Beyond Lending

How Multilateral Banks Can Help Developing Countries Manage Volatility

Guillermo Perry

CENTER FOR GLOBAL DEVELOPMENT

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Center for Global Development

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Preface

We first discussed a draft of this book in a lively and well attended seminar at the Center for Global Development in March 2008. At the time many emerging markets had been doing extremely well and seemed to no longer need multilateral support. It was hard to imagine that a few months later we would be in the middle of the worst economic crisis in the developed world since the Great Depression, a crisis that would end up hitting emerging markets so hard.

Although many—if not most—developing countries were indeed doing better than ever and had ample access to private markets, Guillermo Perry insisted in the first draft of this book manuscript that they remained vulnerable to such external shocks as commodity price declines, capital flow reversals, and natural disasters. He argued that the resulting risks constituted a menace to their future development and not only required that the countries take preventive action but also indicated that multilateral institutions should help enhance their access to international insurance and hedging instruments, both existing and new. In particular, he argued that although the effects of the U.S. financial crisis had so far seemed contained, it would have been "disingenuous to assume full decoupling and to believe that the probability of liquidity shocks in developing countries as a group [was] relegated to economic history." We were unable to "rule out any possibility of a global recession and/or of a global financial meltdown that would severely hit many developing countries."

The draft proposals elicited diverging reactions. Much to their credit, Robert B. Zoellick, the president of the World Bank, Daniel M. Zelikow, representing President Luis Alberto Moreno of the Inter-American Development Bank, and vice presidents from other regional development banks not only recognized that such risks to development were real but made clear their view that the excess capital held by multilateral development banks should be used to help developing countries gain access to enhanced insurance and hedging market products. They explained that various initiatives were already moving in this direction in their respective institutions.

Other participants, however, remained skeptical of such roles for the multilateral development banks and, influenced by the financial exuberance of the times, tended to minimize the risks. They argued instead that fast-growing private markets themselves were developing new instruments that could deal with the risks to developing countries and that multilateral development banks should hold back and concentrate on the poorest and least developed of their clients.

The unfolding global economic downturn of late 2008 and early 2009 is an unfortunate reminder that dealing with external risks indeed remains a major development challenge. We now face a different type of institutional risk: the crisis has brought many clients back to development banks, and demand for their traditional, plain-vanilla loans is booming. The multilateral development banks as of this writing are seeing their previous excess capital being fully exploited, and they are proposing new capitalizations. In this situation it is likely that they will go back to business as usual and cease to innovate in the development of new risk-management products. What was an emerging healthy trend of rethinking the development banks' long-term roles and modernizing their instruments and procedures may fall prey again, as has happened in the past, to complacency and bureaucratic inertia.

As a think tank dedicated to the cause of development, we at the Center for Global Development put a premium on calling to task the global development community and warning against such a risk. We hope that this publication will help alert the heads of multilaterals and others pushing for modernization to the dangers of falling into a kind of intellectual moral hazard that the renewed demand for traditional lending represents.

The preparation and publication of this book was made possible by the generous support for our work on global development policy from the William and Flora Hewlett Foundation and by institutional support from the Bill & Melinda Gates Foundation, the Chair of our Board Edward W. Scott Jr., and other friends of CGD.

Nancy Birdsall
President
Center for Global Development

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The author benefited from comments by Nancy Birdsall and other Center for Global Development (CGD) colleagues on an earlier draft, as well as those by Ed Bartholomew, Stijn Claessens, Augusto de la Torre, Kristin Forbes, Ken Lay, Santiago Levy, Nina Shapiro, John Williamson, and several other participants at the CGD Roundtable on Financial Innovations in Multilateral Development Banks on April 1, 2008. He would also like to recognize the excellent research support of Eliana Rubiano and the publications support of John Osterman. This draft builds on many previous pieces of research by the multilateral development banks themselves, the Bank for International Settlements (BIS), and expert reports and academic articles. In particular, the report makes liberal use of results from Tito Cordella and Eduardo Levy Yeyati (World Bank, 2007) and the set of background papers undertaken for that project, as well as from BIS, Committee on the Global Financial System (2007), and World Economic Forum (2006). Publication of this book was made possible by the William and Flora Hewlett Foundation's support for CGD's work on global development policy and by institutional support from the Bill & Melinda Gates Foundation and CGD chair Edward W. Scott Jr.

1

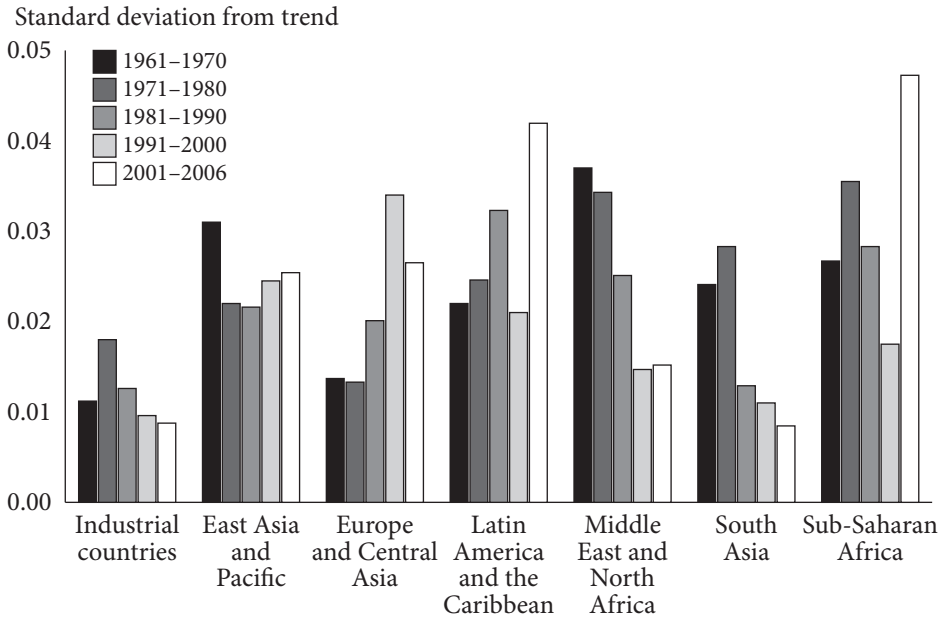
Causes and Consequences of High Volatility in Developing Countries

During most of the last 50 years, output volatility has been much higher in developing countries than in industrial countries (figure 1.1). Although recent years were particularly benign for developing countries in both average growth and reduced volatility, substantial macro-financial vulnerabilities remained, as has become evident once again after the deepening of the international financial crises since last September.

Trends in output volatility have differed across developing regions over a medium-term perspective (see figure 1.1). Though there has been a downward trend in some regions from very high levels in the 1970s and 1980s (in South Asia and the Middle East and North Africa), volatility increased in East Asia and Eastern Europe and Central Asia during the 1990s and in Latin America and Sub-Saharan Africa during 2001–2006. In spite of these differences in trends, average volatility was higher in all developing regions than in OECD countries in all of the last five decades.[1] Thus, high volatility does not seem to be going away in developing countries as globalization advances.[2]

1. With the exception of Eastern Europe and Central Asia in the 1960s and 1970s, when countries in the region were under central planning.
2. In theory, integration with international financial markets should help smooth out the effect of exogenous shocks, but as is shown later, capital flows to developing countries are highly procyclical and thus have been a part of the problem more than a part of the solution.

Figure 1.1. Volatility of GDP per capita by region, 1961–2006



Note: Volatility is defined as the standard deviation of GDP per capita from its trend.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

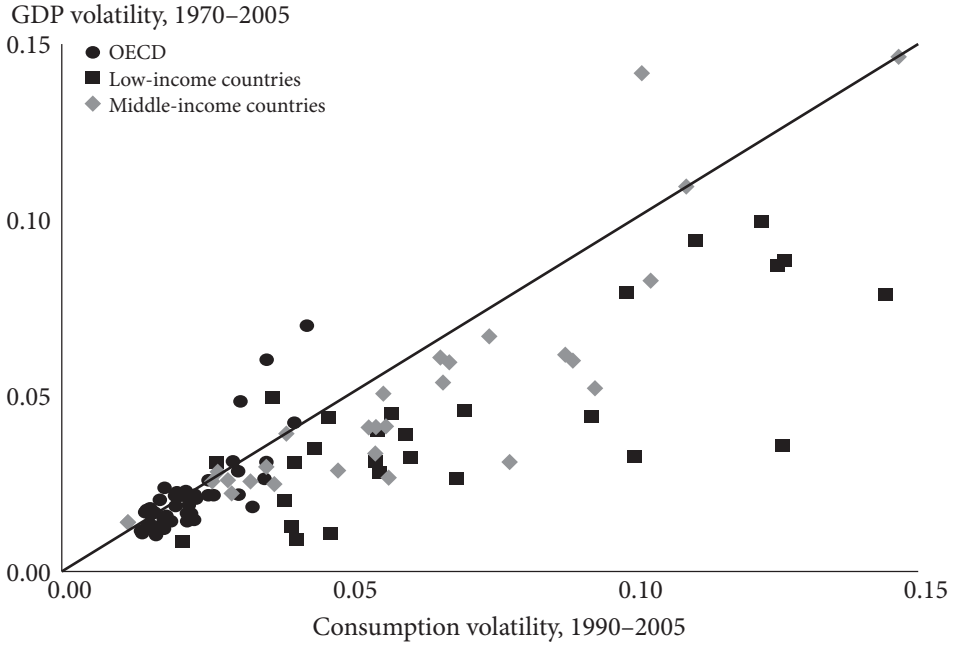
High volatility is a development problem

Economists are especially concerned about high output volatility because it is closely associated with other negative aspects of underdevelopment. To begin with, consumption volatility is even higher than output volatility in most developing countries, contrary to the case in OECD countries (figure 1.2). Thus, the welfare costs of high volatility in developing countries appear to be great. Furthermore, the stylized fact depicted in figure 1.2 indicates that neither financial markets nor domestic policies are helping to smooth consumption in most developing countries.

Second, a substantial body of technical literature has found evidence that high volatility has negative effects on growth or is at least closely associated with lower growth, controlling for other usual determinants.[3] This is not surprising, as there is a broad consensus in the theoretical and empirical literature that high macroeconomic

3. Fatás and Mihov 2006; Bruno and Easterly 1995; Hnatkovska and Loayza 2004; Aghion and others 2005. Though most empirical studies deal in different ways with endogeneity problems, it is fair to say that results about causality remain debatable.

Figure 1.2. Volatility of GDP and consumption per capita by income



Note: Volatility is defined as the standard deviation from the trend. Each group has 15 members, and there are two points per country.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

volatility tends to depress investment (because investment flows depend on both expected rewards and risks) and to bias it toward short-term returns.[4] Recent work suggests that higher macroeconomic volatility is also associated with lower investment in human capital, for similar reasons.[5]

Furthermore, developing countries have been shown to be more prone than industrial countries to currency and financial crises.[6] A high frequency of crisis is closely associated with higher macroeconomic volatility and is just another aspect of higher macro-financial risks and vulnerabilities.[7] In addition to output forgone during these crises, which entails major welfare losses, there is significant evidence than such crises have lasting effects on growth because of irreversible losses of physical, organizational, and human capital.[8]

4. Servén 1997, 1998, 2002.
5. Krebs, Krishna, and Maloney 2005.
6. Calvo, Izquierdo, and Mejía 2004; Edwards 2004; Frankel and Rose 1996.
7. IMF 1999.
8. Greenwald, Kohn, and Stiglitz 1990; Greenwald, Salinger, and Stiglitz 1992.

Finally, recent evidence also suggests a close association between macroeconomic volatility and inequality, with causality probably flowing in both directions.[9] And as several studies have shown, the speed of poverty reduction is a function of the rate of growth, the initial level of inequality, and changes in inequality.[10] Thus, insofar as high volatility seems associated with both lower growth and higher inequality, it would seem to be a major drag on poverty reduction.

In summary, high output volatility and a propensity to currency and financial crises are recurrent characteristics of developing countries and appear to be serious impediments to development because they are closely associated with high consumption volatility, low long-term growth, high inequality, and high poverty. To know what to do about these problems, it is first necessary to know the causes of such high volatility.

What are the causes of high volatility in developing countries?

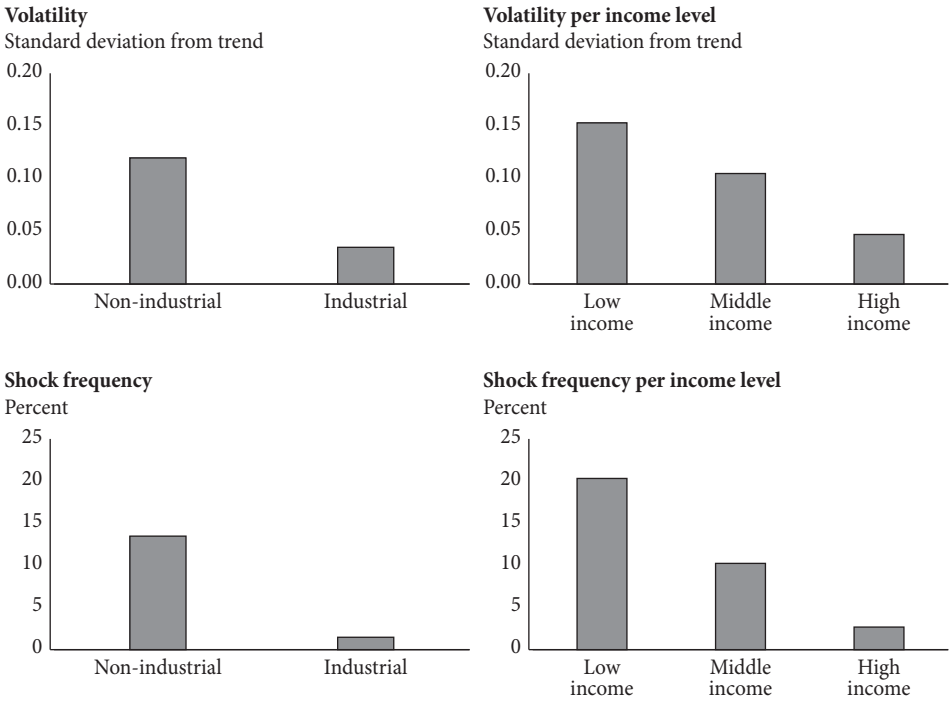
Causes of high volatility and propensity to crises in developing countries can be broadly classified in two groups: those associated with higher exposure to exogenous shocks and augmenting factors, and those related to faulty policies and structural issues. The first group includes both exposure to real external shocks (such as terms of trade) and financial external shocks and natural disasters, and augmenting factors such as the procyclicality of capital flows and currency and maturity mismatches.

Developing countries as a group suffer much higher terms of trade volatility than industrial countries (figure 1.3). The difference is even greater when only extreme events are considered (cases in which the change in terms of trade is 10 percent or more of the average growth rate). Both terms of trade volatility and shock frequency are higher for low-income countries than for middle-income countries, and higher for middle-income countries than for high-income countries. This fact conforms to a longstanding literature highlighting the macroeconomic volatility effects of high output and export concentration of lower income and smaller economies, in particular of those dependent on primary exports.

Similarly, developing countries are more exposed to volatility and shocks originating in the output volatility of trade partners than are industrial countries (figure 1.4). Differences among countries by income group are less pronounced, however, than for terms of trade volatility. While terms of trade volatility is related to export product concentration and the nature of main export products, external demand volatility is related more to market concentration and higher trade shares with similarly

9. Calderón and Levy Yeyati 2007; Gavin and Hausmann 1998; Halac and Schmukler 2004.
10. Bourguignon 2003.

Figure 1.3. Terms of trade volatility and frequency of shocks, 1975–2005



Source: From Calderon and Levy Yeyati 2007.

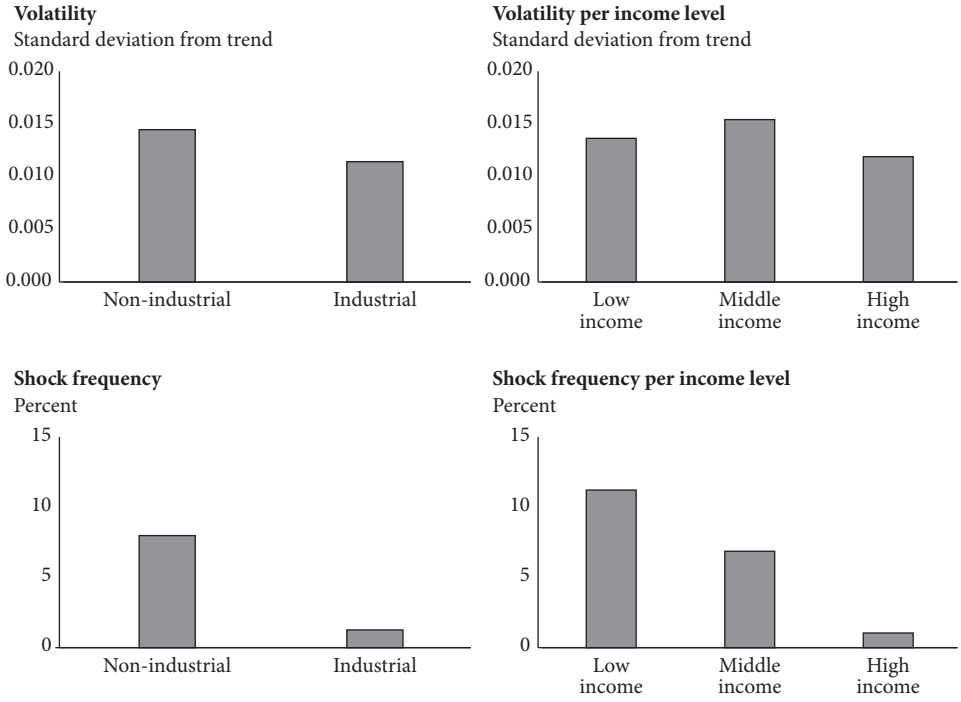
volatile neighbors. Differences among country income groups in export concentration by markets are lower than differences in export concentration by products.

Naturally, countries can reduce their exposure to these real exogenous shocks through export diversification. Most have attempted to do so, with varying success. Still, diversification takes time and can leave developing countries more exposed to these risks than industrial countries were during most of their development process.[11] Countries can cover some of these risks, in particular those originating in the volatility of commodity prices that weigh heavily in their export or import structures, through derivatives. However, as shown later (see chapter 5), availability and use of such financial instruments is limited, for various reasons.

The incidence of natural disasters, measured by the number of events,[12] their intensity, or their economic cost as a percentage of GDP, is also much higher for developing countries than for industrial countries. Low-income countries, especially small countries, tend to be hit harder by these events (figure 1.5). Size is key because

11. Imbs and Wacziarg 2003.
12. Defined as natural disasters that cause more than a minimum number of deaths and injuries.

Figure 1.4. External demand volatility and shocks, 1975–2005



Source: From Calderon and Levy Yeyati 2007.

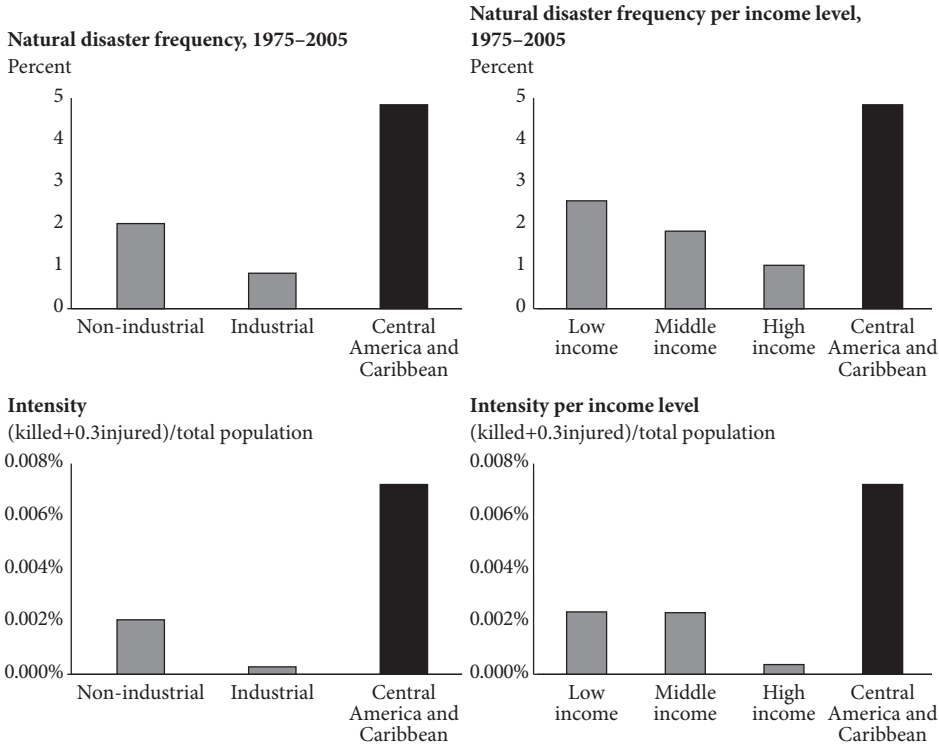
a natural disaster may affect a large share of the territory of a small country but is usually restricted to a smaller area of a large country.

Policies can also mitigate the effect of natural disasters. In particular, better zoning and resettlement policies and building codes and stronger enforcement can reduce the number of casualties and the economic costs associated with such events. Furthermore, preparedness to deal efficiently with emergencies can also reduce human suffering and speed reconstruction and economic recovery. Admittedly, however, there are limits to what can be done through these policies and programs, and countries and businesses also resort to catastrophe insurance. As shown in chapter 6, however, penetration of catastrophe insurance is very low in most developing countries, and fees are high and volatile.

Capital flows should help smooth the effects of real shocks on output. Indeed, countries are supposed to borrow in bad times and pay back in good times. However, what typically happens is the opposite: net capital flows, especially net financial flows, are highly procyclical (figure 1.6).[13] There are several potential reasons behind this stylized fact. It could be, for example, that countries appear more creditworthy in

13. The cyclical component is calculated as the deviation of GDP from its trend.

Figure 1.5. Frequency and intensity of natural disasters

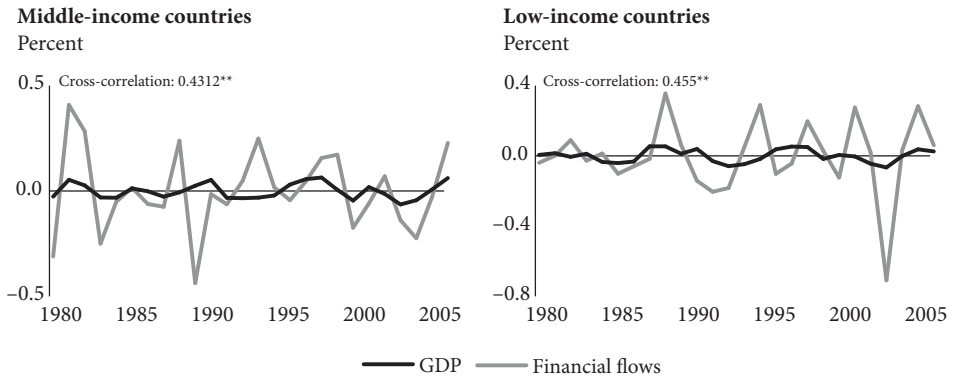


Note: Natural disasters include droughts, volcanoes, tsunamis, floods, and wind storms.
Source: From Calderon and Levy Yeyati 2007 and Gurenko and Zelenko 2007.

good times than in bad. This argument implies that markets have difficulty distinguishing cyclical or temporary problems from a deterioration in fundamentals. Or it could be that countries are more likely to fall into a liquidity crisis in bad times and that a liquidity crisis can easily lead to a default. But again, why should a solvent country find itself in a liquidity crisis if not because markets have difficulty distinguishing between solvency and liquidity problems?

Developing country policies can mitigate or amplify the procyclicality of capital flows. However, that the procyclicality of capital flows is such a generalized fact for developing countries suggests that it is related to significant market failures, as previous arguments have indicated. What is more surprising is that net financial flows are equally procyclical for low- and middle-income countries, even though official flows make up a larger component of flows in low-income countries (figure 1.6). These issues are taken up again in chapter 5.

Figure 1.6. Cyclical component of GDP and net financial flows, 1980–2004



**Significant at 5 percent.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b) and *International Financial Statistics* (IMF various years).

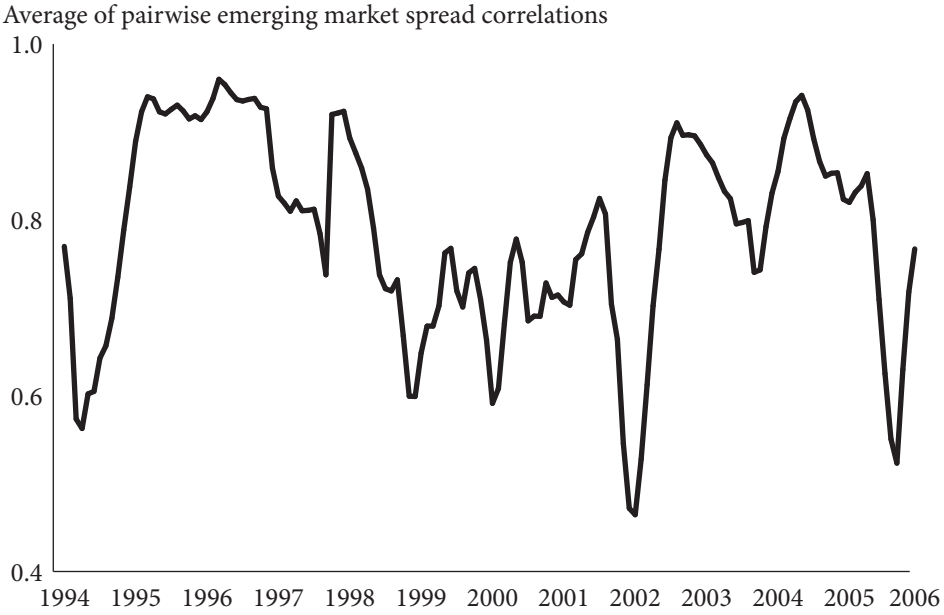
It would be bad enough if capital flows were just procyclical. Even worse, there is significant evidence that countries have occasionally been hit by exogenous capital flow shocks, especially through "financial contagion,"[14] whenever there is a major disturbance in international financial markets. In these cases private financial flows have tended to dry up for all or most developing countries, regardless of their creditworthiness. Financial contagion was especially severe after the Mexican crises of 1982 and 1994, the Russian crisis of 1998, and the Long-Term Capital Management crisis of 2002. Correlations of spreads across countries, which behave almost as the inverse of flows, have tended to increase significantly in these periods (figure 1.7).

Financial contagion from the current financial crisis in the United States to developing countries seemed largely contained until last September. Though stock prices had fallen everywhere and spreads had increased, these phenomena had been more subdued than in previous occasions. Furthermore, there had been no apparent significant capital flow reversals, and developing country currencies continued to appreciate for a while, in sharp contrast to previous episodes of turmoil in financial markets. Unfortunately, such apparent resilience gave way to a traditional sharp increase in spreads, capital flow reversal, and currency depreciations after the events of last September.

Those temporary differences were to a large extent due to better fundamentals (lower current account and fiscal deficits) and higher liquidity ratios (high international reserves and low short-term external debt)—lower macro-financial

14. The term *financial contagion* refers here to the effect of a default or financial stress in one country on third-country spreads and capital inflows (Kaminsky, Reinhart, and Vegh 2003; Claessens and Forbes 2004).

Figure 1.7. Comovement of spreads in emerging markets



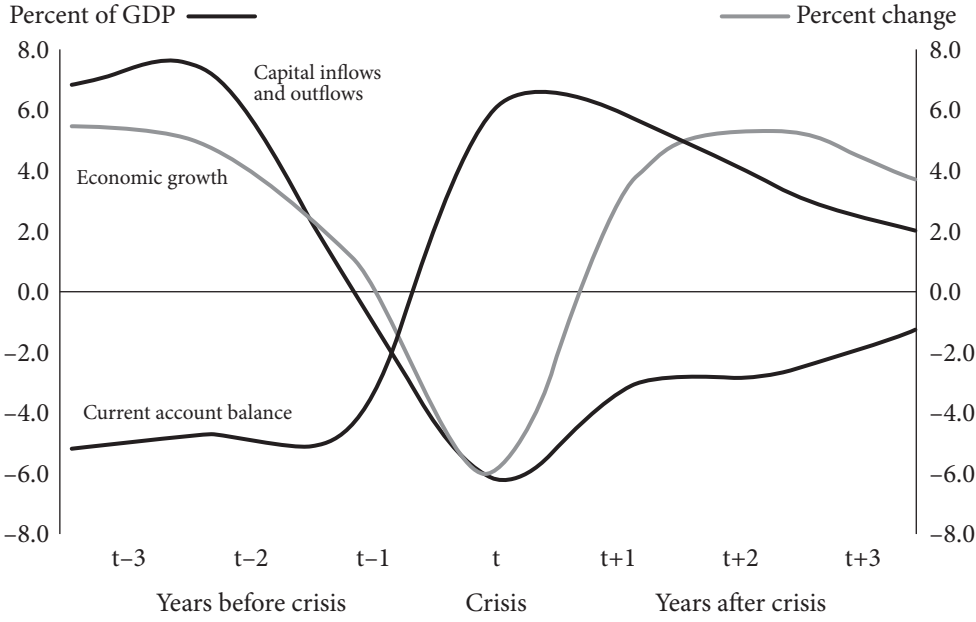
Source: Author's calculations based on data from Bloomberg.com and JPMorgan.com.

vulnerabilities—in developing countries than in the past. But, as the first draft of this report pointed out last August, it was naive to assume full decoupling and to believe that liquidity shocks in developing countries as a group were relegated to economic history. The possibility of a global recession or a global financial meltdown that would severely hurt many developing countries could not be ruled out. More to the point, the improvements in both macroeconomic fundamentals and liquidity ratios must themselves be recognized as having been at least in part a consequence of the characteristics of the previous boom for developing countries. Had the current financial turmoil not been preceded by such an outstanding external environment for developing countries, and had commodity prices not remained at exceptionally high levels until last October, many developing countries might have observed sooner significant capital flow reversals in search of low-risk financial assets.

That private financial flows have normally tended to amplify the effect of real exogenous shocks and have sometimes acted as a primary source of shocks has had further implications: countries have had to adjust to exogenous shocks through costly sharp corrections in the current account. Indeed, several studies have observed that capital account shocks tend to be several times larger than current account shocks,[15]

15. Calvo and Talvi 2005; Cavallo and Frankel 2007.

Figure 1.8. Propensity toward costly crises in developing countries: Capital account shocks lead to sharp adjustments in the current account and temporary recessions



Note: Values are averages for Mexico (1995); Republic of Korea, Indonesia, Malaysia, and Thailand (1998); Brazil (1999); and Argentina (2001).
Source: Ripoll I Alcón 2006.

forcing countries into much sharper current account corrections (figure 1.8). Such sharp adjustments usually take place through both a contraction in aggregate demand, caused by the negative income effect of the exogenous shock (and frequently required procyclical fiscal adjustments) and a significant depreciation of the exchange rate. The depreciation is expected to bring about compensatory expansionary effects through increased exports and reduced imports. However, currency depreciations have often had net contractionary effects in developing countries as a consequence of their negative impacts on the balance sheets of both government and corporations,[16] which tend to be overexposed to currency risk. The severity of these negative balance sheet effects lies behind the apparent overadjustment evidenced in figure 1.8.

These negative balance sheet effects are a direct consequence of large open currency mismatches. The mismatches, however, are ultimately a consequence of insufficient development of domestic currency capital markets. Governments and large firms often face the dilemma of either financing their investments at high interest costs and

16. Calvo and Talvi 2005; Cavallo and Frankel 2007.

short maturities in domestic currencies or of benefiting from the significantly lower interest rates and longer maturities available in international markets in foreign currencies, though incurring risky currency mismatches on their balance sheets.[17]

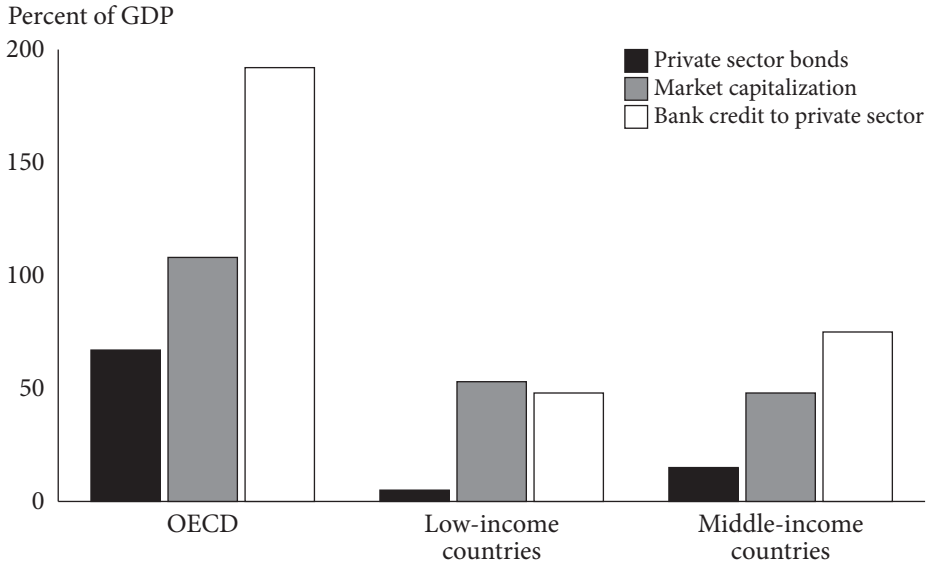
Of course, imprudent fiscal policies and myopic debt management can exacerbate this problem—and have often done so—leading to high levels of public and external indebtedness and to a biased debt composition as a result of attempts to minimize short-term costs while accumulating excessive currency risks. But, at least since the Asian and Russian crises, both governments and corporations have become aware of the potentially devastating costs associated with excessive open currency risks and have significantly reduced their overall indebtedness ratios, tilted their debt composition toward domestic currencies, and used currency swaps, when available, to cover open exposures[18] (see chapter 4). In doing so, they benefited from the exceptionally favorable external environment between 2003 and mid-2008.

However, the extent to which countries can implement such policies is limited by the size, depth, and efficiency of domestic currency markets. As a consequence, developing domestic capital markets has become a major priority for most developing countries. There have been important, though highly unequal, advances in this area. Some emerging market economies, including Chile, Mexico, South Africa, and some countries in Asia and Central Europe, have developed long-term and relatively low-cost domestic currency and currency swap markets and have managed to substantially eliminate currency mismatches and open exposures in the balance sheets of governments and large corporations (see chapter 4). Policies promoting low inflation and flexible exchange rates and regulatory and market infrastructure reforms have been behind many of these success stories.[19] But for most developing countries the road to efficient long-term domestic capital markets is likely to be long—as evidenced by the low indexes of domestic capital market development for low- and middle-income countries shown in figure 1.9—and to leave governments and firms heavily exposed to currency risks along the way.[20]

As mentioned, domestic policies can either mitigate or amplify the effect of exogenous shocks. However, monetary and fiscal policies, which should mitigate the effect of exogenous shocks, have often been procyclical in developing countries and in many instances have been the primary source of macroeconomic volatility.[21] There has

17. The so called "original sin" dilemma; see Eichengreen, Hausmann, and Panizza 2003.
18. See, for example, IADB (2006) and BIS (2007).
19. See, for example, De la Torre and Schmukler (2006).
20. Some countries have attempted to short cut building monetary credibility and domestic long-term capital markets by giving up their currencies and permitting the de facto "dollarization" of their domestic capital markets. De facto dollarization has often led to substantial financial instability, and many countries have been "dedollarizing" their financial systems since the Asian and Russian crises (Fernández Arias and Levy Yeyati 2005; Levy Yeyati 2006b).
21. Procyclicality augments the effect of exogenous shocks while autonomous volatility is a primary source of volatility and shocks; see, Fatás and Mihov (2006).

Figure 1.9. Indexes of domestic financial system development for industrial and developing countries, 2006



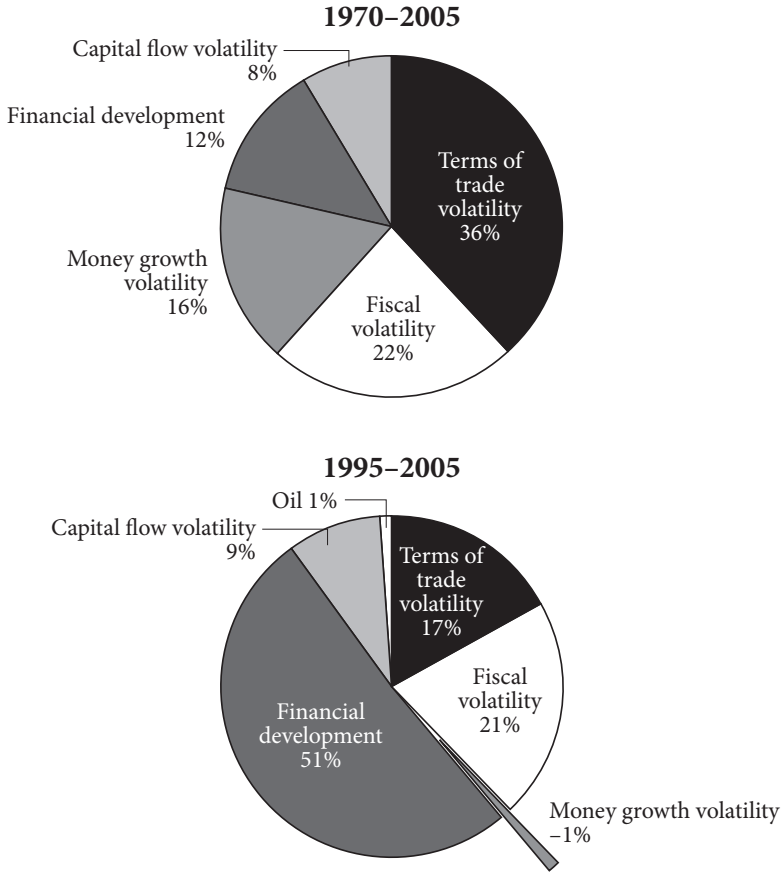
Note: Values are weighted averages for each group of countries based on available information.
Source: Author's calculations based on data from BIS 2007 and World Bank 2007b.

been important progress in monetary policies in the last two decades, as witnessed by the sharp reduction in average inflation levels and volatility in all developing regions. Furthermore, with the increased adoption of floating, or at least flexible, exchange rate regimes, many developing countries have been able to implement countercyclical monetary policies during recent economic cycles.

This is not the case, however, with fiscal policy. Although today there are fewer cases of macroeconomic crises caused primarily by imprudent fiscal policies, neither are fiscal instruments fulfilling a significant stabilizing role in the developing countries. Automatic stabilizers are in general not very potent, and few developing countries have been able to apply discretionary countercyclical fiscal policies.[22] In most cases, fiscal policy continues to be highly procyclical, amplifying the impact of exogenous external shocks. This stylized fact is in part a reflection of the difficulty, even in many industrial countries, of building solid fiscal institutions that help to avoid political pressures to overspend in good times, but it is also linked to the procyclicality of capital flows, which facilitates overspending in good times and make it more difficult to apply expansionary policies in bad times.[23]

22. Suescún 2007.
23. Perry 2007; Tornell and Lane 1999; Lora and others 2004; Alberola and Montero 2006.

Figure 1.10. Causes of excess output volatility in developing countries



Note: Total volatility is decomposed into the effects of fiscal volatility, terms of trade volatility, money growth volatility, financial development, capital flow volatility, and oil price volatility. All volatility measures are standard deviations of cyclical component from the trend. OECD and developing countries were estimated separately in order to calculate the difference in volatility explained by each variable between groups. These estimates should be taken with caution as they do not control for potential reverse causality. Further, estimates do not fully separate exogenous and endogenous causes: measured capital flow volatility is partly due to endogenous factors, and measured fiscal and monetary policies volatility is partly due to exogenous factors.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b) and *International Financial Statistics* (IMF various years).

How much of the high volatility that characterizes developing countries is related to external and how much to domestic factors? Estimates suggest that for 1970–2005 about 44 percent of "excess" volatility in developing countries (as measured against the benchmark of volatility in industrial countries) was associated with higher exposure to external shocks, about 38 percent with more volatile macroeconomic

policies, and the rest (18 percent) with insufficient development of domestic capital markets, financial integration, and other factors (as shown in the upper panel of figure 1.10). Estimates shown in the lower panel of figure 1.10 indicate that that in the period 1995–2005 the corresponding figures were 27 percent, 22 percent, and 51 percent. Changes between the two panels suggest a huge improvement in monetary policies in developing countries, though not in their fiscal policies, consistent with the discussion above. They also suggest that the contribution to "excess" volatility of their higher exposure to terms of trade was coming down, although it was still quite significant and has probably risen again given the huge increase in commodity prices in the last three years and their recent collapse. Finally, these figures indicate that the contribution to "excess" volatility of financial factors (especially of insufficient domestic capital market development) was much more important in the latter period (marked by the effects of the Asian and Russian crisis of 1997/98 and the Argentine crisis of 2001) in comparison to their role in previous decades. This finding is consistent with the increased importance attributed by policy makers to the development of domestic currency capital markets and changes in the currency composition of their debt, observed above.

2 *The Role of Financial Insurance and Hedging (and of Multilateral Development Banks) in Reducing Volatility*

While governments, firms, and individuals in developing countries can reduce their exposure to exogenous shocks somewhat through better policies, they can also use financial instruments and hedges to mitigate the effects of those shocks, as shown in Table 2.1, which summarizes the actions that governments can take to deal with the three types of exogenous shocks discussed in chapter 1.

First, of course, governments can always do nothing: just wait for the shock to happen and then cope with it. If the shock is large, coping may require large and costly current account, exchange rate, and procyclical fiscal adjustments, which may significantly amplify the effects of the shock. For some countries, and to some extent, aid flows may come to the rescue.

Second, governments can "self-protect" through prevention measures. Such measures reduce their exposure to shocks. As examples, export diversification (by products and markets) is the main prevention measure to reduce exposure to real exogenous shocks, and zoning and building codes and their enforcement are the main prevention measures to reduce exposure to natural disasters. Prevention measures against capital flow shocks include keeping debt levels low and avoiding currency and maturity mismatches in government and corporate balance sheets. These measures also mitigate the effects of real shocks as long as they contribute to reducing the procyclicality of capital flows, which usually amplifies the effects of real shocks, as well

Table 2.1. Dealing with high volatility: An insurance framework

Shock \ Action	Coping after the fact	Prevention	Self-insurance	Market insurance/ hedging
Terms of trade	Current account and (procyclical) fiscal adjustment	Export diversification	Stabilization funds	Commodity price futures, forwards, and options
	Aid			Indexed debt (terms of trade, commodity prices)
Natural disasters	Aid	Zoning and building codes	Emergency funds	Insurance and reinsurance
	Fiscal adjustment			Catastrophe bonds
Capital flows	Current account and (procyclical) fiscal adjustment	Debt level and composition	International reserves	Contingent credit lines
	Aid	Domestic Capital market development		Currency and interest forwards, swaps, and options
		Dedollarization		Indexed debt (GDP)
				External debt in domestic currencies

Source: Adapted from the framework developed by Erlich and Becker (1972); Gill and Ilahi (2001); and Packard (2002).

as balance sheet effects that might arise as a consequence of compensatory currency devaluations.

As discussed, to enable governments and firms to reduce currency mismatches, it is necessary to develop deep domestic currency capital markets. When domestic currency capital markets are deep and long-term, governments and firms can optimize the currency composition of their debt, weighing relative costs, maturities, and risks. Although some developing countries have succeeded in developing deep and long-term domestic currency capital markets, this task normally takes time because it requires, among other things, achieving low inflation and monetary policy credibility, adequate legal (creditor and minority share property rights, in particular) and prudential regulatory frameworks, sound corporate governance and credit information systems, and suitable market infrastructure. Developing deep domestic currency capital markets is especially hard for countries that have high de facto financial dollarization as a consequence of previous flawed policies.[1]

1. High de facto financial dollarization is usually a consequence of hyperinflation episodes that have led to a distrust of the local currency as a store of value, or of episodes of deposit confiscation that have eroded confidence in local financial systems. In such cases, countries usually have allowed the development of domestic dollar deposits and credit or the operation of large offshore systems, to develop credit

Third, governments can "self-insure": they can save in good times for bad times. Typical self-insurance policies include creating stabilization funds to mitigate the effects of volatility of commodity prices and, more generally, enacting countercyclical fiscal policies to mitigate the effects of real exogenous shocks and output volatility. Policies also include establishing emergency funds for natural disasters and hoarding international reserves to mitigate the effects of capital flow shocks and volatility.

The accumulation of international reserves can also reduce the probability of a capital flow shock. A sudden stop normally occurs when financiers realize that there is not enough liquidity to cover outstanding debt service commitments in the event of a credit crunch and so refuse to roll over debt, provoking a self-fulfilling liquidity crisis.[2] Thus hoarding international reserves serves as both a prevention measure and a self-insurance policy. More generally, all prevention and self-insurance actions can reduce perceived default risk and hence limit the probability of self-fulfilling liquidity crises. For the same reason they can facilitate cheaper ex ante finance, thus potentially leading to higher growth rates.[3] Obviously, however, self insurance can carry significant financial and investment opportunity costs. The benefits and costs of self-insurance policies are not linear, and there is generally an optimal level of self-insurance beyond which marginal costs exceed marginal benefits.

Finally, governments can buy market insurance or hedges. Financial instruments available to deal with real exogenous shocks include commodity price futures, forwards and options, and, less frequently, structured indexed debt. There have been important developments in the catastrophic risk insurance and reinsurance industry, including the issuance of catastrophe bonds. And there is a limited set of instruments to reduce liquidity and currency risks, including contingent credit agreements, currency and interest rate forwards, swaps and options, and some forms of structured indexed debt. As with self-insurance, market insurance and hedging, by reducing default risk, can also reduce the probability of capital flow shocks and volatility and lead to higher ex ante flows, investment, and growth. But it also comes with its own costs, whether high upfront fees or the opportunity cost of giving up the upside in the case of hedges. The following chapters discuss in some detail the availability of such instruments and why their use by developing countries is uncommon currently.

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markets, albeit inducing wide currency mismatches of debtors. The propensity to peg the exchange rate as an anchor for inflation has also contributed to high dollarization levels as this policy appeared to offer implicit insurance against currency risk (and, indeed, governments often compensated debtors after large forced devaluations through caps and "pesification" of dollar debts, as happened in Argentina in 2002). See, for example, Ize and Levy Yeyati (2003). Countries with high de facto financial dollarization have proven to be more exposed to capital account shocks (see Calvo and Talvi 2005). Some countries have adopted full, legal substitution of foreign currency for their domestic currency. In these cases, the issue is how to develop flexible financial contracts that can protect governments and firms from the effect of adverse external shocks that require real exchange rate corrections (see De la Torre and Schmukler 2006).

2. Chamon 2007; Chang and Velasco 1999.

3. See Levy Yeyati (2006a).

Finally, better prevention policies (and better institutions and policies in general) can also increase access to market insurance and hedges and help develop domestic currency and swap markets. Thus, the policy options outlined in table 2.1 should not be seen as independent alternative courses of action: there can be considerable synergies and complementarities, especially among prevention and market insurance options, in both directions.

The "optimal" mix of policies for reducing volatility

The natural questions arise: when, for what type of risks, and to what extent is it better to prevent, to self-insure, to hedge or pay for market insurance, or just to wait and cope? Ehrlich and Becker's seminal contribution to the economics of insurance[4] sheds considerable light on these questions. The analysis that follows applies their results, and some recent extensions,[5] to government options to deal with exogenous shocks and macro-financial volatility.

The optimal theoretical response depends on the nature of the risks. More specifically, it depends on the expected frequencies and costs of shocks. For rare and low-expected-cost events, it normally does not pay to incur the costs associated with full prevention, self-insurance, or market insurance and hedging. Better to wait for the unlikely event and cope because the expected cost of coping is low. In the case of high-frequency and high-expected-cost events, the emphasis should be on prevention: for example, in areas with frequent large flooding it pays to build expensive dams and other public works or resettle populations. When high frequency is coupled with low expected costs the optimal response is a combination of self-insurance and prevention.

But for rare and costly shocks, the optimal response should in theory focus on market insurance: just waiting and coping may turn out to be too costly, savings would have to be very high and disproportionately costly for such an unlikely event, and full prevention costs might also be very high to cover a low-probability event. In contrast, this is precisely when pooling of risks through market insurance may pay in principle: as long as individual risks are not highly correlated, required collective savings will be several orders of magnitude lower than the sum of what individuals would have to save to cover their own rare but costly risk. Thus, premiums can be lower than the financial costs for individual savers. This is why most people voluntarily take market insurance against major accidents, theft, health events, and fire—as long as such insurance is available and fees are reasonable—but not against minor accidents, petty theft, common colds, or the effects of frequent rainfall on houses. And this is also why most people in developing countries would like to take market insurance against

4. Erlich and Becker 1972.
5. Gill and Ilahi 2001.

unemployment, violent attacks, or natural disasters, but usually find none available. For, as discussed in the next chapter, market failures are a very common feature in many insurance markets.

Second, because most risks come with a continuous distribution that includes both high-frequency and low-cost events as well as upper tails of low-frequency and high-cost events, the optimal response requires a careful design in which market insurance is geared for the upper tails, but not for the more frequent low-cost outcomes. This is commonly achieved either through deductibles or exclusions in insurance contracts.

Third, there are both substitution effects and complementarities among actions. Usually, market insurance and self-insurance are substitutes. If I am fully insured against a potentially high-cost risk, then I do not need to save for its eventual occurrence. But if I find no market insurance for a rare but costly risk, I may have no option but to engage in either very costly coping (for example, dealing ex post with a currency crisis or the effects of a major earthquake) or self-insurance (for example, hoarding apparently "excessive" international reserves or setting aside very large emergency funds). Nonetheless, on occasion some self-insurance can make market insurance more accessible

Conversely, market insurance and prevention can be substitutes or complements, depending on the design of insurance fees and payments. Thus, poorly designed insurance contracts may lead to moral hazard: if I am fully and cheaply protected against a costly risk I may do nothing to prevent it. However, if the insurance fees and payments are contingent on my taking adequate prevention measures, contracting market insurance may induce me to undertake more prevention measures. Thus, fire insurance fees are normally more costly for wooden houses, and one may lose eligibility if there are no fire extinguishers on the property. In the other direction, prevention (and good policies and institutions in general) normally increase access to international market insurance and hedging and help the development of domestic insurance markets.

Fourth, individual welfare increases when there are more options from which to choose. This obvious conclusion, and the existence of significant market failures and externalities in insurance, lead to a potential role for government with respect to insurance options for individuals and firms, and for multilateral institutions, with respect to insurance options for developing countries, as discussed in the next subsection. This is the main economic rationale behind social security (universal health insurance, unemployment and disability insurance, and mandated and noncontributory pensions systems) as discussed in several World Bank publications.[6] Virtually everywhere the emergence of these types of insurance, or their universal coverage, required significant government intervention. This is also the rationale for government support for the development of catastrophe insurance, as happens in most industrial countries (see chapter 6).

6. De Ferranti and others 2001; Gill, Packard, and Yermo 2005; Baeza and Packard 2006.

Fifth, there are risks that cannot be fully or substantially diversified at the national level, especially in small countries and economies, and that require international diversification. Pooling of risks within a country may lead to limited savings in some cases, while worldwide pooling may lead to very considerable savings. Thus, catastrophic risk insurance normally requires reinsurance abroad. And there are, naturally, risks that are essentially undiversifiable at the national level, but substantially diversifiable at the global level: this is precisely the case of macroeconomic risks derived from exogenous shocks such as those discussed in the previous chapter. International financial markets offer an increasing variety of instruments to deal with these risks, but market failures are as important here as in domestic financial markets, as is discussed in the following subsection, leaving a significant potential role for multilateral institutions.

Sixth, official failures are also common, whether through omission of action, excessive reach, or poorly designed interventions. Thus, social security regulations are fraught with inefficiencies such as public health insurance that covers events that should not be insured (common flu) and leaves out some that should be (catastrophic illnesses), as well as excessive administrative costs and fees. Social security institutions and regulations are also plagued by poor incentives for individuals, leading to problems of moral hazard and adverse selection.[7] But they also often fail by omission: thus, in most developing countries the poor go essentially unprotected against the risks of old age, health, and unemployment.[8] In the same vein, bilateral and multilateral agencies may indulge in inefficient interventions and fail by omission. An example of inefficiencies is aid that comes after a natural disaster or an external shock hits a poor country or region. Such ex post aid creates a particular sort of moral hazard: it induces countries to underinsure and, perhaps, even to underinvest in prevention. Aid could be better used to subsidize or reduce the costs of prevention measures and to purchase market insurance for countries. This topic is discussed in subsequent chapters.

Finally, as the potential costs of shocks increase with the level of development, and the opportunity costs of saving normally decline (because discount rates are lower), it is to be expected that demand for insurance will increase. This is one reason high-income countries have higher penetration of insurance against all types of risks; the other is, of course, better institutions and policies. For the same reasons middle-income countries tend to demand more insurance than low-income countries. Middle-income countries are also more exposed to some types of risks, such as capital flow shocks, as discussed in chapter 1. As a consequence, these topics have come more to the attention of multilateral institutions as they have attempted to devise a "middle-income countries strategy" or agenda. However, it would be a mistake to think that these issues are unimportant for low-income countries: as discussed in chapter 1, low-income countries are on average more exposed to real external shocks and natural

7. Perry, Maloney, and Arias 2007.
8. Perry, Maloney, and Arias 2007.

disasters than middle-income countries. And, contrary to expectations, aid currently behaves almost as procyclically as private capital flows, as already mentioned.

Financial market failures and the role of multilateral development banks

Several financial instruments have been designed to reduce, mitigate, or transfer risk, in particular, liquidity, currency, commodity price, and natural disaster risks. Some of them are relatively mature products, with deep and liquid markets in industrial countries, while some are relatively new and have had only incipient market development. As shown in the following chapters, use or access to such products by developing countries is generally quite limited for various reasons.

Before examining the types of products available, it is useful to discuss briefly the difficulties and market failures that normally affect financial innovations. First, when a new product is launched there is considerable uncertainty about how it will perform, and pricing is a problem. In particular, the initial market will not be liquid, and there may be considerable uncertainty about how deep and liquid markets will be at different moments in the future. These characteristics will lead investors to demand a high premium.

As a consequence, the first issuers will have to pay a high premium and face substantial risks. These "first mover" costs and risks are sharply reduced for later investors and issuers, as experience is gained and market liquidity develops. Thus, the first issuers and investors incur high market-development costs that yield market-development benefits (positive externalities) for all subsequent market players. Because the financial sector is highly competitive, successful innovations are copied almost immediately without incurring these development costs, and there are normally no patents or other forms of intellectual property rights protection for financial innovations. Thus, a major appropriability problem arises that constrains the pace of financial innovation.[9]

These problems, which affect all types of financial innovation, are far more severe for products that require global reach to attain their full risk-diversification potential. Currency, output, and natural disaster risks can be greatly diversified through global pooling. Cross-correlations of such risks may be high among neighboring or similar countries, but tend to be low when all countries are included. Therefore, pooling these risks globally substantially reduces the cost of market insurance. But until global pools are achieved, investors will not benefit from much risk diversification, and premiums for early participants will be much higher. There is thus a major coordination problem for the efficient development of these markets.

These first-mover or market-development costs and coordination problems that affect many financial innovations often result in market failures. Thus, this is a potential area for official action, especially when global coordination issues arise. Many

9. Shiller 2003; Claessens 2007; Costa, Chamon, and Ricci 2008.

important financial innovations were developed with help from governments[10] or official international assistance, as in the case of the consolidation of emerging-market bonds as an asset class after the Brady restructuring deals.[11] Multilateral development banks can in principle assume the first-mover or market-development costs and risks of products that may be of special interest to developing countries, by piloting or promoting them and helping develop market liquidity. Global development banks, such as the World Bank, or associations of regional development banks, are especially well placed to help solve the coordination issues arising in developing efficient coverage of currency, output, and natural disaster risks.

Finally, in many instances the low use of risk-management products by developing countries also arises from domestic problems: either lack of technical capabilities, which are required to manage the potential benefits and risks associated with complex financial products, or political economy problems, or both. Political economy problems arise from the fact that insurance requires paying fees upfront to cover risks that may never materialize or that may do so well into the future. Cash-constrained governments with short political horizons are seldom motivated to incur the financial and political costs associated in the short term with taking insurance and may instead leave a significant accumulation of risks for their successors. Hedging might avoid the financial and political costs associated with upfront insurance fees, but it leaves officials exposed to eventual accusations of malfeasance related to the fact that hedging implies "giving up the upside." Multilateral development banks are again well placed to help overcome both of these technical limitations and political economy constraints, as is discussed below. Further, many risk-management products are sensitive to credit risk. Thus, countries or firms with high credit risk are essentially rationed out of these markets or can access them only at very high costs. This suggest a further potential role for multilateral development banks in intermediating the access of developing country governments and firms to risk-management product markets, by retaining credit risk and allowing market participants to take only other risks (such as currency or commodity price risks).

The following chapters illustrate these general points with respect to specific risks and potentially valuable financial instruments. For clarity of exposition, instruments or financial policies whose primary function is to help reduce or mitigate liquidity, currency, commodity price, output volatility, and natural disaster risks are dealt with individually, but it should be clear that instruments designed to reduce the exposure to a particular risk indirectly help reduce or mitigate other risks. This is largely because of the procyclicality of capital flows, which tends to amplify the effects of real shocks and to convert them into serious liquidity risks, and partly because balance sheet currency and maturity mismatches tend to increase the probability of liquidity shocks and amplify the real effects of all exogenous shocks.

10. Shiller 2005b.
11. Calvo and Mendoza 2000.

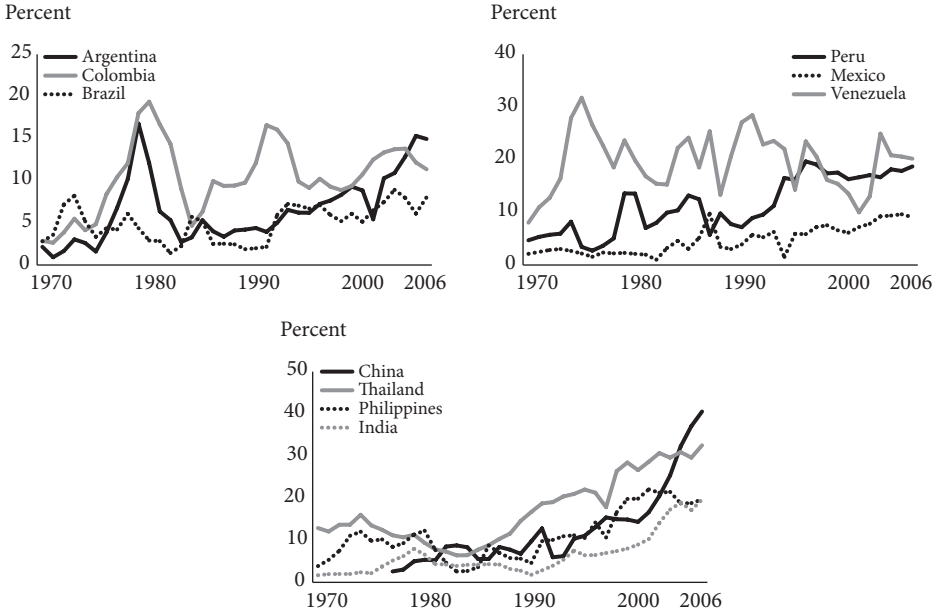
3 *Dealing with Liquidity Shocks and the Procyclicality of Private Capital Flows*

This chapter begins with a discussion of the ways and means of helping to reduce or mitigate risks associated with liquidity shocks and, more generally, with the procyclicality of private capital flows. As mentioned above, capital flow shocks have proven to be potentially devastating in the past, and the procyclicality of capital flows tends to amplify significantly the effects of real exogenous shocks. Although liquidity risks appeared low at the height of the 2003–2008 boom, given developing countries' high accumulation of international reserves and significant reduction of external short-term debt, the severity of the October shock has revealed once more their continued high vulnerability.

To significantly reduce or mitigate the effects of liquidity shocks, if left to themselves, those developing countries would have two costly choices or a combination thereof: They would have to reduce their outstanding external debt to very low levels and virtually abstain from using external finance, by consistently running current account and fiscal surpluses, which would, of course, limit their investment and growth potential. Or they would have to carry large international reserves, incurring significant financial costs, proportional to their country risk. To a large extent, this is precisely what happened in recent years, as shown in figure 3.1.

To avoid falling into such extremes, developing countries might try to partially protect themselves from liquidity risks by contracting contingent credit lines with

Figure 3.1. Net international reserves as a share of GDP



Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b) and IMF 2007.

international private banks. Both Argentina and Mexico did so after they suffered a sudden stop of capital inflows in 1995. Both contingent credit lines were called after the respective countries were hit by capital outflows in the aftermath of the Russian default of August 1998.[1] A study of that experience[2] shows that, in the Argentine case, the contingent credit line rendered little benefit to the country; in the Mexican case, the banks took too much risk. As a consequence, neither of these lines was renewed, and other countries and banks did not follow their example, to our knowledge.

Although there were specific design problems in both cases, in the last analysis the failure of these lines revealed two structural problems. First, by participating in only one or two contingent credit lines, private banks were not able to adequately diversify risks. International banks would be required to hold much lower reserves than individual countries if the banks were participating in a large number of such

1. Mexico called its line in September 1988, amid the first signs of capital flow retrenchment following the Russian crisis, an early decision that was bitterly contested by participating banks, which paid but refused to renew the credit line. Argentina waited to call its line until it was in the midst of a full-blown liquidity crisis in 2001, and by then it needed support from the International Monetary Fund and the World Bank to cover increased required collateral margins. It was finally able to withdraw only about one-third of the initial coverage, partly because of design failures.
2. Cordella and Levy Yeyati 2007.

lines around the world, thus achieving significant diversification gains. Because this was not the case, banks had to carry significant liquidity coverage, or otherwise hedge this high risk, at a substantial financial cost. Thus, both first-mover costs and coordination problems were behind these early failures and the subsequent lack of market development. Second, given the modest size of these facilities, the underlying reasons for private banks to behave procyclically remained intact: the incentives to rush out of the country before liquidity was exhausted. Thus, as the likelihood of a liquidity crisis began to increase, in the Argentine case, an increasing number of banks refused to roll over their initial commitments or otherwise hedged and reduced their exposure to the country, thus severely limiting the actual benefits of the contingent facility.

Multilateral official institutions are in a much better position than private banks to deal with these issues. In particular, as many authors have observed,[3] the International Monetary Fund (IMF) should play the role of international liquidity lender of last resort, because of both its mandate and its large capital base, though some authors suggest it would need to substantially increase its capital to effectively play this role in a world of potentially very large private capital flow reversals. For countries affected by endogenous crises, IMF programs require significant corrective policy actions and hence ex post negotiated conditionality. For exogenous liquidity shocks, such as the ones discussed here, the adequate instrument is, instead, a contingent credit line that disburses automatically when the exogenous shock arises.[4] The Contingent Credit International Line was an intended step in this direction, but it failed because of major design problems. First and most important, it lacked automatic disbursements. But also, eligibility criteria were such that only the strongest countries could apply—those that probably would not need the contingent credit line in the first place. And these countries did not want to signal any hidden weaknesses by applying to participate in a credit line that they were highly unlikely to call and that therefore did not render enough expected benefits. The new IMF Medium-Term Strategy contemplated the enactment of an automatic disbursement facility that would overcome the design failures of the Contingent Credit International Line, but little progress had been achieved over three years of discussion, until the international financial crisis struck full-blown last October, and then it was approved in a matter of days.

Because this paper focuses on the roles of multilateral development banks, it does not further discuss the IMF's role. Obviously, multilateral development banks cannot and should not assume the role of the IMF as a liquidity provider of last resort in major liquidity shocks. They have neither the mandate nor the capital base to play that role effectively, given the sheer differences in magnitude between private capital flows and official

3. Fischer 1999; Summers 1999; Cordella and Levy Yeyati 2005; Forbes 2006.

4. It is often difficult to tell exogenous shocks from endogenous shocks, however. Because of this, contingent credit lines may use parametric guidelines to disburse automatically (for example, a minimum increase of the overall Emerging Markets Bond Index or a minimum reduction of terms of trade or commodity prices).

development flows. But they could help to counteract directly and to some degree, even if far from fully, the procyclicality of private capital flows (and even to mitigate somewhat the effects of exogenous liquidity shocks) in at least two ways: by adopting a countercyclical role through their lending and by offering credit contracts with state-contingent disbursements. These two complementary options are discussed below. As mentioned above, multilateral development banks can also help indirectly reduce the problems associated with the procyclicality of private capital flows (as well as, in the margin, the probability and severity of liquidity shocks) by helping reduce currency, commodity price, and output volatility risks. The latter topics are discussed in subsequent chapters.

Is lending by multilateral development banks countercyclical?

It is common these days for multilateral development banks to publicize their countercyclical lending roles in their official statements. Indeed, as many critics of multilateral development banks have insisted, official lending can be justified solely for countries that have no access, or very expensive access, to private capital markets[5] or in cases in which there are major proven externalities associated with cheaper official lending.[6] However, these critics have consistently failed to notice the problems and risks associated with the procyclicality of capital flows and with exogenous liquidity shocks. Thus, a proper answer to their criticism is that official lending should be available precisely at times when private flows falter, and as a consequence, they should behave countercyclically, in contrast to the behavior of private capital flows.

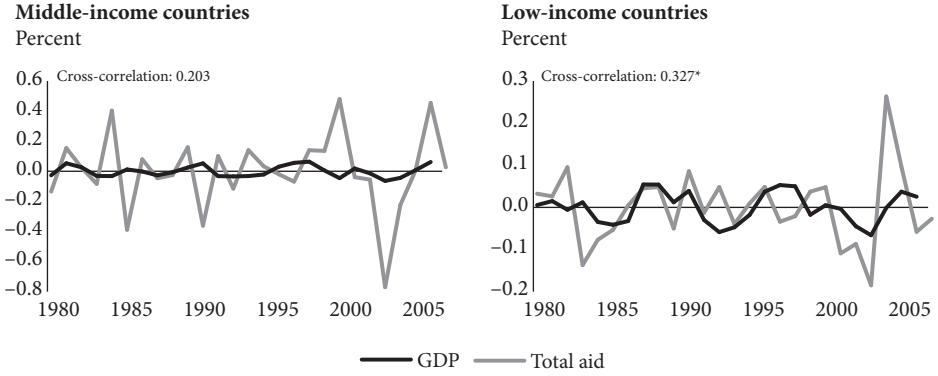
However, a cursory look at the data quickly dispels the notion that this is a generalized practice, as it should be. First, total aid flows behave procyclically, as shown in figure 3.2.

Furthermore, disbursements by multilateral development banks, aggregating at the regional level (shown in the third column of table 3.1), have tended to behave countercyclically in six cases, and in only two of these cases is this result statistically significant, while it has tended to be procyclical in twelve cases, four of which are statistically significant. Because this result could be due to lags between commitments and disbursements, the exercise was performed with commitment figures, and it yields essentially the same result (shown in the fourth column of table 3.1).

To illustrate whether lending has tended to be more countercyclical recently, or whether it has been countercyclical at times of sharp slowdowns, figure 3.3 presents the results of estimations using rolling windows. The individual graphs show no clear trend in most cases. They also show that even in the two regional cases in which lending was found to be significantly countercyclical during the estimation period

5. Meltzer 2000; Lerrick 2006; Einhorn 2001and 2006.
6. Presumably either through the associated technical assistance, conditionality, or incentives to undertake activities with large externalities (for example, environmental preservation).

Figure 3.2. Cyclical component of GDP and total aid



*Significant at 10 percent. The cyclical component is defined as the standard deviation of GDP from its trend.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b) and annual reports of multilateral development banks, 2000–2007.

in table 3.1, this result was driven by specific subperiods[7] and was not a consistent characteristic during the whole sampling period. Finally, there is some evidence in these graphs of countercyclical lending during times of crisis. These exercises were repeated for the largest countries in each region and found, as expected, significant divergence but essentially the same results. Overall, there are more cases of procyclical than of countercyclical lending during the sampling period. There are almost no cases of consistent countercyclical lending during the whole period, and lending tends to be countercyclical in times of deep crisis.

Why does multilateral lending tend to be procyclical more often than not, except in periods of deep crisis? In the author's view, as former insider, this is a consequence both of a lack of clear policies and of bureaucratic incentives. Normally, boards and management (especially chief financial officers) are all too happy to lend more, if possible, to countries that are doing well. Conversely, they are reluctant to lend more when countries are in a slowdown because "country risk" tends to increase in such periods, to a large extent precisely because of the procyclicality of private capital flows. It is difficult to find regional or country directors (or top management or board decisions) who refuse lending requests from countries that are doing well and who deliberately attempt to reduce exposure, as should be done, in such cases. The bureaucratic incentives are just not there. Lending programs and country strategy documents, on the contrary, often explicitly envision increases in lending if countries are doing well and very rarely contemplate increases in lending if countries are hit by exogenous shocks and find their access to private capital markets reduced.

7. 1992–1999 in the case of World Bank lending to East Asia and Pacific, and 1988–1994 in the case of World Bank lending to Sub-Saharan Africa.

Table 3.1. Correlations of GDP and disbursements by multilateral development banks (Regional data)

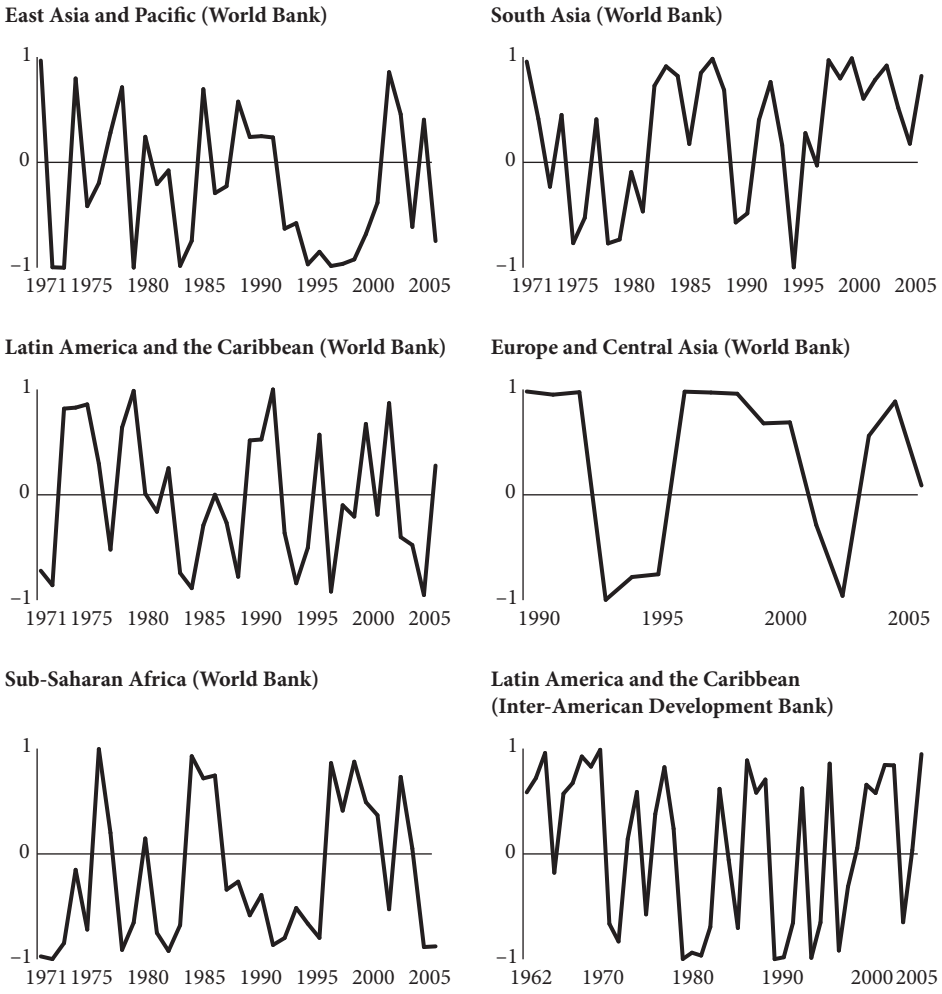
	Period	Disbursements	Commitments
Inter-American Development Bank (Latin America and the Caribbean)	1960–2006	0.051	
European Bank for Reconstruction and Development (Europe and Central Asia)	1994–2006	0.513	0.499*
World Bank (East Asia and Pacific)	1960–2006	–0.315*	–0.1611
World Bank (Europe and Central Asia)	1980–2006	0.350*	–0.371*
World Bank (Latin America and the Caribbean)	1960–2006	0.104	–0.202*
World Bank (Middle East and North Africa)	1960–2006	0.362*	0.388*
World Bank (South Asia)	1960–2006	0.179	0.055
World Bank (Sub-Saharan Africa)	1960–2006	–0.215*	–0.222*
Asian Development Bank (East Asia and Pacific)	1994–2006	–0.286	0.388*
Asian Development Bank (South Asia)	1994–2006	–0.018	0.2503
African Development Bank (Sub-Saharan Africa)	1994–2006	0.2417	0.1898
International Finance Corporation (Latin America and the Caribbean)	1962–2006	0.4551**	0.4045**
International Finance Corporation (East Asia and Pacific)	1968–2006	0.2655*	0.1990*
International Finance Corporation (Middle East and North Africa)	1963–2006	–0.0129	0.1211
International Finance Corporation (South Asia)	1967–2006	–0.1696	0
International Finance Corporation (Sub-Saharan Africa)	1964–2006	0.2349	0.0858
IFC (Europe and Central Asia)	1983–2005	0.2007	0.1048

Note: Calculations correspond to pairwise correlations between the standard deviation of cyclical components for each variable.

* Significant at 10 percent.
** Significant at 5 percent. Reported values of disbursements were calculated as the correlation of the cyclical component of GDP and disbursements over the sample period.

Source: Author's calculations based on data from the World Bank, European Bank for Reconstruction and Development, Asian Development Bank, African Development Bank, International Finance Corporation, and World Development Indicators (World Bank 2007b).

Figure 3.3. Rolling correlations: Regional GDP and disbursements by multilateral development banks (10-year windows)



Note: Reported values were calculated as the correlation between the cyclical component of GDP and disbursements taking, as a reference, 10-year rolling windows over the sample period.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b) and annual reports of the World Bank and Inter-American Development Bank, 2000–2007.

Usually, when a country's exposure to multilateral development banks is reduced in good times, it is the country authorities' decision to do so (for example, to reduce borrowings and prepay outstanding debt) that drives this result, much to the regret and occasional protests of multilateral development bank management.[8] Thus, multilateral development banks tend to behave procyclically, much as private banks do, in good times and for essentially the same reasons. And when country conditions deteriorate because of endogenous or exogenous factors, they tend to restrict lending much as private banks do and also for the same reasons, except when countries get into real trouble and borrow from the IMF. In those cases, multilateral development banks are asked to join the IMF programs with increased lending, not without some protest that liquidity provision should be the exclusive role of the IMF and that it is not part of the long-term "development" objectives of the multilateral development banks.

These internal policies, incentives, and attitudes reflect, in our opinion, a serious identity problem. Multilateral development banks tend to behave too much like private banks and investors, actually competing with them in good times (and with much internal discussion about how to become more competitive in terms of cost) and not substituting for them enough in not-so-good times, with the exception of really bad times, when they are pushed to do so by the IMF. By following this course, multilateral development banks actually play into the hands of their critics and are often not fulfilling a clear development role. Perhaps some stakeholders and some managers remain to be convinced that lending by multilateral development banks should be countercyclical, and this report should help to persuade them. In any case, it is clear that for multilateral development banks to actually perform countercyclically most of the time, lending and risk-management policies must change explicitly. The way country programs are designed should undergo significant changes, and incentives for area and country directors must change as well.

Lending by multilateral development banks to lower income countries, which normally have very limited access to private capital markets, tends not to behave procyclically as often as the banks' overall lending. See table 3.2 and figure 3.4. A significant portion of this lending comes from concessional resources that are managed with rules that are different from those applied to ordinary resources, which help to limit procyclicality. For example, allocations from the International Development Association are based on an internal assessment of the quality of the countries' institutions and policies. Such assessments turn out to be mildly procyclical in practice, as staff analysts tend to rate well countries that are growing well. It would be important to add countercyclical criteria, in an explicit way, to these assessments, thus increasing allocations to countries that are undergoing adverse exogenous shocks, other things being equal.

8. This was the case with several Asian countries that reduced borrowings from the World Bank in the early 1990s and many Latin American and Caribbean countries that have recently prepaid debts to multilateral development banks.

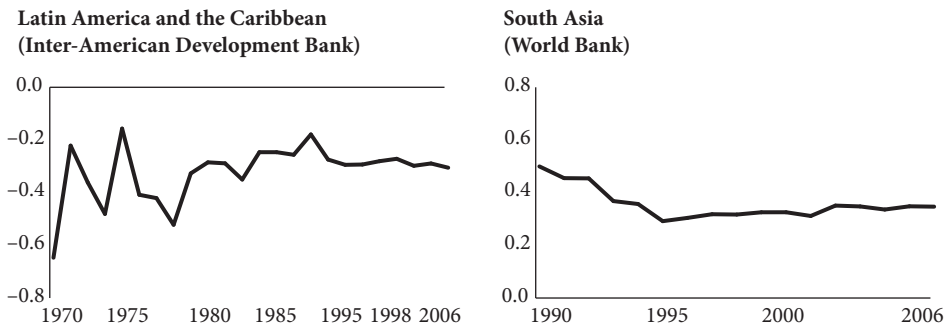
Table 3.2. Correlations of GDP cycles and disbursements by multilateral development banks to low-income countries (Regional data)

	Period	Disbursements
Inter-American Development Bank (Latin America and the Caribbean)	1961–2006	–0.3053*
European Bank for Reconstruction and Development (Europe and Central Asia)	1994–2006	–0.0395
Asian Development Bank (South Asia)	1997–2006	0.0599
World Bank (South Asia)	1980–2006	0.3468*

*Significant at 10 percent.

Note: Reported values were calculated as the correlation of the cyclical component of GDP and net disbursements to low-income countries over the sample period.

Figure 3.4. Rolling correlations of GDP cycles and disbursements by multilateral development banks to low-income countries



Note: Reported values were calculated as the correlation between the cyclical component of GDP and net disbursements to low-income countries taking, as a reference, 10-year rolling windows over the sample period.
Source: Author's calculations based on annual reports, *World Development Indicators* (World Bank 2007b), and IMF *International Financial Statistics*.

Multilateral development bank experience with contingent disbursements

Some multilateral development banks have experimented in a limited way with contingent loans or credit lines. For example, a few years back the World Bank instituted the deferred drawdown option, which could be exercised with any approved loan: after the loan was approved through usual procedures, the government could opt to defer disbursements to a later date (during the next three years), depending on actual need. However, there were very few takers, apparently because of pricing issues and lack of full automaticity of the deferred disbursements. The World Bank's board recently approved a reform to overcome these limitations. A few operations had been approved

before the October crisis, and significant interest had been expressed by many mostly middle-income countries. Other multilateral development banks have also offered contingent loans and credit lines in modest amounts.

For these cases to enter the mainstream, it would appear that multilateral development banks need to incorporate arrangements for more significant contingent lending within country strategy programs, as part of an explicit countercyclical strategy, and not just leave it to options to be exercised on a case-by-case basis when individual loans are negotiated.

4

Dealing with Currency Risks

As mentioned above, developing countries, especially the so-called emerging markets, have become painfully aware that high external liabilities pose both significant liquidity and balance sheet risks. Thus, many countries have been trying to reduce their external liabilities and open currency mismatches in both official and private firm balance sheets. To do so without incurring significant maturity mismatches, these countries have undertaken major efforts to develop long-term capital markets in domestic currencies.

In addition, some countries have begun to issue domestic currency bonds in international markets, and there have been some attempts in Asia to develop a regional market for sovereign and quasi-sovereign bonds in domestic currencies, through the Asian Bond Fund initiative. The initiative was established by the monetary authorities of eight Asian countries in 2005 as a $2 billion fund to invest in sovereign and quasi-sovereign bonds in their local currencies and was expected to attract additional investors. The Asian Bond Fund was the first foreign investor in the Chinese interbank bond market and has helped to lengthen maturities in other markets. The initiative stimulates and supports tax and regulatory reforms and harmonization that would facilitate the development of local and regional markets for such bonds. It has been complemented by a $10 billion regional multicurrency bond platform sponsored by the Asian Development Bank. The African Development Bank is currently promoting a similar initiative in Africa.

Developing domestic currency capital markets

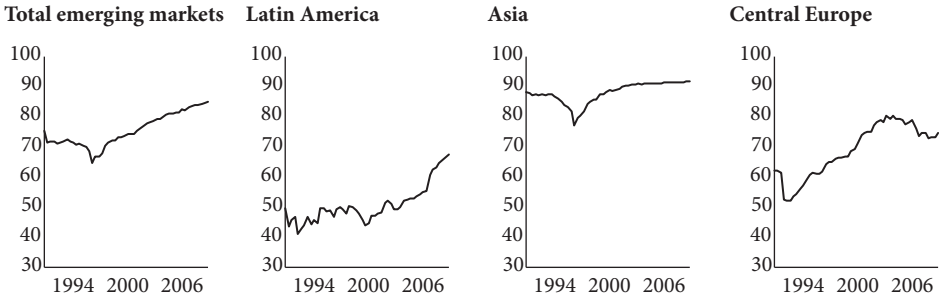
A recent report by the Bank for International Settlements[1] documents the significant progress achieved by some countries in developing domestic currency markets and in reducing currency mismatches in their balance sheets. In particular, figure 4.1, taken from that report, shows how the outstanding domestic bonds and notes (most of which are in domestic currencies) have increased significantly as a share of total outstanding amounts of bonds and notes in the largest countries of Central Europe since 1998 and of Latin America since 2002, while that share has been quite high for some time in the largest Asian economies. Indeed, as shown in figure 4.2, net issuance in domestic currencies has largely exceeded foreign currency issues in the larger countries of these regions in the last 10 years. As a consequence, stocks in local bonds and notes have increased significantly as a proportion of GDP in the last decade in most large developing countries, while the ratio of international bonds to GDP has remained about constant or tended to diminish since 1998.[2] At the same time, there has been a rapid increase in bonds outstanding issued in international markets in domestic currencies (table 2 in the appendix) by some of the large developing countries, though the overall magnitudes are still small and highly concentrated in the South African rand market.

These developments, and the large accumulation of international reserves, have significantly reduced aggregate currency mismatches in some developing countries. The Bank for International Settlements estimates an aggregate index of effective currency mismatches[3] for a few large developing countries and shows that they have been significantly reduced in the last 10 years, and even reversed in some cases (figure 4.3).

However, as recognized by the Bank for International Settlements (2007), while this is true for some of the larger countries in each region, in many other countries the development of local currency markets is still incipient, and aggregate currency mismatches remain more substantial. As mentioned in chapter 1, the development of long-term and low-cost domestic currency markets has usually required achieving low inflation and high central bank credibility, establishing adequate tax and market regulation and a credible capital market regulatory agency, as well as developing effective market infrastructure. It has also normally required the abandonment of fixed exchange rate regimes and the introduction of floating or flexible regimes.[4] Developing long-term domestic currency markets has been a particularly difficult task in countries that indulged in the past in high financial sector dollarization. Indeed, recent "dedollarization" policies have begun to produce results quite slowly[5] (figure 4.4).

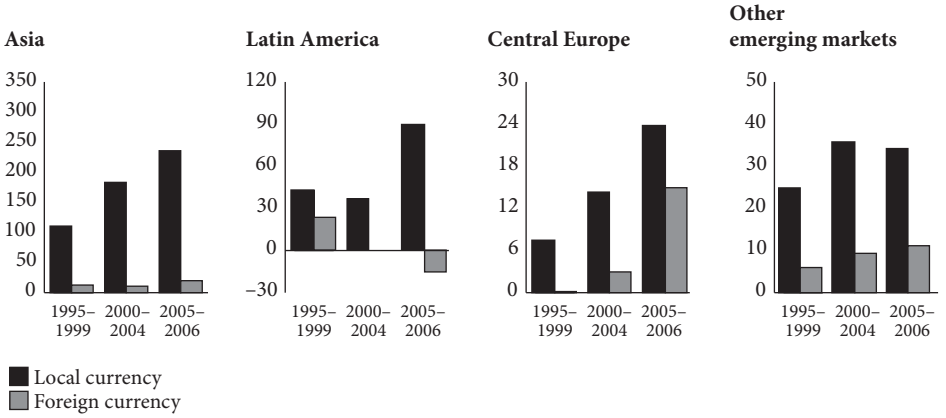
1. BIS 2007.
2. BIS 2007, Graph C3.
3. As the product of the country's net foreign currency asset position, as a percentage of GDP, and as a simple mismatch ratio (foreign currency share of aggregate debt relative to the export-to-GDP ratio).
4. De la Torre and Schmukler 2006; Ize and Levy Yeyati 2003.
5. Though "dollarization" of loans and deposits has been reduced beginning in 2000, it still remains a substantial phenomenon in several countries. For example, in 2005, loans in foreign currencies were as

Figure 4.1. Domestic bonds (Outstanding amount as a percentage of total)



Note: Asia includes China, India, Indonesia, the Republic of Korea, Malaysia, the Philippines, Taiwan (China), and Thailand. Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. Central Europe includes the Czech Republic, Hungary, Poland, and the Russian Federation. South Africa and Turkey are included in "Other emerging markets."
Source: BIS 2007.

Figure 4.2. Net issuance of bonds and notes by region and sector (billions of U.S. dollars)

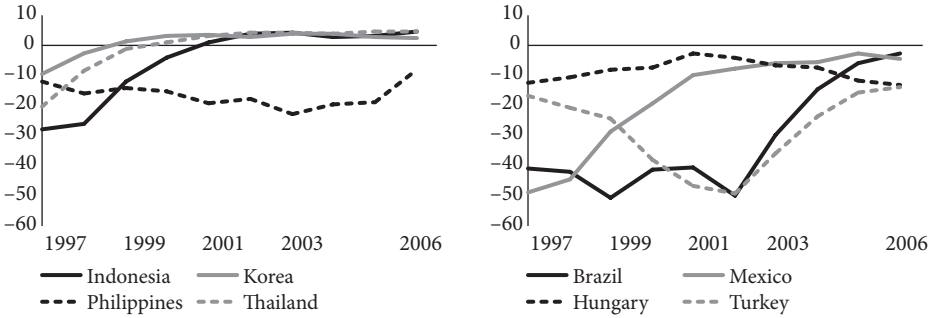


Note: Asia includes China, India, Indonesia, the Republic of Korea, Malaysia, the Philippines, Taiwan (China), and Thailand. Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. Central Europe includes the Czech Republic, Hungary, Poland, and the Russian Federation. South Africa and Turkey are included in "Other emerging markets."
Source: BIS 2007.

In addition, even in those countries in which the aggregate mismatch is significantly smaller today, important currency exposures may remain for private and public sector firms in non-tradable sectors. This is so because domestic corporate

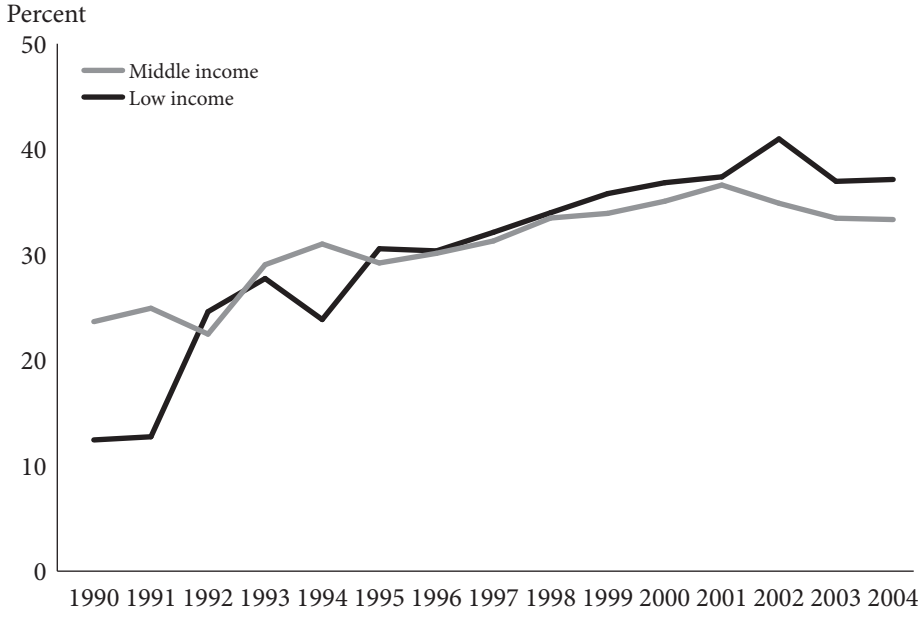
high as 70 percent of total loans in Peru (and similar percentages in Bolivia, Paraguay, Uruguay, and some Central American countries) and 47 percent in Hungary. Deposit "dollarization" ratios were as high as 65 percent in Peru, 56 percent in the Philippines, and 35 percent in Turkey (BIS 2007, Annex Table 12).

Figure 4.3. Indices of aggregate effective currency mismatches



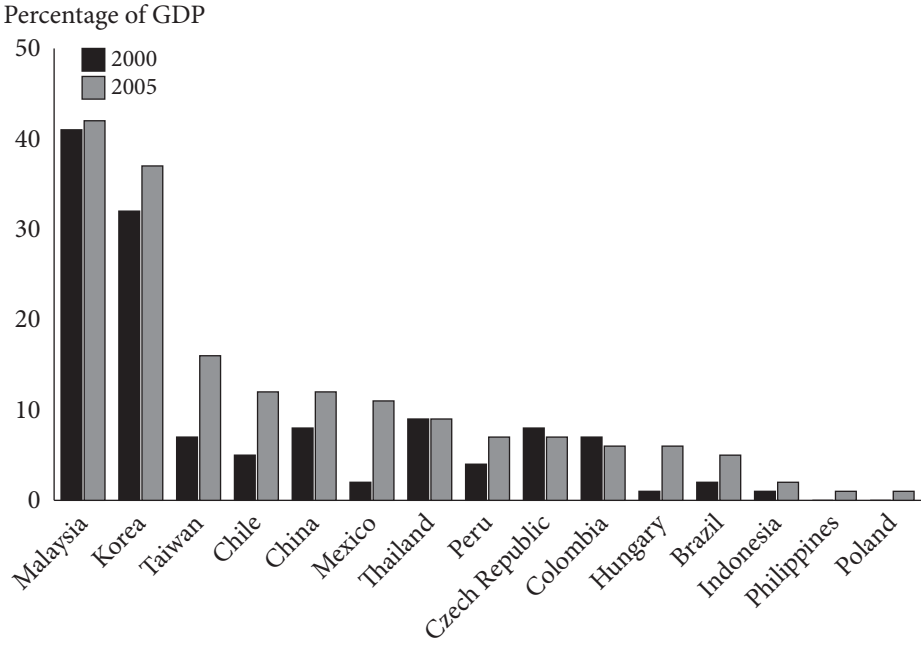
Note: The aggregate effective currency mismatch is the product of the country's net foreign currency asset position (as a percentage of GDP) and the simple mismatch ratio (the foreign currency share of aggregate debt relative to the export/GDP ratio).
Source: BIS 2007.

Figure 4.4. Foreign currency deposits as a percentage of total deposits



Source: Author's calculations based on data from *International Financial Statistics* (IMF various years).

Figure 4.5. Emerging-market domestic private bonds outstanding



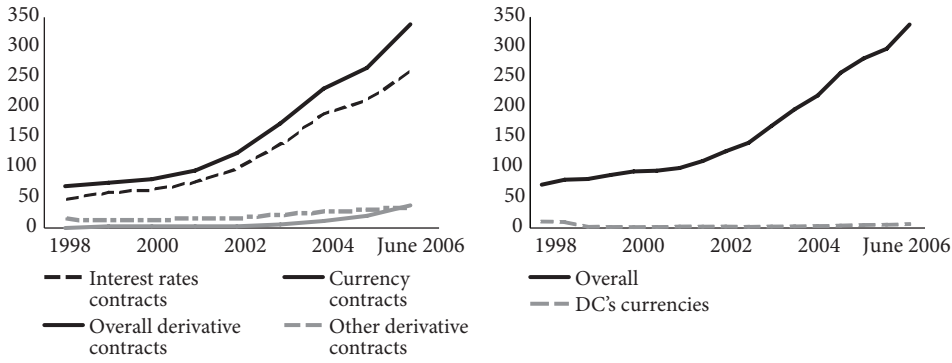
Source: Author's elaboration based on BIS (2007) data.

bond markets, although increasing in size, remain relatively small in most countries (figure 4.5), and the same is true for domestic currency derivative markets, as will be discussed below. Also, many governments still hold large external public debt, and it is not always clear to what extent they will be able to use international reserve stocks for debt service if they lose access to international capital markets and do not run significant fiscal surpluses. In fact, in most developing countries, central banks are the holders of international reserves, and they usually carry significant domestic liabilities against those assets and often have legal limitations on the credit they may extend to governments.

Developing currency derivative markets

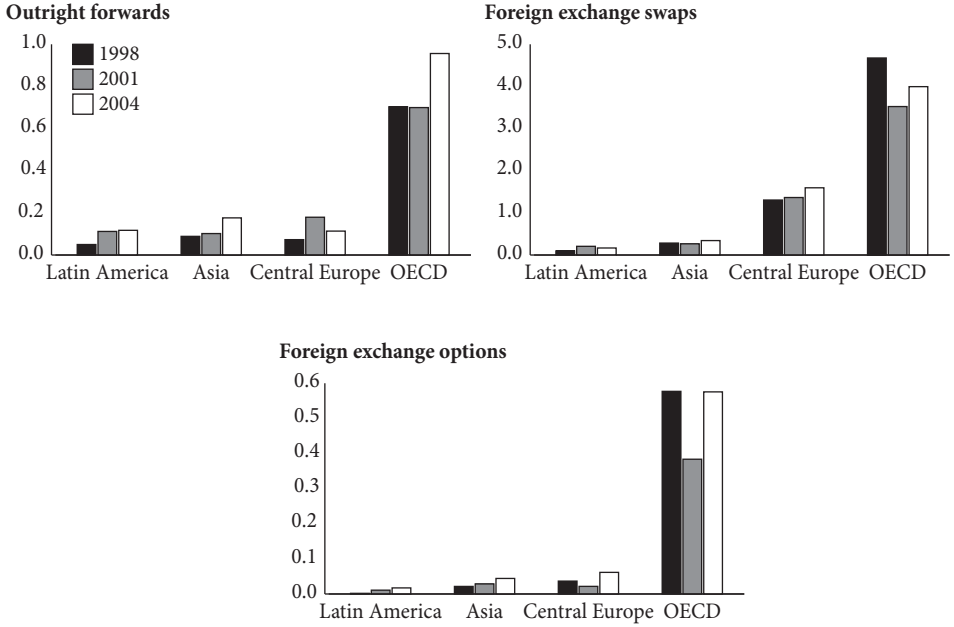
Figure 4.6 shows that, despite the huge growth of global derivative markets in recent years, developing countries are still marginal participants (derivatives in developing country currencies are an insignificant fraction of the total, as shown by the dotted line in the right-hand panel). This is especially the case for currency derivatives (forwards, swaps, and options) in which only a few developing countries have active

Figure 4.6. Global over-the-counter derivative markets (billions of U.S. dollars)



Source: Author's calculations based on BIS (2007) data.

Figure 4.7. Currency derivatives in developing countries and the OECD, as a percentage of GDP (Daily averages)



Source: Author's elaboration based on data from BIS 2007 and *World Development Indicators* (World Bank 2007b).

Table 4.1. Currency and interest rate derivatives, 2004

	Australia	Canada	New Zealand	Brazil	Chile	Mexico
Foreign exchange derivatives turnover, 2004						
Derivative turnover as a percentage of:						
Spot currency turnover	235.7	222.9	433.8	48.5	62	42.4
Trade flow	23.2	5.7	9.6	0.7	1.4	1.1
Trade and capital flows	20.3	5.7	9.2	0.6	1.2	1
Gross domestic product (GDP)	9.2	4.2	5.7	0.2	1	0.7
Single currency interest rate derivatives, 2004						
Derivative turnover as a percentage of:						
Spot currency turnover	50	66	88	35.2	1.3	13
Trade flow	4.9	1.7	2.2	0.5	0	0.3
Trade and capital flows	4.3	1.7	2.1	0.4	0	0.3
Gross domestic product (GDP)	1.9	1.2	1.3	0.1	0	0.2

Source: Cordella and Levy Yeyati 2007.

markets (figure 4.7) and relative turnovers are much lower than for interest rate derivatives (table 4.1).

There are several reasons behind these facts. First and most important, currency swap markets are very sensitive to credit risk because normally the swap provider has to retain not just the currency risk but also the issuer's credit risk.[6] Thus, only relatively low-credit-risk countries have been able to develop deep and cost-efficient currency swap markets. Second, significant revamping and development of tax and market regulations and market infrastructure are normally necessary for these markets to flourish. Third, high credibility of central bank policies is needed. In particular, these markets have developed only in countries that have achieved consistently low inflation for some years and, in general, in countries in which exchange rate regimes are flexible. As already mentioned, in countries with the tradition of pegged exchange rates, interest rate volatility was too high for domestic currency markets to develop while currency risks were generally underestimated by most economic agents, including the government itself.[7] Furthermore, because long periods of stability were followed by sharp depreciation episodes, it was just too difficult to price currency risk and to take risky bets against potentially massive central bank interventions in defense of the currency.

6. Cordella and Levy Yeyati 2007.

7. Ize and Levy Yeyati (2003) showed that increases in dollarization levels are related to the ratio of interest rate to exchange rate volatility.

Actual and potential roles for multilateral development banks

Multilateral development banks have played some role in the development of emerging market economies' local currency capital and derivative markets. Technical assistance has been a key input for building market infrastructure and for required tax and regulatory reforms. But multilateral development banks have also helped occasionally by issuing bonds in domestic currencies of some developing countries, or through an admittedly limited offering of loans and guarantees in domestic currencies and currency swaps. In addition, those multilateral organizations that lend to the private sector have helped to build and strengthen domestic financial institutions through direct equity investments and lending to those institutions. Finally, in some cases, multilateral development banks have supported sovereign and corporate global bonds issued in domestic currencies in international markets, especially by providing advice on required tax and regulatory changes and resolving market clearance and settlement issues.[8]

Since the 1970s, multilateral development banks have issued bonds in some domestic currency bond markets (and, to a lesser extent, global bonds in domestic currencies). More often than not, such issuance was carried out as a means of obtaining cost-effective funding and diversifying portfolio risks (actually a large percentage of these operations has taken place in South African rands[9]). However, multilateral development banks have been "first movers" (first foreign issuers) on several occasions, both in domestic and international markets, and in those cases they have played a useful role in helping develop markets and undertake required tax and regulatory reforms. As examples, the Asian Development Bank was the first foreign entity to issue local currency bonds in the domestic markets of China, the Philippines, and Thailand (jointly with the International Finance Corporation (IFC)); the IFC was a pioneer in several emerging markets, such as Argentina, Brazil, China, Colombia, Malaysia, Morocco, and Peru, as was the European Bank for Reconstruction and Development in the Russian market and the World Bank in several countries, most recently in Romania. The role of the multilateral institutions in the development of currency derivative markets seems mostly limited to technical assistance.[10]

So far, lending in domestic currencies has been a low percentage of overall lending in almost all multilateral development banks (table 4.2), despite the fact that several of them (notably the IFC and the European Bank for Reconstruction and Development) have had operations in local currencies for well over a decade and many of them have widely advertised new local currency initiatives in the last few years (for example, the 2005 and 2006 local currency initiatives by the African Development Bank, the Asian Development Bank, and the Inter-American Development Bank).

8. As examples, we can cite World Bank help to New Zealand in 1989, to Turkey in 2005, and most recently to Gabon, Ghana, and Sri Lanka. The World Bank and the Inter-American Development Bank also supported Brazilian and Colombian global emissions in local currencies in 2005 and 2006.
9. BIS 2007.
10. BIS 2007, Box 5.

Table 4.2. Loans in domestic currencies by multilateral development banks

	Local currency lending (US$ millions)			Local currency lending (Percentage of total loans)		
	2004	2005	2006	2004	2005	2006
Asian Development Bank	18.8	108.6	225	0.75	3.10	5.09
African Development Bank	—	—	—	—	—	—
Andean Development Corporation	—	—	4.1	—	—	0.14
European Bank for Reconstruction and Development*	48	212	182	0.79	6.15	2.92
Inter-American Development Bank	—	66	74	—	1.57	1.71
World Bank	—	—	50			0.21
International Finance Corporation	325	450	580	3.16	3.92	4.56
Inter-American Investment Corporation	—	65	87	—	4.99	5.44

— is not available.

* Values have been converted to U.S. dollars from euros using the average exchange rate for the respective year.

Source: Author's elaboration based on annual reports of the respective institutions.

These operations are usually subject to portfolio caps,[11] and, more important, current prudential practices in most multilateral institutions basically prohibit retaining currency risk in either lending or derivative operations with their clients. Thus, lending operations in domestic currencies are usually fully backed by borrowings in domestic currencies (requiring deep and liquid long-term domestic currency markets for a perfect match of maturities in each operation) or are swapped back to dollars (requiring a deep and liquid currency swap market already in place). As a consequence, such operations are basically limited to those countries that already can obtain domestic funding and currency swaps of similar maturities.

What is the advantage of using a multilateral development bank as an intermediary in such cases? As mentioned above, currency derivative markets are highly sensitive to credit risk. Thus, by retaining the country's credit risk (taking advantage of their preferred creditor status), multilateral institutions are often in a position to achieve significant cost savings in accessing swap markets on behalf of their governmental and first-tier firm clients. Furthermore, they can facilitate access to existing swap markets for firms and subnational agencies that might not be able to access them directly at present because of their high credit risk. But, by limiting themselves to perfectly matched operations, they are not helping to develop or lengthen the maturity of markets, at least not in a significant way. Overall, currency swaps offered by multilateral development banks remain rather marginal, as indicated in table 3 in the appendix.

11. For example, a 10 percent cap by the Asian Development Bank.

Back-to-back funding[12] is an even more unusual operation, and its usefulness is very limited for governments or firms with ratings similar to the sovereign, because multilateral development banks are able only occasionally to issue at significantly lower spreads and longer maturities than governments in relatively well-developed local markets. Why do large differences in credit risk in foreign currency transactions not translate to important differences in premiums in the case of domestic markets, in these cases? This remains pretty much an open question. It may be because government domestic bonds in local currencies benefit from all types of tax and regulatory advantages or, as is usually argued, because they are actually perceived as almost zero risk insofar as they can print money to pay back—in our view, a pretty doubtful proposition in many cases. More often multilateral development banks can obtain significant cost benefits in comparison with governments in issuing in local currencies in international markets rather than in domestic markets.[13] This suggests that multilateral institutions could be especially helpful in developing domestic currency international markets. However, with the exception of the rand market, multilateral development banks have basically limited themselves to occasional opportunistic issuances, which does not permit developing a benchmark yield curve and a liquid market. To do so under current practices in which multilateral development banks limit themselves to an intermediary role, they would have to develop stable agreements with their clients to lend significant amounts in domestic currencies in different maturities. Such agreements could include commitments to undertake required tax and regulatory reforms, similar to the current practice of Master Derivative Agreements required to benefit from derivative contracts with multilateral development banks.

Some authors have suggested that multilateral development banks (especially the World Bank) could play a more ambitious role in offering domestic currency loans and in helping to develop domestic currency markets even while adhering to a policy of not retaining currency risks. The most detailed proposal was advanced by Eichengreen, Hausmann, and Panizza in 2003.[14] The World Bank (and other multilateral institutions) would issue bonds in the international markets denominated in an "emerging market currency index" composed from an inflation-indexed basket of currencies of emerging and developing countries. To avoid incurring currency mismatches, they would convert a portion of their existing loans into claims denominated in the inflation-adjusted currencies of each of the countries included in the index. Eichengreen, Hausmann, and Panizza show that these bonds would have attractive risk-diversification features, as well as high rates of return, for OECD-based investors. They suggest that once the multilateral institutions (especially the World Bank) had developed the initial liquidity of the markets for these bonds, absorbing first-mover and market-development costs, other international issuers would find it attractive to issue debt

12. Funding each operation in the local currency market with close matching between loan disbursements and borrowing flows.
13. Direct communication from World Bank and Inter-American Development Bank treasuries.
14. Eichengreen, Hausmann, and Panizza 2003.

Table 4.3. Correlations of nominal exchange rates

OECD

	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Region	–0.641	–0.854	–0.484	–0.513	–0.640	–0.512
Higher	0.235	0.543	0.330	0.145	–0.516	–0.011
Media	–0.272	–0.647	–0.297	–0.210	–0.642	–0.365
Lower	–0.616	–0.968	–0.659	–0.586	–0.745	–0.648

Region

	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Higher	0.954	0.992	0.993	0.998	0.999	0.988
Media	0.593	0.626	0.867	0.465	0.981	0.855
Lower	–0.386	–0.754	0.276	–0.244	0.951	–0.340
Period	1970–2005	1990–2005	1970–2005	1970–2005	1980–2005	1970–2005

Upper panel: Region stands for the correlation between the weighted average of nominal dollar exchange rates for each region and the OECD weighted average of nominal dollar exchange rates. Higher, media, and lower correspond to the estimated highest, media, and lowest correlation of the nominal dollar exchange rate of individual countries belonging to each region with the OECD weighted average. *Lower panel:* Reported values correspond to the estimated highest, media, and lowest correlations of the nominal dollar exchange rate of an individual country belonging to each region with its regional weighted average.

Source: Author's calculations based on data from *World Development Indicators* (World bank 2007b).

denominated in such an index. This proposal was discussed in several seminars with multilateral authorities and private market participants. Multilateral financial authorities were reluctant at the time to pursue this or similar alternatives.[15]

However, multilateral development banks could play a much more useful development role in developing local currency markets—particularly in countries in which those markets are currently underdeveloped—if they were willing to play the role of market developers by retaining developing country currency risk on their balance sheets and pooling them globally. Pooling currency risks over a large number of currencies could, in principle, result in significant risk-diversification benefits for any global investor. Estimates presented in table 4.3 show that nominal exchange rates in developing regions are, on average, negatively correlated with a basket of OECD currencies and that there

15. Apparently, they considered that perfectly matching a part of their loan portfolio with their issuance of such bonds would be quite a cumbersome task and that the appetite of private markets for such a new instrument might not have been as large as suggested by the authors of the proposal.

Table 4.4. Nominal exchange rates variation, principal component analysis (Proportion of variance explained by the first and second components)

Component	Latin America and the Caribbean	Europe and Central Asia	East Asia and Pacific	Middle East and North Africa	South Asia	Sub-Saharan Africa	Developing countries	World
1	0.819	0.689	0.7973	0.56	0.967	0.837	0.6625	0.6342
2	0.108	0.2483	0.1181	0.218	0.019	0.089	0.2478	0.2574
Sample period	1970-2005	1990–2005	1970–2005	1970–2005	1980–2005	1970–2005		

Note: Calculations consist of the proportion of variance explained by the first and second components taking, as a reference, groups of countries in each region.

Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

are wide variations of such correlations for specific countries over the sampling period.[16] Thus, OECD investors and multilateral development banks could achieve significant risk-diversification benefits by investing in global baskets of currencies of developing regions.

Alternative estimates indicate the high risk-diversification potential of global pools of assets denominated in different currencies. Below we use two simple and well-known statistical methods suited for this purpose: principal components analysis[17] and comovement (average of pairwise correlations) of regional and global baskets of currencies. Table 4.4 shows that, though principal components explain a high proportion of the variance of nominal dollar exchange rates within some regions (Southeast Asia, Sub-Saharan Africa, Latin America), this is much less the case for all emerging markets or for a global basket of currencies that includes those of OECD countries. Further, figure 4.8 (depicting the average of pairwise rolling correlations of regional and global baskets of currencies) suggests that, during some periods, comovement within all regions may be high and that this is much less the case for a global basket of currencies.[18] Thus, the benefits of risk diversification are significantly larger over global currency pools than over regional currency pools.

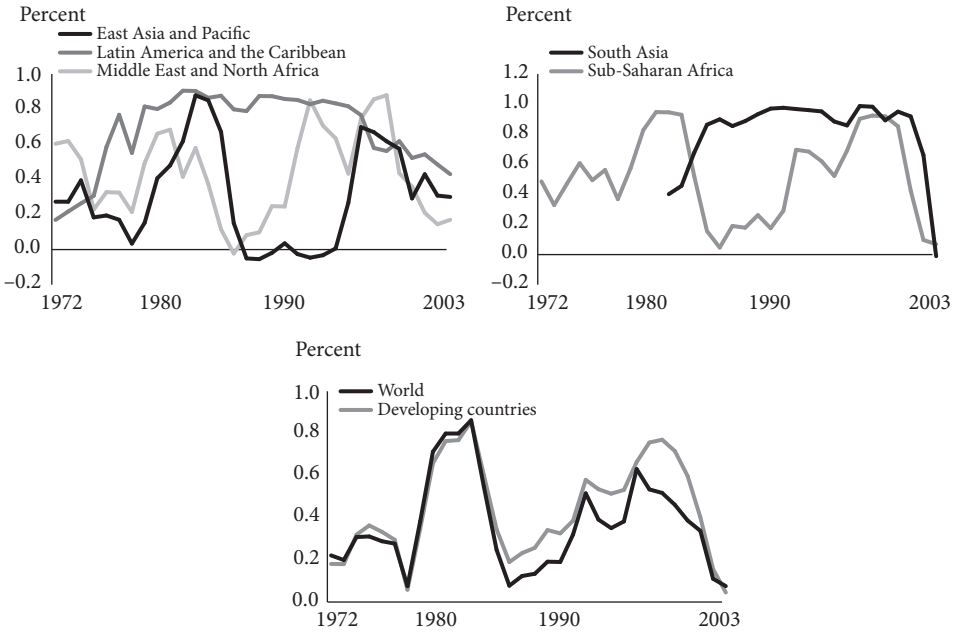
For these reasons, hedge funds and other current foreign investors in domestic currency markets diversify globally, though they normally include only those currencies from developing countries that have well-developed domestic currency markets. And it should not come as a surprise that current initiatives that involve multilateral

16. The lower panel of table 4.3 reports the media and extreme values of individual country correlations with the region's average nominal exchange rate (versus U.S. dollars). The upper panel does the same with respect to an OECD basket.

17. Interested readers can consult Ullah, Wan, and Chaturvedi 2002 for a description of the principal components method.

18. Plots of the principal components of table 4.4 over time show a similar behavior, reinforcing this conclusion. See the appendix to this study.

Figure 4.8. Comovement of nominal exchange rates (Rolling correlations)



Note: Comovement is defined as the average of pairwise correlations for countries within each region.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

development banks (the IFC's MATCH (Matching Assets through Currency Hedging) program, and the FMO-sponsored TCX (The Currency Exchange)[19]) are attempting global diversification over an even wider basket of developing country currencies.

The Currency Exchange (TCX), launched in September 2007, is a particularly interesting initiative because it is designed to allow regional development banks and all their clients to share in the benefits of global currency risk diversification. This vehicle would work as a local currency hedge fund as follows: TCX would accept foreign exchange exposures on transactions originated primarily by its customers (for the first three years only by its shareholders) in hard currencies, by offering swaps and forwards to convert them into domestic currencies for the beneficiaries at the same maturities. Originating customers would retain the credit risk, so that TCX would retain only the currency risk, and though it plans to diversify some away through existing derivative markets, it expects to achieve most risk diversification through its

19. FMO (the Netherlands Development Finance Company) has had experience in managing a €243 million local currency debt fund (SME MASSIF), which invests in local bank debt instruments in 44 currencies and has achieved significant diversification benefits during its 20 years of existence. In launching TCX, it offered a $350 million backstop guarantee in order to achieve an AAA rating since startup. The fund is expected to achieve an AAA rating on a stand-alone basis in a few years.

global pooling. TCX estimates that its global fund of developing country domestic currencies can achieve, on average, a 75 percent risk reduction in comparison with a single currency risk.

Regional development banks and other investors would have guaranteed access for about three to four times their equity investment in TCX (some will join through deeply subordinated debt instruments). TCX expects to be able to offer conversions with no premium over local market interest rates and to help extend prevailing maturities by at least two years (in markets that currently have only short maturities, extensions could be much larger as loans originated by multilateral development banks would keep their initial maturity, although how to price the swaps will certainly be an issue). By April 2008, TCX commitments amounted to around $570 million (most of it in paid in capital and around $170 million in deeply subordinated debt), for a portfolio capacity of more than $2 billion. Committed investors include the African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, FMO, IFU, KFW, NORFUND, and some private banks and investors. The board of the Inter-American Development Bank recently decided to join with $100 million in subordinated debt. As of June 2008, TCX and their committed investors were negotiating the master derivative agreement that would regulate transactions with the fund.

Although of a modest initial size, TCX has the potential to achieve a significant impact in small- and medium-sized countries where local currency markets are small and essentially short-term. So may the IFC's MATCH initiative, which is also expected to benefit from global currency risk diversification and to focus on the development of "frontier markets." The World Bank should consider engaging in a similar program.

Another initiative that can have an important effect on the development of domestic currency markets is the World Bank/IFC-sponsored Global Emerging Markets Local Currency Bonds Market (GEMLOC). This is expected to be a $5 billion investment fund that would have a portfolio of sovereign and corporate local currency emerging market bonds. In its initial phase, it will invest only in sovereign debt instruments of 15 major emerging markets that already have rather developed local currency markets. Thus, it will not initially have a significant developmental impact because there are already several private funds channeling foreign investor funds into these same markets.[20] The potential developmental impact would arise later, when GEMLOC broadens its portfolio to sovereign and corporate debt instruments of less-developed local currency markets. This process is expected to be accompanied by substantial World Bank/IFC technical assistance flows, financed from GEMLOC

20. Even more, GEMLOC will initially have to attract investors that prefer a new fund sponsored by the World Bank and IFC to existing emerging market funds (or global funds) that also invest in existing emerging market local currency debt instruments as an investment channel. Those are likely to be official and institutional investors (such as the Sovereign Welfare Funds) and new investors for which World Bank sponsorship is a valuable seal of support.

earnings, to help these markets achieve improved investability through required market infrastructure, tax, and regulatory reforms (a developmental concept similar to that behind the Asian Bond Fund initiative).

Furthermore, GEMLOC will develop a benchmark index for these instruments, based precisely on their relative investability. The final goal is to help convert developing country local currency sovereign and corporate debt into a mature asset class for foreign investors. As GEMLOC advertises, the numbers speak for themselves for the potential development of this asset class: while today around 70 percent of developing country bonds are in local currencies, global funds hold only about 10 percent of their developing country portfolios in such currencies. To a significant extent, this maybe a reflection of the fact that only 2 percent of this asset class is currently benchmarked, which suggests the potential importance of combining the development of a benchmark index with technical assistance flows and an investment channel. A few decades ago, the IFC launched a similar idea for emerging market equities, which helped them develop into a significant asset class.

5

Dealing with Commodity Price, Terms of Trade, and Output Risks

As shown in chapter 2, output volatility continues to be significantly higher for most developing countries than for developed countries, as a consequence of higher exposure to both real and capital exogenous shocks and of the amplifying effects of balance sheet currency and maturity mismatches and the procyclicality of capital flows and macroeconomic policies. The previous two chapters discussed financial instruments and the actual and potential role of financial innovations by multilateral development banks specifically designed to help countries reduce and mitigate the effects of liquidity and currency risks. This chapter reviews instruments that are specifically designed to reduce and mitigate the effects of real external shocks and output volatility—in particular commodity price derivatives and two types of indexed debt, linked to commodity prices (or terms of trade) and GDP-indexed debt. Again, we should stress that all of these instruments can indirectly help reduce liquidity and output volatility risks.

As shown in chapter 2, developing countries' use of currency and interest rate derivatives is quite limited as compared with the explosive development of these markets in developed countries. Commodity price derivatives have also developed significantly, though for most products maturities are still relatively short term. This is the case for most commodities in which developing countries are the larger exporters, with the partial exception of oil (table 5.1). By way of contrast, corn markets are deeper and have longer

Table 5.1. Commodity derivative volumes (number of contracts)

	Type of contract	Up to 6 months	6 months to 1 year	1 year to 2 years	2 to 3 years	3 to 5 years
Crude oil	Futures/forward	7.214	21.767	21.229	3.379	15.254
	Call options	732.721	374.969	172.138	35.367	na
	Put options	664.472	418.033	194.995	32.159	na
Soybean	Futures/forward	418.048	36.797	54.264	1.534	na
	Call options	256.892	4.137	10.184	na	na
	Put options	179.204	2.448	9.355	na	na
Coffee	Futures/forward	125.657	26.603	11.635	na	na
	Call options	106.439	26.973	242	na	na
	Put options	51.075	24.804	70	na	na
Copper	Futures/forward	72.771	8.083	795	na	na
	Call options	1.478	264	na	na	na
	Put options	894	675	na	na	na
Wheat	Futures/forward	247.902	85.476	28.404	2.396	na
	Call options	103.494	47.810	1.522	na	na
	Put options	68.628	34.010	762	na	na
Corn	Futures/forward	550.993	524.944	153.347	17.377	na
	Call options	405.341	529.968	115.716	10.330	na
	Put options	260.706	387.471	60.173	9.732	na

na is not applicable.

Source: From Cordella and Levy Yeyati 2007.

maturities. These differences are partially due to the observed fact that derivative markets are sensitive to credit risk. Thus, developing country exporters can usually access these markets at high prices and short maturities, which are not adequate to help stabilize incomes over medium-term commodity price cycles.

In addition, political economy limitations are especially severe in this area. Officials hesitate to incur the financial and political costs of paying high upfront fees for insurance or options that would protect their successors from eventual downward risks in commodity prices. Hedging can avoid the upfront costs related to insurance and simple option fees, but it brings political economy problems of its own. There have been several cases in which officials have been accused of malfeasance for giving up government revenues, when prices turned out to be higher than the hedged price.[1]

1. Examples include boards and managers of CODELCO (the Chilean state copper company) and Ecopetrol (the Colombian state oil company).

As an illustration of these problems, a recent study estimated that covering all downward risk through rolled-over options for the price of Mexican oil exports would have cost about 10 percent of the gross actual price in June 2007.[2] It is not surprising then that Mexican authorities have limited themselves to covering just one-year downward risks to prevent potential budgetary liquidity crunches[3] and have paid the corresponding fees from the Oil Stabilization Fund, avoiding political debates in Congress about why a high fee is being paid.

As a consequence of these problems, developing countries that are either substantial net exporters or importers of commodities do not use derivative markets much to protect themselves from commodity price risks. Instead, they attempt to self-insure through the use of Commodity Stabilization Funds, a common practice among both net exporters and net importers. These funds, however, carry a high financial cost and are not exempt from political economy problems of their own.[4]

Another alternative for a net exporter country could be to issue debt indexed to commodity prices (and for a net importer country to invest in such financial assets). In theory, either interest or amortization payments could be indexed to those prices. Indexation of amortization payments could give more liquidity protection against shocks by basically permitting the government to postpone or slow down repayments in bad times in exchange for advancing or accelerating repayments in good times. Debt indexed to commodity prices could be, in theory, a useful way of mitigating some problems associated with the procyclicality of capital inflows, reducing liquidity risks and limiting the need to apply procyclical fiscal policies. It should be a very attractive option for issuers whose income is highly dependent on commodity exports or sales. These instruments could also be attractive to investors because they reduce the issuer default risk. They can also provide hedges for investors that are at the same time buyers of those commodities. However, although such proposals have been discussed for some time, very few countries or companies have actually issued such indexed debt, and, in the few cases in which they have, magnitudes have tended to be too limited and short term to permit a significant stabilization effect. As with other financial innovations, indexed debt presents problems associated with pricing and liquidity, with first-mover costs and coordination problems that may help to explain their slow market development.

Now, debt indexed to commodity prices would be a useful instrument only for countries or companies that are highly dependent on a specific commodity price. An instrument that would be more useful for a larger group of developing countries could be debt indexed to terms of trade, because developing countries in general exhibit

2. Cordella and Levy Yeyati 2007.

3. Once the budget is approved, based on a projected oil price, if the latter turns out to be lower than expected, unexpected cash deficits emerge that tend to be very hard to meet, given budgetary and indebtedness rule rigidities.

4. See Perry (2007).

Table 5.2. Correlations of terms of trade

USA

	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Region	–0.362	–0.173	–0.193	0.018	–0.121	–0.210
Higher	0.512	0.935	0.648	0.370	0.146	0.508
Media	–0.148	0.068	0.055	–0.190	–0.151	–0.111
Lower	–0.733	–0.943	–0.622	–0.686	–0.458	–0.821

OECD

	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Region	–0.108	–0.172	–0.242	–0.220	–0.053	–0.097
Higher	0.518	0.938	0.712	0.253	0.186	0.551
Media	–0.124	0.058	0.079	–0.311	–0.095	–0.100
Lower	–0.768	–0.952	–0.764	–0.774	–0.460	–0.860

Region

	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Higher	0.630	0.903	0.944	0.959	0.978	0.850
Media	0.075	–0.086	0.438	0.449	0.513	0.104
Lower	–0.640	–0.916	–0.393	–0.384	–0.068	–0.517
Period	1980–2005	1990–2005	1980–2005	1980–2005	1980–2005	1980–2005

Note: Reported values correspond to the weighted average of correlations of terms of trade for each region with the United States and the industrial countries. There is also a report of higher, average, and lower correlations obtained by an individual country in each region. The bottom panel presents these values with respect to the weighted regional average.

Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

significantly higher terms of trade volatility than developed countries, as shown in chapter 2. Correlations of average regional terms of trade with the United States or an OECD basket tend to be negative or small, and individual correlations tend to be quite low across countries in some developing regions (East Asia and Pacific, Europe and Central Asia, and Sub-Saharan Africa). See table 5.2. Principal components explain between 30 percent and 50 percent of the variance within regions and around 40 percent

Table 5.3. Terms of trade, principal component analysis (Proportion of variance explained by the first and second components)

Component	Latin America and the Caribbean	Europe and Central Asia	East Asia and Pacific	Middle East and North Africa	South Asia	Sub-Saharan Africa	Developing countries	World
1	0.3932	0.5118	0.3436	0.4114	0.4274	0.312	0.4193	0.405
2	0.1915	0.2016	0.1942	0.2469	0.3152	0.138	0.283	0.2827
Sample period	1980-2005	1990–2005	1980–2005	1980–2005	1980–2005	1980–2005		

Note: Calculations correspond to the contribution of first and second principal components to explaining the variance in terms of trade for each group of countries.

Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

in a global pool (table 5.3). Thus, investors holding a global portfolio and even some regional portfolios of debt indexed to terms of trade could achieve substantial risk diversification. There would be, admittedly, significant coordination problems in developing such options. In addition, terms of trade indexation presents more significant technical problems than commodity price indexation because of the need to rely on an agency to estimate terms of trade based on issuers' supply of information, a process likely fraught with significant delays and with verifiability and political economy problems.

Figure 5.1, a plot of the average of pairwise correlations of terms of trade, confirms that regional comovement of terms of trade are much lower than those of nominal exchange rates (see figure 4.8 above) and seldom achieve high values. Thus, investors could achieve significant diversification benefits in holding regional pools of debt indexed to terms of trade. A similar conclusion can be derived from a plot of the performance of principal components over time (see figure 1 in the appendix).

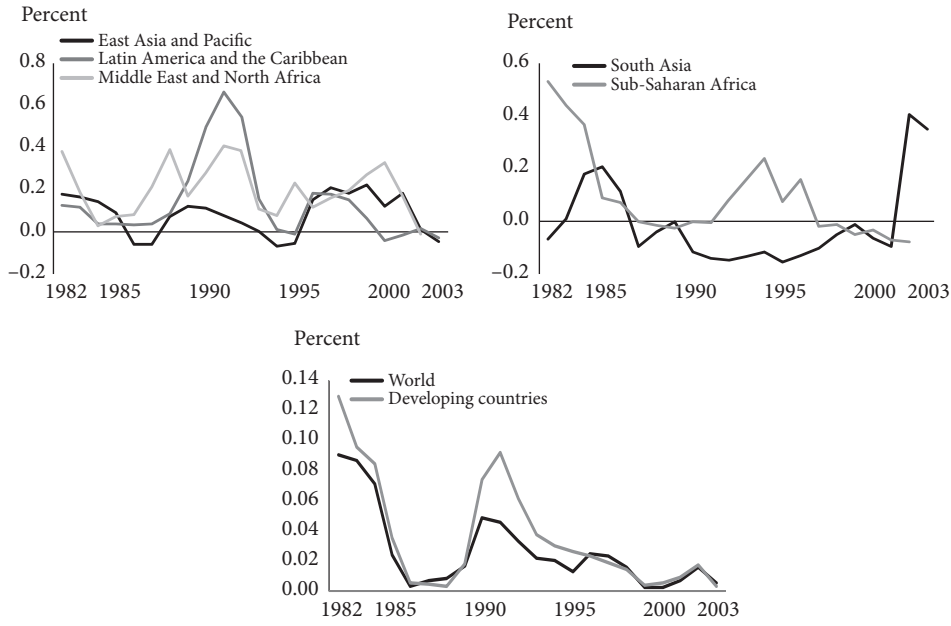
Even more useful for most sovereign governments would be to rely on debt indexed to GDP.[5] After all, what any country would like is to be able to mitigate problems associated with output volatility, whatever its cause, whether exogenous or endogenous. In theory, GDP-indexed debt would permit a sharp reduction in the procyclicality of capital flows and fiscal policy that tends to amplify the effects of both exogenous shocks and endogenous business cycles, leading to high output volatility. Thus, debt indexed to GDP has the potential to achieve significant reductions in output volatility and liquidity and default risk, and hence to improve the long-term growth potential for any country.[6]

A few simulations, shown below, for the aggregate of Latin America and Sub-Saharan Africa, as well as for particular country cases, illustrate the importance that

5. Variance in terms of trade explains only about 10 percent of GDP variance (Hoffmaister and Roldós 1997).

6. See Shiller (2005b); Borensztein and Mauro (2004); and Griffith-Jones and Sharma (2006).

Figure 5.1. Comovement of terms of trade (Rolling correlations)

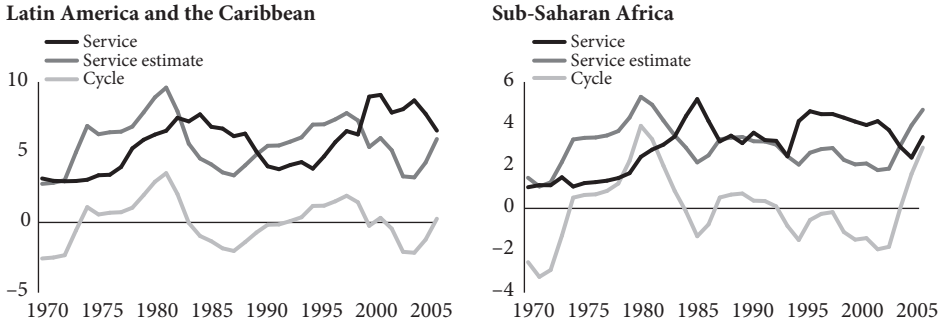


Note: Comovement is defined as the average of pairwise correlations for countries within each region.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

indexing debt to GDP might have for developing countries. To simplify calculations, these simulations assume that amortizations had been perfectly indexed to the variations of GDP growth around its trend, from 1970 to 2005, and show what debt service or amortizations would have looked like in comparison with their actual behavior. In practice, amortizations would be indexed to GDP growth, and thus responsive both to cyclical variations (as in this exercise) and to GDP trends. From figure 5.2 it is apparent that the so-called debt crises of the 1980s in Latin America, as well as the balance of payments and fiscal stress at the end of the last decade, would have been considerably smoothed out if these countries had issued the same amount of foreign debt that they did in previous periods, but with debt service perfectly indexed to the GDP cycle. The same would have been true for Sub-Saharan Africa, where the currency and fiscal crises of the second half of the 1990s would have been considerably smoothed out. To achieve such smoothing, these regions would have accelerated debt payments during the booms of the late 1970s and early 1980s and, in the case of Latin America, also during the boom of the early 1990s, under the GDP-indexed debt case.

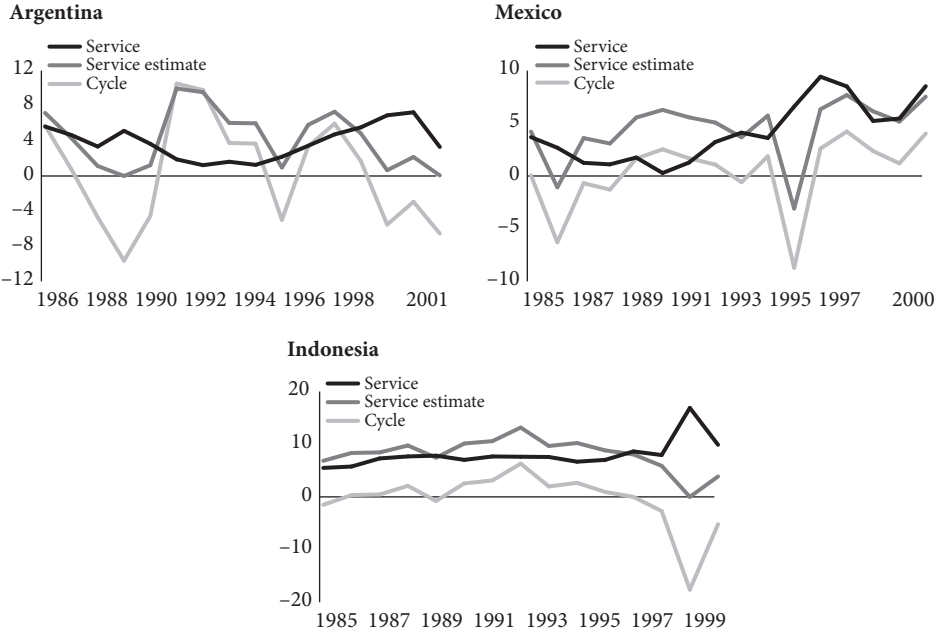
Figure 5.3 shows the stabilization potential of GDP-indexed debt even more dramatically for three country cases. In the case of Argentina, debt service would have been much higher during the strong boom of the early 1990s, rapidly reducing debt

Figure 5.2. Stabilization potential of GDP indexed debt (Aggregate simulations)



Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

Figure 5.3. Stabilization potential of GDP-indexed debt (Individual countries)



Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

burdens, in contrast with the observed deterioration of the underlying structural fiscal situation that took place.[7] Correspondingly, debt service would have been much lower during the recession at the end of the 1990s. The 2001 debt crisis might have been avoided or, at least, it would have been much less severe than it was. Mexico would have accelerated debt service during the boom of 1987–1993, significantly reducing remaining debt burden and possibly escaping the dramatic 1994 Tequila crisis, or at least significantly reducing its cost. Indonesia would have accelerated debt service during the boom of 1987–1995 and significantly eased the stress during the 1997/98 Asian crisis.

From the point of view of investors, a broad portfolio of GDP-indexed debt could help to maximize risk diversification. Shiller has shown that more than 50 percent of individuals' income risk in developed countries is associated with, and actually determined by, GDP risk.[8] This is also likely to be the case for citizens of developing countries, perhaps more so. The only way to diversify away that risk is to invest part of one's portfolio in other countries' risks. This can be only partially achieved through investing in debt and equity instruments because normally banks and equity markets intermediate only a small share of a country's GDP.[9] Thus, the ultimate risk-diversification potential could be achieved only through a portfolio of debt indexed to the GDP of a wide variety of countries. The remaining undiversifiable risk would then be associated with the comovement of countries' GDPs, that is, to worldwide GDP risk.

Tables 5.4 and 5.5 show the low GDP growth correlations at regional levels (except in Europe and Central Asia) and, especially, at global levels. These correlations are significantly lower than those for terms of trade or for nominal exchange rates (as can be seen by comparing these estimates with those of tables 5.2 and 5.3 and tables 4.3 and 4.4). These results illustrate the high risk-diversification potential of regional or global portfolios of GDP-indexed debt. Furthermore, figure 5.4 shows that either the regional or, especially, the global comovement of GDP growth rates has been quite low during most of the last decades and significantly lower than the corresponding comovement of nominal exchange rates or terms of trade (compare figure 5.4 with figures 5.1 and 4.8). The same conclusion is derived from observation of the performance of principal components over time (figure 5.5), which also shows that global comovement of GDP growth rates is not only lower but also more stable over time than the comovement of terms of trade or nominal exchange rates (compare with figures 1 and 2 in the appendix).

However, for all their theoretical attractiveness, both for issuer countries and worldwide investors, these "macro" markets have not been developed. Actual individual

7. See Perry and Servén (2002).

8. Shiller 2004. More precisely, between 50 and 75 percent of five-year household income variances are explained by GDP variations in the United States.

9. Stocks listed represent at most 10 percent of GDP in emerging countries (Borensztein and Mauro 2002 and 2004).

Table 5.4. Correlations of GDP growth rates (Rolling correlations)

USA						
	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Region	0.200	0.284	0.175	0.051	0.299	0.084
Higher	0.385	0.787	0.518	0.147	0.299	0.360
Media	0.072	0.299	0.084	–0.004	0.176	0.026
Lower	–0.089	0.028	–0.250	–0.190	0.041	–0.393
OECD						
	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Region	0.527	0.364	0.294	0.155	0.366	0.287
Higher	0.879	0.743	0.536	0.896	0.366	0.893
Media	0.264	0.328	0.163	0.159	0.149	0.089
Lower	–0.034	0.038	–0.197	–0.177	0.033	–0.460
Region						
	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Higher	0.604	0.934	0.808	0.662	0.990	0.733
Media	0.359	0.717	0.390	0.460	0.256	0.240
Lower	–0.063	0.296	–0.100	0.192	–0.070	–0.041
Period	1970–2005	1990–2005	1970–2005	1962–2005	1980–205	1961–2005

Note: The reported values correspond to the correlations of the weighted average GDP growth rates for each region with the United States and the industrial countries. Also reported are higher, average, and lower correlations obtained by individual countries within each region. The lower panel presents these values with respect to the weighted regional average.

Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

country experience with GDP-indexed debt has been sporadic, generally associated with debt restructuring episodes, when coordination problems and liquidity risks are significantly reduced. Indeed, the best known cases have been associated either with Brady deals (Bulgaria and Costa Rica) or more recent debt restructuring deals (Argentina and Bosnia). However, even then, they have often been costly for issuers. The Argentine case has been particularly costly to the issuer, partly as a result of design

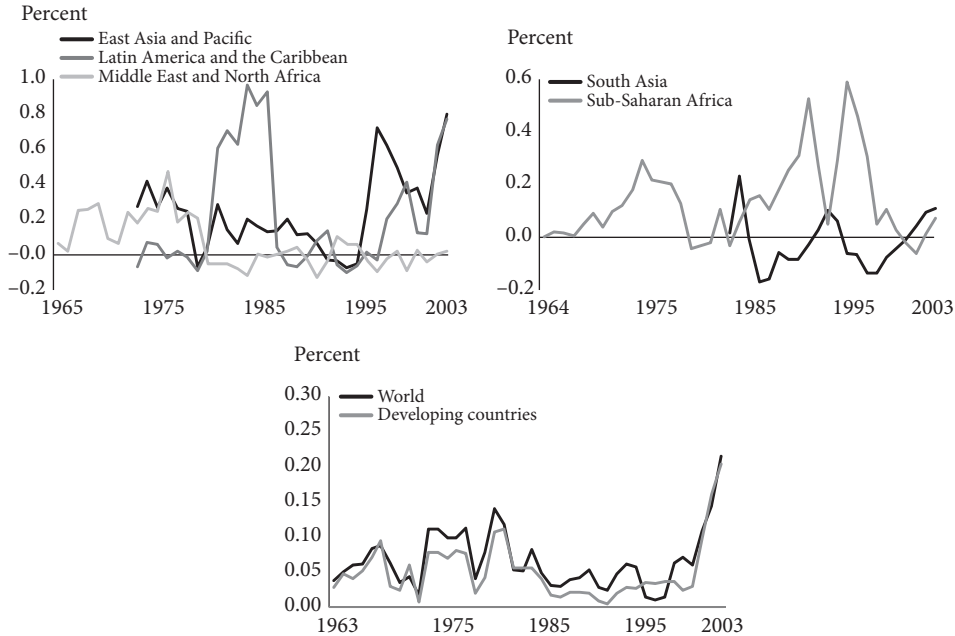
Table 5.5. Principal component analysis—GDP growth (Proportion of variance explained by the first and second components)

Component	Latin America and the Caribbean	Europe and Central Asia	East Asia and Pacific	Middle East and North Africa	South Asia	Sub-Saharan Africa	Developing countries	World
1	0.2458	0.5954	0.4337	0.2715	0.2481	0.116	0.2877	0.27
2	0.1046	0.1758	0.1777	0.1761	0.2404	0.1008	0.1247	0.1402
Sample period	1970–2005	1990–2005	1970–2005	1962–2005	1981–2005	1961–2005		

Note: Calculations correspond to the contribution of first and second principal components to explaining the variance in terms of trade for each group of countries.

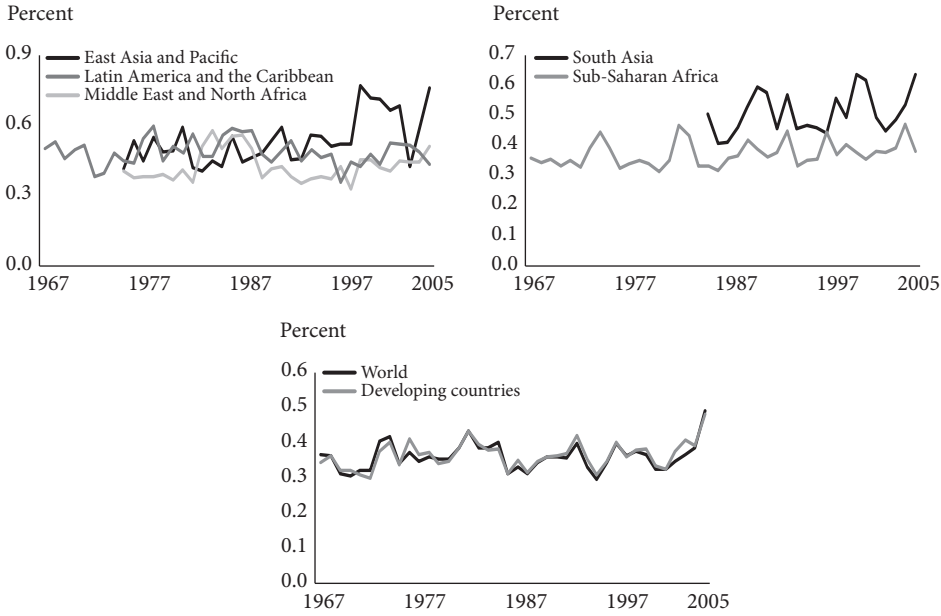
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

Figure 5.4. Comovement of GDP growth rates (Rolling correlations of GDP growth rates)



Note: Comovement is defined as the average of pairwise correlations for countries within each region.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

Figure 5.5. Comovement of GDP growth rates (Principal components performance over time)



Note: Comovement is defined here as the proportion of variance explained by the first and second principal components by region.
Source: Author's calculations based on data from *World Development Indicators* (World Bank 2007b).

problems and the strong unexpected growth recovery after the 2001 crisis. But, more generally, high costs and marginal market development are consequences of the high risks associated with just one or a few issuers, when the benefits of diversification associated with a regional or global portfolio of GDP-indexed debt cannot be achieved. Thus, first-mover costs and coordination problems appear to be particularly severe for the development of GDP-indexed debt markets, for the same reasons that they are quite severe for developing country currency and terms of trade–indexed debt markets.

Once more, multilateral development banks, especially those with global reach, are in a privileged position to help solve some of these problems and help develop these markets. John Williamson recently put forward a practical proposal[10]: a multilateral development bank would support and help coordinate the simultaneous issuing of GDP-indexed debt for a number of small countries. The group of countries included should have low GDP correlations among them and with OECD countries, so that they would offer interesting diversification benefits to investors. Furthermore, by virtue of their being small countries, the amounts issued would be small enough to

10. Williamson 2008.

be easily placed in the markets and, at the same time, large enough in relation to the countries' GDP as to offer significant stabilization benefits to the issuers.[11]

There have been other more technical arguments offered to explain the slow development of these theoretically attractive markets. Some refer to the assumed difficulties of pricing and the expected high premiums. However, a recent paper by Chamon and Mauro[12] shows that these arguments have been overdone. Indeed, liquid GDP-indexed bonds should not be much more difficult to price than plain vanilla sovereign bonds and certainly not more expensive because the key parameter in determining price—the probability of default risk (liquidity considerations aside)—should be lower for GDP-indexed bonds and not more difficult to calculate than for plain vanilla bonds. The critical issues for pricing and premiums are thus really those related to liquidity and risk-diversification potential, as discussed above.

Other arguments offered against these types of bonds refer to "moral hazard" or data-manipulation risks. These, too, seem to have been overdone. It is difficult to conceive of a case in which GDP-indexed debt would give authorities a strong enough incentive to adopt policies that reduce GDP growth, as the political costs associated with such an outcome would be several orders of magnitude higher than whatever political cost is associated with higher debt payments. Indeed, most authorities would gladly pay some additional debt service costs for the benefits associated with higher growth, including those of higher tax revenues from which the additional debt payments could be easily made. The same is true, although admittedly to a lesser extent, for data-manipulation risks. If governments have incentives to cheat about GDP growth figures, they all tend toward the direction of exaggerating growth rates. Adding negative financial incentives, such as those associated with higher debt payments of GDP-indexed debt, would hardly alter the net sign of the overall incentive structure.[13] In any case, to minimize this risk, the international financial institutions could play a role in promoting agreements that guarantee good GDP accounting and disclosure practices, much as is currently done with respect to debt, fiscal, and monetary statistics.

11. For discussions and estimates of the "optimal level" of GDP debt indexation for a given country, see Shiller (1993) and Durdu (2005).

12. Chamon and Mauro 2005.

13. Theoretically, it could alter incentives in the margin due to sharp discontinuities in the design of indexed debt contracts, which is an argument for adequate design and not against the instrument per se.

6

Dealing with Natural Disaster Risks

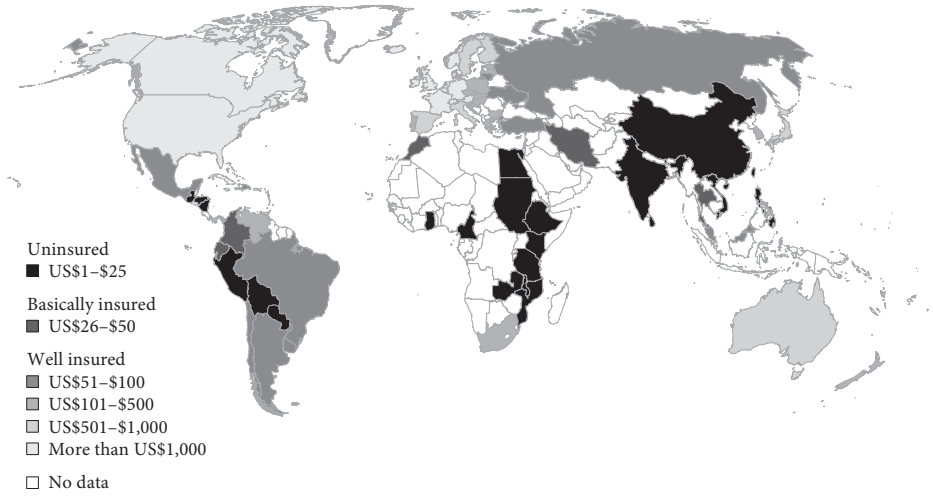
As shown in chapter 2, developing countries—especially small developing countries—are significantly more exposed than developed countries to natural disaster risks. Natural disasters are more frequent and of higher intensity in developing countries, and their economic cost, as a proportion of GDP, is several times larger than for developed countries. These higher economic costs are to a large extent a consequence of the weaker zoning and building codes, and of the greater difficulties in enforcing such regulations, that are found in poorer countries, but they are also a consequence of substantially lower levels of catastrophic insurance penetration.

Gurenko and Zelenko[1] have estimated that while there has been a significant increase in the fraction of expected economic loss for natural disasters that is insured in industrial countries, from around 20 percent in 1980 to about 40 percent in 2006, the corresponding figure for the average of developing countries has stayed at a very low 3 percent. Data from Geo Risks Research for 2006 indicate that very few developing countries have average property insurance premiums higher than US$50 per capita while the corresponding figures for developed countries are above US$500.[2] See map 6.1.

There are several reasons behind these major differences. Property insurance in general and catastrophic insurance in particular are highly sensitive to price,

1. Gurenko and Zelenko 2007.
2. Geo Risks Research 2006.

Map 6.1. Global distribution of insurance premiums per capita



Source: Courtesy of Munich Re Foundation.

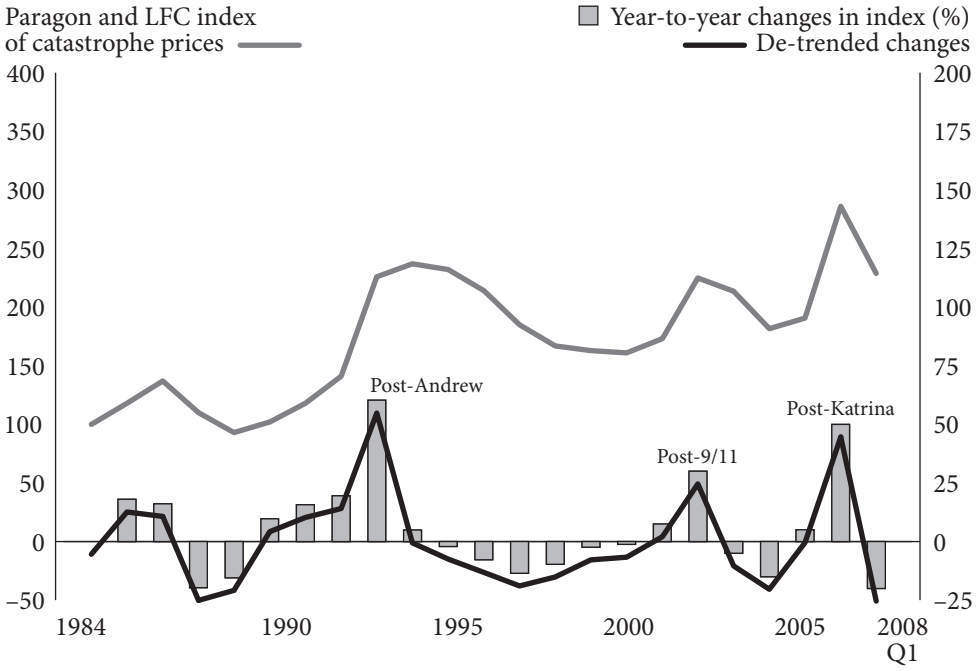
especially in low-income settings. In addition, catastrophe reinsurance fees are not only high but also very volatile. Figure 6.1 shows how these fees skyrocketed in the United States in the years following major hurricanes or floods, notably after Hurricane Katrina. Similarly, table 6.1 shows the huge increases that took place in insurance premiums along the coasts of Mexico after the major hurricane damage in Cancún in 2005. Such increases actually paralyzed investment in tourism development for a while because private investors did not want to go uncovered and could not find insurance at reasonable premiums for several months after the hurricane season.

This impressive volatility of catastrophic insurance fees has been explained primarily by the fact that when a high-cost, low-probability event occurs, reinsurance companies see a large chunk of their capital washed out because their risk capital is normally only about 30 to 50 percent of maximum economic losses.[3] It has taken from six months to a couple of years to replenish capital to previous levels after a major natural disaster has depleted the reinsurance companies' capital base. To avoid this problem, many governments have agreed to be residual risk takers in those upper tails of the probability distribution of natural disasters and, as a consequence, have achieved higher insurance penetration in their jurisdictions.[4] In these cases,

3. Gurenko and Zelenko 2007.

4. Examples include the State of Florida (which, after a highly successful experience, has recently encountered financial problems as a consequence of an excessive increase in government subsidies) and Turkey. In the latter case, the World Bank supported the government in an integrated program that included a government-sponsored Turkish Catastrophe Insurance Pool, which was partially financed by the World Bank. The program led to an increase in penetration to around 20 percent, which is an unusually high figure for a developing country.

Figure 6.1. U.S. catastrophe reinsurance price indices



Source: From Cordella and Levy Yeyati 2007; Lane Financial 2007.

government support is normally triggered automatically when the underlying physical event exceeds pre-specified parameters.

In addition, high and volatile fees are also the consequences of low risk diversification by reinsurance companies, precisely because catastrophic insurance is still basically concentrated in industrial countries. In this area, as happens in the case of currency and GDP risk, global reach is key to adequate risk diversification, but achieving global reach represents a formidable problem of market coordination.

High reinsurance premiums are also the result of the fact that, given the high capital exposure of reinsurance companies, syndication is a common practice in the industry. Generalized syndication practices help spread risks among reinsurance companies but significantly reduce competition and therefore result in higher fees.

Obviously, another major reason for low penetration of catastrophic insurance in developing countries has to do with their poorer prevention policies. As discussed in chapter 2, well-designed market insurance requires fees proportional to risks and eligibility criteria that are related to compliance with minimum-security norms. Thus, deepening catastrophic insurance penetration requires a well-integrated prevention and government insurance support program.

Table 6.1. Insurance premiums for hydrometeorological risk before and after major hurricane damage in Cancún, Mexico, 2005 (Premiums as a percentage of insured values)

		Zoning (insured property location)			
		Yucatán Peninsula	South Pacific	Gulf of Mexico	Interior
Homes	2004	0.35	0.12	0.15	0.08
	2006	0.60	0.30	0.30	0.08
Buildings	2004	0.35	0.13	0.15	0.12
	2006	1.40	0.50	0.50	0.12
Industrial property	2004	0.60	0.25	0.30	0.14
	2006	1.60	0.80	0.80	0.14

Source: From Cordella and Levy Yeyati 2007.

However, in most developing countries today, governments are far from being able to support private catastrophic insurance penetration by taking on part of the burden of high cost events, because they themselves are not adequately insured against these casualties. Thus, for example, in spite of the rapid development of the catastrophic bond ("cat" bond) markets (figure 6.2), very few developing countries have issued bonds in these markets, and they have done so in small amounts and at high costs.

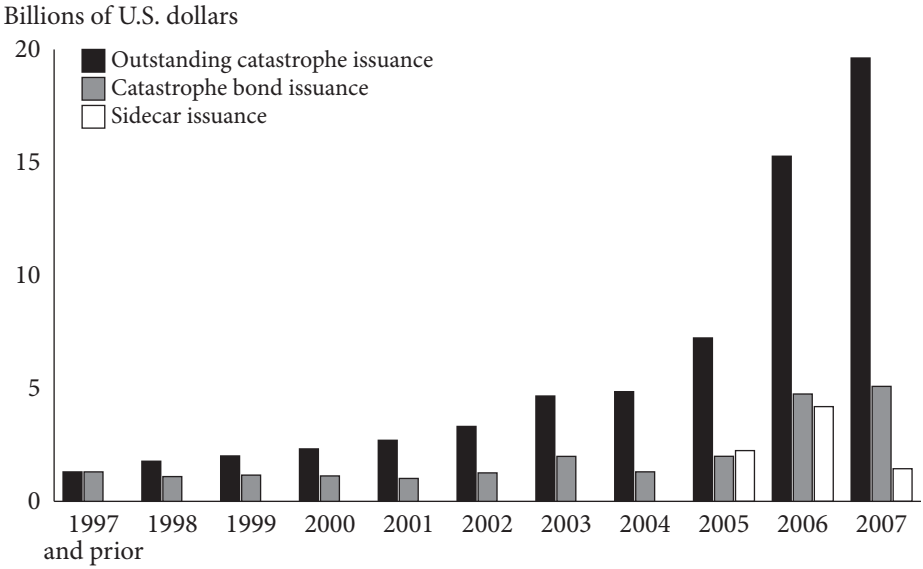
It is instructive to analyze Mexico's issuance in 2006 of the first emerging market catastrophe bond. Although it was one of the cheapest issuances at the time because it provided significant diversification benefits for investors until then fully concentrated in industrial countries, it was still quite costly (the premium was equivalent to 2.5 to 3 times the expected covered loss)[5] and quite small. Why pay so much for so little coverage? Mexican authorities wanted to cover just short-term expenditure needs arising from a natural disaster because they knew that those are the most difficult to finance, given budgetary rigidities and lead times to obtain additional debt financing or aid flows from existing IMF Emergency Facilities,[6]emergency loans from multilateral development banks,[7] and bilateral aid, which take less time than normal facilities and loans to be disbursed but nonetheless take on average from 4 to 12 months to be

5. Cordella and Levy Yeyati 2007.

6. The IMF has an Emergency Assistance Policy for Low-Income Countries that includes the possibility of augmenting resources under a Poverty Reduction and Growth Facility agreement when an exogenous shock occurs, or else accessing the Emergency Natural Disaster Assistance Facility, the Compensatory Financing Facility, or the Exogenous Shocks Facility. Approvals and disbursements from these facilities are relatively fast, but still take typically a few months.

7. Multilateral development banks usually have faster procedures for approval of emergency, as opposed to regular, loans, but lead times between the occurrence of a disaster and disbursements still are over four months in general.

Figure 6.2. Total catastrophe transactions



Source: World Development Indicators (World Bank 2007b).

disbursed.[8] They were thus willing to pay a high price to cover the risk of being cash starved during the first months after the occurrence of a major disaster.

This case illustrates some important problems associated with government access to and use of catastrophic insurance. It also indicates an additional potential role for multilateral development banks that is behind some recent initiatives. First, the need to cover short-term liquidity needs arising from natural disasters currently can be met either through financially costly self-insurance (emergency funds large enough to cover short-term cash needs associated with costly but low-probability events) or through costly catastrophe bonds and insurance of government assets. An obvious role for multilateral institutions in these circumstances is thus to offer contingent credit lines that would be triggered by a catastrophic event and would disburse automatically. The World Bank and several regional development banks have moved to offer such contingent lines, though there are still few actual approvals.

It should be clear, however, that a contingent credit line is a second-best solution because it is not generally well advised to burden a disaster-stricken country with additional debt. The best solution would be an insurance solution, and multilateral development banks can help in reducing the cost and volatility of insurance premiums by using their convening power to overcome coordination problems and achieve global, or at least regional, diversification benefits for their clients.

8. See Ghesquiere and Mahul (2007) for a more general treatment of this point.

A recent initiative sponsored by the World Bank, the Caribbean Catastrophic Reinsurance Facility, does precisely that for a group of 16 Caribbean countries. The World Bank contributed to the capital of the facility, and several donors contribute to finance the premiums paid by participating countries. The facility retains some risk, which is significantly reduced by pooling, and diversifies the rest either through reinsurance or the issuance of catastrophe bonds. The World Bank estimates that through a combination of reduced cost of capital, risk pooling, and partial risk retention, premiums were reduced by approximately 68 percent (of which about 35 percentage points were attributable to a lower cost of capital and the rest to risk-diversification benefits) compared with individual country solutions.[9] In principle, reinsurance and catastrophe bond premiums not only may be lower but also become less volatile thanks to the retention capacity of the facility. The facility operates on a parametric basis and has already made its first disbursements to countries hit by a hurricane.

This successful example could be replicated in other regions, through World Bank or regional development bank sponsorship, or preferably through joint sponsorship. Moreover, a Global Catastrophic Reinsurance Fund could achieve much higher risk-diversification benefits, but creating it would have to overcome significant coordination problems. The World Bank would be well placed to promote such an initiative. Alternatively, or as a complement, regional development banks could join in a fund with global reach, establishing principles of operation similar to those of the TCX discussed above with respect to the global diversification of developing country currency risks.

Another alternative for global risk pooling being promoted by the World Bank is that of issuing a Global Catastrophe Mutual Bond, which would cover a variety of natural disaster risks for several countries. The World Bank would pay debt service to investors out of fees paid by countries corresponding to the amounts and types of events they want to insure against. Donors would be encouraged to pay for specific poor countries' fees. Disbursements to countries would be based on parametric coverage, estimated as a fraction of the expected government loss for events exceeding the preestablished parameters, thus allowing for automatic disbursements that would cover expected short-term cash needs. Country coverage would depend on three additional design parameters: (a) the attachment point, which determines the minimum level of losses that the member country will need to absorb before coverage payments are received (the deductible); (b) the exhaustion point, which determines the maximum level of losses after which coverage will be exhausted; and (c) the ceding percentage, which is the percentage of each dollar of loss between the attachment point and the exhaustion point that the member country will retain.[10] The World Bank has estimated that savings in expected premiums, as compared with stand-alone country catastrophe bond issuance, would be around 50 percent

9. See Ghesquiere and Mahul (2007) for a more general treatment of this point.
10. World Bank 2007a.

on average for a group of 10 representative countries[11] covering two types of risks (earthquakes and hurricanes). Adding more countries and disaster risks would achieve even higher diversification gains. It is expected that the Global Catastrophe Mutual Bond will also achieve significant fee stability compared with present high market premium volatility.

Both the Mexican and the Caribbean Catastrophic Reinsurance Facility examples signal another important issue. Governments usually consider insuring only for short-term cash needs following a natural catastrophe, and not for the more significant expenditures related to reconstruction, to a large extent because they count on emergency relief funds (from IMF Emergency Facilities, emergency loans from multilateral development banks, and bilateral aid). Because these take some time to be disbursed, normally between 4 and 12 months, governments still see the need to insure against liquidity risks associated with urgent short-term cash needs but not to cover longer term reconstruction financing needs as they can "cope" with this risk through the use of emergency relief funds. Thus, despite all the benefits of emergency relief funds, they have the serious drawback of reducing the incentives for governments to take market insurance (which normally requires adopting some prevention actions) against natural disaster risks, something they should do, given the high potential diversification gains that could be obtained through global insurance pools. It would be so much better if aid would concentrate on supporting integrated prevention and insurance solutions, as in the case of the Caribbean Catastrophic Reinsurance Facility where donors are paying for the fees of participating countries, because the theoretically optimal solution for this type of risk is an integrated combination of prevention and pooling of risks through efficient market insurance, instead of costly and inefficient coping after events have occurred. A shift of aid flows from ex post coping to ex ante prevention and insurance would have the additional benefit of eliminating, or at least reducing, the high level of politicization of aid flows. Such a shift, however, can be accomplished only through the convening power of multilateral institutions, as was the case for the Caribbean Catastrophic Reinsurance Facility. It should be stressed that this principle also applies to other forms of exogenous risks, such as terms of trade risks: it would be much better if aid would help to "insure" ex ante (for example, by covering premiums or development costs of indexed debt), rather than come ex post to the rescue of shock-stricken poor countries.

The discussion above suggests a potentially more ambitious role for multilateral development banks in helping developing countries to achieve higher catastrophic insurance penetration. The diversification benefits that could be achieved through a global pool of both public and private risks could be very substantial. Gurenko and Zelenko (2007) estimate that, on average, premiums for a single country might be about 4 times the expected loss and that they can be reduced to 3.3 times in regional

11. Six in Latin America (Chile, Colombia, Costa Rica, Dominican Republic, Mexico, and Peru), two in Asia (Indonesia and the Philippines), and two in Europe and Central Asia (Albania and Turkey).

Table 6.2. Potential gains from risk diversification in a Global Catastrophic Reinsurance Facility

	Premium	Premium/ expected loss	Premium/total sum insured
Sum of countries	140.84	4.03	3.80%
Region 1	27.17	3.17	3.10%
Sum of regions	115.68	3.32	3.10%
Portfolio	79.27	2.27	2.20%

Note: Region 1 covers Mexico and Central America. Portfolio covers 22 developing countries in Latin America and the Caribbean, Asia, and Europe and Central Asia.

Source: Gurenko and Zelenko 2007.

pools and to 2.3 times in global pools[12] (table 6.2). Given these significant savings, the Mexican authorities requested that the World Bank study the viability of establishing a Global Catastrophic Reinsurance Facility to which both governments and private insurers could have access. The significant reduction in premiums that could be achieved, plus an expected reduction in volatility of fees, might result in important increases in catastrophic insurance penetration in participating countries. The facility would benefit from seed capital contributions from the World Bank and other multilateral development banks, but it has been envisioned that it would eventually be a fully private endeavor. Initial studies suggest the financial viability of the proposal.[13]

12. The corresponding figures for fees (premiums over sums insured) would be 3.8 percent, 3.1 percent, and 2.2 percent, respectively.
13. Gurenko and Zelenko 2007.

7

Why Multilateral Development Bank Practices Are So Far from Their Potential

The preceding chapters have shown that developing countries usually have underdeveloped long-term domestic currency markets and limited access to insurance and risk-management products that would help them deal with adverse exogenous shocks. This can be attributed in part to domestic reasons (weak technical capacities, political economy problems, and faulty policies and institutions) but also to market failures associated with first-mover, liquidity, and coordination costs and problems and to significant externalities thereon. It has also been shown that, in each of these cases, multilateral development banks are in a position to help overcome those first-mover, liquidity, and coordination costs and problems. At the same time, they can help governments improve their institutional and policy environments, strengthen their technical capabilities, and overcome inhibiting political economy problems that are currently limiting the use and penetration of existing and new products in developing countries. That is, multilateral institutions can help in solving both demand and supply market limitations. They can thus play a very useful role as market developers. In particular, we found that the global reach and convening power of multilateral institutions can be especially useful to help develop global markets for developing countries' domestic currencies and terms of trade or GDP-indexed debt as well as to achieve higher global coverage of catastrophic insurance solutions.

Our review shows that most multilateral development banks have been indeed promoting the development of some of these markets through different financial innovations. Furthermore, the speed of innovation appeared to be accelerating before the recent international financial crisis, and there were several recent promising initiatives. Still, our assessment is that current practice is still quite far from what it might be and that there are several areas in which developing countries would benefit if multilateral development banks were to take a more decisive role as market developers and more quickly mainstream their current limited offering of new financial products. This is the case, for example, with their still-limited supply of loans and guarantees in domestic currencies and of currency and domestic interest rate derivatives, though this is an area in which there are several promising initiatives such as the IFC's MATCH program and The Currency Exchange (TCX), in which several regional development banks will participate. The World Bank's GEMLOC initiative can also have an important effect in helping developing countries' domestic currency bonds become a significant asset class.

Current practice is also far from what it might be in multilateral development banks' supply of catastrophic insurance instruments, though there are several important recent and ongoing initiatives in this area promoted, in particular, by the World Bank. The lack of innovation and market-development initiatives is even more noticeable in the area of indexed debt instruments. Finally, even if multilateral institutions can only help mitigate problems associated with private capital flow volatility and potential liquidity shocks in the margin, areas in which the major role belongs to the IMF, they appear to be doing much less than is possible. In particular, their lending is often as procyclical as private capital flows, and there is very limited development of contingent disbursement instruments.

Why has the actual role of multilateral development banks in these areas differed so much from their potential role? Why has the push for helpful financial innovations and for assuming the role of market developer been just a recent development? We can identify four potential, probably complementary, answers to these questions.

First, as indicated in several chapters above, multilateral development banks' own risk-management policies have considerably limited their potential support for their clients' risk-management options. In particular, with few exceptions, multilateral institutions have been basically willing to retain only their clients' credit risk on their balance sheets. By so doing, they have limited their potential support to their clients in several ways. As an example, they merely intermediate other risks such as currency risks, which in practice has limited their offer of loans and guarantees in domestic currencies, or of currency swaps, to those countries that already have relatively well-developed local currency or swap markets. In those cases, the intermediation of the multilateral development banks has often reduced costs substantially because they retained the country's or issuer's credit risk, but this practice has left out all those

countries that have less-developed domestic currency and swap markets—precisely those that would benefit most from multilateral support in this area.[1]

As discussed in chapter 4, multilateral development banks, especially those with global reach such as the IFC and the World Bank, would be in a position to achieve significant currency risk diversification through global pools, but this would require that they be willing to retain residual currency risks on their balance sheets. The IFC's MATCH initiative is designed precisely to take advantage of global currency risk-diversification opportunities and will permit the IFC to help develop domestic currency markets in frontier countries. In a complementary way, the GEMLOC initiative expects to eventually help private investors diversify currency risks over a wider variety of developing country currencies than is now the case, while producing a useful benchmark for this asset class. In these initiatives, the IFC and the World Bank expect to use their convening powers to solve coordination problems to achieve the full potential of global risk diversification, and to support and stimulate developing countries in enhancing required technical capabilities and undertaking necessary regulatory reforms. The potential for currency risk diversification at a regional level is significantly more limited, though still substantial. That is why several regional development banks have opted to join the TCX initiative, which would allow them to jointly benefit from the higher global currency risk-diversification potential.

Similarly, multilateral development banks with global reach are in an especially advantageous position to help achieve significant risk-reduction benefits through global diversification of other developing country risks, such as those associated with natural disasters. These multilateral institutions are the natural promoters of global solutions that would cover many developing countries in different regions, as the World Bank is beginning to do in the area of catastrophic insurance through a variety of initiatives. As shown in the case of the Caribbean Catastrophic Reinsurance Facility, there are substantial benefits of catastrophic risk diversification even for a limited number of neighboring countries. Available studies backing the launch of the Global Catastrophe Mutual Bond and the Global Catastrophe Reinsurance Facility show that benefits would be much more substantial with global coverage of risks and countries. Again, the convening power of multilateral development banks is extremely valuable in solving coordination and political economy problems in this area, and their technical support can be key to supporting complementary institutional and policy actions.

Similarly, and for the same reasons, multilateral development banks with global reach would be in the best position to help develop global markets of indexed debt, such as GDP-indexed debt, that could be extremely attractive for issuers and investors

1. As a further example, some multilateral development banks offer contingent credit lines that disburse when natural disasters happen. However, this kind of support falls short of insurance-type solutions, which require the retention of some disaster risk against multilateral development banks or special vehicle capital (as in the case of the Caribbean Catastrophic Reinsurance Facility), given that it is not generally wise to burden disaster-stricken countries with additional debt.

alike, provided that global diversification benefits are indeed achieved and first-mover costs are overcome. Unfortunately, multilateral development banks have not yet undertaken initiatives in this area.

Regional development banks can also achieve important risk-diversification benefits with respect to natural disaster risks or output risks at a regional level, although such benefits would be significantly lower than those that can be achieved through global diversification. They may benefit, though, from global diversification benefits by either joining forces through global funds, just as TCX is doing with respect to currency risks, or by joining in the initiatives promoted by multilateral development banks with global reach.

As with currency risks, these possibilities require a willingness on the part of multilateral development banks either to retain risks other than credit risk on their balance sheets or to allocate capital to special vehicles or funds that would retain some of these risks. Are multilateral development banks in a position to retain these additional risks and make the corresponding capital allocations? Table 7.1 indicates that they have been strengthening their capital positions (as measured by their equity-to-loan ratios) during the past 10 years. More to the point, a recent comparative study by Standard & Poor's indicates that most of the multilateral development banks have very high risk-bearing capacity available (defined as equity against total "development-related operations"—loans, guarantees, equity, and derivatives), especially when callable capital is taken into account. The upper panel in table 7.2 shows Standard & Poor's estimates of the narrow risk-bearing capacity of different multilateral development banks (when only paid-in capital is taken into account), and the lower panel shows the corresponding figures when callable capital is also taken into account (at a discount).[2]

These figures suggest that most multilateral development banks could retain additional risks on their balance sheets without impairing their ratings and that such idle capacity has been growing in the last decade. Facing the recent crises and increased demand from developing countries for traditional fast-disbursing loans, multilateral development banks are making a major effort to respond and hope to nearly double their previous lending levels. However, once the effects of the current international crisis are overcome and international private financial markets resume lending, we will likely see a continuation of the trend under which a growing number of higher-middle-income country governments (which were obtaining investment-grade ratings or just a few notches below them, were borrowing in private markets at relatively low spreads, and had accumulated significant amounts of international reserves) were rapidly reducing their borrowings from multilateral development banks and paying back portions of their outstanding debts.

Eventually, once the current crisis is over, several multilateral development banks (especially those that lend only or mainly to sovereign governments) will probably

2. Standard & Poor's (2007). Figures are made comparable by making suitable adjustments to the reported balance sheets of each multilateral development bank.

Table 7.1. Multilateral development banks' equity-to-loan ratios (Percentage)

	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06
World Bank	22.06	21.44	20.65	21.23	21.54	22.90	26.59	29.35	31.44	32.94
Asian Development Bank	44.54	36.79	34.29	35.23	35.10	38.79	46.37	50.89	49.48	47.72
Inter-American Development Bank	35.66	31.86	28.88	28.68	28.91	29.24	33.38	37.13	38.38	41.17
African Development Bank	39.73	41.60	41.80	48.16	50.34	62.28	70.24	80.84	76.55	82.03
European Bank for Reconstruction and Development	73.08	60.18	52.49	55.50	62.70	62.03	65.71	63.93	82.12	91.08

Note: Except for the World Bank, the fiscal years of multilateral development banks coincide with calendar years.

Source: From Cordella and Levy Yeyati 2007, table 3.6.

Table 7.2. Multilateral development banks' risk-bearing capacities (Percentage)

	World Bank	IFC	Inter-American Development Bank	Asian Development Bank	European Bank for Reconstruction and Development	African Development Bank	Inter-American Development Corporation	Andean Development Corporation	European Investment Bank
Narrow risk-bearing capacity/Development-related operations (loans, guarantees, equity, derivatives)									
2001	28	83	31	35	56	53	86	35	13
2002	33	77	32	39	58	62	95	35	13
2003	33	77	33	46	64	67	102	37	13
2004	37	85	37	50	64	78	106	40	13
2005	35	85	38	48	79	82	103	44	12
2006	40	86	42	45	89	85	91	44	12
Broad risk-bearing capacity/Development-related operations (loans, guarantees, equity, derivatives)									
2001	82	83	108	74	136	116	86	35	45
2002	97	77	112	86	14	143	95	35	44
2003	102	77	110	118	148	153	102	40	58
2004	112	85	119	128	150	172	106	42	63
2005	111	85	123	122	154	178	103	47	58
2006	120	86	130	116	156	186	91	47	56

Source: Standard & Poor's 2007

face the dilemma of either accepting to retain a wider variety of developing country risks on their balance sheets, not just credit risk, or seeing a higher proportion of their capital remain idle, thus calling into question their development effectiveness. This is perhaps the main reason multilateral development banks had been speeding up their rates of financial innovation in recent years. It is possible, though unfortunate, that the present increase in demand for traditional loans will reduce the incentives to innovate and delay the pace of financial innovation during several months or a few years. But the need to innovate will remain, and it is to be hoped that, eventually, the recent pace of rapid financial innovation will resume.

It is frequently argued that multilateral development banks face statutory limitations to retaining developing country risks other than credit risk on their balance sheets. Inspection of their articles of agreement suggests that this is not the case: most multilateral development banks, like most financial institutions, seem to be allowed to make diverse equity and portfolio investments against their capital.[3] The real issue appears to be with current risk-management policies and practices.

In particular, those multilateral development banks that work mostly with sovereign governments and that benefit from a de facto preferred creditor status are actually accustomed to bearing very limited risks from their development-oriented operations. It is not surprising, therefore, that a highly conservative risk-management culture has prevailed in which there is little appetite to retain and manage more complex and higher risks. In contrast, those multilateral development banks that work only or substantially with the private sector are more used to retaining and managing more diverse and higher risks. It should not come as a surprise, therefore, that they have often been pioneers in financial innovation among multilateral development banks. As an example, the IFC, the European Bank for Reconstruction and Development, the European Investment Bank, and FMO have been pioneers in lending in domestic currencies. As mentioned, recent initiatives by the IFC (MATCH) and FMO (TCX) would take lending in domestic currencies a necessary step further by achieving risk reduction through global pooling and retaining some residual currency risks on the balance sheets of these institutions, as discussed in chapter 4. Similarly, these institutions have often been more aggressive in offering different types of guarantees and other structured products (see tables in the appendix).

A second factor that has limited the mainstreaming of financial innovations in many multilateral development banks has to do with bureaucratic culture, procedures, and inertia. This is again more noticeable in those institutions that lend only or mostly to sovereign governments. In these cases, procedures and incentives are closely linked to traditional lending operations bundled with technical assistance and supervisory support. Financial innovations normally appear as stand-alone financial products that are offered and managed by specialized treasury or financial unit officials and are

3. An important issue to clarify is whether they can retain all types of risks against their total capital, including callable capital, or just against their paid-in capital.

not well integrated with the more operational units' procedures and incentives. New financial products need to be promoted to the clients because their use often requires improved technical capabilities and associated institutional and policy reforms, as well as overcoming political economy problems. This is a role for country operational units. However, in practice, the fact that most technical support is bundled with traditional lending operations creates a major internal bias in operational units in their favor and thus against the mainstreaming of new financial products.

Many observers have noticed that the pervasive practice of bundling technical support with lending, while having evident synergies and benefits, has drawbacks.[4] Most noticeably, the practice limits the capacity of multilateral development banks to maintain the intellectual and technical leadership that is more easily achieved with "global practice" groups of excellence that can offer technical support and advice on a flexible, free-standing basis and are subject, at least partially, to a market test. In practice, some of the most successful areas of technical support in many multilateral development banks are stand-alone groups whose services are not necessarily bundled with traditional lending operations.[5] While these issues go beyond the scope of this paper, it should be emphasized that they seem absolutely key to unlocking the capacity to innovate and to mainstream innovations in multilateral development banks, with respect to both financial and knowledge products.

More generally, bureaucratic culture and incentives are very often not conducive to experimentation and change. A strong preference for taking on few risks, or just the risks that one is already familiar with, is a common bureaucratic trait in all types of institutions. It is perhaps just somewhat more pervasive in official institutions, especially in official institutions that have only or mostly official stakeholders and clients. Those multilateral development banks that deal only or more significantly with private clients do tend to develop a more pro-innovation and risk-taking culture than those that deal primarily with sovereign governments.

A final and related limiting factor is perhaps the most crucial one: the frequent lack of stakeholder push and support for financial innovations. Although there are some notable exceptions, multilateral development bank boards have usually been more reluctant to innovate than management in this and other areas. This may be to some extent an unavoidable limitation of collective action: it is not easy to achieve consensus for change among representatives of many developed and developing countries with widely different interests. But, more profoundly, it seems to be associated with a lack of a common view among stakeholders about the basic roles of the multilateral development banks in a world with more access to private capital flows.

4. See, for example, Birdsall, Rodrik, and Subramanian (2005) and Birdsall and Subramanian (2007), p. 63.
5. Examples include the Foreign Investment Advisory Service (advisory services for promoting foreign investment) at the Multilateral Investment Guarantee Agency, and Private Participation in Infrastructure (an advisory program for promoting and structuring private-public partnerships in infrastructure) at the World Bank and IFC.

While few would dispute that multilateral development banks still have a major role to play in supporting lower income countries, though the most adequate means are hotly debated, views have been sharply divided with respect to their role vis-à-vis middle-income countries. Differences in views have been closely associated with the concentration of multilateral development banks in traditional lending operations. The most radical critics of actual practices at multilateral development banks[6] have argued that their lending to middle-income countries is not adding any value from a development perspective, given the increased access of these countries to international private capital markets. Even more, they claim that by continuing to lend to these countries at subsidized rates, multilateral development banks are hindering the sound development of private markets. Furthermore, they argue that multilateral institutions should give grants and not loans to low-income countries because poor countries should not be burdened with debt. They cite the Highly Indebted Poor Countries initiative as a late recognition of this failure. In short, they argue for the conversion of multilateral development banks into development agencies that would limit themselves to distributing grants and providing technical assistance to low-income countries, and be essentially deprived of financial intermediation functions.

Unfortunately, most multilateral development banks' responses to these critics have been unduly defensive. They have essentially claimed that multilateral development banks' traditional lending has development value, even when countries have access to private markets, because of its bundling with technical assistance (former arguments about the constructive role of conditionality having been basically abandoned). They have also disputed the view that developed countries subsidize their lending. Furthermore, they have claimed that soft loans are better than grants from the point of view of their own financial sustainability because it is easier to bundle loans with technical assistance over a longer period of time. Admittedly, none of these responses is wholly convincing even to those who believe that multilateral development banks still have an important financial role to play.

What the radical critics systematically overlook, and what multilateral development banks' own defenses often underscore, is that many or most of the developing countries that have gained access to international private capital markets remain highly vulnerable to a variety of exogenous shocks, that the procyclicality of private capital flows and the usual denomination of international financial flows in foreign currencies amplify the severity of the effects of these shocks, and that international private capital markets are, on occasion, themselves the source of exogenous liquidity shocks to middle-income developing countries, as is presently the case. They also overlook the fact that low-income countries are normally even more exposed than middle-income countries to real shocks, whether related to terms of trade and abrupt changes in external demand or the occurrence of natural disasters. By overlooking

6. The most influential voices among these have probably been Meltzer (2000); Lerrick (2006); and Einhorn (2001 and 2006).

these facts, the radical critics do not even discuss whether there is enough access by developing countries, both low- and middle-income ones, to insurance or hedging instruments in private financial markets that could help them mitigate the effects of these vulnerabilities. Hence, they fail to address the key question: whether there is a role for multilateral development banks in helping develop access by developing countries to insurance and hedging instruments. We hope that this report, by providing a systematic treatment of these highly important issues, will facilitate a new consensus among stakeholders about the potential financial roles of multilateral development banks in a world with more access to private capital flows.

The frequent procyclicality of lending by multilateral development banks is an example of how the lack of focus on these issues by most critics and defenders of multilateral development banks alike precludes progress in arriving at a more consensual view. Traditional lending by multilateral development banks to middle-income countries could be defended as having developmental value, as long as it could be shown that it complements, and not substitutes for, the action of private markets. Although multilateral development banks have long realized this, and they actually frequently claim that their lending is countercyclical, more often than not this is not the case in practice, as shown in chapter 3. Bureaucratic culture and incentives and a lack of internal consensus in multilateral development banks about their own developmental role seem to be behind this fact, as discussed in that chapter. By failing to adopt a more prodevelopmental, countercyclical stance in their lending, multilateral development banks are playing into the hands of their more radical critics.

It should be noted, however, that most of the public debate and differences in views on multilateral development banks' financial developmental roles are focused on their lending to sovereign governments. In contrast to the variety of reports and articles on these issues, there is a virtual absence of analysis and debate on multilateral development banks' developmental role through direct financial support to the private sector. There may well be a general feeling that multilateral institutions are fulfilling a useful role in this area, complementing and not substituting for private markets. We noted above that those multilateral institutions that lend solely or significantly to the private sector are, in practice, more flexible and responsive to actual client needs and more prone to innovate. Furthermore, there is apparently significant effective demand for lending and other forms of financial support from multilateral development banks to the private sector in all developing countries, in contrast with what is happening with lending to the governments of middle-income countries, given the higher spread differentials. Thus, these operations have been growing rapidly, while aggregate net disbursements to sovereign governments have been stalling or diminishing.

It could be argued that the lack of a sharply drawn debate about the *raison d'être* and the developmental effectiveness of multilateral development banks' financial operations with the private sector of developing countries has facilitated innovation in and growth of the institutions' private sector arms. Yet, to guarantee their effectiveness, it

would seem useful to subject these operations to a more critical analysis of their "additionality," while avoiding the ideological radicalism that has plagued the debate on the financial role of multilateral development banks with respect to sovereign governments and that has resulted in so much harm by blocking progress toward a shared view on needed change and innovation.

In sum, to bridge the gap between the actual practices of multilateral development banks and their potential developmental contributions through financial innovations examined in this report, it seems necessary to reconsider their current risk-management policies and practices, as well as to undertake some internal reforms that would remove existing biases in favor of traditional lending bundled with technical assistance and against financial innovations. But, more important, it seems indispensable to achieve greater consensus about multilateral development banks' financial roles among stakeholders in the current international environment. It is hoped that this report contributes to building such a consensus.

8

An Agenda Going Forward

We have shown that there is a wide gap between present actions and the potential of multilateral development banks to support their clients' risk-management policies, although there are some promising recent initiatives. We have also discussed the possible reasons behind the existence of this gap. Going forward, multilateral development banks need to prioritize actions to overcome it.

Domestic currency initiatives

A first priority for multilateral development banks should be to concentrate efforts on helping their clients, especially the low-income countries and the lower tier middle-income countries, to develop long-term domestic currency capital markets. Doing so would require a significant change in multilateral institutions' current risk-management policies, coupled with increased technical assistance in this area. Multilateral development banks' own supply of loans and guarantees in domestic currencies and of currency and domestic interest rate derivatives is still very limited. Most important, these operations are highly concentrated in countries that already have relatively deep domestic currency and swap markets, where multilateral development banks merely intermediate currency risk and retain the credit risk, thereby achieving some cost savings for their clients but little developmental impact (for example, no significant

extension of maturities). This is a direct result of their refusal to retain any currency risk on their balance sheets and/or to undertake aggressive issuance of their debt indexed to a wide pool of their clients' domestic currencies. As a consequence, the countries that would have a greater need for the support of multilateral development banks in developing their domestic currency markets are precisely those that have no access to their domestic currency operations or currency swaps.

Fortunately, this is an area in which there are several promising initiatives such as the IFC's MATCH program and The Currency Exchange (TCX), in which several regional development banks will participate. Both of these initiatives are based on the principle that a global fund can retain currency risks and achieve significant overall risk reduction by pooling currency risks across the globe. As the proof of the pudding is in the eating, the eventual success of the IFC's MATCH initiative should be measured by the number and volume of operations in "frontier" markets (those with underdeveloped domestic currency capital markets), and the success of TCX should be measured by its actual capacity to significantly extend maturities in countries that have only short-term domestic currency markets. The World Bank should consider following the example of the IFC in this regard, and regional development banks that are not members of TCX should be encouraged to explore joining this initiative.

A totally different initiative, the World Bank–sponsored GEMLOC, can also have an important effect in helping developing country domestic currency debt become a significant asset class. It is a hedge fund linked to an "investability" index and a technical assistance program. Although it will initially begin operations in countries with already developed domestic currency capital markets, hence having limited developmental impact, there are plans to extend it to a large number of countries. Its eventual success should be measured by the number of currencies in which it invests and, even more so, by how fast it reaches underinvested markets and shows some clear developmental impact.

Indexed debt pilots

A second area of priority should be to develop pilot programs for GDP-indexed or terms of trade–indexed debt or a combination thereof. In particular, GDP-indexed debt instruments could help achieve a high degree of macroeconomic stabilization for issuers, as debt payments would increase in good times and be reduced automatically in bad times. At the same time, a global pool of GDP-indexed bonds would provide the maximum risk-reduction potential for investors through global diversification (the remaining undiversifiable risk would be that associated with global GDP growth).[1] The stabilization and risk-diversification potential of terms of trade–indexed bonds would be lower but still quite substantial. The creation of these macro-markets

1. Shiller 2003 and 2004.

requires strong convening power to help overcome coordination problems and first-issuer risks and costs, in addition to other, relatively minor, problems associated with pricing, GDP or terms of trade accounting, and so forth.[2] A global multilateral development bank like the World Bank would be in privileged position to help develop these markets. Regional development banks could also play this role by joining in an effort with global reach, as some of them are doing through TCX with respect to the development of global currency markets.

The first priority could be to develop a pilot program with the simultaneous issuing of GDP-indexed (or terms of trade–indexed) bonds by a group of small countries situated in different regions.[3] If the participating countries are well chosen, the pool would offer significant risk diversification for investors. The overall issue would be small enough to be easily absorbed by the market, but at the same time, being small countries, the issuers may achieve significant stabilization potential. The World Bank could absorb the costs associated with the design of the bonds, their covenants, and issuance.[4]

The lessons of these experiences would permit a proper follow-up, either by proceeding with a second, more ambitious pilot multi-bond issuance or by convincing a selected group of investment-grade or near-investment-grade countries to become individual issuers of GDP-indexed debt (as was done with the introduction of new collective action clauses in sovereign bonds, with the leadership of Mexico). Over time, multilateral development banks themselves should begin to offer regularly GDP-indexed (or terms of trade–indexed) loans as one more option at the moment of deciding on the financial characteristics of each operation.[5] It should be stressed that such loans could help reduce their clients' credit risk, as the probability of default can be significantly reduced when a significant portion of a country's debt is GDP indexed.[6]

Catastrophic insurance initiatives

Similarly, multilateral development banks with global reach are in an especially advantageous position to help achieve significant risk-reduction benefits through global diversification of other developing country risks, such as those associated with natural disasters. The World Bank has a variety of recent initiatives in this regard.

To begin with, the Caribbean Catastrophic Reinsurance Facility covers governments' estimated short-term cash needs in the aftermath of disasters for a group of 16 Caribbean countries. The facility operates on a parametric basis. The World Bank

2. Chamon and Mauro 2005.
3. Williamson 2008.
4. Simultaneously, the multilateral development banks may begin experimenting with GDP-indexed (or terms of trade–indexed) loans for some of their clients.
5. Today, countries may choose currency of denomination among a set of permitted currencies, fixed or floating interest rates.
6. As shown in the simulations included in Chapter 5.

contributed to its capital, and several donors finance part of the premiums paid by participating countries. The facility retains some risk, which is significantly reduced by pooling, and diversifies the rest either through reinsurance or the issuance of catastrophe bonds. The World Bank estimates that through a combination of reduced cost of capital, risk pooling, and partial risk retention, premiums were reduced by approximately 68 percent as compared with individual country solutions.[7] In principle, reinsurance and catastrophe bond premiums not only may be lower but also become less volatile thanks to the retention capacity of the facility. This successful example could be replicated in other regions, either through World Bank or regional development bank sponsorship. Moreover, a Global Catastrophic Reinsurance Fund could achieve much higher risk-diversification benefits, but significant coordination problems would have to be overcome in creating it.

Another World Bank initiative in the making is that of issuing a Global Catastrophe Mutual Bond, which would cover short-term cash needs for several governments for a variety of natural disaster risks. The World Bank would pay debt service to investors out of fees paid by countries, corresponding to the amounts and types of events they want to insure against. Donors would be encouraged to pay for specific poor countries' fees. Disbursements to countries would be based on parametric coverage, thus allowing for automatic disbursements that would cover governments' expected short-term cash needs. The World Bank has estimated that savings in expected premiums, as compared with stand-alone country catastrophe bond issuance, would be around 50 percent on average for a group of 10 representative countries[8] covering two types of risks (earthquakes and hurricanes). Adding more countries and disaster risks would achieve even higher diversification gains. It is expected that the Global Catastrophe Mutual Bond would also achieve significant fee stability compared with current high market premium volatility.

There is, however, a potentially more ambitious role for multilateral development banks in helping developing countries to achieve higher catastrophic insurance penetration. The need to do something in this area is highlighted by the fact that the fraction of expected economic loss for natural disasters that is insured in industrial countries rose from around 20 percent in 1980 to about 40 percent in 2006, while the corresponding figure for the average of developing countries has stayed at a very low 3 percent. The diversification benefits that could be achieved through a global pool of both public and private risks could be very substantial. The World Bank has estimated that, on average, premiums can be reduced more than 40 percent in global pools, compared with the average premium for individual countries acting alone. Given these significant savings, the Mexican authorities requested that the World Bank

7. Of which about 35 percentage points were attributable to a lower cost of capital and the rest to risk-diversification benefits (Ghesquiere and Mahul 2007).

8. Six in Latin America (Chile, Colombia, Costa Rica, Dominican Republic, Mexico, and Peru), two in Asia (Indonesia and the Philippines), and two in Europe and Central Asia (Albania and Turkey).

study the viability of establishing a Global Catastrophic Reinsurance Facility to which both governments and private insurers could have access. The significant reduction in premiums that could be achieved, plus an expected reduction in volatility of fees, might yield important increases in catastrophic insurance penetration in participating countries. The facility would benefit from seed capital contributions from the World Bank and multilateral institutions, but it has been envisioned that it would eventually be a fully private endeavor. Initial studies suggest the financial viability of the proposal.[9] It should move forward.

Helping to deal with other types of exogenous shocks

Helping developing countries reduce exposures to currency risks (by supporting the development of long-term capital markets in domestic currencies through various means), terms of trade and output risks (through the development of terms of trade–indexed and GDP-indexed debt, while continuing to help diversify their economies and improve their macro-policies), and natural disasters risks (through integrated prevention and insurance programs such as those of the Caribbean Catastrophic Reinsurance Facility and those envisaged for the Global Catastrophe Mutual Bond and Global Catastrophic Reinsurance Facility) would go a long way toward helping them reduce their macroeconomic volatility and proneness to crises. But these are not the only types of risk against which developing countries would benefit from more protection.

As mentioned in the first chapter, exogenous capital flow shocks have been on several occasions a primary source of substantial output and welfare losses, and private capital flow volatility augments the impact of any other shock. Protection against major capital flow shocks is the responsibility of the IMF, which has long been struggling to create an operational automatic facility to help countries protect against these shocks. Multilateral development banks can play only a minor role in this respect, given the limited size of their outflows in comparison with private capital flows. But they could begin to be part of the solution, and not of the problem, if they at least would be true to their stated goal of acting countercyclically with respect to private capital flows. Achieving this goal, however, would require a significant change in internal culture, incentives, and procedures.

Contingent credit loans or lines could help governments cover limited liquidity risks. General-purpose deferred drawdown options offered by the World Bank are a case in point. The initial design of the deferred drawdown options was so poor that they essentially had no takers. An improved recent design might increase their usage. The World Bank and most other multilateral development banks have contingent credit loans or lines that disburse against the occurrence of a natural disaster, a

9. Gurenko and Zelenko 2007.

terms of trade shock, or any other calamity. Although helpful, these credit lines are a second-best option to proper insurance facilities, as it is not wise to burden disaster-stricken countries with additional debt.

Recent events have shown how useful it would have been for countries to be partially covered against food and energy price risks. Debt indexed to terms of trade would have helped food and energy importer countries deal with the balance-of-payments aspect of the shock, but it is desirable to develop financial instruments that would give automatic budget finance for, as an example, increased expenditures in conditional cash transfers, which might be the best available program to help the poor affected by the shock. Other examples include the potential impact of epidemics and other health shocks, and climate change effects.

As this partial list suggests, there is a continuous need for multilateral development banks to innovate in new financial instruments that, adequately linked to technical assistance and capacity building, may help developing countries manage a variety of risks. This consideration suggests that, eventually, multilateral institutions should contemplate deeper internal reforms designed to create the right operational incentives to promote and use financial innovations and to remove the present biases in favor of traditional lending. The de-bundling of traditional lending, technical assistance services, and administrative budgets would play a key role in such reforms. As importantly, or perhaps more so, it is necessary to achieve a clearer consensus among stakeholders about the role of multilateral development banks in a world of large and increasing private capital flows. We hope that this study may contribute to this end and help sustain the effort to innovate even in present times of temporarily high demand for traditional loans.

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Appendix

Table A1. Volatility of GDP in countries with extreme values

East Asia & Pacific		Europe & Central Asia		Latin America & Caribbean	
Indonesia	0.117550	Iceland	0.0970	Argentina	0.15627
Korea, Rep.	0.096036	Turkey	0.0948	Nicaragua	0.14673
Solomon Islands	0.087337	Finland	0.0744	Uruguay	0.13341
New Zealand	0.084003	Germany	0.0729	Chile	0.12580
Philippines	0.081891	Spain	0.0718	Peru	0.11151
China	0.059160	Netherlands	0.0599	Panama	0.03578
Fiji	0.057798	Ireland	0.0591	Honduras	0.03483
Thailand	0.055936	Greece	0.0527	Barbados	0.03351
Singapore	0.051169	Hungary	0.0461	El Salvador	0.02543
Hong Kong	0.042319	Norway	0.0438	Puerto Rico	0.01418

Middle East & North Africa		South Asia		Sub-Saharan Africa	
Oman	0.141752418	Bangladesh	0.120455496	Zimbabwe	0.176626839
Saudi Arabia	0.125162489	Pakistan	0.070223603	Uganda	0.128699433
Syria	0.077869555	India	0.056679129	Congo, Dem. Rep.	0.126130392
Israel	0.069966882	Sri Lanka	0.05635585	Nigeria	0.121127137
Algeria	0.06627665	Nepal	0.054337727	Sierra Leone	0.117019031
Jordan	0.065078443			Burundi	0.070837254
Morocco	0.058882678			Cameroon	0.06775795
Egypt	0.053278502			Madagascar	0.067007116
Malta	0.051170395			Seychelles	0.06287795
Tunisia	0.046884161			Mauritania	0.060200632

Note: Volatility is defined as the standard deviation of GDP per capita from its trend. Reported values are the highest and lowest volatility calculations for each region.

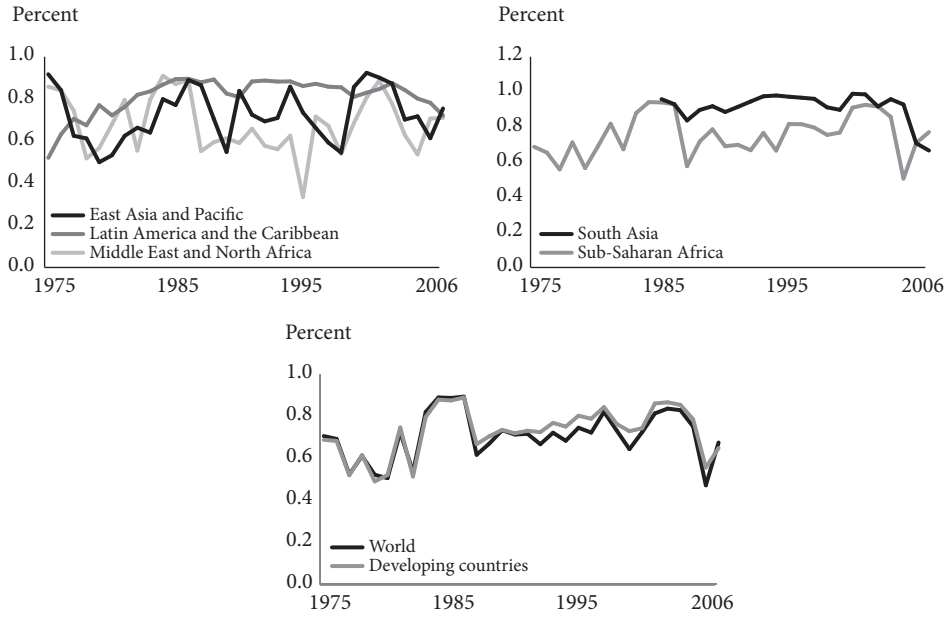
Source: Author's calculations based on World Bank (2007b) and *International Financial Statistics* (IMF various years).

Table A2. Bonds outstanding in domestic currencies: Amounts outstanding at year end (millions of U.S. dollars)

	1995	2000	2005	2006
Latin America	47	2,759	11,628	25,018
Argentine peso	0	2,286	579	826
Brazilian real	0	15	5,494	10,730
Chilean peso	0	239	74	247
Colombian peso	0	0	1,296	1,993
Mexican peso	47	220	3,682	9,943
Peruvian new sol	0	0	283	439
Venezuelan bolivar	0	0	220	841
Asia, larger economies	95	3,235	5,069	4,875
Chinese yuan	0	0	1,503	1,665
Indian rupee	0	0	11	145
Korean won	0	94	979	1,183
New Taiwan dollar	95	3,141	2,476	1,182
Other Asia	380	1,769	2,745	4,652
Indonesian rupiah	0	40	239	619
Malaysian ringgit	203	42	519	1,439
Philippine peso	48	189	60	72
Thai baht	130	1,499	1,927	2,522
Central Europe	320	5,340	20,101	22,575
Czech koruna	320	2,341	10,181	12,474
Hungarian forint	0	61	4,425	4,299
Polish zloty	0	2,848	5,495	5,802
Russian ruble	0	493	570	3,499
Israeli new shekel	0	0	347	597
Turkish lira	0	0	5,696	9,516
Saudi riyal	0	0	187	187
South African rand	685	5,949	18,909	23,394

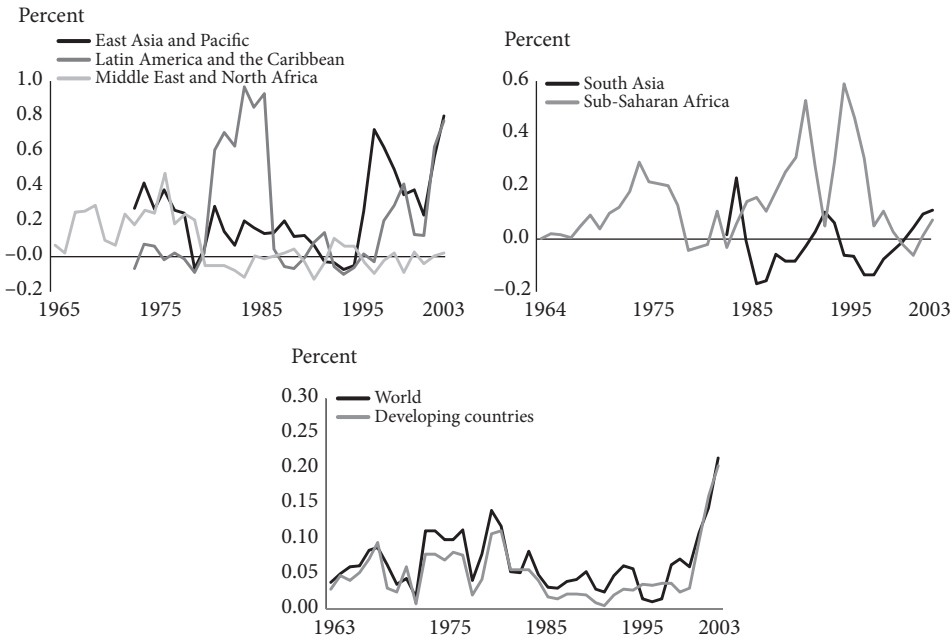
Source: BIS 2007.

Figure A1. Comovement of nominal exchange rates: performance of principal components over time



Note: Comovement is defined as the proportion of variance explained for the first principal component.
Source: Author's calculations based on data from World Bank (2007b).

Figure A2. Comovement of terms of trade: performance of principal components over time



Note: Comovement is defined as the proportion of variance explained for the first principal component.
Source: Author's calculations based on data from World Bank (2007b).

Table A3. Overall currency and interest rate swaps by multilateral development banks (millions of U.S. dollars)

	2005		2006	
	Currency swaps	Interest rate swaps	Currency swaps	Interest rate swaps
Asian Development Bank	10.8	17.28	—	—
African Development Bank	—	—	157.77	428.46
Andean Development Corporation	1.98	1.58	1.72	2.21
European Bank for Reconstruction and Development*	2,086	285	1,487	476
Inter-American Development Bank	1,797	113	1,459	190
World Bank	—	—	—	—
International Finance Corporation	167.01	—	158.67	—
Inter-American Investment Corporation	—	—	—	—
European Investment Bank*	332	—	368	—
Nordic Investment Bank*	1,179	—	935	—

— is not available.

* Values have been converted to U.S. dollars from euros using the average exchange rate for the respective year.

Source: Author's elaboration based on annual reports of the respective institutions.

Table A4. Guarantees

	Guarantees (millions of U.S. dollars)			Guarantees as a percentage of development-related expenditure[a]		
	2004	2005	2006	2004	2005	2006
Asian Development Bank	1,306	1,192	1,237	5.05	4.74	4.40
African Development Bank	15	10	12	0.17	0.12	0.15
Andean Development Corporation	268	204	544	3.58	2.66	6.23
European Bank for Reconstruction and Development*	616	578	551	3.38	3.16	2.41
Inter-American Development Bank	331	319	379	0.66	0.66	0.82
World Bank	1,218	1,157	995	1.15	1.11	1.01
International Finance Corporation	315	291	494	2.47	2.06	2.83
Inter-American Investment Corporation	5	1	4	1.12	0.20	0.58
European Investment Bank*	334	168	85	0.09	0.05	0.02
Nordic Investment Bank*	31	31	31	0.18	0.18	0.16

* Values have been converted to U.S. dollars from euros using the average exchange rate for the respective year.

a. Sum of loans, equity, and guarantees.

Source: Author's elaboration based on Standard & Poor's (2007) and annual reports of the respective institutions.

Table A5. Equity investments

	Equity investments (millions of U.S. dollars)			Equity investments as a percentage of total loans to private sector		
	2004	**2005**	**2006**	**2004**	**2005**	**2006**
Asian Development Bank	164	197	261	63.8	27.7	38.0
African Development Bank	3	35	—	2.0	20.3	—
Andean Development Corporation	112	115	93	10.0	6.4	5.4
European Bank for Reconstruction and Development*	894	709	1,267	16.7	14.9	20.3
Inter-American Development Bank	—	—	—	—	—	—
International Finance Corporation	1,893	2,505	2,812	16.3	20.1	20.6
Inter-American Investment Corporation	101	78	67	22.8	15.3	8.9
European Investment Bank*	1,496	1,664	2,101	3.0	3.3	4.1
Nordic Investment Bank*	2,125	2,309	2,490	14.2	13.7	14.7

— is not available.

* Values have been converted to U.S. dollars from euros using the average exchange rate for the respective year.

Source: Author's elaboration based on annual reports of the respective institutions.

As the drafts of this book were coming together in early 2008, Guillermo Perry argued that developing countries remained highly vulnerable to external risks such as commodity price declines, capital flow reversals, and natural disasters. The economic crisis that has since ensued could not have proved his analysis more true: rather than fall into complacency as the short-term demand for traditional loans increases, multilateral development banks (MDBs) should move beyond lending to provide innovative risk-management tools for developing countries to manage volatility and create long-term stability.

"This book combines rigorous academic analysis on the causes and consequences of vulnerability and volatility with the policy insights from an insider who has first-hand experience dealing with these issues. It will be a useful reference for students and researchers interested in development issues, as well as for policymakers and experts in the multilateral development banks."

Ricardo Haussman,
Director of the Center for International Development, Harvard University

"Perry outlines a toolkit to help improve developing countries' resilience, stability, and therefore long-term growth—strategies that have become even more important during the current period of increased market volatility. This book should be required reading for all policymakers in the developing world."

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Professor of Economics, Sloan School of Management, MIT

"Anyone who was unaware of the threat that volatility poses to developing countries will have a new appreciation of the problem in the wake of the Great Global Credit Crisis. And there is no better place to go than this for an understanding of what the multilateral financial institutions can do to help them cope."

Barry Eichengreen,
George C. Pardee Professor of Economics and Political Science, University of California–Berkeley

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