
Reducing Currency Mismatching: A Domestic Agenda

The central message of this book is that simultaneous and deliberate policy action, taken on a number of fronts mostly at the national level, can nurture real and financial development in emerging-market economies and reduce currency mismatching. Hence, we expect that the currency mismatch problem is likely to become less severe as countries develop. On this score, we are more optimistic than the authors of the original sin hypothesis (OSH).¹ In support of our optimism, we stress five points.

First, most studies find a positive relationship between financial-market depth and the level of economic development. Burger and Warnock (2002), for example, find that *the size of a nation's local currency-denominated bond market (expressed as a ratio to GDP) is significantly related to GDP per capita but not to country size*. This reinforces the point made earlier (from Burger and Warnock 2002) that what distinguishes emerging economies from industrial countries is overall bond market development, not the currency denomination of outstanding debt. Caprio and Honohan (2001) show that stock market turnover, liquid liabilities of banks and nonbanks, and both government and private bond capitalization (each expressed as a share of GDP) all increase with the level of per capita income. Since financial-market development helps

1. One of the main reasons the original sin school opts for an international solution to the currency mismatch problem is that their empirical work reveals no significant association between original sin and the level of economic development (per capita GDP). Therefore, they argue that emerging economies cannot expect the currency mismatch problem to become less severe as they develop.

increase the supply of local currency-denominated finance, we see little reason to be pessimistic about longer-term prospects.

Second, as demonstrated earlier, available measures of aggregate currency mismatch—be they short-run liquidity measures (like the ratio of short-term external debt to reserves) or broader indicators of “effective” mismatch (like our aggregate effective currency mismatch index, AECM)—indicate that many emerging economies have been able to reduce significantly their aggregate currency mismatch over medium-term periods (tables 9.1 and 4.6). Note, for example, the large reductions in the ratio of short-term debt to reserves and in estimated AECMs achieved by the former Asian-crisis economies (since 1997), South Africa (since 1996), and Russia (since 1997–98). At the same time, the entries in tables 9.1 and 4.6 serve notice that there is nothing automatic about reducing currency mismatches. With the exception of Mexico, most of the larger economies in Latin America saw aggregate currency mismatches rise appreciably between 1995–96 and 2001, and Turkey experienced a significant exacerbation of its mismatch in the same period as well.²

Third, a more intensive examination of individual country cases provides encouragement that if the right measures are implemented, progress on currency mismatching can be substantial over periods no longer than a decade. Mexico’s experience since its 1994–95 crisis speaks to this point: as outlined by Cuevas and Werner (2002) and the IMF (2002b), (1) the inflation rate decreased from over 50 percent in 1995 to less than 5 percent in 2002; (2) the move to a floating exchange rate resulted in a reallocation of currency risk from those (nontradable producers) who were least capable of bearing it to those (exporters) better able to do so; (3) in 1995, the government started issuing inflation-indexed debt and by July 2002 was able to issue a 10-year bond with a fixed yield in Mexican pesos; (4) the average maturity of domestic government debt has increased from 8 months in 1995 to 25 months in 2001, and the share of fixed-rate debt in the total rose to 15 percent by end-2001; (5) the corporate sector followed the pattern of the government fixed-income market;³ (6) market-makers were introduced in the domestic fixed-income market in 2000 and have contributed to an increase in both liquidity and maturity; (7) the role of

2. In some cases, the ratio of short-term debt to reserves and the estimated AECM point in different directions; for example, Hungary’s aggregate currency mismatch (as measured by its AECM in table 4.6) improved significantly since 1995, whereas its ratio of short-term debt to reserves deteriorated (table 9.1). This is not altogether surprising since the ratio of short-term debt to reserves emphasizes short-run liquidity conditions, while the AECM covers a broader range of assets and liabilities and incorporates longer-term structural factors that are relevant for assessing the output costs of a currency mismatch during a currency crisis.

3. According to IMF (2003c) figures, local bond markets in Mexico increased from less than 8 percent of GDP in 1995 (just after the crisis) to over 14 percent in 2001. See also Sidaoui (2002).

Table 9.1 Short-term external debt as a percent of foreign exchange reserves

| Region/country | 1990 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|--|-------------|------------|------------|------------|------------|-----------|------------|------------|-----------|
| Latin America^a | 197 | 117 | 108 | 106 | 104 | 99 | 113 | 104 | 84 |
| Argentina | 165 | 181 | 167 | 178 | 160 | 159 | 238 | 242 | 215 |
| Brazil | 299 | 75 | 90 | 108 | 109 | 115 | 124 | 111 | 77 |
| Chile | 67 | 55 | 53 | 63 | 59 | 48 | 67 | 60 | 73 |
| Colombia | 51 | 77 | 70 | 79 | 96 | 71 | 59 | 56 | 47 |
| Mexico | 191 | 207 | 167 | 116 | 103 | 91 | 89 | 75 | 58 |
| Peru | 191 | 52 | 60 | 62 | 78 | 73 | 109 | 82 | 63 |
| Venezuela | 57 | 69 | 32 | 39 | 45 | 40 | 37 | 47 | 62 |
| Asia, large economies^a | 120 | 51 | 49 | 58 | 31 | 22 | 19 | 15 | 11 |
| China | 31 | 34 | 27 | 25 | 23 | 13 | 13 | 10 | 7 |
| India | 339 | 46 | 38 | 33 | 33 | 28 | 26 | 16 | 10 |
| Korea | 141 | 184 | 222 | 330 | 76 | 59 | 44 | 40 | 37 |
| Taiwan | 13 | 22 | 22 | 26 | 19 | 16 | 12 | 10 | 8 |
| Other Asia^a | 164 | 144 | 141 | 181 | 97 | 60 | 58 | 53 | 39 |
| Indonesia | 183 | 208 | 197 | 224 | 113 | 75 | 74 | 63 | 44 |
| Malaysia | 22 | 35 | 44 | 75 | 39 | 27 | 28 | 31 | 26 |
| Philippines | 369 | 73 | 82 | 179 | 108 | 64 | 62 | 65 | 56 |
| Thailand | 66 | 124 | 125 | 152 | 88 | 45 | 40 | 36 | 26 |
| Central Europe^a | n.a. | 23 | 29 | 37 | 45 | 37 | 38 | 44 | 46 |
| Czech Republic | n.a. | 30 | 38 | 56 | 62 | 44 | 44 | 41 | 23 |
| Hungary | 240 | 40 | 59 | 67 | 87 | 62 | 61 | 63 | 91 |
| Poland | 70 | 13 | 14 | 17 | 22 | 25 | 28 | 39 | 41 |
| Russia | n.a. | 150 | 235 | 255 | 230 | 139 | 50 | 46 | 37 |
| Israel | 34 | 28 | 18 | 14 | 13 | 16 | 14 | 18 | 19 |
| Turkey | 129 | 88 | 80 | 105 | 116 | 101 | 140 | 129 | 81 |
| Saudi Arabia | n.a. | n.a. | 46 | 50 | 69 | 65 | 57 | 66 | 58 |
| South Africa | 684 | 384 | 1234 | 298 | 325 | 232 | 200 | 177 | 162 |

n.a. = not available

a. Weighted average of countries shown, based on 1995 GDP and PPP exchange rates.

Note: Short-term liabilities (with a maturity of less than one year) to BIS reporting banks, as a percentage of foreign exchange reserves; short-term debt defined as consolidated cross-border claims to all BIS reporting banks on countries outside the reporting area with a maturity up to and including one year plus international debt securities outstanding with a maturity up to one year; outstanding year-end positions.

Sources: IMF *International Financial Statistics* and Bank for International Settlements statistics.

local institutional investors, particularly Mexican pension funds, increased markedly over the past decade and supported the development of the derivatives market; and (8) by 2000, spreads on seven-year interest swaps and three-year exchange rate forwards had dropped to 20 and 10 basis points, respectively. A recent *Wall Street Journal* article ("Mexico Turns to a New Lender: Mexico—Economic Stability Sets Up Thriving Peso-Debt Market Tapped by Companies, State," November 13, 2003)

reports that these favorable trends continued in 2003, with the Mexican federal government having issued a 20-year fixed-rate peso bond in October and with Mexican companies and state and local governments having issued about \$10 billion of peso debt in the first 10 months of 2003 (four times the amount issued just five years ago). Although currency mismatches still exist for the government and corporate sectors in Mexico, Werner (2002) concludes that the scale of the problem has diminished.⁴ Our own measures of aggregate effective currency mismatch for Mexico (recall table 4.6) support this conclusion, with large declines in the AECM from its peak in the crisis and the immediate aftermath (1994–96).

Even putting aside those emerging economies where growth of the local government bond market over the past decade has been driven either (as in emerging Asia) by the need to recapitalize banking systems severely damaged by crisis or (as in parts of Latin America) by long-running fiscal deficits and exchange rate depreciation (cum exchange rate-linked debt), there are many notable improvements that have favorable implications for control of currency mismatches. So too, albeit to a lesser extent, for local corporate bond markets. A few examples taken from a recent IMF (2002b) report convey the flavor. China's local government bond market has grown from 12 percent of GDP in 1994 to nearly 30 percent in 2001 to become the largest (in absolute terms) in the region (excluding Japan). The Hong Kong bond market has more than doubled (relative to GDP) since 1994. Singapore's government bond market has also doubled (again relative to GDP) over this period, and the yield curve has been extended to 15 years. Hungary has, since 1997, followed a debt issuance strategy aimed at reducing currency risk and rollover risk—with the result that, *inter alia*, the share of foreign-currency debt in total government debt has been reduced from 41 to 30 percent. Chile has made extensive use of inflation-indexed debt, in concert with a transition to fiscal responsibility and the development of a deep institutional investor base, to support healthy government and corporate bond markets, with maturities on corporate bonds now extending to 20 years or more. Admittedly, emerging economies still have a long way to go in terms of improving the liquidity of their bond markets, and some developing countries are probably too small to develop their own bond markets. Nevertheless, local bond market developments over the past decade should be regarded as positive.

We would be remiss, too, if we did not draw attention to the large buildup in foreign exchange reserves by emerging economies over the past decade, especially since 1995. Relative to GDP, average reserve holdings of emerging economies were twice as high in 2001 as in 1990–94 (IMF 2002a). As noted in Turner (2003), aggregate foreign exchange reserves in

4. The OSH apparently discounts all these positive developments since it records Mexico as having an original sin ratio of one (the highest possible number) throughout 1993–2001.

emerging Asia (excluding financial centers Hong Kong and Singapore) now exceed aggregate domestic currency by almost \$400 billion (figure 7.1), and in some emerging economies, reserves exceed domestic currency by several multiples (figure 7.2). These increases in reserves not only serve to reduce the aggregate effective currency mismatch but also offer an opportunity to deepen domestic debt markets—because of the domestic liabilities on the central bank’s balance sheet as a counterpart to its foreign exchange assets (as discussed in chapter 8).

Fourth, the discussion in the previous chapter shows how many emerging economies have upgraded their supervisory regimes and recognized the importance of their loan customers’ mismatches. Even if banking supervisors are not able to catch all foreign exchange exposures of banks (direct as well as indirect), determined efforts to limit exposures to a limited share of bank capital should still reduce losses from currency mismatches to a tolerable level. Supervisors are now more aware of the need to frame regulations and supervisory guidelines in ways that deter banks from using sophisticated derivative instruments to evade the prudential oversight of currency mismatches. In any case, as pointed out by Paul Krugman (2000), there is an inconsistency in arguing—as does the OSH—that today’s capital markets are too “imperfect” to hedge emerging-market currency risk but are “perfect” enough to undo any regulations on foreign-exchange exposure.

Finally, one should not underplay the growth potential of financial markets while overplaying the influence of “original” sins. On the first count, recent history is replete with financial markets—ranging from asset-backed securities to credit derivatives—that did not exist for long periods but rapidly became sizable once they reached a critical mass.⁵ Also, as shown in table 9.2, though starting from a very low base, the share of cross-border bank loans denominated in local currency has gone up substantially in most emerging-market regions over the past decade. On the second count, while a country’s longer-term credit history matters, improved policy performance in the more recent period can lead to much-improved market access and terms of financing. In this connection, Reinhart, Rogoff, and Savastano (2003b) have calculated default/restructuring probabilities for various emerging economies going back to 1824. In their sample, Mexico turns out to be the country that has had the highest historical default probability. Yet Mexico’s much-improved economic performance over the past decade or so has now been rewarded by quite low interest rate spreads (roughly 200 basis points over US Treasuries) on its benchmark bonds. Clearly, the market does not focus only on “original” sins; current and recent policy sins—or lack of them—count more.

5. The BIS triennial survey indicated that positions in the global credit derivatives market increased from \$118 billion in June 1998 to \$693 billion in June 2001.

Table 9.2 Share of external debt denominated in local currency
(percent, position at end of period shown)

| Country | Cross-border bank loans ^a | | | International debt securities | |
|-----------------------------------|--------------------------------------|------------|-------------|-------------------------------|------------|
| | 1990 | 1995 | 2002 | 1995 | 2002 |
| Latin America^b | 1.5 | 1.2 | 1.4 | 0.0 | 0.3 |
| Argentina | 1.7 | 1.2 | 2.1 | 0.0 | 0.7 |
| Brazil | 1.4 | 0.6 | 1.2 | 0.0 | 0.0 |
| Chile | 4.4 | 4.8 | 1.8 | 0.0 | 0.0 |
| Colombia | 0.8 | 0.0 | 0.1 | 0.0 | 0.0 |
| Mexico | 1.1 | 1.0 | 1.5 | 0.0 | 0.0 |
| Peru | 0.7 | 3.0 | 2.9 | 0.0 | 0.0 |
| Venezuela | 1.4 | 2.2 | 0.9 | 0.0 | 0.0 |
| China | 0.3 | 1.0 | 3.7 | 0.0 | 0.0 |
| India | 0.9 | 5.2 | 7.1 | 0.0 | 0.0 |
| Korea | 1.8 | 1.5 | 3.9 | 0.0 | 0.0 |
| Taiwan | 1.0 | 3.0 | 6.9 | 0.0 | 0.0 |
| Other Asia^b | 1.5 | 2.0 | 3.7 | 0.7 | 2.8 |
| Indonesia | 1.1 | 1.7 | 3.5 | 0.0 | 0.0 |
| Malaysia | 5.2 | 6.7 | 1.9 | 0.0 | 0.2 |
| Philippines | 0.5 | 3.6 | 3.1 | 1.8 | 0.1 |
| Thailand | 0.8 | 1.2 | 6.4 | 1.4 | 14.2 |
| Central Europe^b | 11.6 | 7.3 | 15.8 | 0.0 | 0.5 |
| Czech Republic ^c | 17.6 | 11.7 | 20.0 | 0.0 | 0.0 |
| Hungary | 8.1 | 4.2 | 12.1 | 0.0 | 0.9 |
| Poland | 11.9 | 4.9 | 15.2 | 0.0 | 0.0 |
| Russia ^d | 22.2 | 22.9 | 1.2 | 0.0 | 0.0 |
| Israel | 1.1 | 2.7 | 1.4 | 0.0 | 0.0 |
| Turkey | 0.9 | 1.1 | 2.2 | 0.0 | 0.0 |
| Saudi Arabia | 5.8 | 6.9 | 5.4 | 0.0 | 0.0 |
| South Africa | 2.3 | 6.7 | 15.6 | 0.0 | 9.2 |
| <i>Memorandum:</i> | | | | | |
| Australia | 18.1 | 14.8 | 52.3 | 33.9 | 14.0 |
| Sweden | 5.7 | 22.1 | 30.1 | 1.7 | 3.4 |

a. BIS reporting banks collect a breakdown of their cross-border claims in US dollar, euro, yen, pound sterling, Swiss franc, and residual currencies. This table uses data on residual currencies as a proxy for loans in local currency of the debtor country. For example, a Spanish bank's claim on Mexico in residual currencies most likely (but not exclusively) represents lending to the country in Mexican pesos. Data for 1990 use total claims in residual currencies as a proxy for loans in local currencies.

b. Sum of the countries shown.

c. Data for 1990 relate to former Czechoslovakia.

d. Data for 1990 relate to former Soviet Union.

Sources: Data have been obtained from the Bank of England, Dealogic, Euroclear, the International Securities Market Association, Thomson Financial Securities, national sources, and the Bank for International Settlements.

To sum up, it is too pessimistic to conclude that, in the absence of an international initiative, emerging economies will be powerless to overcome their own currency mismatch problems within a relevant time frame. There is much that can be done at the national level to develop the supply of local currency-denominated finance and to improve the incentives to hedge against excessive currency risk. As Burger and Warnock (2002) concluded from their examination of the behavior of global investors toward emerging-market securities, a key policy objective should be the development of local bond markets and the concomitant development of derivative instruments, which will not only provide a multiplicity of financing sources if foreign investors shy away from placing funds but will also transfer currency risk to those best able to bear it and allow the decoupling of bond and currency investments. This is why in addition to monetary policy and the currency regime, our action plan pays attention, *inter alia*, to measures that can help broaden the investor base for bonds, develop more liquid benchmark securities, ensure that bond yields are market-determined, foster a repo market in government bonds, ease restrictions on short selling, promote derivatives markets, move away from currency-linked debt to inflation-indexed debt as an intermediate step toward local currency-denominated fixed-rate debt, and maintain a suitable cushion of international reserves.

Summary

The currency mismatch problem in emerging economies is serious, and a sustained effort to overcome it merits high priority in any reform of the international financial architecture. We believe that a major implication of the original sin hypothesis, namely that absent an international initiative, emerging economies are doomed to borrow abroad in foreign currencies, has—rightly or wrongly—led many to draw misleading policy implications.

The most useful way to define currency mismatching is the sensitivity of net worth (and net income) to changes in the exchange rate. To measure the extent of currency mismatch, attention needs to be paid to both the asset and liability sides of balance sheets, to the response of non-interest flows (like exports) to an exchange rate change, and to the ability of emerging economies to borrow domestically—not just internationally—in the local currency. Our new AECM indicator—which could and should be further refined—suggests that it is possible to construct a measure that incorporates these desirable features.

We see significant differences among emerging economies in their capacity to hedge currency risk. We find that national macroeconomic and exchange rate policies—and the incentives linked to them—matter a great deal for generating and managing currency mismatches, and that

significant progress can be made in reducing such mismatches over the medium term. Debt management policies are important. We also find that institutional microeconomic policies—notably developing bond markets and ensuring that official oversight of financial institutions limits currency mismatches (indirect as well as direct)—are also crucial.

Developments over the past decade in several countries suggest that the benefits of better policies are likely to show up first in the development of domestic financial markets. Only when progress is sustained can one expect changes in the currency composition of international borrowing and in cross-border bank lending by international banks.

Although the primary responsibility for controlling currency mismatches resides at the national level (in emerging economies), international financial institutions could help by monitoring currency mismatches in their publications and—where they are excessive—by making reduction of those mismatches over the medium term a condition for IMF loans.