 billion of debt securities issued by developing countries in international markets that was outstanding on average between 1999 and 2001, less than \$12 billion was denominated in the currency of these countries.² The disproportion between these figures suggests that the problem is too widespread to be entirely explicable in terms of the weakness of policies and institutions, whose prevalence is less. It is as if emerging markets suffer from an inherited burden, almost irrespective of the policies of their governments. This is why the difficulty they face in borrowing abroad in their own currencies is referred to as “original sin” (Eichengreen and Hausmann 1999).

² These numbers are from Tables 1 and 3 in Chapter 1 below.

Currency mismatches, balance sheet effects, and original sin are often referred to together and regarded as synonymous. This makes it important to emphasize how they differ. Original sin refers to the inability of countries, typically emerging markets, to borrow abroad in their own currencies. This inability may result in a currency mismatch on the national balance sheet; indeed it necessarily will if the country in question incurs a net foreign debt. But countries characterized by original sin that do not borrow abroad will not have a currency mismatch. Neither will countries that accumulate foreign reserves to match their foreign liabilities. But neither country will then have a net foreign debt. More generally, countries may wish to limit borrowing without prohibiting it or to accumulate reserves to offset some fraction, generally less than one, of that foreign borrowing. In their case, some degree of currency mismatch will result, but there will still be no direct mapping between original sin and the extent of the mismatch (appropriate scaled, say, by GNP). Still other countries may be able to substitute the placement short-term domestic-currency debt for issuance of long-term foreign-currency debt. They too will suffer balance-sheet effects, in this case if the interest rate moves, but the balance-sheet effect will have nothing to do with the currency denomination of the foreign debt. Balance sheet effects, currency mismatches, and original sin, as we define it here, are all relevant to the discussion, but it is important to clearly distinguish them in what follows.

While these issues have begun to attract attention, they have yet to receive systematic treatment. The contributors to this volume aspire to provide just this. They provide new information on the extent to which foreign debt is denominated in foreign currency; in other words, they attempt to measure the incidence of original sin. They

analyze the consequences of original sin for the economic performance and prospects of emerging markets. They investigate the underlying sources of the problem. And they propose an international initiative to ameliorate it. Each goal is pursued with a combination of theory and empirical analysis.

The contributions to Part I measure original sin and analyze its consequences. The first chapter, by Ugo Panizza and the editors, quantifies the incidence and extent of original sin for a sample of developed and developing economies. The authors then utilize these indicators to show that the composition of external debt – and specifically the extent to which that debt is denominated in foreign currency – is a key determinant of the stability of output, the volatility of capital flows, the demand for foreign reserves, the choice of exchange rate regime and the level of country credit ratings. Their results show that original sin has statistically significant and economically important implications for these variables, even after controlling for other more conventional determinants of macroeconomic outcomes. They demonstrate that the macroeconomic policies on which stability and creditworthiness depend, according to the conventional wisdom, are themselves importantly shaped by the currency denomination of external debt.

The succeeding three chapters explore the channels through which macroeconomic outcomes are affected by the currency denomination of the external debt. Chapter 2, by Roberto Chang, Luis Céspedes and Andrés Velasco, augments a mainstream model of macroeconomic fluctuations in open economies to include a role for debt denomination. It uses this model to demonstrate how the presence of original sin makes monetary policy less effective and output stabilization more difficult. The authors also show how a sufficiently high level of foreign currency debt can render an economy

crisis prone. Chapter 3, by Giancarlo Corsetti and Bartosz Mackowiak, analyzes how the currency composition of the government's debt obligations can render that debt unsustainable when the economy is buffeted by shocks. The authors show how, as the share of dollar denominated or short-term debt increases, the fiscal accounts become less flexible, and expected inflation and depreciation become more responsive to anticipated shocks. Hence, original sin may explain why inflation and currency depreciation are more sensitive to shocks in countries that are otherwise identical in terms of the magnitude of the debt and the disturbances they suffer.

Chapter 4, by Olivier Jeanne and Jeromin Zettelmeyer, demonstrates that balance sheet mismatches of the sort that will be a consequence of original sin when a country has a net foreign debt, as a developing country is expected to have, create scope for self-fulfilling crises in a large class of crisis models. Their analysis implies that no exchange rate arrangement may suffice to prevent the emergence of crises in the presence of original sin. Central bankers thus face the unsavory choice of channeling external pressure into higher interest rates or a weaker exchange rate, both of which weaken balance sheets. In principle, fiscal policy makers can help, but fiscal policy is itself subject to a financing constraint which will tighten just when expansionary policies might be warranted. In such circumstances, international rescue lending by an organization such as the International Monetary Fund may make countries with a fundamentally sound fiscal position but a temporary financing constraint less crisis prone.

The importance of original sin having been established, Part II of the volume seeks to uncover its sources. Historical evidence is useful here, since the developed countries that are now able to borrow abroad in their own currencies have not always

enjoyed this privilege. It should be illuminating, in other words, to understand what institutional developments and policy measures allowed them to gain this capacity.

Chapter 5, by Michael Bordo, Christopher Meissner and Angela Redish, focuses on the overseas regions of British settlement -- the United States, Canada, Australia, New Zealand, and South Africa -- which have some of the deepest and best developed financial markets in the world, and the last of which has recently joined the short list of emerging markets able to fund themselves abroad by issuing securities denominated in their own currencies. The authors show that the U.S. government was able to issue and market dollar denominated bonds abroad from the beginning of the 19th century, although the amounts involved were small and U.S. sovereign debt had gold clauses (effectively indexing it to foreign currency) until 1933. The British Dominions, in contrast, only shifted to domestic currency external sovereign debt after 1973. The authors link cross-country differences in these developments and their timing to the soundness of financial institutions, the credibility of monetary regimes, and the state of financial development. In addition, they invoke an element of path dependence: these institutional factors mattered because of the superimposition of major shocks, like the two world wars, that effectively closed down international markets, in turn encouraging the development of domestic borrowing capacity and a constituency for creditor-friendly policies. In the U.S. case, in addition, the development of the ability to borrow abroad in the domestic currency was linked to the size and importance of the country, which by the end of the 19th century had made the dollar into a key currency. In the other countries considered, this capacity was linked to membership in the British Empire, which limited the fears of

British investors about the stability of domestic currency bonds and the intentions of their issuers.

In Chapter 6, Marc Flandreau and Nathan Sussman put a different spin on the idea that redemption from original sin has involved an element of path dependence. They argue that redemption was related, in the continental European cases they consider, to the presence of a liquid currency market in that currency, acquisition of which tended to be correlated with a country's involvement in international trade and finance. They show that Russia, in spite of weak institutions, had less original sin than the Scandinavian countries, reflecting the legacy of these commercial and financial factors. They also establish that relatively few countries lost or gained original sin over time. One exception was the United States, whose presence in world trade and investment changed in the course of its early history, with implications for its ability to borrow abroad in its own currency.

Chapters 7 and 8 train theoretical light on these issues. In Chapter 7, Olivier Jeanne explores the implications of poor monetary policy credibility for the currency denomination of private debts. He associates low credibility with the probability that the central bank may opt for a burst of inflation. The lower the credibility, the higher the ex post real interest rate in case the central bank keeps inflation low. This confronts the firm with a Hobson's choice between borrowing in dollars and going bankrupt if a massive depreciation takes place, versus borrowing in pesos and going bankrupt if things turn out well. The author demonstrates that as credibility declines, dollar borrowing becomes the safer option. The implication is that liability dollarization may not be the consequence of

moral hazard and that taxing or restricting foreign currency borrowing would not be welfare enhancing.

In Chapter 8, Marcos Chamon and Ricardo Hausmann model the interaction of private borrowers' choice of debt denomination and the central bank's choice of monetary policy. In their model, the central bank faces a shock that can be accommodated through either changes in the exchange rate or changes in the interest rate. Borrowers seek to minimize the likelihood of bankruptcy and must choose between short-term peso or dollar liabilities. If bankruptcies are costly, then the central bank may seek to avoid them by stabilizing the variable that is relevant given the private sector choice of debt denomination. If the central bank stabilizes the exchange rate by letting the interest rate vary more with the shocks, then dollar debt will be safer. If, on the other hand, it stabilizes the interest rate while letting the exchange rate go, peso debt will be preferred. The authors show that the externality that a private borrower's choice exerts on the other borrowers through the effect on the resulting monetary policy allows multiple equilibria to occur. In addition, if interest rates have small (large) demand effects and exchange rates have large (small) inflationary consequences, the central bank has a stronger a priori willingness to choose to stabilize the exchange rate (the interest rate). If those effects are sufficiently large, a private borrower will choose dollar (peso) debt even if all others choose peso (dollar) debt, thus eliminating the multiple equilibria. The implication is that original sin may be more prevalent in countries where the pass-through is high and the financial system is shallow.

Ultimately, the relevance of these theoretical perspectives for the situation in which emerging markets find themselves can only be determined empirically. In Chapter

9, Eichengreen, Hausmann and Panizza attempt to provide an empirical analysis of the sources of original sin. In particular, they review a more complete set of domestic explanations to original sin – seven in total – than have been discussed in the previous literature. They explore whether low levels of development, weak institutions, low monetary policy credibility, weak fiscal fundamentals, low trade openness and a small proportion of domestic lenders relative to foreign lenders can explain the phenomenon. The authors find that these conventional hypotheses have surprisingly little explanatory power. In other words, the standard policy and institutional variables turn out to shed strikingly little light on why many emerging markets find it so difficult to borrow abroad in their own currencies, and they offer little in the way of an explanation for why a small number of countries have been able to escape this plight.

The authors then explore the possibility that the problem of original sin has as much to do with the structure and operation of the international financial system as with any weaknesses of policies and institutions. They find a robust relationship between the absence of original sin and the relative size of an economy measured by the magnitude of its GDP, its trade or the size of its financial system. This would be the predicted result if economies of scale, network externalities or liquidity effects are important (as suggested by Flandreau and Sussman in their chapter). The authors also find that emerging markets that have achieved redemption from original sin have generally overcome the obstacles posed by the structure of the international system with help from foreign entities -- multinational corporations and international financial institutions -- that have found it attractive, for their own reasons, to issue debt in the currencies of these countries.

The final part of the book turns to solutions. In Chapter 10, the editors build on the fact that countries that have achieved redemption from original sin have overcome the obstacles posed by the structure of the international system with the help of foreign entities to propose an initiative for addressing original sin. They recommend that the international policy community to commit to an initiative to develop an emerging-market index and a market in claims denominated in it. The index would be composed of an inflation-indexed basket of currencies. By having international investors hold long positions in this basket, it is then easy – through simple financial engineering – to allow each index member to borrow in terms of its own inflation-indexed currency. The editors offer detailed recommendations for how the international financial institutions and the governments of the advanced countries might go about this.

No single change in the international financial architecture, by itself, will eliminate financial crises or solve all the problems of developing countries. But neither will initiatives at the national and international levels limit the financial fragility of emerging markets and the instability of international capital flows if they fail to address the systemic problems that help to give rise to original sin. We hope that the contributions to this volume, which document the problem, analyze its sources and propose solutions, will draw wider attention to this fact.

References

Aghion, Philippe, Philippe Bacchetta, and Abhijit Banerjee (2000), "Currency Crises and Monetary Policy in an Economy with Credit Constraints," mimeo UCL.

Céspedes Luis Felipe Roberto Chang and Andrés Velasco (2002) "IS-LM-BP in the Pampas," unpublished manuscript, Harvard University

Calvo, Guillermo (1998), "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops," unpublished manuscript, University of Maryland, College Park (July).

Cole, Harold L. and Maurice Obstfeld (1991), "Commodity Trade and International Risk Sharing: How Much Do Financial Markets Matter?" *Journal of Monetary Economics* 28, pp.3-24.

Eichengreen, Barry and Ricardo Hausmann (1999), "Exchange Rates and Financial Fragility," in *New Challenges for Monetary Policy*, Kansas City, Missouri: Federal Reserve Bank of Kansas City, pp.329-368.

Frankel, Jeffrey and Andrew Rose (1996), "Currency Crashes in Emerging Markets: An Empirical Treatment," *Journal of International Economics* 41, pp.341-366.

Jeanne, Olivier (2002) "Monetary Policy and Liability Dollarization," unpublished manuscript, International Monetary Fund.

Krugman, Paul (1999), "Balance Sheets, the Transfer Problem, and Financial Crises," unpublished manuscript, MIT.

Milesi Ferretti, Gian Maria and Assaf Razin (1998), "Current Account Reversals and Currency Crises: An Empirical Treatment," NBER Working Paper no. 6620 (June).

Razin, Assaf and Efraim Sadka (1999), "Country Risk and Capital Flow Reservations," unpublished manuscript, Tel Aviv University.

Rodrik, Dani and Andrés Velasco (1999), "Short-Term Capital Flows," *Annual World Bank Conference on Development Economics*, Washington, D.C.: World Bank, pp.59-90.

Stiglitz, Joseph (2002), *Globalization and its Discontents*, New York: Norton.

World Bank (2003), *Global Development Finance*, Washington, D.C.: World Bank.