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INTERNATIONAL FINANCE AND GROWTH IN DEVELOPING COUNTRIES: WHAT HAVE WE LEARNED?

Maurice Obstfeld

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ABSTRACT

Despite an abundance of cross-section, panel, and event studies, there is strikingly little convincing documentation of direct positive impacts of financial opening on the economic welfare levels or growth rates of developing countries. The econometric difficulties are similar to those that bedevil the literature on trade openness and growth, though if anything, they are more severe in the context of finance. There is also little systematic evidence that financial opening raises welfare indirectly by promoting collateral reforms of economic institutions or policies. At the same time, opening the financial account does appear to raise the frequency and severity of economic crises. Nonetheless, developing countries have moved over time in the direction of further financial openness. A plausible explanation is that financial development is a concomitant of economic growth, and a growing financial sector in an economy open to trade cannot long be insulated from cross-border financial flows. This survey discusses the policy framework in which financial globalization is most likely to prove beneficial. The reforms developing countries need to institute to make their economies safe for international asset trade are the same ones they need so as to curtail the power of entrenched economic interests and liberate the economy's productive potential.

Maurice Obstfeld
Department of Economics
University of California, Berkeley
508-1 Evans Hall #3880
Berkeley, CA 94720-3880
and NBER
obstfeld@econ.berkeley.edu

The years after 2002 produced a surge in net capital flows from richer countries to the developing world. In 2008, the World Bank estimated 2007 net private capital flows into developing countries at nearly $1 trillion, up around 30 percent from only a year earlier.[1] In the early and mid-1990s, a prior surge of private capital to developing countries preceded a period of extreme financial turbulence, starting in Asia but spreading out to Russia and Latin America. Until mid-2007 the recent experience had been more tranquil, playing out against a seemingly benign backdrop of strong economic growth, low world interest rates and inflation, and strong terms of trade.

The subprime crisis that originated in the United States in August 2007 has, however, upset these favorable conditions. The expansionary monetary response by major central banks, coupled with sharply escalating prices for energy and foodstuffs, initially unleashed inflationary pressures as well as social unrest in poorer countries. As industrial countries plunged more deeply into recession over the course of 2008, however, commodity prices collapsed, inflationary fears gave way to the threat of deflation, and several countries turned to the International Monetary Fund (and other sources) for official financial support. Is the developing world as a whole about to enter an era of renewed crisis?

After the Asian debacle of 1997–98, prominent critics of financial globalization argued that its benefits were intangible and undocumented, whereas its risks were enormous and real. The years since the late 1990s, however, saw attempts, both at the national and supranational levels, to make the international financial environment more stable. Furthermore, the trend of financial evolution and opening in developing countries generally

[1]See World Bank (2008, p. 2). The capital inflow figure I cite refers to "net external financing," or the net resources foreign investors provide in order to finance a country's current-account deficit, its net

continued. Accompanying the latter trend were seemingly successful bids in many developing countries to achieve greater stability in prices and, to a degree, in the public finances. Once again, however, these achievements arguably were facilitated by a generally benign global macroeconomy, but now appear to be at risk as global growth falters and commodity prices fluctuate wildly.

This paper reviews the potential benefits and costs to developing countries of embracing financial globalization. Both theory and evidence are covered, with emphasis on the supporting institutional and policy reforms that seem most likely to result in net gains. I will argue that despite the meager direct evidence that developing countries gain from financial globalization, they should nonetheless proceed—albeit cautiously, in an incremental and sequenced manner. There is evidence that *domestic* financial development spurs growth under the right conditions, and these conditions—plus domestic financial development itself – are likely to make capital inflows from abroad more productive. Furthermore, over the longer term, an internationally open financial system is likely to be more competitive, transparent, and efficient than a closed one. Finally, extensive domestic financial development makes it much harder to police and enforce binding financial-account restrictions, especially as international trade in goods and services expands.

The current instability in the industrial world's financial markets testifies, however, to the inherent fragility even of purely domestic finance in the presence of informational asymmetries and distorted incentives. That fragility becomes even more acute when finance is embedded in a globalized context, as I discuss below. Developing countries that suffer from relatively severe structural shortcomings must therefore be especially cautious in their

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international reserve accumulation, and its residents' own net purchases of assets located abroad. The measure

approach to financial globalization. In addition, whereas fixed exchange rates have proved dangerous in a context of open capital markets, a regime of freely floating rates raises problems of exchange-rate volatility that are particularly severe for emerging economies pending further evolution in their financial markets.

I begin by describing the trend of financial opening as well as recent capital flows to developing countries, comparing the circumstances of the recent surge with those of the one that ended a decade ago following the onset of the Asian crisis.

I. Trends in Financial Integration and Recent Inflows to Developing Countries

Researchers have devised both *de jure* and *de facto* quantitative measures of a country's integration with global capital markets.[2] The former types of measures often are based on information from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER), which in 1996 began to publish a highly disaggregated description of national restrictions on financial-account transactions. The measure recently proposed by Edwards (2007) is shown in Figure 1 for the period ending in 2004.[3] These data indicate a trend of de jure financial opening in developing economies beginning in the late 1980s, although all developing regions remain on average more closed than the high-income countries have become. On these numbers, sub-Saharan Africa and South Asia are less open than other developing regions, which appear to be at or (in the case of the Western

includes errors and omissions.

[2]Stulz (2005) discusses some of the measures described below, as well as others.

[3]Edwards (2007) constructs his index by augmenting earlier work of Quinn (2003) and Mody and Murshid (2005) with information from national sources.

Hemisphere) above the average financial openness level of the high income countries around 1970.

There are well-known problems with the de jure measures, however; see Kose and others (2006), for example, for a thorough discussion. Aggregative de jure measures are highly subjective in some respects. Moreover, capital controls that appear strict based on their statutory descriptions can, in reality, be quite porous. Countries typically apply different regulations to inflows as against outflows, or to resident as against nonresident transactions, making the impact of a single de jure openness number virtually impossible to interpret without further information. These limitations of the de jure measures motivate the consideration of various de facto measures of international financial integration. Although de facto measures may furnish more accurate descriptions of ex post financial openness than de jure ones, they likewise fail directly to gauge the incidence and severity of the actual regulations that limit various financial trades by various parties. In short, none of the available measures is even close to ideal for empirical work aiming to assess the linkage between financial openness and growth.

In deciding the weight to place on a given empirical study, the reader should always keep in mind how well the financial openness measure employed by the researcher applies to the question at hand.

One widely used de facto measure is based on the data on total foreign assets and liabilities assembled by Lane and Milesi-Ferretti (2007); see Figure 2. The data shown are disaggregated as characterizing four country groupings: high-income, industrialized countries; middle-income emerging markets; generally poorer developing countries; and Gulf oil exporters. In all country groups (other than the Gulf group, which is a special case), the trend

of de facto financial integration since the early 1990s is upward, most sharply in the high-income group, followed by the emerging markets.

Recent years have seen a surge of net financial flows from richer countries into the developing world. Table 1 documents some characteristics, along with comparative data for the 1990s surge that preceded the Asian crisis.[4] Three contrasts stand out. In the recent period the developing world is in substantial current account surplus, whereas in the 1990s poorer countries borrowed from the rich. Second, in the recent period the rate of net external financing by richer countries has been nearly three times what it was then. Finally, one counterpart of the current account surplus cum financial inflow is a massive rate of average annual reserve accumulation in the last six years, as compared with the more moderate pace seen during 1992–97. As discussed below, this development may be viewed as an important, stabilizing adjunct of financial opening. Of course, there has also been an accelerated rate of acquisition of claims on the industrial countries by developing-country *private* residents.[5]

Recent data are dominated, however, by the substantial Chinese presence in international financial markets and by the commodity-price driven surpluses of Russia and the Middle East. Stripping out those regions, we see that the average rate of financial inflow in recent years is still double the rate of the 1990s. The developing world, excluding China, Russia, and the Middle East, ran a current account deficit for 2003–08, but a much smaller one than in 1992–97. Furthermore, even outside of China and the oil surplus regions, reserve

[4]"Net external financing" is defined in footnote 1 above.

[5]If errors and omissions are neglected, developing-country private residents' net acquisition of claims on industrial countries equals net external financing less reserve accumulation plus the current account surplus. Thus, on average over 2003–08, private residents of developing countries added a net sum of about $600 billion every year to their assets held abroad..

accumulation has been much more rapid recently than in the 1990s—more than five times the earlier rate. There are two implications for financial stability. First, countries running current account surpluses or small deficits do not have a big external borrowing need that might suddenly be denied by a capital-market reversal. Second, a high reserve level provides a cushion of ready liquidity in a crisis.

We may examine two other indicators of financial fragility. For developing countries, short-term debt as a share of total external debt rose prior to both the 1980s debt crisis and the Asian crisis according to World Bank data. In the aftermath of both crises, borrowing maturities lengthened temporarily (see Figure 3). Since the early 2000s, however, the share of short-term foreign borrowing has risen once again, most dramatically for the lower middle income countries. Taken alone, this development reduces financial stability by raising the burden of a potential capital-flow reversal. Second, the overall average share of non-debt-creating inflows in net external financing (mostly portfolio equity plus FDI) is little changed compared to the 1990s inflow experience, 62 percent in 2003–08 as against 61 percent in 1992–97. The nondebt share was only about 10 percent at the start of the 1980s, but since 1993 it has fluctuated between 56 and 94 percent. Although the secular rise in equity-like foreign finance adds to overall financial stability by reducing potential sudden repayment demands, the rising portfolio component also creates a conduit for foreign investor sentiment to buffet stock-market prices and, through them, the domestic economy.

In both cases of capital inflow surge, low global interest rates have been an initial driving force. However, the level of nominal dollar interest rates (and real dollar rates) has generally been lower in the 2000s than in the 1990s, for reasons that remain under

debate. Figure 4 shows average nominal dollar borrowing costs for different income classes within the developing world. Since the 1980s, sudden elevations in borrowing costs following a surge of lending have at times presaged emerging-market crises (see Calvo, Leiderman, and Reinhart, 1996). Borrowing costs were on the rise prior to the emergence of the 2007 subprime crisis, and it remains to be seen how they evolve as the crisis unfolds and as countries deal with the economic pressures that emerged in 2008.

II. Fear of Financial Opening

Most economists would agree, despite some caveats, that protective measures discouraging *trade in goods* will ultimately harm the growth performance of developing countries. The case for *financial* openness is much more controversial. Jagdish Bhagwati's much-cited 1998 article on "The Capital Myth" in *Foreign Affairs* demonstrated that even those committed to free international trade in goods need not support unfettered international trade in assets, given that some dimensions of economic globalization hold potentially devastating perils. The analogy between trade in "widgets" and in "dollars" is specious, according to Bhagwati.[6] At the time Bhagwati wrote, the recent Asian financial disaster, surely exacerbated by the crisis countries' access to global capital, provided an immediate

[6]Earlier this point was emphasized by Díaz Alejandro (1985), whose account of the early-1980s Chilean crisis put at center stage the folly of believing "that financial markets, domestic and international, were no different from the markets for apples or meat" (p. 9). One is tempted to observe, however, that in many countries food production processes are heavily regulated by government due to the possibility of disease transmission through the supply chain. In the United States, Upton Sinclair's indictment of laissez-faire in the meat-processing industry, *The Jungle* (1906), led to a partial "sudden stop" in U.S. meat exports—as has happened more recently to several countries in response to outbreaks of mad cow disease. Quickly the United States passed the legislation setting up the Food and Drug Administration. Issuers of subprime-related financial products in the United States during the mid-2000s certainly were not subject to oversight comparably stringent to that applied to American meat products.

example of the risks inherent in financial trade. As discussed below, moreover, concrete evidence of gains from financial globalization—at least gains of the type traditionally claimed on the basis of simple economic theory—have proven hard to document in any definitive way. On these grounds, critics of financial globalization such as Bhagwati (1998), Rodrik (1998), Cooper (1999), Stiglitz (2003), and Rodrik and Subramanian (2008) have all made cases against broad, willy-nilly financial opening.[7]

Not only capital-account skeptics, but also writers of a more conservative bent who generally favor financial opening have supported "market-based" deviations from laissez-faire. Feldstein (1999), for example, endorses Chilean-style deposit requirements designed to discourage short-term inflows. Just prior to the Asian crisis, the IMF was considering an amendment of its Articles of Agreement that would have updated the Article VIII focus on current-account convertibility to comprise the financial account (see Fischer 1998). The Asian crisis derailed that ill-timed initiative; and by 2002 the IMF's director of research was arguing that, "These days, everyone agrees that a more eclectic approach to capital account liberalization is required" (Rogoff, 2002, p. 55).[8]

[7]Even the hypothesis that openness to *trade* promotes growth is supported by quite limited statistical evidence. Harrison and Rodríguez-Clare (2007) survey the econometric literature on trade and growth and conclude, contrary to the positive reading of Fischer (2003, p. 14), that "the empirical work on this question is surprisingly mixed." The interpretive obstacles that Harrison and Rodríguez-Clare identify are *exactly the same* as those that bedevil studies of the effects of financial openness on growth. Although the obstacles are qualitatively the same, however, their resolution often seems even more problematic in the financial sphere. One problem, already mentioned, is the absence of reliable measures of the height of barriers to financial trade. In the sphere of merchandise trade one can turn to data on statutory tariff rates and quotas and even shipping costs, but financial barriers are likely to be more exotic and difficult to quantify. To the extent that capital-flow barriers involve unobservable informational asymmetries that are less severe in non-financial markets, for example, they will be much harder to measure than are trade barriers. I discuss other problems of empirical interpretation below.

[8]Of course, this rather mild indictment of capital-account fundamentalism in not inconsistent with Rogoff's (2007) more recent comment that "Too many policymakers still believe that externally imposed opening to international capital flows was the main culprit behind the financial crises of the 1990s—a view that unfortunately is lent some intellectual respectability by a small number of left-leaning academics….Pushing for greater capital market liberalization after the debacle of the 1990's will be controversial. But the core of the idea

International trade, whether in widgets or in dollars, inevitably carries side effects that can reduce the theoretical mutual gains. The difference between trade in goods and assets is one of degree—in general a large difference in degree—though at the individual level the loss of a job due to import penetration can be as devastating as the loss of a job due to a financial meltdown. Theory teaches us that whereas in principle trade is Pareto-improving, in practice it carries distributional effects that create losers as well as winners. To realize the potential Pareto improvement entailed by a move to freer trade, income must be redistributed domestically.

In practice, however, the lump-sum redistributions that would be necessary are *never* made. And it is easy to see why. In a dynamic market economy, change, and with it, shifts in economic fortunes, is constant. Government cannot possibly eliminate all the ex post losses—and if it did, the resulting adverse economic incentives would seriously impair economic efficiency and growth. Europe and the United States, for example, find themselves on different portions of the equity-efficiency spectrum as result of Europe's greater propensity to provide social insurance in various ways. Regarding trade: outside of a laboratory setting, it is difficult (indeed impossible) to isolate empirically the income redistributions attributable to international trade per se—and therefore impossible to calculate the appropriate compensation. The fact that trade patterns are in large part an endogenous product of deeper economic factors makes the task even more daunting. Witness the difficulty economists have had in determining the role of trade versus technological change on the U.S. wage structure. And if we cannot somehow isolate the effects of trade, we are back, in effect, to a regime of continually making transfers to offset all kinds of market-induced redistributions.

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was right then, and it is right now." An interesting discussion of the IMF staff's shifting attitudes toward capital-

Furthermore, in the real world of market rigidities and distortions, the dislocations caused by shifts in the international trading environment can of course go beyond pure redistributive effects. But to attribute these dislocations, like shifts in income shares, to trade, economists would need to know the counterfactual: how would economic history have played out under autarky?

So even international trade in goods is a two-edged sword. That is not to deny that the rapid and widespread devastation associated with financial crises overshadows the more gradual effects of changes that originate in the trade accounts. The potential destructive power of financial meltdown is also present, however, in a purely domestic context—that is, even in an economy completely closed to trade and capital movements.

Financial collapse can propagate more quickly and destructively, even in autarky, than more run-of-the-mill shocks to goods markets that do not impact the financial system significantly. The interesting question is how these intrinsic problems of financial markets are exacerbated (if indeed they are) once those markets are opened to the outside world. An answer to this question, in turn, requires an explanation of precisely how dollar markets in general differ from widget markets.

The basic differences relate to the intertemporal nature of financial trades and to the potential for asymmetric information to eliminate trade gains. Asset trade inherently involves commitment—the commitment to pay on a later date. Payment in reality is therefore always contingent, and the circumstances of contingency can depend on information known to only one party to the deal. Thus, financial transactions inherently must allow for the asymmetric-information distortions that we call moral hazard and adverse selection. These distortions

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account restrictions in the context of actual country advice is in Independent Evaluation Office (2005).

reduce the gains from asset trade that would otherwise be available—even with an efficient and impartial judicial enforcement system. As is well appreciated, government guarantees aimed at mitigating the redistributive effects of financial crises can, in fact, worsen moral hazard and raise the probability of eventual crises. Domestic financial systems evolve—and are regulated by governments—so as to contain the effects of these distortions.

Again, the difference compared to goods markets is a matter of degree. A consumer durable yields returns over time, it may be known to the seller to be a "lemon," yet an unconditional service contract may leave the owner with insufficient incentives to operate the durable good appropriately. But there is no doubt that commitment and informational problems are by far most severe, and have the widest systemic ramifications, in the financial market setting.

Every country faces the challenge of coping with the potential distortions in financial markets, and they do so through some combination of insurance, prudential policy, transparency requirements, and market discipline. Even leaving aside the international aspects of financial transactions, the ramifications of home-grown crises can be severe in terms of forgone GDP, and they can be so even for richer countries—witness the S&L crisis in the United States, the Nordic banking problems of 1987–91 following deregulation there, the drawn-out post-bubble sclerosis of Japan's banks, and the most recent credit event, the subprime crisis. Given the extent of financial globalization among industrial countries today, the days of purely domestic crises may well be over.[9]

Often financial crises have arisen in the aftermath of deregulation—typically the removal of financial-sector restrictions inherited from the Great Depression and World War

II, or, in developing countries, a move from the centralized allocation of savings to a more market-oriented system. In many cases, the particular mode of deregulation, driven in general by political imperatives rather than by a sound vision of financial sector optimality, induced additional moral hazards and abuses. Rapid financial innovation has also led to problems. There has clearly been a learning process in coping with changing financial structures and products, yet new versions of the misuse of other people's money (e.g., Enron or subprime products) emerge, and most likely always will. Most countries reckon that the advantage of a market-oriented system, even when subject to some political pressures, outweighs the inefficiency and blatant abuses that characterized centralized systems of credit allocation. The hope is that the safeguards to the system can gradually be enhanced as result of experience, while avoiding systemic meltdowns. In general, in most of the industrial countries, this approach did tolerably well for decades—though there were clearly recent areas of financial excess, such as the home equity and mortgage market in the United States in the 2000s, the background for the subprime crisis.[10]

So domestically, at least, financial markets raise perennial problems. Economists agree that to safeguard its own domestic health, every individual economy should do its best to make its own financial system immune to systemic crisis within a market framework. Of course, this approach might well entail allowing individual investors to lose and individual institutions to fail. But whereas modification of the financial regulatory framework is a perennial issue, there is little sentiment (as there was after the disruptions of the early 1930s) for an all-out assault on domestic finance. The money-lenders have returned to the Temple.

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[9]Fiscal cost estimates for past banking crises are tabulated by Ergungor and Thomson (2005). Fiscal costs are naturally far below total economic costs, including repercussions on the broader economy.

[10]For a recent general survey of financial stability issues, see Schinasi (2006).

What do *international* financial flows add to the mix? Here we see the second-best analysis of Lancaster and Lipsey (1956) in action. If the domestic financial system is distortion-ridden, then eliminating restrictions on foreign asset trade need not improve matters, and may well make them worse. This indeed was the case in Chile in the early 1980s, in Mexico in the mid-1990s, and in Asia later on in the same decade. There is no doubt that, given the existing distortions within the crisis countries' financial sectors, the mode in which financial opening played out—driven in many cases by internal politics and vested interests—only enhanced vulnerability.

There are at least five basic ways in which the international margin raises potential new problems:

1. Sovereignty. The potential involvement of two (or more) governments as implicit parties to international contracts (Tirole, 2002).
2. Regulatory end-run. International transactions can sometimes be used to evade domestic supervision.
3. Competitive forbearance. Domestic financial institutions can lobby politicians to loosen prudential restrictions that might reduce profitability compared to foreign institutions.
4. Currency mismatch. The potential for unbalanced currency positions—for example, dollar liabilities versus domestic-currency assets—creates a significant additional systemic risk.
5. Contagion. With international trade in assets, financial fears can be spread throughout a wider range of national financial systems, leading to aggravated multiplier effects on real economic activity.

The realization of potential net gains from international financial trade relies on containing the risks posed by these five factors. If the domestic financial system is not fairly sound on a stand-alone basis, the further channels for malfeasance and transmission provided by financial-account opening can magnify the potential for instability. And these channels, if not mitigated by international regulatory cooperation and other measures (such as sufficient exchange-rate flexibility), may pose new risks even for a sector that would be quite stable otherwise. Empirically, many crises have been provoked by the opening of unsound systems to capital flows—with the resulting levering-up of preexisting risks—although there are certainly cases (Japan is one example) where financial problems have had little or no connection to international financial flows.[11]

III. Some Crisis Mechanisms

The literature has identified numerous mechanisms that can lead to currency and financial crisis. For emerging markets in particular, there is a potentially explosive multidirectional interaction among the currency market, the government finances, the banking sector, and the corporate sector—one that goes beyond, but is closely related to, the threat of "twin" (banking plus currency) crises documented by Kaminsky and Reinhart (1999). Figure 5 provides a schematic.

Shaky government finances—some give the example of Argentina, 2001—can

[11] Some studies suggest that in many cases it is domestic financial liberalization that has been the main driver of lending booms and subsequent crises, with capital inflows playing a secondary supporting role. This perspective suggests a primary policy focus on the oversight and stress-testing of domestic financial intermediation. See, for example, Gourinchas, Valdés, and Landerretche (2001).

lead to a widening of government borrowing spreads to an extent that default becomes inevitable. In that case, with central-bank reserves drawn down through capital flight, the previously fixed currency is inevitably allowed to depreciate. Banks and corporates with foreign currency liabilities then are squeezed—and banks are squeezed even if they have lent foreign currency to domestic corporates that are themselves forced into default due to mismatched assets and liabilities. At the same time, government finances may be strained further by explicit or implicit bailout promises, and by the ultimate need to restructure the financial system. When the financial system is at an early stage of development and firm borrowing is heavily constrained by balance sheet considerations, currency depreciation can cause investment to crash, The problem can, at some level, begin anywhere in the chain, with for example, devaluation fears sparking bank withdrawals and financial distress as part of the stampede into the safety of foreign currency.

These mechanisms are distinct from the unique-equilibrium story proposed by Krugman (1979), where an unsustainable fiscal deficit leads to reserve loss, current-account deficit, real appreciation, and inevitable collapse, as in the Southern Cone experiences of the 1970s. Yet even those episodes contained some of the financial elements that have been the hallmarks of the so-called "21st century crises."[12]

Regardless of the mechanism, crises have been very costly. In a study focused on emerging markets from the mid-1970s through 1997, Hutchison and Noy (2005) find that a typical currency crisis reduces output by a cumulative 5 to 8 percent, whereas a typical banking crisis reduces output by a cumulative 10 to 13 percent. Their analysis also suggests

[12]IMF Managing Director Michel Camdessus characterized the 1994 Mexican crisis as "the first financial crisis of the twenty-first century." Boughton (2001) has suggested that the 1956 Suez crisis may really

that the cost of a twin crisis—banking plus currency—is additive in the costs of its components. Even so, these are big losses.[13]

An alternative view, however, is that crisis-prone countries have, on average and including crisis periods, grown faster than countries in which credit growth is smoother due to an absence of crises (Tornell and Westermann, 2005). The argument, essentially, is based on a model incorporating a strong risk-return tradeoff, where the risks are due to various financial market imperfections, including structural currency mismatch.

This discussion highlights that, whereas crises may sometimes be driven by expectations, their possibility presupposes some weakness in various "fundamentals" of the economy. These may be institutional fundamentals, such as the quality of bank supervision, the quality and transparency of corporate governance, the state of domestic financial development, and the reliability of enforcement of domestic property rights. Or they may be more traditional macro fundamentals, such as a competitive real exchange rate and a sustainable trajectory for public debt, the level of liquid international reserves, and the term and currency composition of external debt. In principle, addressing these weaknesses can improve the economy's risk-return tradeoff, allowing a combination of higher growth and lower volatility.

At a global level there has been an explosion in gross foreign asset positions in recent years. The averages, which are evident in the well-known data of Lane and Milesi-Ferretti (2007), conceal the fact that for some countries—smaller countries and major financial

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be the first twenty-first century crisis. On different grounds one might well identify the 1890 Baring Crisis as the first twenty-first century crisis.

[13]Joyce and Nabar (2008) argue on empirical grounds that sudden stops affect investment only when they coincide with banking-system crises, and that openness to capital flows accentuates the negative investment effect of banking crises. Edwards (2007) finds no evidence that countries with higher capital mobility face an

centers—gross foreign assets and liabilities now stand at three or four times GDP. The rapid expansion of gross asset positions, far beyond the minimum asset trade that would be needed to settle current account imbalances, is certainly driven in part by enhanced risk sharing between countries. But it certainly also reflects transactions that, while they do not create additional trade in underlying economic risks, do raise the risk of counterparty failure. Since leveraged international portfolios generally are not balanced in currency terms—for example, the United States borrows overwhelmingly in dollars, but balances its foreign assets more evenly among dollars and other currencies—exchange rate changes have the potential to redistribute large sums internationally in seconds.

Even among richer countries that have addressed some of the most serious domestic financial-sector problems and have flexible exchange rates, private financial flows have led to instability. As always, the precise source of the next crisis is usually not evident except with hindsight. One ongoing cause for current concern has been the proliferation in international financial markets of unregulated nonbank actors managing huge portfolios. The turbulence surrounding the Long-Term Capital Management rescue late in 1998 is one example; a more recent one is the contagious spread of U.S. subprime mortgage lending concerns starting in the summer of 2007. The policy response has been to seek ways of addressing specific financial-market distortions (such as the difficulty in pricing certain derivatives), rather than to shut down or tax cross-border financial flows. Notwithstanding recent events, most observers conclude from industrial-country experience that there is at least the potential for creating an environment within which trade in financial assets can yield net welfare gains.

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increased risk or incidence of crisis, but concludes that crises tend to reduce economic growth more in countries that are more open financially.

Outside of a few exceptional cases, these generalizations do not yet apply, however, to a majority of developing countries, which have suffered quite harshly in financial crises.

External financial deepening does not yet extend to most of the developing world, with a few emerging exceptions, of which Chile is one of the most notable. Chile has, however, learned from its troubled past, and both institutional reform and a flexible exchange rate regime have contributed to its apparent ability to engage relatively safely in world capital markets (Cowan and De Gregorio, 2007). Other of the poorer countries have not yet reached this stage, and still face difficulties in finding a comfortable reconciliation of open capital markets with the exchange rate regime, as is discussed further below.

Institutional weakness not only can lead to crises in developing countries; even short of crises, such weakness may severely limit the gains from international asset trade. Stulz (2005) presents a clear account of one set of mechanisms, based on imperfect protection of equity investors, coupled with the possibility that the state expropriates firm profits. If corporate insiders can secretly appropriate benefits from running a firm, benefits that naturally reduce the dividends of outside shareholders, then insiders will have to put up a substantial equity stake in the firm to align their incentive to receive dividends with those of the outsiders. The result will be a concentration of firm ownership that limits the beneficial effects on the firm of financial globalization, and simultaneously limits the economy's ability to benefit from international risk-sharing opportunities. For example, even if financial globalization brings a fall in the cost of capital, the agency problem may limit the firm's investment response.

Stulz argues that if government predation is also a problem, fewer firms will be created and the concentration of ownership will be magnified. Because insiders have a greater

incentive to adopt opaque practices and entrench themselves, they can appropriate private rents more easily, and will have to co-invest more in equilibrium. Firm managers may take on excessive short-term debt, hoping that government fear of financial crisis will deter over-zealous predation or other interference. Foreign shareholders may be especially vulnerable to expropriation by the government. So it is not surprising that a weak rule of law and unreliable protection of property rights can limit the gains from financial opening. Of course, some of the mechanisms discussed here—for example, any propensity to take on additional leverage, especially of short maturity—also accentuate the risk of crises.

IV. Empirical Evidence on the Effects of Financial Opening

What do the data tell us about the gains developing countries might reap from financial globalization? There is an extensive literature trying to assess the gains from financial globalization, both at the macro level and at the level of firms. Several comprehensive studies—among them Eichengreen (2001), Prasad and others (2003), Collins (2004), Obstfeld and Taylor (2004), Bosworth (2005), Kose and others (2006), Henry (2007), and Prasad and Rajan (2008)—survey the empirical gains to emerging markets from financial liberalization. Theoretically, there are some major *direct* channels through which financial opening could benefit countries that pursue it.

One theoretical channel of gain is improved risk sharing. In principle, countries can use equity or derivatives markets to trade the risks of income fluctuations with foreigners. This risk-sharing process, in principle, could reduce the level of consumption relative to output volatility.

There is no reliable evidence that such volatility reductions have occurred in developing countries as a result of external financial liberalization. Prasad and others (2003) examine the trends in income and consumption volatility for groups of industrial, more financially integrated (MFI), and less financially integrated (LFI) economies. For each group, they focus on median volatility. They find that between the 1980s and 1990s, when much liberalization occurred, consumption-growth volatility fell in the industrial and LFI economies, but actually rose in the MFI countries. Income-growth volatility fell in all three groups, though less noticeably for the MFI group. An implication is that for the MFI countries, consumption relative to income volatility rose—and it did so sharply. This outcome seems to flatly contradict the prediction that external financial opening should allow countries better to smooth consumption across states of nature. The end of the 1990s is responsible for higher consumption as well as income volatility for the MFI countries, suggesting that the crises of that period—as well as the consumption booms sometimes preceding them—play a role in explaining the findings.

A more formal econometric approach to assessing how liberalization affects volatility is taken by Bekaert, Harvey, and Lundblad (2006). Theirs is an exhaustive multi-country panel study of the effects of equity market liberalization and more general capital-account opening on aggregate volatility, especially the volatility of consumption growth. In a very detailed paper, the authors link consumption-growth volatility over five-year windows to official liberalization indicators, a measure of liberalization intensity based on the ratio of investable to total equity market capitalization, and measures of capital-account openness. The pervasive sense from the empirical estimates is that in a 90-country sample including industrial countries that were already liberalized throughout the entire 1980–2000 sample,

equity-market liberalization has a significantly negative relationship to volatility. In the restricted sample of 40 (mostly) developing countries that liberalized within the sample period, the apparent volatility-reduction effect of equity-market liberalization, while often present, tends to be much smaller and statistically insignificant. The results generally are weaker for more general capital-account opening measures. The authors' estimating equations incorporate traditional control variables of the type typically included in the cross-country economic growth literature (such as human capital measures), as well as measures of macro-policy quality and institutional quality (which often themselves are estimated to reduce consumption growth volatility, or to enhance the beneficial effect of liberalization).

An obvious suspicion is that the results are driven by one basic empirical fact: consumption-growth volatility was much lower in the richer countries that have been mostly financially open over the entire sample period. Further, it is doubtful that the chosen regressors fully explain macro volatility. Thus, when one restricts the cross-sectional coverage to a sample of developing countries, the liberalization effect, which may simply reflect the lower volatility in richer countries, disappears. Bekaert, Harvey, and Lundblad (2006) try to address this critique by adding fixed effects to their specification, but it is unclear that this dispels the concerns about identification of the volatility-reducing role of liberalization.[14] On the other hand, the study finds no evidence to support the contention that financial opening, on average, *raises* volatility, even for the emerging-market sample.

A further difficulty in this work is the seeming use of consumption data that are not adjusted to reflect deviations from purchasing power parity. Because there have been huge

[14]Consistent with these concerns is the finding of Kose, Prasad, and Terrones (2007) that emerging markets have not benefited much from enhanced opportunities to share consumption risks. Also consistent is the

real exchange rate fluctuations, particularly in crisis situations, the welfare significance of the results is open to question. However, the consumption-smoothing channel is only one of the theoretical mechanisms through which international asset trade could benefit developing countries.

A second major channel proposed for understanding developing countries' benefits from capital inflow is the alleviation of capital scarcity. This effect may work by lowering the cost of capital and, perhaps transitionally, adding to the rate of economic growth. More generally, there could be other reasons for financial opening to enhance economic growth, and there is a substantial literature that searches for such effects.

One strand of empirical literature on trade gains is the study by Gourinchas and Jeanne (2006), who show that the gains to developing countries from borrowing abroad to attain their steady-state capital stocks are very low. The basic problem is that the polities of the poorer countries generally offer such low protection of property rights that steady-state capital stocks are themselves low. There is no great incentive to invest, and thus no great incentive for capital inflow from richer lenders. Caselli and Feyrer (2007) claim that once one accounts for factors besides capital and labor, as well as for the generally higher prices of capital goods in terms of consumption goods in poorer countries, marginal returns on physical investment do not diverge greatly as between rich and poor countries. They argue that the Lucas (1990) "paradox" of small capital flows to poor countries, notwithstanding apparently big differences in marginal products of capital, arises from goods-market rather than from financial-market frictions. If so, further financial opening would have little impact on investment in poorer countries. Intriguingly, Estevadeordal and Taylor (2008) tie growth-enhancing effects of post-

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cross-sectional finding of Klein and Olivei (2008) that any positive effect of financial openness on financial

1970 trade liberalizations primarily to reductions in tariffs on imported capital goods. An interesting question is whether these tariff reductions have affected growth in part by attracting capital from abroad.[15]

Prasad, Rajan, and Subramanian (2006) emphasize that over the 2000s, capital has tended to flow from poor to rich countries, rather than from rich to poor as theory might lead one to expect. This compounds the Lucas (1990) puzzle. Only FDI seems to follow the conventional pattern of traveling from rich to poor countries (and there is more FDI these days from richer to poorer within the developing country group). Prasad, Rajan, and Subramanian show further that growth is significantly positively correlated with the net capital *outflow* (current account surplus) for nonindustrial countries, whereas the opposite correlation prevails for industrial countries – only for the richer group does greater net use of foreign capital appear to be associated with higher growth. Aizenman, Pinto, and Radziwill (2007) reach similar conclusions. Prasad, Rajan, and Subramanian (2007) argue that foreign capital inflows can lead to growth-reducing overvaluations, as well as to financial instability when an underdeveloped financial sector lacks the ability to safely funnel foreign capital to productive domestic uses. They put their basic finding as follows (Prasad, Rajan, and Subramanian 2007, p. 205):

> Our analysis makes it clear that nonindustrial countries that have relied on foreign capital have not grown faster than those that have not. Indeed, taken at

depth and growth applies mainly to longstanding OECD countries.

[15]In evaluating cross-country differences in returns to capital, more work at the micro level, such as Minhas' (1963) study, would be illuminating.

face value, there is a growth premium associated with these countries *not* relying on foreign finance.

Indeed, in a recent study, Gourinchas and Jeanne (2007) point out that such capital as does flow to developing countries tends, on net, to flow perversely, to the relatively low-productivity locales. The general problem is that greater beneficial effects of inflows presuppose a level of domestic reform that, if it exists at all, is too recent to be reflected strongly in the historical record to date. Even in a framework like that of Gourinchas and Jeanne (2006), capital inflows will yield sizable benefits if preceded by reforms that raise the desired level of investment and capital (Obstfeld and Taylor, 2004). But financial opening, introduced without the requisite reforms, can be damaging, as we have seen.

Even though developing countries as a group have been in substantial current account surplus in recent years, it is still possible that there are gains from the swapping of different assets on a *gross* basis. For example, the benefits of inward FDI may spur growth through various spillovers, while the current account surplus allows the luxury of rapid reserve accumulation and the resulting liquidity insurance. But an evaluation of such possibilities requires a more formal, statistical approach to the data on developing-country performance.

What is the econometric evidence on financial opening, growth, and investment? Researchers have pursued a variety of empirical approaches.

One of the most popular has been the cross-sectional approach, which builds directly on the copious growth-regression literature. Typically studies investigate empirical regressions of long-period average growth on theoretical determinants, including variables measuring the extent of capital-account openness. From the many studies that have been

conducted, one gleans the conclusion that there is no robust cross-sectional relationship between liberalization and growth; see Prasad and others (2003, table 3.2) for a summary of extant research. A fairly typical cross-section study finding no effects is the widely cited one by Edisonand others (2002).

A problem in interpreting the findings of this literature, however, is the absence of a clearly specified theoretical framework within which openness will affect growth. In a recent survey, Henry (2007) presents a persuasive critique of the cross-section approach. To take an example from his paper, assume a standard Solow growth model in which long-term growth is determined by an exogenous rate of total factor productivity (TFP) growth, whereas in the transition to a steady state, growth will also reflect capital deepening. Assume also that rich countries have fully open capital accounts over the sample period, while poorer countries have initially closed capital accounts but open up at some point in the period. One frequently used measure of financial openness is the variable *SHARE*, measuring the fraction of years in the period for which the capital account is open according to some dichotomization of the IMF's AREAER measure. The assumptions in Henry's example mean that $SHARE < 1$ for poor countries, $SHARE = 1$ for rich countries.

If all countries are initially in steady state, then the financial opening that the poorer countries carry out in the sample period induces a capital movement from rich to poor. Transitionally, this shift in capital will reduce growth in rich countries and raise it in poor countries. But notice the implication: cross-sectionally, growth is *negatively* correlated with *SHARE*. This negative correlation is found despite the fact that, in the model, capital moves from rich to poor countries as a result of the poor countries' opening, raising per capita output growth in the poor countries just as the neoclassical paradigm predicts. Examples such as this

one call into question the usefulness of the cross-sectional approach to testing the growth effects of financial opening. It would make more sense to look econometrically for an effect of the *change* in *SHARE* on the *change* in per capita output growth.[16] It is worth noting that Henry's (2007) critique applies beyond the Solow model to at least some endogenous growth models, such as the one used in Obstfeld (1999) to analyze the growth effects of a foreign resource inflow.

Alternatively, once could reasonably investigate the effect of the level of financial openness on the level of per capita GDP, in line with the approach recommended by Hall and Jones (1999). The implied relationship between the *change* in per capita GDP and the *change* in financial openness—equivalently, between growth and the change in financial openness—would remove unobservable country fixed effects from the specification.

A different approach exploits more fully the temporal dimension in the data, linking financial opening to subsequent economic changes. Such approaches allow one to address the point made by both Hall and Jones (1999) and Henry (2007) that the growth effects of policy changes may be temporary. Henry has extensively explored the event-study approach to financial liberalization. In a series of papers, he finds that equity-market liberalization leads to substantial equity-market appreciation and an implied fall in the cost of capital (Henry, 2000a), to a large increase in the growth rate of private investment (Henry, 2000b), and to an increase in the growth rate of the capital stock (Henry, 2003). Other researchers have found similar effects, although there have also been challenges and refinements.

[16]For a discussion of similar issues in cross-sectional tests of the trade-growth link, and a proposed alternative approach, see Estevadeordal and Taylor (2008). The interpretation of pure cross-section tests becomes even murkier if the underlying growth regression specification includes the investment rate as a regressor, as often is the case, although Henry's basic point still holds true. By controlling for the investment rate, the econometrician forecloses an estimated effect of financial opening on growth through the capital-deepening channel.

Regarding output growth per se, Bekaert, Harvey, and Lundblad (2005) estimate (using a 1980–97 data panel) that, post equity-market opening, the growth rate of real per capita output rises by 1 percent per year on average in the following five years. Once again, their methodology is to add liberalization indicators to a dynamic but otherwise standard growth-regression specification, though they perform substantial further robustness exercises. Importantly, Bekaert, Harvey, and Lundblad also find that the positive effect on growth is largest when the quality of institutions and the level of financial development are high. However, their benchmark country sample is a broad one, including industrial countries. When analysis is restricted to a sample of 40 (mostly) emerging markets, the effect of equity-market liberalization on growth proves robust, but the effect of Quinn's (2003) measure of capital-account openness, which is positive and significant in a broad sample of countries, becomes insignificant. An interesting question, returned to below, is the nature of the forces that might generate such a large estimated increment to GDP growth following equity-market liberalization.

These results are striking, but there are a number of pitfalls in interpreting them. One is simply that the methodology often requires a precise stand on the date of liberalization. That decision may be tricky, in part due to the distinction between de facto and de jure situations. A second major issue is endogeneity. Countries may liberalize when growth prospects turn favorable, or when future macro volatility is expected to be low. In addition, liberalization may be spurred by political factors that simultaneously spur additional reforms, be they of policies or institutions. Thus, Henry (2007) suggests that the extremely large growth effect found by Bekaert, Harvey, and Lundblad (2005) cannot be accounted for quantitatively unless equity-market opening is accompanied by an increase in TFP growth.

Various controls can be introduced in an attempt to correct for some of the policy reforms that might accompany opening, and in some instances these somewhat reduce the measured liberalization effect. However, it is always questionable whether the control variables adequately capture the nature of the economic reforms, so the endogeneity issue remains. This endogeneity critique is perhaps *the* major reason for being skeptical of *all* the econometric work suggesting that financial opening, in and of itself, spurs more rapid aggregate economic growth (or reduces macroeconomic volatility).

In some cases, *microeconomic*, firm-level data may be useful in circumventing some of the endogeneity problems that plague the more aggregative studies.[17] For example, suppose the reforms that accompany liberalization affect all firms in a sample similarly, yet liberalization's effects are concentrated in a subset of the firms. In that case, a comparison of firm performance across the treatment and control groups allows identification of the effect of liberalization. Of course, this conceptual identification framework is valid in theory, but the strong maintained assumptions it requires may make it difficult to implement in practice.

Henry (2007) and Kose and others (2006) survey the recent micro-level literature, but a discussion of two selected studies illustrates the flavor of the results that have been obtained.

Mitton (2006) draws on a sample of 1,141 firms from 28 countries to examine the effect of equity liberalization. The major innovation is to use firm-specific dates on which individual firms' shares become eligible for purchase by foreign investors. This approach largely eliminates the concern that liberalization is jointly determined with aggregate economic reforms or with expectations of good aggregate economic performance—although

the concern that expectations of strong future *firm* performance determines the firm-specific liberalization date remains. Mitton attempts to control for this problem in various ways. Even after doing so, he concludes that equity liberalization has a positive and large effect on firm performance across five dimensions: real sales growth, investment, profitability, efficiency (ratio of real sales to work force), and leverage.

Chari and Henry (2004) study a data sample of 430 firms from eight countries, finding an average 15 percent firm-level equity appreciation (in real dollar terms) following liberalization. They are able to tie about a third of this appreciation to a factor suggested by the capital asset pricing model (CAPM), the covariance of firm-level equity returns with those on a broader market portfolio. Before liberalization, a firm's equity price depends on the covariance of its return with the local stock market. After, it depends on the lower covariance with the world stock market. Thus, it is possible to identify a firm-specific effect of equity-market liberalization on the cost of capital.

V. The Key Importance of the Structural Setting

I noted above the finding of Bekaert, Harvey, and Lundblad (2005) that the positive effect of liberalization on growth is largest when the quality of institutions and the level of financial development are high. In another study, Alfaro and others (2004) find that FDI has a stronger growth-promoting effect when the local financial sector is better developed. The literature examining such hypotheses more generally is somewhat fragmentary, but it suggests the importance of certain structural preconditions in order that financial inflows have the maximal

[17]Harrison and Rodríguez-Clare (2007) call for further micro studies to resolve questions about the

beneficial effect on an emerging market economy.[18] This conclusion seems plausible in light of the anecdotal evidence on emerging-market crises and the literature on institutions and growth. Indeed, there is some evidence that the institutional and regulatory setting is important even for reaping the benefits of opening to merchandise trade (Bolaky and Freund, 2004).[19]

Mishkin (2006) has provided an accessible overview and interpretation of recent emerging-market crises that places at center-stage the way in which faulty institutional underpinnings have distorted the effects of capital inflows from abroad and led to economic instability.[20] (Of course, some of these factors were present in much earlier crises, and were noted at the time by perceptive commentators such as Díaz Alejandro and McKinnon. The events of the 1990s should not have come as a surprise.)

In the Republic of Korea prior to its 1997–98 crises, the fundamental institutional distortion was the political power of financially shaky chaebols, which effectively manipulated the financial system to obtain access to cheap foreign funding. Moral hazard—a government bailout mentality—was pervasive. The financial fragility was compounded by the government's decision, earlier in the 1990s, to open the economy to short-term but not long-term foreign borrowing.

In Argentina prior to its 2001–02 crisis, the structural economic problems included an inflexible labor market; fiscal imbalance (in part due to the spending autonomy of provincial

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effects of trade openness on growth.

[18]Klein's (2008) results, which show a positive impact of liberalization on growth only after a critical initial income threshold has been passed (but not for high-income capital-rich countries), could be interpreted as pointing in this direction. See also Arteta, Eichengreen, and Wyplosz (2003) and Klein and Olivei (2008).

[19]A finding in the theoretical literature is that open economies might be most susceptible to financial instability at intermediate levels of financial development. See, for example, Aghion, Bacchetta, and Banerjee (2004).

[20]See also the case studies included in Ishii and others (2002), as well as Mishkin (2008).

governments); a regulatory structure for the banks that did not adequately account for the losses they would incur in the event that the peso's fixed dollar exchange rate collapsed; and, eventually, changes in bank regulations designed to induce banks to hold more government debt. The Argentine "convertibility" scheme for anchoring the peso to parity with the dollar threw up an eventually damaging paradox: How can a government require institutions to avoid currency mismatches when it adheres to the position that its currency and the dollar are irrevocably linked as a matter of law? The refusal to think about the unthinkable eventually had severe consequences.

Kose and others (2006) usefully delineate four sets of structural features of an economy that can affect the level of benefits countries reap from financial inflows: financial-sector development and regulation, general institutional quality, the macro policy setting, and the degree of openness to trade. They present a detailed discussion of the empirical evidence on each of these structural factors, both econometric and anecdotal.

We have already seen how distortions in the financial system have historically helped give rise to financial crises. Lax supervision of financial markets may allow currency, term, or risk-category mismatches that can render banks and other actors insolvent in the event of a crisis. Moreover, in an international environment, regulators should conduct a comprehensive "value at risk" analysis for all the economy's interlinked sectors, as stressed by Dornbusch (2002). Consider an emerging-market bank that notionally has matched currency positions on its books, because its dollar liabilities are matched by dollar lending to domestic corporates. If those corporates, however, have revenue streams denominated in won and that currency falls sharply against the dollar, the corporates' loans from the banks may go into default, throwing the banks themselves into crisis. In this case, the currency risk taken on by the corporates—

perhaps so they can enjoy lower dollar interest rates—is passed back to the banks in the form of credit risk. The regulatory framework must take a comprehensive view of the risks and ensure that moral hazard due to an expected bailout by the government does not give banks the wrong incentives when making loans.

Financial-sector development matters in other ways. Resources borrowed from abroad may not be channeled to efficient uses if financial institutions are weak, and in this case the likelihood of eventual default will be higher. Illiquid domestic financial markets will also be less able to provide interim funding for investment projects that would be profitable long-term if credit were available. In principle, equity inflows to an emerging market are less likely to be destabilizing than debt inflows, because required payments to foreign shareholders are contingent on firm outcomes. The share of equity in total inflows, however, is likely to be higher if the degree of shareholder protection—which also encourages domestic equity holding—is high.

Various institutions also matter for the effects of financial inflows. These include institutions that guarantee protection of property rights, political stability, judicial effectiveness and impartiality, low corruption, and high corporate governance standards. A number of empirical studies indicate that better institutions lead to a higher proportion of equity investment relative to debt in financial inflows (especially of FDI, which may entail positive spillovers to the economy through technology transfer and learning-by-doing effects). Weak institutions also reduce the overall level of private financial inflows to an economy.

The framework for macroeconomic policy is also important, and I return to it later on. The case of Argentina indicates how fiscal imprudence can generate unstable government debt dynamics, in which government borrowing rates rise to reflect higher default

probabilities, inducing further borrowing, further rate rises, and eventual crisis. Institutions to limit fiscal excess, including strictly circumscribed bailout promises, restrictions on subnational governments, and legislated fiscal limits and transparency (as in Brazil's 2000 fiscal transparency law; see Singh and others 2005) can all contribute to the stability of capital flows.

The exchange-rate regime is a key aspect of the policy environment. Most emerging-market financial crises have occurred in setting of fixed, or inflexibly managed, exchange rates. A key tenet of macroeconomic policymaking, the open-economy trilemma, holds that no country can simultaneously enjoy all three of the following: free capital mobility, a fixed exchange rate, and a monetary policy directed toward domestic goals (such as an inflation target). Countries that have attempted to maintain a rigidly fixed currency, such as Argentina in its 1991–2001 decade of legislated convertibility, have faced harsh tradeoffs in sacrificing a monetary policy that might help combat unemployment, external imbalances, and real appreciation of the currency due to internal inflationary pressures. Even China, which maintains capital controls, faces such a situation now. Moreover, market participants may pay inadequate attention to the risks of an exchange-rate collapse, relying on the government either to provide forward cover (as the Thai central bank did, at considerable fiscal cost, in 1997) or to mount a defense of the parity long enough that short-term funds can be withdrawn or repaid. Adjustment of a current account deficit is always more problematic under a fixed rate. For these reasons, it seems likely that a flexible exchange rate rather than a fixed one is more likely to enhance the benefits from financial globalization. Exchange-rate volatility in itself could conceivably be costly to growth, but Aghion and others (2006) find that this effect seems to operate only for countries at low levels of financial development, which tend to have

closed capital accounts. For more financially advanced developing countries, there is little obvious association between the flexibility of the exchange rate regime and growth (or standard measures of financial development), but exchange rate pegging does seem to raise the probability of a crisis; see, for example, Husain, Mody, and Rogoff (2004). Once the capital account is open and the exchange rate is flexible, though, countries face the problem of possibly unwelcome currency appreciations, and the associated external deficits and compression of exports. The real exchange rate movements pose less of a crisis threat than under a pegged nominal exchange rate, but, at the same time, may develop much more quickly. Ad hoc capital inflow controls, although possibly useful for prudential purposes if appropriately structured, may not help much in mitigating such currency pressures when they arise. A fiscal-policy response can be more effective, albeit more cumbersome to enact in the short run.

Central bank independence may contribute to financial stability. Prohibitions on central bank financing of fiscal deficits can help to anchor inflation expectations. Moreover, a history of inflationary instability is a prime contributor to the dollarization of liabilities, a factor that makes it more difficult to operate a floating exchange rate, even a managed float. Thus, institutional changes that help stabilize inflation expectations (central bank independence, but also fiscal controls) can help make exchange rate flexibility feasible.

Policies that affect the maturity of external debt, if feasible and effective, can potentially reduce financial instability. With longer maturity borrowing, of course, repayment of principal is deferred, hopefully until after a crisis passes. A famous instance of a policy working in this direction was Chile's *encaje*, the two-year unremunerated reserve requirement on financial inflows, which acted as a tax falling most heavily on *short-term* inflows. Its long-

term efficacy has, however, been debated. It is certainly true that policies that promote short maturities (recall the South Korean example) can be disastrous.

The extent of rigidity in markets, especially in the labor market, can also be critical. An excessively high regulatory burden can hamper the movement of factors between sectors of the economy, in turn impeding the allocation of capital to its most productive uses. An inflexible labor market, in particular in the presence of a rigid nominal exchange rate, can make the economy especially vulnerable to volatile bidirectional capital flows.

Finally, consider trade openness. This structural feature of an economy may facilitate financial stability through diverse channels. For example, greater openness to trade might foster competition in product markets, reducing the political power of entrenched interests that were previously able to lobby successfully for policies favorable to themselves, but otherwise harmful to the economy. Greater openness also reduces the vulnerability to a "sudden stop" in foreign lending (Calvo, 1998), in the sense that the required real exchange rate adjustment will be smaller, as will be the knock-on financial effects of that relative price change on balance sheets and the income distribution. Frankel and Cavallo (2004) provide some empirical support. Martin and Rey (2006) provide a model in which, for given costs of international asset trade, higher barriers to merchandise trade make a financial-market crash more likely.

To the extent that trade openness itself promotes economic growth, a host of adjustment issues that might alarm the financial markets can be mitigated. Any necessary resource movement between sectors of the economy becomes less painful when growth is more rapid, because there is less need for absolute employment reductions in relatively shrinking sectors.

Often the four structural categories identified by Kose and others (2006) intersect. For example, bailout guarantees, while promoting moral hazard, also can reduce the credibility of commitments to maintain a prudent fiscal stance.

Of course, inferring causality from the empirical associations is perilous. For example, fiscal rectitude, labor market flexibility, and trade openness typically reflect endogenous government policies, which can be driven by "deeper" political factors that, in themselves, make the economy better able to live productively with an open financial account. It is hard to believe, however, that a favorable configuration of conventional fundamentals will not make an independent contribution to financial stability.

VI. Endogeneity of Institutions

Must external financial opening therefore await thoroughgoing structural reform? Kose and others (2006) present a detailed case that the answer is no, on the grounds that liberalization itself will promote a structural evolution that enhances the beneficial effects of liberalization while reducing the likelihood of negative effects. In their view, financial opening can lead to improvements in financial sector development, the quality of institutions, and in macro policies. These "collateral benefits," at least over the longer term, enhance the net benefits that even an emerging country wins from financial opening. They will also, in and of themselves, promote investment and growth. The IMF's Independent Evaluation Office (2005) seems also to lean toward this view.

The hard empirical evidence is, however, sketchy. Kose and others document a simple positive correlation between measures of financial development, measures of institutional

quality, inflation control, and de facto financial openness. Unfortunately, as the authors acknowledge, these correlations leave open the possibility that it is high levels of structural quality that encourage de facto openness.

Attempts at structural estimation are, for the moment, few. One study is that of Chinn and Ito (2005), who present a panel analysis, 1980–2000, for 108 countries. They find that, once a critical threshold of "legal and institutional development" (measures taken from the International Country Risk Guide and other sources) has been reached, further progress in that dimension directly fosters the development of equity markets, and also interacts positively with financial openness to promote equity-market growth. Development of the banking sector, they find, is a precondition for equity-market development. In another study, Tytell and Wei (2004) find a disciplining effect of financial openness on monetary policy (but not on fiscal policy). There is some supportive anecdotal evidence as well, Brazil's experience under President Lula da Silva being a case in point.

Kose, Prasad, and Terrones (2008) look directly at the correlation between financial openness and the TFP growth rate using 1966–2005 data on a large panel of countries. Breaking the data up into nonoverlapping 10-year averages and using lagged regressors as instruments to address potential endogeneity concerns, they find that, even when the sample is restricted to nonindustrial countries, de jure financial openness has an economically and statistically significant positive impact on the growth rate of TFP. They also find a tendency for external FDI and portfolio equity liabilities to raise TFP growth, but for external debt liabilities to lower it. The authors' regression specifications relate TFP growth linearly to country fixed effects, initial TFP, trade openness, the terms of trade change, population

growth, private sector credit growth, a measure of institutional quality, and de jure and de facto indicators of financial openness.

Because what Hall and Jones (1999) refer to as "social infrastructure" appears closely related to TFP, one could interpret these findings as indirect support for the theory that financial openness enhances the institutional environment. However, the results of the Kose-Prasad-Terrones study raise a number of questions. Why is the estimated positive effect of capital-account openness on TFP growth apparently so strong when a positive effect on output growth has been found to be so elusive? What happens when some of the standard determinants of output growth such as human capital are added to the regression specifications? Why is the measured effect of de jure financial openness found to be so much larger (two to three times as big) in instrumental variable compared to OLS estimates? Aside from a convergence term, why does *nothing* but capital-account openness seem to matter consistently for TFP growth in developing countries? Finally, through what channels is TFP affected by financial openness? The estimates are intriguing but, as Kose, Prasad, and Terrones (2008) observe, they raise a host of further research questions.

Even if direct empirical support for an effect of financial openness on institutions is scant, there are some plausible and even persuasive theoretical arguments. For example, the analysis of Rajan and Zingales (2003) suggests that financial opening may promote competition and thereby weaken the power of obstructive incumbents to block reforms that are counter to their interests. Emerging-market firms that list on industrial-country stock exchanges may be forced to import higher governance standards. Once a country or firm becomes dependent on international investors, it may be more amenable to their demands for better governance and transparency. Foreign financial actors (such as foreign banks) may,

through a competitive effect, promote the spread of more efficient and prudent practices; see the studies surveyed by Mishkin (2008) and by Prasad and Rajan (2008). Governments that see themselves as dependent on foreign finance may hesitate before embarking on excessively expansionary or populist policies (at least when the next election is sufficiently distant).

Stulz (2005) suggests that the fall in the cost of capital and the expanded financial opportunities attendant upon financial opening make it more attractive for entrepreneurs to lobby the government for measures that increase shareholder protection. These measures, if implemented, can make it easier for firms to reap the gains from financial trade. He further argues that financial opening can restrain the predation of the state and hasten institutional reforms, because crises will be more probable otherwise:

> [F]inancial globalization reduces the ability of those in control of the state to extract rents. If they attempt to do so, resident investors can put their money elsewhere, foreign investors can go home, and local firms will become uncompetitive. From this perspective, it is not surprising that financial crises will sometimes occur in those countries in which investor protection is weak and respect for property rights suspect.
>
> Rather than viewing financial crises as the downside of financial globalization, this view suggests that the possibility of such crises is intrinsic to the benefits from financial globalization. Free capital flows make it harder for the state to expropriate investors because it gives investors an exit. (Stulz 2005, p. 1633)

Some potentially contrary evidence is beginning to emerge, however. For example, Gozzi, Levine, and Schmukler (2008) use a large multi-country, multi-firm, time-series data set to study the behavior of Tobin's *q* before, during, and after years in which emerging market firms first "internationalize" by drawing on foreign equity. They find that on average, *q* rises in the year before and the year of internationalization, but returns to its prior level the year after as corporate assets and debt rise. The authors interpret the absence of a permanent increase in *q* as evidence that firms do not "bond" themselves to a higher level of corporate governance simply by internationalizing. This result, they argue, is in line with other recent evidence throwing doubt on the "bonding" hypothesis.

In light of the meager empirical evidence, one must hesitate to jump to the tempting policy conclusion that, if only the capital account is opened, all will eventually work out for the best. Some sequencing clearly is called for (as indicated by a classic literature), with greater trade-account openness, a reliably good degree of macro stability, an effective regulatory framework, and a viable and robust exchange-rate arrangement (to be discussed in the next section) as minimal prerequisites for successful financial opening. For countries not already open, a phased approach is prudent. First the economy is opened to FDI. The available evidence suggests that FDI flows have the biggest positive effect on domestic investment and growth (for example, Borensztein, De Gregorio, and Lee, 1998; and Bosworth and Collins, 1999). Next come portfolio equity flows consistent with the development of local financial markets, and only later, longer-term debt-creating flows. The liberalization of short-maturity flows comes last. Steps that might promote the development of a market in local-currency bonds (also to be discussed in the next section) should be taken in preparation for the

later stages of opening. These precepts are generally consistent with the approach described by Ishii and others (2002) .

VII. The Macro-Monetary Framework

I have alluded at a couple of points above to the importance of the exchange rate system. Indeed, a distinct argument in favor of capital controls is a pure "macro" argument not directly motivated by issues of financial stability. Through capital controls, a country can simultaneously attain exchange rate *and* domestic monetary policy targets. Thus, controls offer one way to address the open-economy monetary policy trilemma.

Clearly the revealed preference of the main industrial regions has been to embrace open capital markets along with whatever gains they bring, and to trade away exchange rate stability in favor of a monetary policy oriented toward domestic objectives. It is not clear that the alternative of capital controls would even be feasible for the industrial countries, given the extent of domestic financial development and the growth of world trade—even in the early 1970s industrial-country capital controls were all but impossible to enforce. Interestingly, the preceding pattern seems to hold also in emerging markets—greater exchange rate flexibility, financial sector reform, fiscal and monetary frameworks conducive to moderate and stable inflation—but as Fischer (2003) observes, no generalized retreat from open capital markets (and this in the absence of the type of foreign pressures for financial opening seen in the 1990s). Some countries, such as Korea, have further liberalized their capital accounts since the Asian crisis, while also working hard to improve domestic financial stability (Noland 2007).

The pattern is not universal, of course. As its convertibility plan was unraveling in December 2001, Argentina imposed temporary capital outflow controls (Dominguez and Tesar, 2007). In December 2006 Thailand imposed an unremunerated reserve requirement on capital inflows in order to limit baht appreciation. (The idea was similar to one that Chile had used earlier, as is discussed below.) The stock market immediately fell by 15 percent, and next day the government removed the reserve requirement as it applied to equity investments. Indonesia, Korea, and Malaysia, all previous users of controls, saw their own equity markets fall along with Bangkok's, and chose publicly to rule out the use of restrictions similar to Thailand's.[21] The baht continued to appreciate against the U.S. dollar through early 2008. In May 2007 Colombia imposed a 40 percent, six-month, unremunerated reserve requirement on portfolio investment inflows. The effect, if any, in limiting the peso's appreciation is unclear. Recent inflow controls such as those attempted by Thailand and Colombia do not reflect so much a retreat from financial integration or even an adjunct to prudential financial supervision, as an attempt to counteract capital-account driven short-term exchange-rate pressures that reduce competitiveness and therefore could slow growth. I return to this real appreciation problem in the penultimate section below.

For a number of countries, we also see increasing self-insurance through the acquisition of sizable foreign reserves. Feldstein (1999) recommended this measure in his "self-help" primer, and it has been implemented avidly. One benchmark frequently cited is the so-called "Guidotti-Greenspan" rule, according to which a country's liquid foreign exchange reserves should at all times cover its foreign-currency debt repayable within one year. Many emerging markets, however, hold reserves far in excess of this benchmark; see Jeanne (2007).

[21]See "Thailand Scraps Capital Controls after Stocks Plummet," *International Herald Tribune*,

Obstfeld, Shambaugh, and Taylor (2008) show empirically that the level of financial development, as measured by the broad money supply M2, is a strong and robust correlate of reserve demand. They suggest that countries are trying to self-insure against the possibility of simultaneous banking and currency crises, in which domestic deposit withdrawals finance currency flight.

Emerging markets' reactions to the subprime crisis that broke out in the U.S. in 2007 may be a stress test of the role of a healthy reserve cushion and a relatively strong current account position (outside of Eastern Europe, Turkey, and some other countries) in preventing contagious market panic. If so, emerging markets appeared to do reasonably well until the eruption of worldwide panic in September 2008. Figure 6 shows that as of August 2008 (one year into the. subprime crisis), the EMBI+ spreads for key emerging areas had suffered a tremorbut not a complete meltdown. Of course, commodity prices were elevated until mid-2008 and the crisis caused policy interest rates in the rich countries to be lower than they otherwise would have been.

Reform and restructuring efforts are driven in part by a belief among emerging-market policymakers that integration with the world economy, in finance as well as in trade, is eventually a necessary concomitant of graduation to higher income status. Many researchers believe that domestic financial development is a prerequisite of economic growth—see, for example, Levine (2005) and the studies collected by Demirgüç-Kunt and Levine (2001). Levine (2005, p. 921) summarizes his view of the evidence as follows:

December 19, 2006. http://www.iht.com/articles/2006/12/19/business/baht.php

> A growing body of empirical analyses, including firm-level studies, industry-level studies, individual country-studies, time-series studies, panel investigations, and broad cross-country comparisons, demonstrate a strong positive link between the functioning of the financial system and long-run economic growth. While subject to ample qualifications and countervailing views noted throughout this article, the preponderance of evidence suggests that both financial intermediaries and markets matter for growth even when controlling for potential simultaneity bias.

A sophisticated, deep financial system is, however, hard to insulate from the rest of the world, especially given the reality of growing merchandise trade. Furthermore, opening a closed financial system can, at least in principle, improve its performance. Improvements can come from importation of foreign best practice, from efficiency-enhancing competitive effects, from expanded diversification opportunities, and through undermining domestic vested interests (enhanced competition in the political arena).

One major ambiguity in the finance-growth literature is the question whether financial development causes or is caused by growth. Much of the literature, as noted by Levine (2005), for example, points toward a causal role for finance. Even if growth primarily leads finance, however, the implication is that countries that succeed in raising their per capita incomes will find it difficult to remain financially closed.

Apart from the useful precaution of reserve accumulation, what monetary framework is most suitable in a setting of substantial financial development and openness? The available choices are delimited by the trilemma. Given a degree of capital-account openness, monetary

policy can be deployed to set the exchange rate or to reach a domestic policy objective (such as inflation control), but not both. In order credibly to fix the exchange rate in a world of highly fluid capital, however, it is not enough to renounce domestically oriented monetary policy using words alone. The authorities' hands must effectively be tied through far reaching institutional change. This is why the longevity of conventional "fixed" exchange rates has been so limited (Obstfeld and Rogoff, 1995). Even Argentina's radical convertibility plan collapsed after a decade as the political pressures undermining it became irresistible. If the institutional scaffolding is weak, as in Argentina, then credibly fixed exchange rates will require forgoing a national currency altogether, as in dollarization or through joining a currency union such as the euro zone. Evidence seems to support the hypothesis of evolution toward a bipolar world in which governments eschew adjustable or heavily managed pegs (see Figure 7).

Adoption of even a fully credible exchange rate peg entails some disadvantages, especially for larger economies, notably, the sacrifice of the shock absorption capacity of exchange rate flexibility when nominal prices and wages are sticky. This capacity of a flexible rate can be an aid in inflation control, in moderating unemployment, and in the adjustment of incipiently large external imbalances.

Developing countries, often characterized by an inability to borrow externally in their own currencies as well as extensive domestic liability dollarization, cannot weather large exchange rate movements as easily as industrial countries can. The reason is familiar from recent crises. A large depreciation of the domestic currency causes the value of debts relative to assets to balloon. If external liabilities are in foreign currency, the net wealth of the country can fall precipitously, and external debtors go bankrupt. But the potential problems are even

more severe. If there are unmatched foreign-currency liabilities in *intra*national positions, for example, dollar bank deposits held by domestic residents, debtor balance sheets deteriorate sharply when the home currency falls, possibly throwing many actors within the economy – and their creditors—into bankruptcy. Furthermore, the need to borrow abroad in foreign currencies imparts a structural disadvantage to their foreign exchange markets, making exchange rates more volatile. (Obstfeld, 2004, discusses one mechanism arising entirely from asset-market dynamics, while the next section describes a complementary mechanism that operates through goods-market channels.) A result is the Calvo and Reinhart (2002) "fear of floating" and with it, reduced monetary autonomy: the apparent tendency of emerging market floaters to be guided more heavily by exchange-market developments than are industrial countries. But fixed exchange rates seem not to be an option—they have certainly contributed in several ways to the harsh character of emerging-market crises. And there is no doubt that a regime with at least some day-to-day exchange-rate uncertainty is a useful preventive measure against currency mismatch and crises.

An attractive conceptual framework for monetary policy is that of "managed floating plus," proposed by Goldstein (2002). The framework combines substantial exchange rate flexibility, a credible inflation targeting regime (preferably buttressed by genuine central bank instrument independence), and, crucially, measures to limit currency mismatch, both within the economy and with respect to the external investment position. Goldstein and Turner (2004) propose practical measures for monitoring and limiting currency mismatch.

The limitation on currency mismatch is intended to reduce the balance sheet repercussions of exchange rate fluctuations, freeing the monetary authority to tolerate exchange rate movements that are a byproduct of inflation-oriented policies (and thereby

reducing the fear of floating). It might be added that a healthy financial system is also a prerequisite, and for a similar reason: central-bank credibility requires the ability to make significant and possibly abrupt interest-rate changes in the face of an inflation scare.

Useful in implementing such a program is the development of a local-currency bond market. Such markets not only mitigate the problem of currency mismatch, they facilitate the conduct of monetary policy and enhance the economy's ability efficiently to channel resources to investors. Not coincidentally, a major development of recent years has been the growth of local-currency bond markets in a number of emerging markets. There has also been increasing external placement of local-currency bonds in some cases. The World Bank (2008, p. 66) reports that East Asian bond markets grew from $400 billion in 1997 to $1.6 trillion by end-September 2005. This growth was partly a result of governments issuing local-currency bonds in connection with financial and corporate restructuring after the Asian crisis. With the major exceptions of China and India, these bond markets are much more open than in 1997. This development has been supported by innovations in contingent contracting, notably, the increasing use of credit default swaps and nondeliverable forward transactions. In November 2007 the World Bank launched a Global Emerging Markets Local Currency Bond (GEMLOC) program to cultivate local-currency bond markets and raise their attractiveness to foreign investors.

Latin American countries and Russia have been able to issue some local-currency bonds in world markets. This is not unprecedented: Argentina was able to borrow in pesos abroad during 1996–2001, under its convertibility plan. More recently, though, Brazil, Colombia, and Uruguay have tapped the international sovereign borrowing market with local-currency debt, payable in dollars, and, in Uruguay's case, indexed to domestic inflation. Is

this the wave of the future? This seems unlikely. International issuance of local-currency debt is second best to a more vigorous development of a domestic bond market open to foreign lenders. Tovar (2005, p. 117) judiciously concludes, "[T]here is no guarantee that the recent increase in this sort of issuance by sovereigns in the region reflects a permanent trend. History provides many examples of rapidly shifting preferences on the part of international investors." In general, Latin America has lagged in terms of domestic financial development (de la Torre and Schmukler, 2007).

The domestic bond market evolution that has occurred in emerging markets has been promoted by measures ranging from pension reform to initiatives by international organizations (and, of course, by a lowering of formal inflow barriers). It is important to ask, however, whether institutional reforms of the type that are likely to enhance the benefits from financial inflows might play a catalytic role. According to the notion of "original sin" advanced by Eichengreen and Hausmann (1999), there might be little that developing countries themselves can do to gain access to domestic-currency loans from abroad.

Using a 2001 dataset on domestic and foreign-currency bonds outstanding in the markets of 49 industrial and developing countries, however, Burger and Warnock (2006) conclude that the size of the bond market, and the currency composition of borrowing, are endogenous. The most robust positive predictor of both bond market size and the share of local-currency borrowing is a history of low inflation variance (consistent with the theoretical prediction of Jeanne, 2005). There thus may be a virtuous circle, in which low inflation promotes development of local-currency bond markets, which in turn allow a more credible pursuit of low inflation by the authorities. For government bonds, Claessens, Klingebiel, and

Schmukler (2003) find that greater exchange-rate flexibility is associated with a bigger local-currency bond market.

Burger and Warnock (2006) also find that a high rating on a "rule of law" measure promotes the size of the local bond market relative to GDP, whereas strong creditor rights promote a high share of local currency bonds. Claessens and others likewise find a role for institutional variables. Further corroboration comes from two studies of emerging bond markets by Eichengreen and Luengnaruemitchai (2004, 2008), who focus on Asia's relative success. They find that bond-market capitalization (2004) and foreign participation in the domestic bond market (2008) both depend positively on aspects of institutional quality and domestic financial development. Burger and Warnock (2007) study the determinants of U.S. investor participation in local-currency bond markets and argue that foreign investors avoid high variance and negative skewness, even in diversifiable idiosyncratic returns. If so, enhanced macroeconomic stability (including a lower frequency of maxi-devaluations) could spur foreign demand for local-currency bonds.

These results are intriguing, but they must be interpreted with caution. There is the possibility of bidirectional causation, of course, which Burger and Warnock (2006) try to address through the timing of regressors and various instruments. At the conceptual level, however, the findings raise puzzles. Why should creditor rights influence local-currency borrowing, but not the total extent of bond market development, as Burger and Warnock (2006) find? To what extent do the results simply capture that the industrial countries, being richer, have deeper bond markets and a more rigorous rule of law? The regressions show a strong *negative* effect of economic growth on bond market development, which surely captures the fact that Asian countries grew more rapidly than the industrial world over the

1990s, yet still had more limited bond markets in 2001. Hopefully future work will throw further light on policies and reforms that promote local bond market development and the escape from original sin, both of which can greatly ease the implementation of a macro framework that includes extensive exchange rate flexibility and an open financial account.[22]

A full managed float may be impractical at the early stages of financial opening and market liberalization, when capital controls still are in place and somewhat effective. China, for example, is in this position now, as is India. As a transitional measure, some system such as the "basket, band, and crawl" (BBC) suggested by Williamson (2001) can be very helpful. Roughly speaking, the basket peg helps maintain multilateral competitiveness, the crawl offsets differential inflationary trends, while the bands place limits on excessive volatility or misalignment. The bands, of course, would not be viable for long absent capital controls. But in the transition to fuller financial openness, such a system may effectively limit the overvaluations that have often helped generate crises.

Chile's case shows, once again, that progress is possible.[23] Chile had a disastrous early experience of financial opening culminating in a 1982 crisis involving a huge output loss, steep currency depreciation, and nationalization of much privately contracted financial-sector external debt (Díaz Alejandro, 1985). This sobering history provides the background for the successful reforms undertaken there since the mid-1980s.

On the currency side, from the mid-1980s the Chilean peso's U.S. dollar exchange rate was kept within a crawling band, the central parity of which was adjusted daily to reflect the inflation difference between Chile and its main trading partners. The goal of the crawl was to maintain competitiveness—though there is a danger in any such system that expectations feed

[22]An interesting discussion of the Australian experience is in McCauley (2006).

into inflation, resulting in accommodation of the pervasive expectations via the exchange rate. Partly for this reason, no doubt, as well as due to indexation, inflation remained relatively high in Chile for a decade, dropping below double digits only in the mid-1990s. (In 1998 lagged domestic inflation was replaced by an inflation target in the definition of the crawl, a key reform in bringing inflation down further.) Although the top end of the band (weak peso) was tested frequently prior to 1991, 1991–97 was a period similar to the recent past in China, with the peso near the strong edge of the band and attempts by the authorities to resist capital inflows and to sterilize. (Estimates of the quasi-fiscal costs of sterilization run about 0.5 percent of GDP per year, a huge number. Net international reserves peaked at 25 percent of GDP.)

In 1992 Chile moved to a BBC when it redefined its central peso rate in terms of a basket including the DM and yen as well as the U.S. dollar. Variations in currency composition were made opportunistically. Starting in September 1998, in the wake of capital outflows associated with Asian-crisis spillovers, the currency-band width was set at ±4 percent and widened continuously until December 1999, when free floating of the peso was declared.

On the financial account, prior to liberalization, Chile channeled transactions through a formal foreign exchange market consisting of the central bank, commercial banks, and specially authorized exchange trading houses. An informal (but fully legal) informal foreign exchange market existed for non-financial transactions; it had a floating exchange rate. Initially, exporters and importers of capital were obliged to sell foreign exchange proceeds in the formal market. The non-financial private sector was allowed to acquire foreign exchange

[23]Some of the following material draws on Obstfeld (2007).

informally. The strength of enforcement sometimes reflected balance of payments pressures. Only by the mid-1990s had the discrepancy between formal and informal exchange rates essentially disappeared. Chile still maintained, for some years afterward, its *encaje* or unremunerated reserve requirement on foreign capital inflows, but this was scrapped in the late 1990s. Prior to full financial liberalization and, shortly afterward, free floating, Chile restructured its domestic financial system and imposed extensive regulation and supervision, with special attention to currency mismatches on balance sheets. There was also a substantial development of domestic forward exchange trading after 1995, allowing a better allocation of exchange rate related risks.

China and India, even though their economies have generated high economic growth rates in the presence of capital controls, show gradual movements toward external liberalization. China's plans of the latter 1990s were slowed by the Asian crisis. More recently, external liberalization has been mostly of outflows, driven by the need to relieve the pressure of reserve inflows on the money supply and the price level (Obstfeld, 2007). The weak state of China's banking system makes a thoroughgoing financial opening impracticable at the present time.

India's public discussion has been much more deliberate than China's. In 1997, India's Committee on Capital Account Convertibility, chaired by S. S. Tarapore, sketched out preconditions for attaining complete convertibility over a three-year period (Tarapore, 1998). This thinking was derailed by the Asian crisis, but the preconditions that the report envisioned for safely opening the capital account are similar in many respects to those spelled out above. These include strengthening of the financial system (especially reducing the banking system's burden of nonperforming loans), along with an array of complementary macro-stabilization

measures: fiscal consolidation, inflation control, limits on the current account deficit, and monitoring the real exchange rate for overvaluation. The report also suggests a healthy reserve cushion, managed from the Guidotti-Greenspan perspective of partially covering short-term foreign debts. Tarapore himself favored a tax on short-term capital inflows as a way of limiting the economy's maturity mismatch.

The issue has been revisited in the *Report of the Committee on Fuller Capital Account Convertibility*, again chaired by Tarapore (Tarapore and others, 2006). The course recommended by the committee is quite incremental, and the broad supporting preconditions from the earlier capital-account convertibility report are reasserted. In a dissenting note, Bhalla (2006) endorses the committee's emphasis on limiting both rupee overvaluation and excessive short-term foreign debt. But he faults the report on its timidity in liberalization and on its recommendation of an explicit and relatively narrow real exchange rate band for the rupee. The latter, he argues, would simply be a target for speculators, even with many capital controls retained.

VIII. Capital Inflows, Real Appreciation, and Volatility

If a more flexible exchange rate is necessary for safely managing an open capital account, one collateral cost is that shifts in the world demand for domestic assets (as well as other shocks) can very rapidly translate into substantial real currency appreciation. In the presence of nominal price stickiness, the currency may overshoot. Particularly if credit markets are imperfect, the resulting relative price configuration can send faulty price signals that damage international competitiveness, inducing costly intersectoral resource reallocations and

unemployment. With an open capital account, the possibility of undesired real currency appreciation—and indeed, depreciation—is inherent in the trilemma. Because appreciations are associated with distress in the manufacturing sector and with current account deficits, however, it is these rather than depreciations that generally worry policymakers the most outside of crisis periods.

The real appreciation problem drew professional attention roughly three decades ago in the dual contexts of disinflation and the so-called "Dutch disease." In Argentina, Uruguay, and Chile, the adoption of exchange-rate based stabilization programs in the late 1970s led to capital inflows, consumption booms, and real appreciation. All three Southern Cone stabilization programs ended in tears, for reasons that have been extensively analyzed. Liviatan (1980) suggested that under a floating exchange rate, a capital import tax might be useful in limiting the sharp real appreciation that would otherwise occur at the outset of a dramatic disinflation. The tax might prevent a collapse in exports and thereby deter the manufacturing sector from becoming a powerful lobby against the stabilization program.

If an emerging market facing an increase in asset or output demand prevents its currency from appreciating in nominal terms, its intervention operations will lead in the first instance to a rise in international reserves and the money supply. Higher inflation will result, bringing the economy, eventually, to the same long-run equilibrium position that would have been reached more quickly under a floating exchange rate. Under an open capital account, attempts to sterilize the resulting money-supply increase through central bank domestic-asset sales will only draw in offsetting capital flows and raise foreign reserves further (while at the same time raising the government's quasi-fiscal expenses). In the hope of keeping inflation expectations anchored despite a positive demand shock (for assets or goods), many countries

have responded to real exchange rate movements by a mixture of intervention and nominal appreciation. As noted above, some have also resorted to short-term capital-inflow controls of various kinds, typically coupled with sterilization. The ultimate success of such measures in limiting real exchange rate variability is unclear. Interventions in asset markets may be more successful when shocks to the exchange rate originate in the asset markets themselves rather than in output markets.

The underlying problem is likely to be much more severe for economies that cannot borrow in domestic currency, and that feature extensive domestic liability dollarization. Such currency mismatches create a transmission mechanism that endogenously makes the real exchange rate more variable with respect to underlying shocks than they would otherwise be. The transmission mechanism operates through wealth effects.

A very simple small-country flexible-price model illustrates the basic channels involved. Denote by p the relative price of nontradable goods in terms of tradable goods, and assume that the prices of tradable goods are equal to their prices in world markets, which are exogenously given. If α is the share of nontradables in consumption (generally in the ballpark of $\alpha = 0.75$), then p^{α} can be identified with the real exchange rate as well as with the consumer price index (CPI), a *rise* in this price being a real currency *appreciation*.

The supply function for nontradables is $y(p)$, with $y'(p) > 0$. Let W^C be the real wealth of domestic creditors (in terms of the CPI), W^D the real wealth of domestic debtors (in terms of the CPI), and z a demand shock. The demand for nontradables is the sum of the demands of domestic creditors and domestic debtors, written as $e^C(p,W^C) + e^D(p,W^D) + z$. The shock z could reflect, for example, a positive demand impulse due to an influx of foreign loans. When p rises, the partial effects on the demands of creditors and debtors alike are negative.

Total domestic real wealth is $W^C + W^D = K - p^{-\alpha}F$, where K is the aggregate capital stock (assumed to be indexed to the CPI) and F represents the net foreign debt (assumed to be denominated in tradables, in accordance with the "original sin" model).

Even though the capital stock is (for simplicity) assumed to be invariant with respect to the CPI, there is domestic liability dollarization, meaning that in general, entrepreneurs who operate capital have financed its acquisition through borrowing that is indexed to tradables. As a result, real appreciation transfers wealth from creditors to debtors within the economy, whereas real depreciation does the reverse. In the absence of a net foreign debt (that is, when $F = 0$), these two effects would be exactly offsetting. But if, as I assume instead, $F > 0$, then a real appreciation will raise aggregate real wealth and a real depreciation will lower it. These assumptions are captured by the inequalities:

$$\frac{\partial W^C}{\partial p} < 0, \frac{\partial W^D}{\partial p} > 0, \frac{\partial \left(W^C + W^D \right)}{\partial p} = \alpha p^{-\alpha - 1} F > 0.$$

A second empirically relevant assumption is that wealth redistributions within the country are not neutral in their effects on aggregate demand. It is debtors who have the higher marginal propensity to consume out of their current wealth—an effect exacerbated by various financial market imperfections, including agency constraints through which higher wealth allows more borrowing by the debtor class.[24] In symbols, the assumption regarding marginal consumption propensities is that:

[24] The emphases on both the balance-sheet effects of currency movements and the differing marginal consumption propensities of different economic groups are salient in the classic literature on contractionary devaluations. For lucid discussions, see Díaz Alejandro (1963; and 1965, p. 31).

$$\frac{\partial e^D}{\partial W^D} - \frac{\partial e^C}{\partial W^C} > 0.$$

One can now calculate how movements in the forcing variable z will affect the real exchange rate under the conditions of the model. Differentiation of the goods-market equilibrium condition $y(p) = e^C(p,W^C) + e^D(p,W^D) + z$ shows that:

$$\frac{dp}{dz} = \frac{1}{y'(p) - \frac{\partial e^C}{\partial p} - \frac{\partial e^D}{\partial p} - \left(\frac{\partial e^C}{\partial W^C} - \frac{\partial e^D}{\partial W^D}\right)\frac{dW^C}{dp} - \frac{\partial e^D}{\partial W^D}\frac{d\left(W^C + W^D\right)}{dp}}.$$

(I assume this derivative is positive.) In the absence of any wealth effects due to a change in the real exchange rate, the denominator above would be simply $y'(p) - \frac{\partial e^C}{\partial p} - \frac{\partial e^D}{\partial p} > 0$. As a result of the wealth effects, however, this positive number is reduced in the denominator by the *positive* quantity $\left(\frac{\partial e^C}{\partial W^C} - \frac{\partial e^D}{\partial W^D}\right)\frac{dW^C}{dp} + \frac{\partial e^D}{\partial W^D}\frac{d\left(W^C + W^D\right)}{dp}$. The first summand here captures the redistribution of wealth from creditors to higher-consuming debtors when p rises; the second, the positive demand effect of the accompanying rise in aggregate wealth given a net foreign debt. Intuitively, through these two distinct wealth effects, real appreciation raises demand for nontradables, partially offsetting the primary partial price effects on supply and demand. Thus, in equilibrium, a given demand impulse z has a magnified effect on the real exchange rate. Of course, the implication is the same for negative demand shocks, which will cause disproportionate real depreciations in this model. The latter could be asymmetrically large if additional financial constraints begin to bind as the currency falls. In summary, with

original sin and domestic liability dollarization, we should expect real exchange rate volatility to be sharply higher than it otherwise would be.

The analysis points to an important reason why developing economies find it hard to find a comfortable resolution of the trilemma, and often exhibit "fear of floating" as documented by Calvo and Reinhart (2002). An obvious way forward is to promote reforms that reduce dollarization, as discussed above, but this is easier said than done. Fiscal responses to real appreciation might also be appropriate, but run into the obvious obstacle that as a political matter, fiscal retrenchment is always more problematic than expansion. Macroprudential regulation of financial institutions, with the stringency of oversight tied to the strength of capital inflows, might also prove a useful device for deterring lending booms and the associated real appreciation (see Ocampo and Chiappe, 2003, for one proposal). Analogous regulatory regimes are currently under consideration for the industrial economies' financial markets. Fixed exchange rates and capital mobility have proved to be an explosive mixture, but for the moment, significant market-driven changes in floating exchange rates will remain problematic for developing countries that embrace financial globalization.

IX. Conclusion

Particularly at the macro level, it is hard to find unambiguous evidence that financial opening yields a net improvement in economic performance for emerging countries. Major problems in empirical evaluation include the bundling of financial opening with a potential host of other growth-friendly reforms, and the endogeneity of the liberalization decision itself. Microeconomic data may provide less ambiguous evidence, but even in the micro context identification problems can remain. Managing flexible exchange rates in the context of an open capital account has been an especially thorny issue for developing economies.

Nonetheless, policymakers in emerging markets have displayed a remarkable revealed preference for financial openness, and the trend is likely to continue (perhaps with occasional seizures when global economic conditions sour). Why? *Domestic* financial development is attractive from several perspectives—it promotes growth, can enhance welfare more generally, allows easier government borrowing, and eases the conduct of a domestically oriented monetary policy. Such domestic financial deepening, along with merchandise trade expansion, makes capital controls ever costlier to enforce. Furthermore, financial opening is likely to promote, through several channels, a more competitive and resilient domestic financial system.

Domestic financial development itself is likely to make external financial liberalization easier to live with. But there are other institutional reforms that ultimately are also helpful—relating to the rule of law, corruption, contract enforcement, corporate governance, reductions in liability dollarization, and the like. These reforms cannot be accomplished overnight, and in the process, a phased and cautious piecemeal approach to

liberalization is in order. It is important, though, that the piecemeal nature of the approach not exacerbate existing distortions or create new ones—for example, by liberalizing short-term debt flows ahead of long-term flows.

Distortions in industrial-country financial markets—distortions of which we are acutely aware these days—are not irrelevant to the fate of developing economies that embark upon financial integration with richer countries (Dobson and Hufbauer, 2001). In the necessary process of international financial coordination, the emerging markets must increasingly become equal partners with their industrial counterparts, just as in the sphere of international trade.

Regarding the appropriate macro-monetary framework, we have learned much from the vicissitudes of the post debt-crisis years. The World Bank (2006, p. 140) puts it as follows:

> As developing countries become more open to international financial markets, designing and building a sound regime of external financial policy making and regulation presents an urgent challenge. A consensus has formed around the three core components of such a regime – membership in a credible currency union, such as the [euro zone], or an exchange rate that reflects market forces; gradual opening of the capital account; and a monetary policy framework that favors price stability.

Conversely, a stable and sound macro-monetary framework seems likely to promote complementary structural developments in the economy—structural developments that are

essential to reduce the negative impacts of exchange-rate volatility for countries that retain national currencies. One instance is the possibility, suggested by some evidence, that inflation stability promotes domestic-currency bond markets. In general, financial liberalization itself can yield "collateral" institutional benefits for the economy, benefits that both spur growth and make an open financial account less crisis-prone (Kose and others, 2006). Determining the extent to which this has been reliably true in practice is an urgent item on the research agenda for growth and development economists.

The conclusion that financial integration is inevitable, and eventually even helpful, is in line with a classic insight from the trade policy literature: the efficient way to correct a distortion is to attack it at to its source. In the present setting, domestic financial market imperfection and institutional weakness, not financial openness, is the primary problem. The ideal response would be a correction of domestic imperfections plus intervention to address the specific additional issues raised by the international margin. Only if this approach is unworkable might a closed financial account be the answer. Unfortunately, as Rodrik and Subramanian (2008) point out, the political resources that can be devoted to reform efforts are limited, so not all distortions can be attacked within a short horizon. Until economists have a better handle on precisely which repairs are most critical for safe financial opening, the process of liberalization should be especially gradual and cautious.

A hopeful aspect in this picture is that the financial and institutional reforms developing countries need to carry out to make their economies safe for international asset trade are *at the same time* reforms they need to carry out anyway so as to curtail the power of entrenched economic interests and liberate the economy's productive potential. Taken all alone, financial openness is not a panacea—and it could be poison. The empirical record

suggests that its benefits are most likely to be realized when implemented in a phased manner, when external balances and reserve positions are strong, and when complementing a range of domestic policies and reforms to enhance stability and growth.

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Table 1. Two Surges in Financial Inflows to Developing Countries
(In billions of U.S. dollars)

	1992–97 average	2003–08 average
Current account balance (All developing countries)	–86.5	460.7
Net external financing (All developing countries)	289.5	837.9
Increase in reserves (All developing countries)	64.3	689.4
Current account balance (Excluding China, Russia, Middle East)	–96.7	–38.9
Net external financing (Excluding China, Russia, Middle East)	225.6	470.0
Increase in reserves (Excluding China, Russia, Middle East)	39.7	218.6

Source: IMF, *World Economic Outlook* database (as of August 2008).
Note: Figures for 2008 are IMF projections.

Figure 1. Edwards' (2007) De Jure Measure of Capital Account Openness

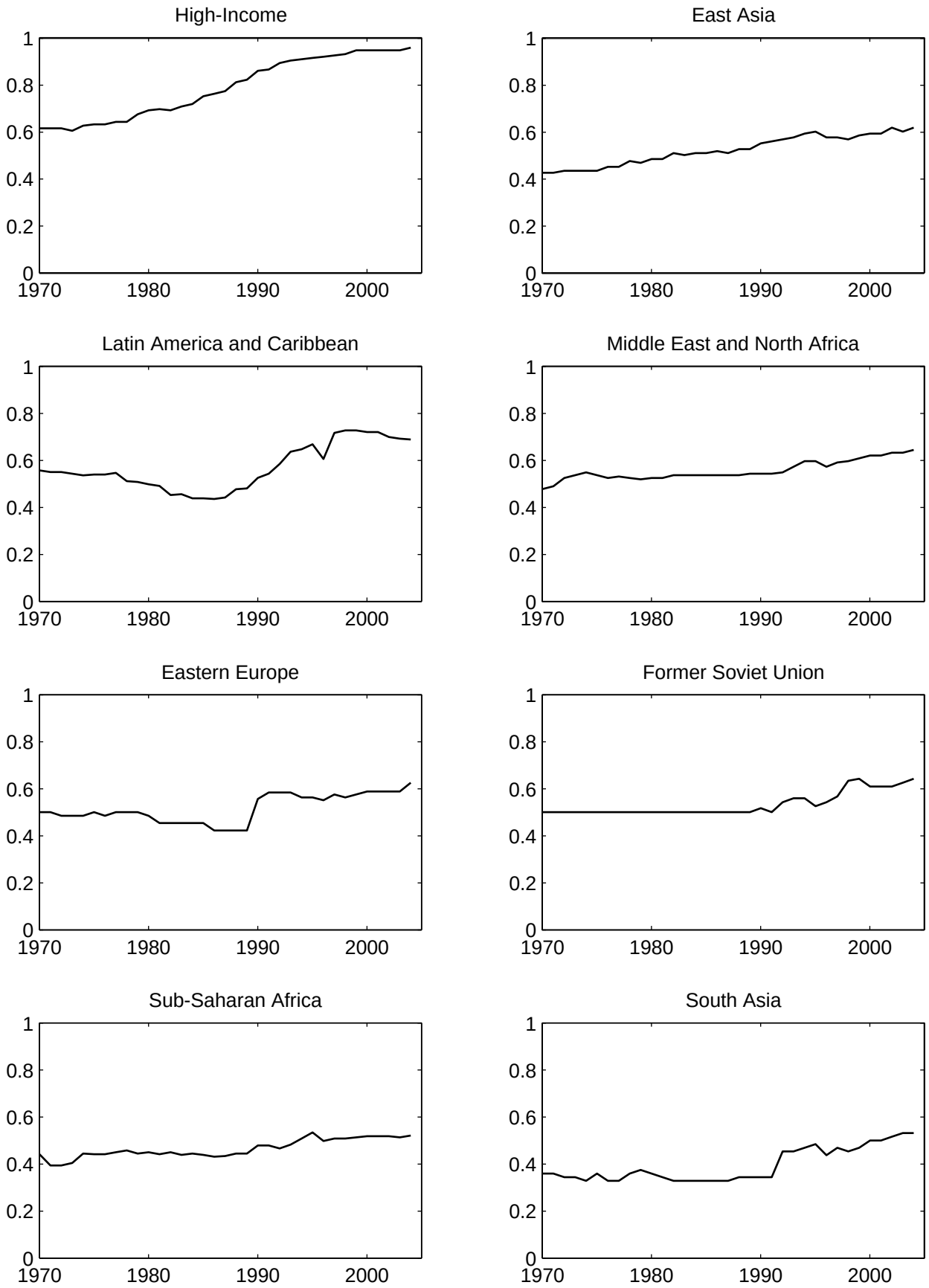


Figure 2. Assets Plus Liabilities, 1970-2004 (Ratio to Group GDP)

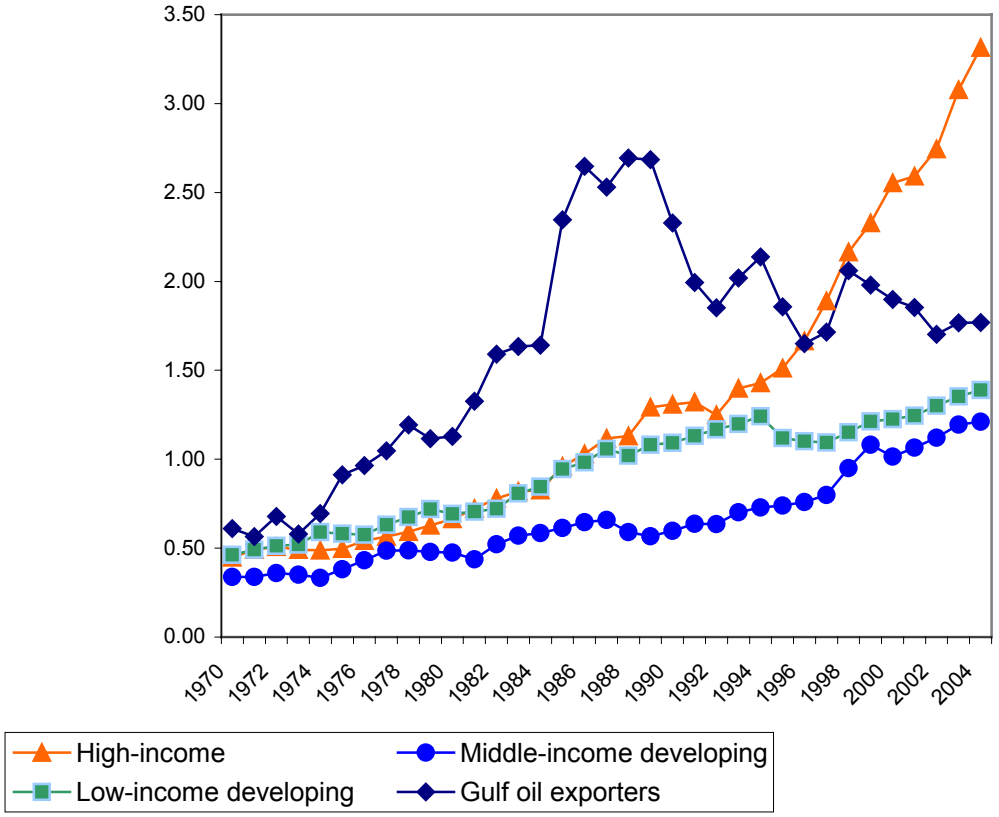


Figure 3. Short-Term Debt as a Fraction of Total External Debt, by Income Class

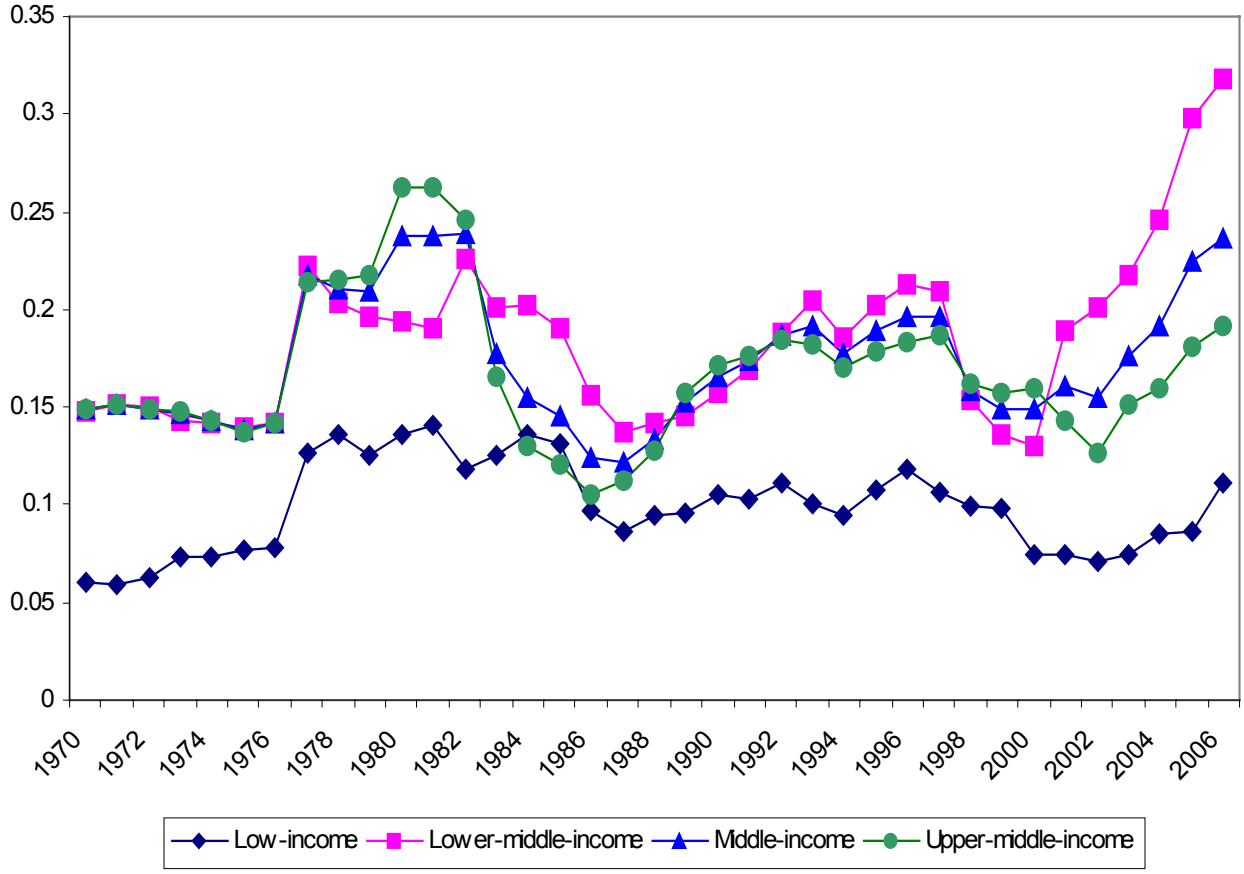


Figure 4. Average Borrowing Cost by Income Class
(In percent)

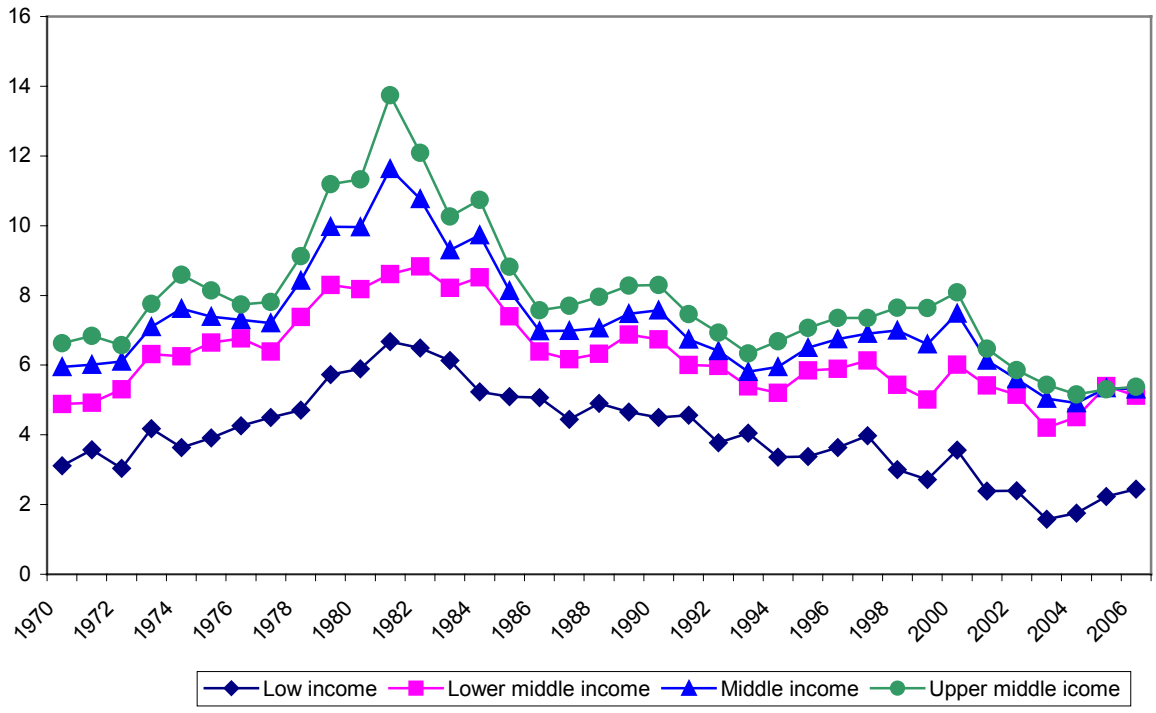


Figure 5. Channels of Crisis

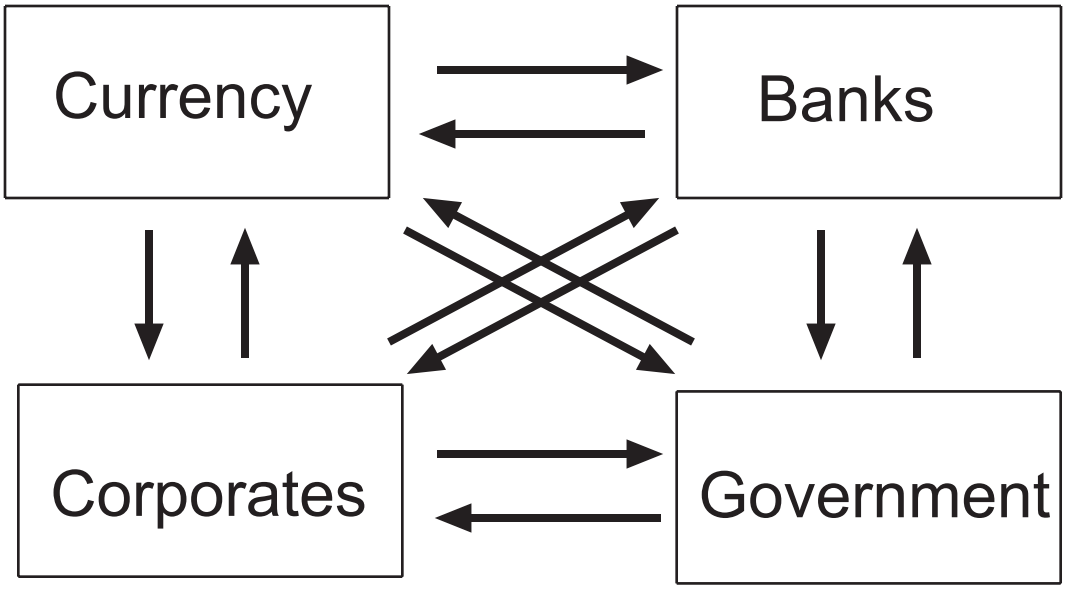
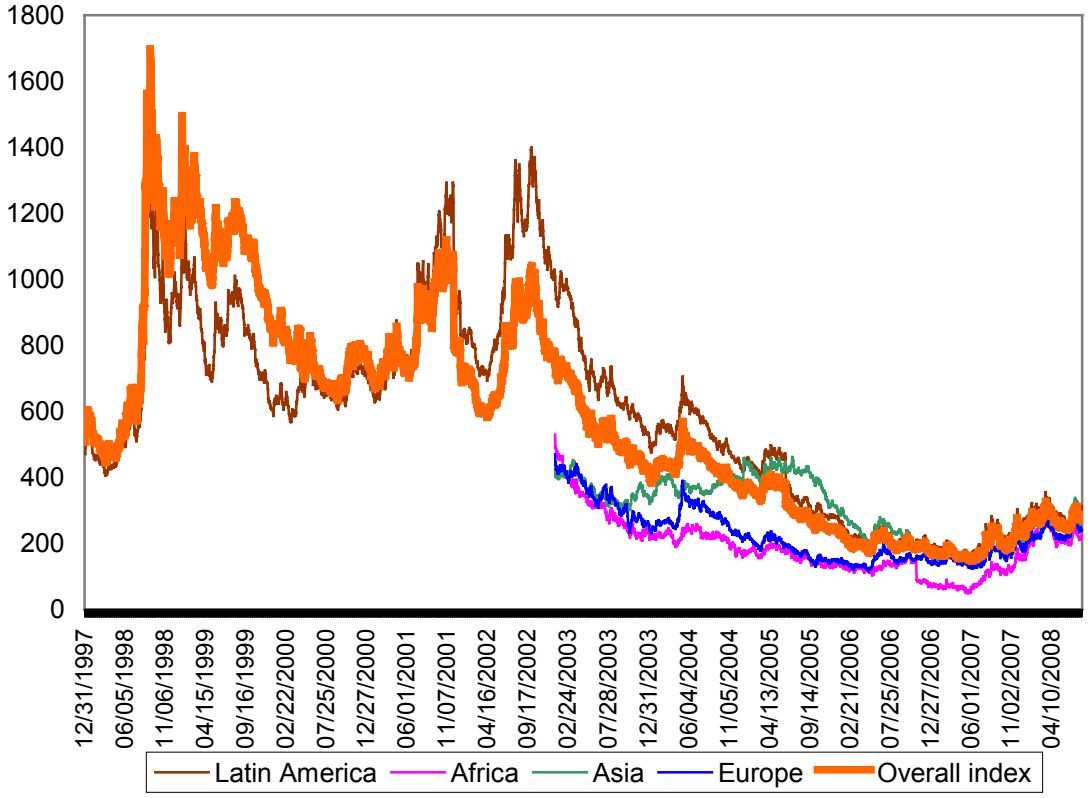


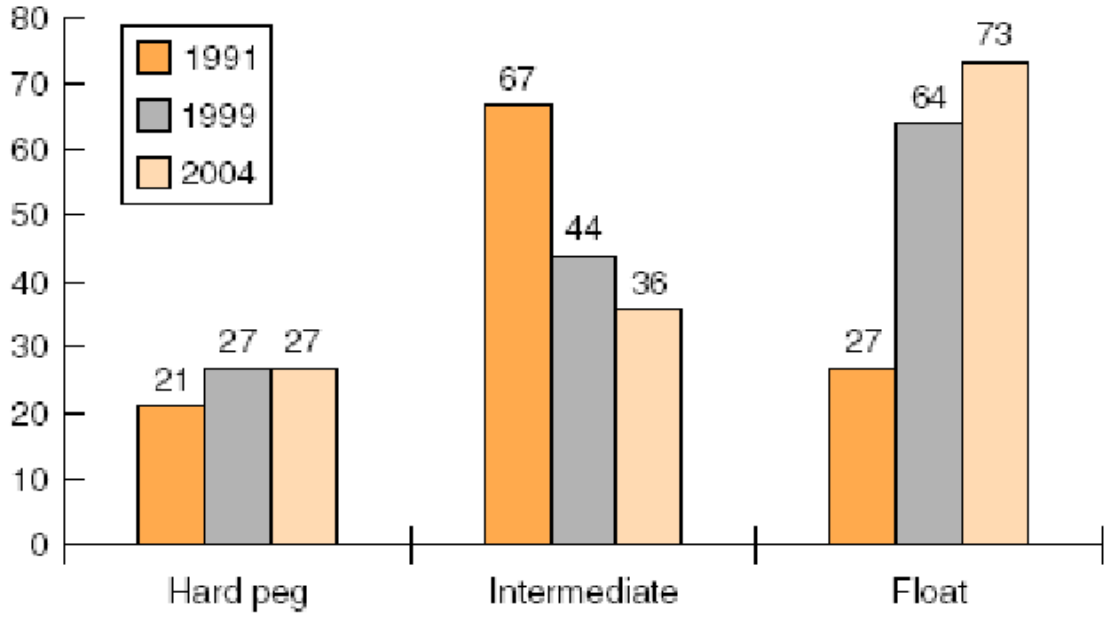
Figure 6. EMBI+ Spreads



Source: Cbonds Website: http://www.cbonds.info/all/eng/index/index_detail/group_id/1/.

Figure 7. Changes in Exchange Rate Flexibility, 1991—2004

Number of countries



Sources: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*; and World Bank staff estimates. Figure taken from World Bank (2006).