Financial Instability[1]

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1. Introduction and Motivation

Financial instability matters. Table 1, drawn from Dobson and Hufbauer (2001), shows some representative estimates of annual average output losses per year from currency and banking crises. Losses like these are of first-order importance. 2.2 percentage points of growth per year, which is what Latin America lost as a result of financial instability in the 1980s, makes incomes and living standards two-thirds higher in a generation.[2] Raising per capita incomes to this extent transforms a society's living standards, providing the resources to address critical social problems. For developing countries as a class, Dobson and Hufbauer's estimates suggest that over the last quarter of a century financial instability has reduced the incomes of developing countries by roughly 25 per cent. Back-of-the-envelope calculations like these can reasonably be questioned.[3] But they nonetheless show how profoundly financial instability matters.

Economies without financial markets cannot have financial crises.[4] This is a pointer to what sorts of countries suffer most from financial instability. Generally these are not the poorest countries, which have relatively rudimentary financial markets. In these countries, households are only loosely linked to the financial economy and feel only indirect effects when financial markets malfunction or collapse. It is in the next tier of

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[2] A generation of 25 years.
[3] Many of the grounds on which they can be questioned are enumerated in Section 2.
[4] If there is no finance, in other words, there can be no financial problems.

developing countries and emerging markets where the costs of financial instability are greatest.[5]

Thus, ameliorating problems of financial instability may not meet the immediate needs of the poorest countries. But it will enhance the welfare of several billion residents in the next tier of developing countries. In addition, of course, a solution to this problem will also benefit the poorest countries over time as they develop and become more vulnerable to financial instability.

Insofar as countries without financial markets cannot have financial crises, one conceivable response to the problem of financial instability is to suppress domestic financial markets and transactions, thereby eliminating the problem of banking and financial crises, and international financial markets and transactions, thereby eliminating the problem of currency and exchange rate crises. Banks that are not permitted to borrow and lend will not fail; more generally, if banks are very tightly regulated the scope for risk taking by their managers will be limited. Similarly, if strict capital and exchange controls limit purchases and sales of foreign exchange, then there will be limited scope for speculating against a currency. Thus, China, despite the presence of significant financial problems, has not experienced an overt banking or currency crisis in recent years.[6] The obvious explanation for this fact is that the country maintains strict controls on both its banks and capital account transactions.

[5] Thus, Dobson and Hufbauer (2001), in the same sections of their work from which Table 1 is drawn, also consider financial crises in Sub-Saharan Africa. While there have been some major and devastating crises in this region, overall they reach conclusions consistent with the assertion in the text.

[6] That is, it has not experienced a severe disruption to financial markets leading to a significant fall in output, which is how an actual crisis can be defined for present purposes. The definition of financial crises is discussed at greater length below.

These observations point to the question of why more countries do not respond to financial instability by suppressing financial markets and transactions. The answer is that policies that stifle financial development have economic costs. Financial development relaxes borrowing constraints, thereby enabling new firm formation, intensifying competition, and facilitating the adoption of new technologies. There is overwhelming evidence of the positive association of financial development with productivity growth (Guiso, Sapienza and Zingales 2002). Well-developed financial markets disseminate information about profitable and productive investment opportunities, enhancing the efficiency with which capital is allocated. They help with monitoring managers and strengthening corporate control, positively influencing the efficiency with which resources are allocated within the firm. They mobilize savings, facilitate specialization, and encourage exchange.

How important are these effects? Financial development that raises financial depth, as measured by the ratio of domestic credit to GDP, from 0.25 to 0.55 – that is, from the levels typical of financially underdeveloped countries to that typical their more financially well developed counterparts – raises the rate of economic growth by a full percentage point per annum according to the widely-cited estimates of King and Levine (1993). These numbers are large. Raising growth by a percentage point a year raises incomes by a third in a generation.[7] This suggests that the benefits of financial development may be as large, or even larger, than the costs of financial instability. Hence, the costs of a policy that limits financial instability by limiting financial development may be even greater than its benefits. Additional calculations consistent with this conclusion are presented below. Revealingly, not just economists but also

[7] The basis for these estimates is described below.

policy makers acknowledge the practical importance of these arguments. To continue with the preceding example, it is revealing that we see China moving gradually in the direction of domestic financial liberalization and capital account decontrol despite the existence of significant financial vulnerabilities. Evidently, the country's policy makers, who are hardly free market ideologues, see benefits from increased financial development as well as potential costs from increased financial vulnerability. Their view is that if the transition is carefully managed, the former can exceed the latter.

To be sure, there is less than full agreement on the best strategy for stimulating financial development. In particular, there is no agreement on how far the deregulation of domestic financial markets and transactions should proceed, and on whether it is also necessary at some point to deregulate the capital account of the balance of payments. In particular, not everyone agrees that there is a tradeoff between policies that limit financial instability by tightly regulating domestic financial markets and international financial transactions, on the one hand, and policies to encourage domestic financial development, on the other. Even among those who do, there is less than full consensus on the terms of trade.

This paper evaluates responses to the problem of financial instability in this light. Section 2 describes the challenge, asking questions like the following. Has crisis frequency been rising or falling? Have crises been growing more or less severe? What is their impact on poverty and other social ills? It then examines what we know about the causes of currency and banking crises and reviews additional estimates of their costs. It critically scrutinizes the case for domestic and international financial liberalization and asks whether the evidence lends support the relevant theory.

Section 3 considers alternative treatments for the problem of financial instability and presents some estimates of their costs and benefits. It discusses two "opportunities" with the capacity to diminish the prevalence of financial instability but at significant cost in terms of growth and economic development foregone. It then goes on to describe two more unconventional treatments that would offer similar benefits at lower costs but subject to different degrees of political feasibility.

Before proceeding, a few comments on methodology irresistible. The organizers of this meeting seem to have in mind a specific template of how a discussion of policy interventions to address social and economic issues, including financial crises, should be framed.[8] Policy options should be referred to as "opportunities." Experts should assign numerical values to their costs and benefits. Results should be derived by assembling and crunching lots of numbers. Large simulation models are presumably best for these purposes. Panelists can then simply turn to the last page of the computer printout and read which number for "net benefits" is largest.

Several decades of social-science research have taught us the importance of making our assumptions explicit and of unambiguously describing the logical apparatus used to move from assumptions to conclusions. It is important to clearly specify the model underlying a particular piece of analysis and to provide clear justifications for its assumptions. But this does not mean that a more complicated model is better. Large models have advantages, but large simulation models of the extent, costs and benefits of a problem, whether the latter is financial instability, global warming, population ageing or any other issue that might be considered by the experts assembled by the Copenhagen

[8] Here I am drawing conclusions both from the instructions given to the authors of expert papers for the Consensus and personal communications from the organizers.

Consensus, will be full of assumptions of varying degrees of reliability. The larger the model, the more such assumptions are heaped one on top of the other, and the harder it is to understand which assumptions are critical for the results. The assumptions are sometimes so numerous that it is impossible to even mention them all, much less discuss them.

Not only does this make the source of a "finding" hard to identify, but it encourages a false sense of precision. If a variety of other assumptions about parameter values and structural relationships are equally plausible, so too are a variety of other estimates. In large models, this point cannot be met simply by constructing confidence intervals, since so many parameters and structural relationships can be varied and these interact in poorly-understood but clearly high-nonlinear ways. The point applies equally to the simulation models built by natural scientists to explain physical phenomena and to the simulation models built by economists to explain social phenomena; natural scientists will readily admit that these same points apply to studies of, inter alia, the determinants of global warming or the spread of disease vectors. For some applications, the costs of this approach may exceed its benefits.[9] The more general point is that there are reasons to question an approach that encourages all authors, regardless of the problem with which they are concerned and the literature on which they build, to adopt a common template.

2. The Challenge

A foundation of recent research on financial liberalization is the observation that the policy has both benefits and costs. The benefits of well developed, freely functioning financial markets are familiar if difficult to quantify. These include the ability for

[9] To use the organizers' preferred language.

individuals and households to smooth their consumption by borrowing and lending, to share risk by diversifying their portfolios of assets and liabilities, to undertake profitable investment opportunities that would otherwise be inhibited by liquidity constraints, and more generally to achieve faster growth, greater returns on investment, and higher incomes. The costs take the form of volatility in markets that respond sharply to new information – volatility with which the affected economies can find it difficult to cope.

It is important to emphasize that volatility is intrinsic to financial markets. The more efficient are markets, they more decisively they will react to new information, and the more volatile they are likely to be, other things equal. Volatility cannot – indeed, it should not – be eliminated. It is a mechanism for conveying information relevant to resource allocation decisions.

But excessive volatility can be disruptive and costly. A sudden decline in asset valuations can erode the value of collateral on which access to external finance depends. When credit and leverage are widely utilized, the result may be a domino effect of bank failures and distress among nonbank financial intermediaries. The consequences can include a cascade of cancelled investment projects, leading to a sharp drop in output. Thus, the challenge of coping with financial instability is not to eliminate volatility but to limit it and its negative effects.

A recent analysis of this tradeoff is Ranciere, Tornell and Westermann (2003) in an NBER working paper that received prominent coverage in *The Economist.*[10] The authors show that countries where credit growth is relatively volatile, because financial markets are allowed to operate more freely, tend to grow more quickly. The authors even find that countries where credit growth is more negatively skewed – where relatively

[10] "Economics Focus: No Pain, No Gain," *Economist Magazine* (13 December 2003, p.77).

steady growth rates are interrupted by occasional sharp drops, presumably associated with financial crises – grow more quickly than those where credit growth is slow and smooth. Thus, even though volatility may cause periodic sharp drops in credit output, the benefits for growth of having free if also volatile financial markets may still exceed the costs.[11]

The net benefits would be even greater, of course, if the occasional, disruptive drops in credit growth associated with crises could be eliminated without also eliminating the positive impact on growth. The next section of this paper considers some possible ways of going about this.

On the costs of financial instability. A moment's reflection reveals why there exists a range of estimates of the costs of financial crises. First, there is disagreement about what constitutes a crisis. Analytically, a crisis can be defined as a sharp change in asset prices that leads to distress among financial markets participants.[12] In practice, unfortunately, it is not clear where to draw the line between sharp and moderate price changes or how to distinguish severe financial distress from financial pressure.

Even if crises can be identified, there is still the problem of quantifying their effects. As a first cut, one might attempt to measure the induced fall in GDP. But simply taking the difference between growth rate in crisis and non-crisis periods may not be an appropriate way of going about this. Crises may result from recessions rather than or in addition to causing them. The entire fall in output may not be properly attributable to the crisis, in other words. Similarly, crises may be more likely following periods of

[11] Some calculations below, using an entirely different methodology, reach essentially the same conclusion.
[12] This definition is due to Eichengreen and Portes (1987).

unsustainably rapid economic growth; in this case, simply taking the difference between growth rates before and after the event will exaggerate its effects.

Bordo, Eichengreen, Klingebiel and Martinez-Peria (2001) attempt to take the preceding observations on board in estimating output losses due to crises for a consistent sample of 21 middle- and high-income countries over the last 120 years, as well as for a larger sample of emerging markets over the shorter period starting in 1973. Over the entire period, the loss from the average crisis approaches 9 per cent of GDP, and the probability of a randomly selected country experiencing a crisis in a random year averages 8 per cent. Thus, at slightly less than one per cent per annum, their estimates of average annual output losses are close to those presented by Dobson and Hufbauer (2001) for emerging markets and developing countries in the 1980s and 1990s (and, again, generated using an entirely different approach). A range of other empirical studies reach similar conclusions.[13]

Averages like these tend to conceal the diversity of country experience. Some financial crises produce relatively limited output losses, while others, such as those of Indonesia in 1997-8 and Argentina in 2001-2, precipitate a full-scale economic collapse, in which output falls by upwards of 20 per cent and living standards, further eroded by the collapse of the country's exchange rate and the terms of trade, fall by even more.

Statistical analyses also provide a sanitized sense of the social consequences. To remind oneself of the immediacy of these effects, it is only necessary to observe that

[13] To cite to of the more authoritative studies, Caprio and Klingebiel (1996) estimate that banking crises cost 2.4 per cent of output per year for each year of their duration. Goldstein, Kaminsky and Reinhart (2000) estimate that currency crises cost 3 per cent of output per year of their duration in low-inflation countries and 6 per cent of output per year of their duration in high-inflation countries. To get annual averages like those in the text and Table 1, it is then necessary to multiply these output losses by the corresponding crisis frequencies. Mulder and Rocha (2000) provide a critical review of the empirical literature.

Indonesia and Argentina experienced larger falls in output and real incomes than that suffered by the United States in the Great Depression, an event that produced a revolution in social and economic policy. This is another way of saying that the social impact of financial crises can be enormous. Chen and Ravallion (2001) have estimated that the Asian crisis in 1997 increased the incidence of poverty in the region by 22 million individuals. In South Korea alone, the total number of poor rose from 6 million in 1997 to more than 10 million in 1998. (Table 2 below shows the associated changes in social indicators ranging from divorce to crime to drug addiction to suicide.) To put these figures in perspective, recall that Korea was not even a case where the Asian crisis was relatively severe (largely because recovery from the crisis was unusually rapid). In Indonesia (where the crisis was severe), poverty increased from 7-8 per cent in the second half of 1997 to 18-20 per cent in September 1998 (Suryahadi et al. 2000). Atinc and Walton (1999) show that women and girls generally suffered the most from the decline of living standards. If the goal of the Copenhagen Consensus is to address social ills like gender inequality, crime, drug addiction, poverty and suicide in a broad range of countries, then an "opportunity" that successfully addresses the problem of financial instability would seem to be a priority.

There is little evidence in the Bordo et al. study just cited that the output costs of banking or currency crises have been rising or falling. What does seem to be changing is crisis frequency, which was greater in the 1970s, 1980s and 1990s than over the entire 20th century and the 1950s and 1960s in particular. (See Figure 1.) This increase in frequency is mainly due to an greater incidence of currency crises and of twin crises (instances where currency and banking crises coincide and reinforce one another).

On the causes of financial instability. Recommendations for action should logically start from an analysis of the causes of these problems. Contributors generally distinguish four classes of explanations for financial instability and crises.[14]

Unsustainable macroeconomic policies. This was the focus of early crisis models such as Krugman (1979).[15] Countries suffer currency crises in these models because they run inconsistent and unsustainable policies. In the classic case, monetary and fiscal policies are too expansionary to be consistent with the currency peg. Countries experience banking crises because their governments treat the banks as a captive market for the public debt issues that they desperate must place in order to finance their deficits.[16] Macroeconomic imbalances are the fundamental cause of crises, in this view, although the proximate triggers may be contagion effects or imprudently low levels of foreign exchange reserves.

This leaves open the question of why governments run unsustainable and contradictory macroeconomic policies in the first place. Increasingly, scholars point to weaknesses in policy making processes. In some cases, the central bank lacks a clear mandate and independence from political pressures. In others, the excessive decentralization of fiscal institutions allows spending ministries and provincial authorities to spend now and appeal later to the central government for the necessary finance, creating common-pool problems for the fisc. Politicians in unstable political systems may spend and borrow excessively, without worrying about the intertemporal consistency

[14] Here I consciously avoid the first-generation, second-generation, and third-generation terminology that is commonly used (and frequently misused, causing no end of confusion) to distinguish different theories of balance of payments crises (an author's prerogative when the author in question coined this terminology).
[15] It continues to be the theme of authoritative analyses of recent crises, such as Mussa's (2003) treatment of the recent Argentine case.
[16] See Serven and Perry (2003).

of their fiscal plans, in order to increase their probability of staying in power. These theories thus point to the development of stronger policy-making processes as the fundamental prerequisite for financial stability.

Fragile financial systems. A number of recent crises were not obviously rooted in macroeconomic factors. Macroeconomic imbalances were not particularly prominent in the Asian crisis, for example.[17] At the same time, financial weaknesses seemed to play a larger role there than in previous crises. In countries like South Korea, the banks' dependence on short-term debt rendered them vulnerable to investor panic. More generally, balance-sheet vulnerabilities put banks and nonbank financial institutions (such as finance companies) at risk when confidence eroded and capital began to hemorrhage out of the financial system.

Recent work (e.g. Goldstein and Turner 2003) has emphasized the prevalence of currency mismatches in the financial system as a key source of financial fragility. When banks have assets in local currency but liabilities in dollars, fears of a crisis that lead to the exchange rate to weaken can become self-fulfilling, since at the now weaker exchange rate assets will no longer be sufficient to service or redeem liabilities.[18] Even when banks match the currency composition of their assets and liabilities, lending as well as borrowing in dollars, their clients, with incomes in pesos but debts in dollars, will be thrust into bankruptcy if the currency declines, bringing the financial system crashing down.

This view consequently emphasizes strengthening prudential regulation and supervision as the key to reducing financial instability. Governments should distance

[17] The case of Thailand notwithstanding to the contrary.
[18] Leading to further sales of domestic claims in anticipation of default, which in turn produces a further fall in the exchange rate.

themselves from the financial system, resisting the temptation to use domestic banks as instruments of development policy. Responsibility for supervision and regulation should be assigned to an independent central bank or regulatory agency. Special attention should be paid to limiting currency mismatches, not just on bank balance sheets but on the balance sheets of corporations and other borrowers as well. Again, however, this leaves open the question of why some countries regulate their financial systems so poorly in the first place.

Institutional weaknesses. This question has given rise to a literature emphasizing weaknesses in domestic governance structures as the ultimate cause of financial instability. Bank managers and corporate CEOs who are inadequately accountable to their shareholders may have inadequate incentive to prudently manage financial risks. Short-sighted governments, for their part, may be reluctant to distance themselves from financial institutions and may deny regulatory agencies the autonomy needed for their effective operation.

In this view, weak corporate and public sector governance allows excessive risk taking, resulting in vulnerable corporate financial structures (specifically, too much reliance on debt as opposed to equity and excessive dependence on short-term borrowing). The corresponding treatment is to strengthen shareholder and creditor rights, improve corporate governance and financial transparency, and place clear and credible limits on the official safety net extended to financial institutions.

Flaws in the structure of international financial markets. A final strand of analysis links financial instability, in emerging markets in particular, to the structure and operation of the international financial system, and specifically to aspects of that structure

largely beyond the control of individual countries.[19] Scholarly statements of this view emphasize the pervasiveness of asymmetric information in international financial markets, which encourages herding by investors and gives rise to sudden stops and capital flow reversals that can cause crises independently of conditions in the afflicted economies.[20] Capital mobility is the problem, in this view. Capital flows can be unstable due to the prevalence of other distortions.[21] The corresponding solution is retaining controls on capital flows.

A different statement of this view harks back to explanations for financial crises emphasizing weaknesses in financial systems, and currency mismatches in particular. It suggests that emerging markets are vulnerable to crises because of the reluctance of international investors to hold debt securities denominated in emerging-market currencies. Thus, countries that borrow abroad will inevitably have currency mismatches on their national balance sheets. Solving the problem of financial instability therefore requires an international initiative that will enhance the ability of emerging markets to borrow in their own currency.

Contributions to this literature, starting with Eichengreen and Hausmann (1999), observe that the global portfolio is concentrated in the currencies of a few large countries and international financial centers.[22] Although it is tempting to blame weak policies and

[19] This interpretation has roots in Keynes (1933) and Nurkse (1944), who generalized from the Great Depression about the destructive effects of destabilizing international speculation. A famous restatement of this view is the speech of then Malaysian Prime Minister Mahathir at the IMF-World Bank meetings in Hong Kong in 1998, in which he blamed hedge funds and other "international speculators" for destabilizing fundamentally stable emerging-market economies. For the academic version of this argument see de Brouwer (2001).
[20] See Devenow and Welch (1996).
[21] See Bhagwati (1998).
[22] Of the nearly $5.8 trillion in outstanding securities placed internationally in the period 1999-2001, $5.6 trillion was issued in five major currencies: the U.S. dollar, the euro, the yen, the pound sterling and Swiss franc. While residents of these countries issued $4.5 trillion dollars of debt over this period, the remaining

institutions for the difficulty emerging markets face when attempting to borrow abroad in their own currencies, even countries with admirably strong policies and institutions (Chile and Singapore are examples) find it difficult to borrow abroad in their own currencies. The one country characteristic that is robustly associated with the ability to borrow abroad in the local currency is country size (large countries can, small countries can't).

Transactions costs in a world of heterogeneous economies can explain this bias toward a small number of currencies issued by a handful of large countries. These observations are related to the literature on the determinants of key currency status (Kiyotaki, Matsuyama and Matsui 1992), which explains the dominance of a small number of currencies in international markets as a function of network externalities and transactions costs. They suggest that the global portfolio is concentrated in the currencies of a few countries for reasons largely beyond the control of those which are excluded.

The empirical literature. The empirical literature on explanations for financial instability is too extensive to be adequately summarized here. Suffice it to say that recent empirical studies suggest that these explanations for financial vulnerability are complementary rather than competing and that they can interact in mutually-reinforcing ways.[23] For example, the same macroeconomic imbalances are more likely to precipitate a crisis when the financial system is weak, since the authorities will be less able to raise interest rates in order to prevent capital from hemorrhaging out of the economy, reflecting the fear that weak banks will be unable to cope with higher interest rates,

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$1.1 trillion of debt denominated in their currencies was issued by residents of other countries and by international organizations. Since these other countries and international organizations issued a total of $1.3 trillion dollars of debt, it follows that they issued the vast majority of it in foreign currency.

[23] See for example Ghosh and Ghosh (2003).

bringing the financial system crashing down. Similarly, characteristics of the international financial system that make it difficult for emerging markets to borrow abroad in their own currencies make all the more imperative careful macroeconomic management and rigorous supervision and regulation to limit the vulnerabilities of the financial system. More attractive than attempting to run a horse-race between these explanations, in other words, is attempting to identify the appropriate treatments for each and estimating the costs and benefits of the latter.

On the benefits of financial liberalization. By tightly controlling financial markets and transactions, governments can limit financial instability. But if doing so was costless, then we would regularly see countries that experience financial crises slapping on tight controls. That we do not suggests that policies of financial repression have costs as well as benefits.

A large literature, going back to at least Schumpeter (1939) and Goldsmith (1969), documents the importance of financial development for economic growth. Recent research has focused on disentangling cause and effect, showing that the correlation does not reflect the operation of a third omitted variable, and quantifying the impact. Macroeconomic estimates using time-series techniques and dynamic panel estimators, as well as microeconomic and sectoral evidence, all point to independent effects running from financial development to economic growth. Khan (2000), in a review of the relevant literature, shows that raising a country's level of financial development (as measured by the sum of stock market capitalization and domestic bank

credit as a share of GDP) from the levels of India to the levels of Singapore can raise its growth rate by 2 per cent per annum.[24]

The question for present purposes is whether policies that restrict domestic and international financial transactions also discourage financial development.[25] That statutory restraints on domestic financial transactions limit financial development is uncontroversial; indeed, that regulatory limits on domestic financial transactions limit such transactions is all but tautological. Empirically, authors like Demetriades and Luintel (1996) report econometric estimates that banking sector controls have negative effects on domestic financial deepening.[26] Others like Henry (1998) have provided evidence for financial markets as well as financial institutions, showing that liberalization is associated with an increase in capitalization, valuation and turnover on equity markets.[27]

More controversial is the link between capital account liberalization and financial development. De Gregorio (1998), in what is perhaps the first systematic study of this question, finds that domestic financial development is negatively impacted by capital controls. Klein and Olivei (1999) extend this analysis to a larger sample of countries and

[24] Other reviews of the relevant literature include Levine (1997) and Khan and Senhadji (2000). Singapore is a small country that has attempted to specialize as a financial center; consequently, it has unusually high levels of stock market capitalization and domestic bank credit as shares of GDP. Biasing this example in the other direction is the fact that India has a higher ratio than other developing countries (Pakistan and Bangladesh, for example). More modest estimates are used in the cost-benefit analysis exercises below.

[25] Alternatively, one could look at the impact of domestic financial liberalization on the efficiency of domestic resource allocation directly without forcing the effects to go through financial deepening (analogously to studies, considered below, that look at the direct impact of capital account liberalization on resource allocation growth). Abiad, Oomes and Ueda (2003) construct comprehensive indicators of domestic financial liberalization and show, using firm-level data, that countries with freer domestic financial markets are characterized by a lower dispersion of Tobin's q, which is an indicator of more efficient resource allocation.

[26] The one policy that does not obviously have this effect is lending rate ceilings, but the effect of all other banking sector controls is strongly negative.

[27] Which in turn has positive effects on investment and growth. Some of Henry's work, discussed further below, suggests larger effects of some forms of financial-market liberalization (those affecting equity flows) than others (those affecting debt flows).

again find that financial development is negatively affected by the maintenance of capital controls. However, they find that this relationship is significant only for the developed countries in their sample. Chinn (2001), on the other hand, finds that some of the largest effects on activity in equity markets (as measured by the total value of equities traded and equity market turnover) are for developing countries.[28]

Some authors bypass the link from specific liberalization measures to financial development and from there to economic growth and to ask whether there is evidence that the removal of restraints on international financial transactions impacts growth directly. An early and widely-cited econometric study by Rodrik (1998) lent no support to this hypothesis. Subsequent investigators have reproduced his results, with some prominent exceptions (see Table 3).[29] At the same time, the fact that the advanced-industrial countries all have open capital accounts suggests the existence of a threshold above which the removal of capital controls is viewed as advantageous. This has led to a recent literature seeking to estimate thresholds above which capital account liberalization has favorable effects but below which it does not (for example, Klein 2003, Presad et al. 2003, Ferreira and Laux 2003). In the most widely cited of these studies, Klein places this threshold at a per capita income of US $2,000.

[28] As the author notes, it is the same forms of financial activity that exhibit the strongest connection to economic growth (in, inter alia, Henry 2002) that are evidently most likely to be stimulated by financial liberalization.

[29] The reason for these disagreements is of course straightforward enough. Analytically, it is always possible for a policy that removes one distortion to reduce rather than increase welfare and growth if other distortions are present. Thus, Hellman, Murdock and Stiglitz (2000) present a model in which the removal of ceilings on domestic interest rates may be welfare reducing because of asymmetric information that gives rise to moral hazard in banking. Other authors have provided analytical demonstrations that the removal of controls on capital inflows and outflows can be welfare reducing rather than welfare increasing when other distortions are present. A classic demonstration is Brecher and Diaz-Alejandro (1977). These results are not surprising; they are straightforward applications of the theory of the second best.

Other authors have attempted to distinguish different aspects of capital account liberalization. For example, Henry (2003) looks at the effects of liberalizing the access of foreign investors to domestic equity markets. He finds that the growth rate of the capital stock increases by an average of 1.1 percentage points per year following such liberalizations, while the growth rate of output per worker rises by 2.3 percentage points per year. He concludes that since the cost of capital falls, investment accelerates, and the growth rate of output per worker increases when countries liberalize the stock market, "the increasingly popular view that capital account liberalization brings no real benefits seems untenable."[30]

Related to this is recent work considering the impact of capital account liberalization not on growth but on volatility. Kose, Prasad and Terrones (2003) find that in the 1990s capital account liberalization is associated with an increase in the volatility of consumption. Gavin and Hausmann (1996) similarly find a positive association between the volatility of output and the volatility of capital flows. O'Donnell (2001) also finds that a higher degree of financial integration leads to a higher level of output volatility in developing countries (in contrast to the results for OECD countries, where more financial integration leads to less output volatility).

This association of capital account liberalization with volatility helps to explain why positive connections to growth are difficult to detect. If capital account liberalization increases the likelihood of costly crises and output losses, or if crises lead to larger output losses when the capital account is open, then it is not surprising that it is hard to distinguish the positive effects of capital account liberalization on growth. This is

[30] In subsequent work (Henry and Lorentzen 2003), he argues that some forms of liberalization (those affecting equity flows) have more favorable affects than others (those affecting debt flows).

the finding of Eichengreen and Leblang (2003), who show that capital account liberalization slows growth when it is undertaken by countries that are crisis prone but accelerates it when it is undertaken by countries that are not.[31]

Summary. A growing body of evidence shows that financial liberalization is a two-edged sword. Liberalization facilitates financial deepening and development, which has strong positive impacts on economic growth, other things equal. At the same time, liberalized financial markets can be volatile, and extreme instances of volatility can result in sharp dislocations (financial crises) that result in costly output losses. There is some dispute about how significantly capital account liberalization stimulates financial development and economic growth and about whether it has different effects on countries at different levels of economic and institutional development. But the general point is that policies that limit financial instability by limiting financial transactions are likely to have costs as well as benefits. It would be preferable, the implication follows, to find ways of limiting costly financial instability without at the same time discouraging financial development.

3. Opportunities

This section considers four options ("opportunities") for addressing the problem of financial instability.

There is of course a fifth option, which is to simply to continue to encourage economic development and growth. As noted above, financial instability is often seen as a consequence of weaknesses in policies and institutions symptomatic of economic underdevelopment. While advanced countries also experience financial turbulence, full-

[31] Other studies reach similar conclusions, as shown in Table 4.

blown crises there are now exceptional.[32] Economic and financial development and maturity have thus led to increased financial resiliency, allowing the high-income countries to obtain a superior point on the tradeoff between financial development and volatility. For those who see financial instability as just another symptom of economic underdevelopment, one conceivable response is simply to continue with the current approach of encouraging economic development and growth. As rule of law – and shareholder and creditor rights in particular – becomes more firmly established, market participants will be able govern financial markets more effectively. The public sector will develop an enhanced regulatory capacity. Problems of financial instability will then find a natural solution, as they have in the high-income countries. The international policy community, led by the multilateral financial institutions, can remind emerging markets of the need to enhance financial transparency, strengthen shareholder and creditor rights, and improve prudential supervision and regulation, and by exerting peer pressure for the adoption of such measures. The recent push to promulgate international standards for financial best practice is an illustration of this international role.[33] But beyond this they need not go.

There is much merit in this point of view, and the policy agenda that flows from it should continue to be pursued whether or not, in addition, one or more of the

[32] Prasad et al. (2003) document the lower levels of volatility in these countries. Again, the fact that all of the advanced-industrial countries have chosen to deregulate their domestic financial markets and capital accounts in order to reap the efficiency advantages of financial liberalization is evidence that the negative side effects, in the form of increased volatility and financial instability, have been reduced to acceptable levels. Historically, the United States is a clear example of a country that has undergone this transition. In the 19th century it was regularly battered by financial instability. See Sprague (1910). Although it still experiences financial disturbances (like the Savings & Loan problem of the 1980s and the all but failure of Long-Term Capital Management of the 1990s), these events generally do not have the highly disruptive output effects evident in emerging markets.

[33] The most notable of these standards is the Basel standard for capital adequacy of internationally active banks. This standard-setting agenda received an additional push from Goldstein's (1997) proposal for an international banking standard. On the subsequent expansion of the standard-setting process, see IMF and World Bank (2001).

"opportunities" listed below is also pursued. Adopting one of the innovative treatments for financial stability detailed below will produce few benefits if it is taken as an excuse to slack off on ongoing efforts to strengthen economic and financial institutions and policies. At the same time, building stronger policies and institutions is easier said than done. It may take many years for the natural process of "growing up" to reduce financial instability to socially acceptable levels.[34] As Reinhart, Rogoff and Savastano (2003) emphasize, emerging markets have made only painfully slow progress in this direction. And, as poor countries grow less poor and their development becomes more financially intensive, they may experience more financial instability before they experience less, unless additional steps are taken to address the problem. This creates a certain impatience with the standard diagnosis and conventional, if not unimportant, treatment.

The question is what additional steps to take. I now consider four options ("opportunities") for addressing the problem of financial instability.

1. Re-regulate domestic financial markets. A long line of work, starting with the literature on narrow banking, advocates strict regulation of domestic financial institutions and markets in response to problems of financial instability.[35] Such measures would limit the growth of bank credit to the economy and bond and equity market capitalization relative the benchmark in which domestic financial markets and institutions are lightly regulated. The more comprehensive the relevant regulations (and the more effective they therefore are in limiting financial instability), the more certain one can be

[34] To return to the previous illustration, it took the United States half a century and more; recall the devastating financial crises of the 1930s.

[35] In today's world, such regulatory measures would be effective only if they were comprehensive. Narrow banking would not be enough, for intermediation would simply shift from banks to near-banks (such as finance companies, as was the case in South Korea after 1997) and securities markets, and the result would be no significant reduction in financial instability.

that the growth of credit to the private sector would be constrained. Less financial instability would be attained at the cost of less financial depth and development.

To be clear, not all regulation discourages financial development or efficient financial intermediation. Given the prevalence of asymmetric information leading to adverse selection and moral hazard in financial markets, the argument for some regulation to enhance market efficiency and development is incontrovertible. Conceptually, one can imagine a continuum stretching from zero to one, where zero denotes no regulation and one denotes draconian financial repression. From the point of view of financial development, the optimal intensity of financial regulation lies somewhere in the middle. The current thought experiment involving asking what happens when the intensity of regulation is moved significantly beyond this point.

Some simple cost-benefit calculations run as follows.[36] Assume that re-regulation of domestic financial markets eliminates banking but not currency crises.[37] Banking crises are less frequent and costly in terms of output losses than currency crises, according to Dobson and Hufbauer, on whose estimates I draw.[38] The average output loss per year from a banking crisis is 53 per cent as large as the average output loss per year from a currency crisis, and a banking crisis in randomly selected country in a randomly selected year is 66 per cent as likely as a currency crisis. The result is to attribute 30 per cent of the total cost of financial crises to their banking crisis component.

[36] For this option, I also assume no change in international financial regulation. Goldstein and Turner (2003) explicitly make the point that it is then possible to open the capital account and enjoy the benefits of international financial transactions if the banking system is adequately regulated to limit currency and maturity mismatches (and complementary steps are taken on the corporate governance front.)

[37] Since currency crises can and have occurred for a variety of reasons not related to instability in the banking system (see Section 2 above), there is no reason to think that they too would disappear as a result of this approach to the problem.

[38] As noted above, a variety of other estimates (like those of Bordo, Eichengreen, Klingebiel and Martinez-Peria 2001) for the post-1973 period are compatible and would lead to very similar results.

Given a ballpark estimate of a 1 per cent loss in developing GDP growth per annum due to financial crises, a 0.3 per cent per annum loss of GDP is eliminated by this policy intervention.

The costs of the intervention depend on the elasticity of economic growth with respect to financial development and on how drastically financial regulation hinders the development of financial markets. Demetriades and Luintel (1996, Table 3) provide detailed estimates of the impact on financial development for one country, India; their estimates suggest that moving from deregulated to highly regulated financial markets results in a 30 per cent percentage decline in financial depth at the mean (where the financial intermediation ratio is computed relative to GDP). King and Levine (1993) show that reducing financial depth by this amount will cut per capita growth by 1 percent a year.

Putting these pieces together, the net benefits of this first "opportunity" are -0.7 per cent of developing country GDP per annum. To express this as a share of global GDP, recall that developing countries account for slightly less than one-half of global GDP (42.9 per cent in 2000) when the latter is computed at purchasing power parities. The result is a loss of just above $100 billion per annum in 2003 U.S. dollars as an annual flow, an amount which will rise as the world economy continues to expand.[39]

As noted above, it would be silly to attach an unrealistic degree of confidence to such estimates. For example, some readers may object to King and Levine's estimates of the impact of financial development on economic growth as too large.[40] But it is

[39] $107 billion, to be precise. This figure is derived by grossing up IMF estimates of global GDP in 2000 by 9 per cent to account for growth in the interim, taking the developing country share of this total (at purchasing power parity exchange rates), and multiplying the result by 0.007.
[40] Or too small.

straightforward for the reader to scale down this parameter and then to the estimates of the gross costs of this initiative proportionately. That a specific number is presented for this estimate in the text and Table 5 below (as per the organizers' instructions) should not lead one to pay undue attention to this one point estimate. But a more general analysis would not change the key conclusion that this treatment for financial instability would have significant costs that would in large measure offset its benefits.

2. Reimpose capital controls. This recommendation responds to the view that the volatility of capital flows and international financial markets is at the root of financial instability. The experience of countries like Malaysia suggests that the maintenance of strict capital controls can limit the risk of currency crises, but at some cost in terms of domestic financial development. Since the share of the costs of financial crises that is not attributable to banking crises is attributable to currency crises, the calculations of the preceding subsection lead immediately to the conclusion that benefits of this intervention are 0.7 per cent of developing country GDP.

Estimating the costs of this intervention requires an estimate of the impact of capital account restrictions on financial depth and development. Widely cited estimates by Klein and Olivei (1999) suggest that the financial intermediation ratio (calculated as liquid liabilities as a share of GDP) is 28 per cent lower in countries that continuously maintain capital controls than in countries that eliminate them.[41] Note that this effect is very slightly smaller than the effect of strict domestic financial regulation on financial deepening and development. King and Levine's (1993) work on the connections between

[41] These are their instrumental variables estimates, which seek to control for simultaneity. Klein and Olivei's results suggest, intuitively enough, that this effect is most robust for developing countries. That is the way that they are applied in the current exercise, since the calculations of the costs and benefits of capital account regulation presented here are for developing countries only.

financial development and growth again suggests that reducing the financial development ratio by this amount will lower per capita income growth by 1 percent per annum.

The net benefits of this second "opportunity" are then -0.3 per cent of developing country GDP. Again, to express this as a share of global GDP, recall that developing countries account for slightly less than one-half of global GDP when the latter is computed at purchasing power parities. The resulting total, computed as above, is a net loss per annum of $42 billion in 2003 U.S. dollars, an amount that will again rise as the world economy continues to expand.

Again, sensitivity analysis of this point estimate is straightforward. Some observers will question whether the impact of capital account liberalization on the financial intermediation ratio is as large as estimated by Klein and Olivei. It is straightforward to scale down this parameter and scale down the estimated gross costs of this initiative proportionately. Others will doubt whether measures to re-regulate capital account transactions will eliminate all currency crises, since even the tightest capital controls can sometimes be evaded and when there are other potential sources of financial instability the incentive to do so will be strong. Again, it is straightforward to assume that strict regulation of capital flows eliminates only some fraction of currency crises and to scale down the estimate of gross benefits proportionately.

Be that as it may, the preceding analysis suggests that re-regulating domestic financial markets and reimposing strict capital controls are unattractive. While these measures can limit the incidence of banking and currency crises, these gains come at significant cost. In both cases, representative estimates from the mainstream economic literature suggest that those costs, which take the form of limiting financial development,

may actually exceed the benefits, in the form of limiting financial instability.[42] It can be argued that the preceding exaggerates the negative impact of strict domestic financial regulation and capital controls on domestic financial deepening and development or the positive effects of financial development on economic growth. But other authors have reached similar conclusions on the basis of independent, and often very different, analyses.[43] And even if such effects are arguably subject to exaggeration, there is no doubt that they exist. As such, net gains will be smaller than gross gains. In turn this creates an understandable wish to look to other opportunities for limiting financial instability.

3. Adopt a common currency. Currency mismatches are widely implicated in financial crises in developing countries. As noted above, developing countries that borrow abroad do so in foreign currency, virtually without exception. Countries that accumulate a net foreign debt, as capital-scarce developing countries are expected to do, therefore incur a currency mismatch. This mismatch is a source of currency instability, insofar as even limited exchange-rate depreciations significantly increase the domestic-currency cost of servicing external debts, in turn precipitating the kind of large depreciation that is the defining feature of a currency crisis. Currency mismatches are also a source of banking-sector instability insofar as exchange rate depreciation then has adverse balance-sheet effects for the banking sector, as well as for the corporate sector that is the banks' principal lending-side clientele.

[42] Thus, focusing on these policy options sits uneasily with the organizers' notion that expert papers should concentrate on "opportunities" whose benefits presumably exceed their costs. But proposals for financial re-regulation and the reimposition of capital controls have been – and remain – the starting point for the policy debate, and no analysis which neglects them would be regarded as definitive. If I have convinced my readers that these widely-cited options have costs as well as benefits and that the former might even dominate, then focusing on two "opportunities" whose net returns are estimated as negative has served its purpose.

[43] See Dobson and Hufbauer (2001), p.69 and passim.

Some commentators insist that the inability of developing countries to borrow abroad in their own currencies reflects weaknesses in their domestic policies and institutions that can only be remedied by developing stronger policies and institutions.[44] Since strengthening policies and institutions takes time, in the meantime developing countries face the Hobson's choice of either suffering these vulnerabilities or limiting net foreign borrowing (since net foreign borrowing means net foreign currency borrowing) and domestic financial development through the policies described in previous subsections.[45]

But insofar as the cause of financial vulnerability is currency mismatches, currency unification provides another opportunity for remedying it. If borrowing and lending countries have the same currency, currency mismatches are eliminated, by definition, and they no longer create vulnerabilities in financial systems. This has led authors like Mundell (2000) to envisage a single world currency as a solution to the financial instability problem.[46] The experience of the euro area illustrates how this response can eliminate the currency-crisis problem; just contrast the prevalent of currency crises in Europe in the 1980s and 1990s with their absence from the euro area today.

Eliminating currency crises produces a benefit to emerging markets 0.7 per cent of developing country/emerging market GDP per year (as calculated in the preceding

[44] See for example Reinhart, Rogoff and Savastano (2003).
[45] Thus, Reinhart, Rogoff and Savastano argue that developing countries should solve this financial-fragility problem by limiting foreign borrowing, notwithstanding the possible negative implications for their sustainable rates of growth.
[46] Early analyses recommended currency boards and unilateral dollarization as possible solutions to the problem (see e.g. Eichengreen 1994, Eichengreen and Hausmann 1999), but recent experience, notably in Argentina, suggests that such arrangements would not be sufficiently durable to rule out the possibility of reissuance or additional issuance of the national currency, and that they would therefore be unlikely to provide a durable solution to the mismatch problem.

subsection). Generalizing from the experience of the euro area, the changeover costs of replacing national currencies with a single world currency would be no more than 0.1 per cent of GDP. Together these figures suggest an initial annual gross flow benefit of $107 billion, a nearly 600 per cent annual return on an investment of $16 billion, or a net gain of $91 billion per annum.[47]

An appeal of this proposal is that the single-currency solution would not enhance financial stability at the cost of financial development. To the contrary, Europe's experience with a single currency suggests that adoption of a single currency may have positive implications for financial depth. Witness the rapid growth of a pan-European corporate bond market following the elimination of currency risk premia by the euro.

On question about this proposal is how banking crises will be affected by a move to a single world currency. Insofar as banking crises result from vulnerabilities associated with the presence of currency mismatches on the balance sheets of financial and nonfinancial firms, their incidence and costs will be reduced (along with the incidence and costs of currency crises), raising the gross benefits from the policy by as much as an additional 40 per cent.[48] On the other hand, one can argue that a policy initiative that eliminates currency volatility without otherwise modifying the underlying sources of volatility may only cause the same volatility to show up elsewhere, for example in banking systems rather than currency markets. For example, if macroeconomic volatility increases as countries forsake the option of an independent

[47] With the share of developing countries in world GDP again calculated at purchasing power parities. The net gain of $91 billion falls to $50 billion when that share is calculated at market exchange rates.
[48] Recall that three tenths of the total costs of financial crises are attributable to banking crises according to the studies underlying the preceding calculations, while seven tenths are attributable to currency crises. Three over seven is approximately 40 per cent. This is an upper bound on the additional benefit, of course, insofar as banking crises also occur for reasons not related to currency mismatches.

national monetary policy that can be tailored to local needs, this increase in amplitude of business cycles may limit the reduction in banking crises, or even lead to more banking-sector instability, not fewer.[49] Unfortunately, there is no consensus on how useful an independent monetary policy is for damping cyclical fluctuations.[50]

The other question that must be posed concerns the political feasibility of a world currency. For many countries, the national currency has symbolic value matched only by the national flag and national airline. At the same time, it is tempting to argue that if monetary unification is possible for Europe, then there is no reason that it should not be possible for the world as a whole. But in Europe monetary integration is part of a larger integrationist project with political as well as economic aspects. In Europe, there exists a European Parliament to hold the European Central Bank politically accountable for its policy actions. In contrast, there exists no body with analogous powers at the global level and little prospect of creating one for the foreseeable future.

Thus, the lack of a mechanism for political accountability is a serious obstacle to the creation of a single world currency. This is why many observers regard this option as politically unrealistic over the time frame relevant for practical policy making.

4. Pursue an international solution to the currency-mismatch problem. A fourth approach is to address the distortions in international financial markets that make it difficult for developing countries to borrow abroad in their own currencies. This would help to limit financial instability by eliminating the problems that saddle net foreign debtors with costly currency mismatches. It would allow them to borrow abroad to

[49] This is also a caveat to the notion that currency unification would encourage financial development, insofar as additional macroeconomic volatility due to the abandonment of the stabilization role of national monetary policy would negatively impact the development of financial markets.
[50] The latest IMF analysis of this question (Rogoff et al. 2003) suggests that it has been of little if any value in practice for the developing countries that are the subject of the present analysis.

smooth consumption and finance their investment needs. It would not enhance financial stability at the cost of financial development.

As explained in Section 2, some analysts view the difficulty that developing countries have in borrowing abroad in their own currencies as related to the limited appetite of international investors for emerging-market currencies. Eichengreen and Hausmann (2003) show that the global portfolio is concentrated in the currencies of a few large countries and international financial centers. The explanation, they suggest, is that for other more "exotic" currencies the management costs incurred by international investors exceed the associated benefits in the form of additional portfolio diversification. In addition, they show that markets in the currencies of the select few emerging economies that have managed to escape this problem have tended to develop through debt issuance by nonresidents, who then swap their debt service obligations into their currency of choice, allowing residents on the other side of the swap to offload their currency risk as if they had borrowed in local currency.

The authors therefore propose the creation of a synthetic unit of account in which claims on a diversified group of emerging-market economies can be denominated, together with steps by the international financial institutions to develop a liquid market in claims denominated in this unit. They propose that the nonconcessional windows of the World Bank and other international financial institutions (IFIs) should issue debt in this index. Their AAA rating allows the IFIs to place debt with institutional investors. The historical properties of the underlying bonds suggests that claims denominated in this unit would exhibit trend appreciation, relatively low volatility, and a negative correlation with

consumption in the countries in which they are marketed, all of which would make them attractive to international investors.

To be sure, such claims would be less attractive initially insofar as the market in them would be relatively illiquid. However, given the mandate of the international financial institutions to foster economic growth and stability, it can be argued that the IFIs should subsidize issuance until sufficient liquidity develops to make the new bonds easily tradable. The G-10 countries should then follow by issuing sovereign debt denominated in the EM index. As a liquid market develops, developing countries will be able to do the same. The result will be the more efficient international diversification of risks and a reduction in financial fragility.[51]

The proposal described in Eichengreen and Hausmann (2003) has four components. Step 1 is to define an inflation-indexed basket of currencies of emerging and developing countries (the "EM index"). Step 2 is for multilateral institutions like the World Bank to issue debt denominated in this index. To avoid incurring a currency mismatch, they would convert a portion of their existing loans into claims denominated in the inflation-adjusted currencies of each of the countries included in the index so as to replicate the index in their pattern of lending. Step 3 would broaden and deepen the EM market by having G-10 sovereigns issue debt in this instrument and swap their currency exposure with countries whose currencies are included in the EM index. Step 4 would

[51] This is not the only proposal for increased international risk sharing as a response to problems of macroeconomic and financial instability. The World Bank has attempted to promote the development of insurance markets for terms-of-trade risk. Shiller (2003) has proposed that governments issue derivative securities that would permit GDP-per-capita swaps between countries as a way of diversifying country-specific macroeconomic risks. Caballero (2003) has advocated the development of instruments indexed to the prices of the principal commodity exports of emerging-market borrowers. Berg, Borensztein and Mauro (2002) have promoted the idea of GDP-linked bonds, the coupons on which would fluctuate with the growth of real GDP. The Eichengreen-Hausmann proposal is one more attempt, in this spirit, to help to complete incomplete financial markets.

then encourage institutional investors and mutual funds to create products that add credit risk to the index as a way of further encouraging the development of the market. The details of this proposal are described in Appendix A.

It is important to emphasize that this proposal does not envisage additional official lending. It does not entail an expansion in the scale of the World Bank's lending operations.[52]

The benefits of this initiative would be similar to those of the single-currency option described above. Eliminating the risk of currency crises by no longer forcing developing countries that are net foreign debtors to incur currency mismatches again produces a benefit of 0.7 per cent of developing country/emerging market GDP per year. This amounts to an initial annual flow benefit of $107 billion. Again, insofar as only some currency crises are eliminated by this initiative, one will want to scale down this estimate. On the other hand, insofar as banking crises result from vulnerabilities associated with the presence of currency mismatches on the balance sheets of financial and nonfinancial firms, their incidence and costs will be reduced (along with the

[52] An expansion of IFI lending may or may not be desirable for general development purposes, but it is not integral to the present initiative. Neither does the proposal imply that developing countries should issue debt in EMs. This would not help to solve the currency-mismatch problem since it would just substitute exchange rate risk vis-a-vis the EM for exchange risk vis-a-vis the dollar. Currency risk would not be significantly diminished, because any one emerging market currency would only account for a fraction of the EM basket. Rather, the proposal is designed to allow countries to denominate their obligations in constant units of their domestic consumption basket. That is, they would become able to issue domestic-currency-denominated bonds indexed to their consumer price indices. The World Bank (and possibly the regional development banks) would aggregate the loans of the countries making up the EM index in order to create a basket of loans with the same currency composition as the EM bonds that they themselves issue. Institutional investors would not do this for them because private markets would initially be lacking in liquidity. But by taking steps to render the market more liquid, they would be paving the way for private financial institutions to take over the task.

incidence and costs of currency crises), one may want to raise one's estimate of the gross benefits (by up to an additional 40 per cent).[53]

The costs of this initiative will depend on the yield that investors demand on EM-denominated World Bank bonds.[54] This will differ from the yield on dollar-denominated World Bank bonds for three reasons. First, it will depend on the expected change in the exchange rate between the dollar and the EM index over the life of the bond.[55] Second, it will depend on the risk premium that foreign investors require in order to hold EM currency risk. Third, it will depend on the liquidity premium that investors demand to compensate them for the more limited liquidity of the new instrument.

It is hard to estimate the magnitude of these costs. The reduction in risk associated with making the world a safer financial place and the expected appreciation of the EM might in fact result in no additional interest rate cost for the World Bank. On the other hand, new instruments often have to be priced at a discount until investors gain familiarity with them and liquid secondary markets develop. The World Bank could choose to absorb this cost on the grounds that it has an interest in solving currency-mismatch problems that threaten the stability of the international financial system.

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[53] Again, this is an upper bound on the additional benefit insofar as banking crises also occur for reasons not related to currency mismatches.

[54] In principle, the additional balance-sheet risk assumed by the World Bank might be included. In practice, however, it is not obvious that the Bank and its regional counterparts would be assuming additional balance-sheet risk. The effect of the initiative would be to repackage currency risk already on their books and place it with international investors through the issuance of EM-denominated debt. Emerging markets that borrow from the World Bank, for their part, would be able to off-load the currency risk currently associated with their debt service obligations. Insofar as the result is an improvement in the capacity of countries borrowing from the Bank to keep current on their external obligations, the credit risk in the World Bank's loan portfolio could in fact decline, other things equal. In addition, there would be no additional convertibility risk as countries payments would be made in the same currencies used at present.

[55] As explained in Appendix A, since the EM should have a tendency to appreciate against the dollar due to the Balassa-Samuelson effect, on average this factor should reduce the interest cost to the World Bank.

The World Bank's reported loans outstanding in FY 2003 were US $116 billion; its own borrowings outstanding were US $109 billion.[56] Discussions with market participants suggest that, in order to issue EM-denominated debt, the Bank might have to pay from zero to 50 additional basis points to compensate investors for the initially limited liquidity of these issues (in addition to a current cost of borrowing of approximately 3.25 per cent). This is comparable to the premium demanded by investors for private placements on international bond markets – private placements similarly differing from other bond issues by their lesser liquidity. Taking the upper bound of 50 basis points suggests a net cost of the initiative of US $545 million per annum (until a liquid market develops and the need for a liquidity premium disappears).[57] This is a small figure relative to the annual flow benefit of $107 billion estimated above.

4. Concluding Remarks

Table 5 summarizes the costs and benefits of these four "opportunities." Soince that table speaks for itself, I use this conclusion for some additional remarks.

In his recently published memoirs, Robert Rubin emphasizes the importance of probabilistic thinking for policy making.[58] Policy is made in an uncertain world. Given the complexity of social systems and the imperfect predictability of human behavior, the impact of a policy is unavoidably uncertain. Those responsible for policy decisions and advice must therefore consider a range of probable outcomes. The point applies equally to policies toward financial instability, disease, hunger, corruption, global warming, demographic change, and any other challenge confronting the world today. Whatever the

[56] World Bank (2003), p.3.
[57] Calculated as $109 billion * .005.
[58] See Rubin and Weisberg (2003).

problem, it is dangerous and even potentially counterproductive to base policy decisions on a false sense of certainty and precision.

In the present context, this means that one should not be misled by confidently-presented estimates of the costs and benefits of policy options based on spuriously rigorous models. In discussing the costs and benefits of different responses to financial instability, it would have been possible to offer much more complex calculations and present the results with many more decimal points. It would have been possible to obtain estimates of these magnitudes by simulating one of the popular global macroeconomic models or by building a general equilibrium model of the world economy expressly for this purpose. But the resulting estimates would have been contingent on dubious assumptions, many of which would even not have been apparent to the naked eye. Very detailed calculations of this sort, whether they estimate the costs and benefits of interventions to control financial instability, disease, hunger, or global warming, have a tendency to look deceptively precise. Basing evaluations on spuriously precise estimates that do not acknowledge intrinsic uncertainty runs the risk of producing bad policy.

The advantage of the simpler approach to such calculations taken here is that the underlying assumptions are explicit. The uncertainty to which they are subject is clear. Readers wishing to re-do those calculations subject to somewhat assumptions can do so freely, following the examples provided in the text. In reality, of course, the same uncertainty surrounds estimates of the key parameters underlying models of aids diffusion, malaria propagation, poverty reduction, global warming, and so forth. Thoughtful readers of the material prepared for this project would do well not to allow themselves to be lulled by a false sense of scientific precision.

Appendix A

This appendix provides more detail on the four steps of the Eichengreen-Hausmann proposal.[59]

Step 1. Develop an index based on a basket of emerging-market currencies. For developing countries to be able to borrow abroad in local currency, foreign investors will have to take a long position in those currencies. But it is hard to imagine foreign investors managing portfolios that include the currencies of many small, poorly-diversified economies. The authors therefore propose the creation of a unit of account made up of a portfolio of emerging-market and developing-country currencies.[60]

To deal with the temptation to debase the currency faced by net debtors borrowing in their own currencies, the underlying debt instruments would be indexed to the consumer price index (CPI) of each country. Indexing to the CPI, like indexing to the dollar, allows countries with limited credibility to lengthen the maturity of their obligations. But indexing to the CPI has better properties from the point of view of macroeconomic stability: it is similar to indexing to the real exchange rate, which is a relative price.[61] Thus, if the real exchange rate is stationary, the index will display long-run stability. Averaging over 20 countries enhances this stability still further. In addition, since the real exchange rate tends to appreciate in good times and depreciate in bad times, debt service payments on these obligations are positively correlated with capacity to pay, which is the opposite of dollar debts. Finally, to the extent that late-developing countries grow faster than advanced economies, this generates domestic inflation not offset by depreciation of the exchange rate (the Balassa-Samuelson effect), strengthening the real exchange rate and thereby raising the compensation received by foreign investors.[62] This gives the index a long-run tendency to appreciate.

Eichengreen and Hausmann consider two such baskets, one that includes the 20 largest countries for which the IMF publication *International Financial Statistics* conveniently provides quarterly data on exchange rates and consumer price indexes since at least 1980, and another that includes the largest 22 countries with the same continuous data since 1993.[63] Figure 2 shows the value of the two indexes along with the yen-dollar and deutschemark-dollar exchange rates.[64] Historically, the two EM inflation-adjusted

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[59] The text is drawn, with some modifications, from Eichengreen and Hausmann (2003).

[60] As argued by Shiller (2003), new markets typically need new indexes to synthesize relevant information, whether it is the S&P 500, the CPI or the Lehman Bond Index.

[61] While indexing to the CPI may be necessary to create a demand by foreign investors to hold claims denominated in the currencies of emerging markets, it is not obviously sufficient, given that many emerging markets already issue CPI-indexed claims which have not found their way into the portfolios of foreign investors. This is the problem that the remainder of proposal seeks to address.

[62] The EM index appreciates vis a vis the dollar over time if the sum of the real exchange rate appreciation of the underlying currencies plus U.S. inflation is positive. This means that the index will appreciate, even if the real exchange rate depreciates, as long as this depreciation is less than U.S. inflation. If these countries are expected to see real appreciation, and that U.S. inflation expectations are in the neighborhood of percent, this should trend appreciation a robust characteristic of the index.

[63] They weight the constituent countries by GDP at purchasing power parity in order to avoid setting weights in a manner that favors countries that do not behave prudently, as would happen if the indices were weighted by the market dollar value of GDP or the value of foreign debt.

[64] The indexes are presented on a per dollar basis so that increases in the index imply depreciations.

currency baskets are less volatile against the dollar than are the yen and the mark. For example, it is striking that in the period of the Asian and Russian crises the EM index actually depreciated against the dollar by less than the deutsche mark. This low volatility suggests, other things equal, that claims denominated in the EM index should be attractive to international investors.

Note that the reduction in volatility associated with moving from a single emerging-market currency to a portfolio of such currencies is related to more than pure diversification.[65] In addition, there are structural reasons why one should expect negative correlations among the real exchange rates of the countries constituting the index. Many of the countries in question are on opposite sides of the same markets. While some export oil or coffee, others import those commodities. Therefore a positive shock to one is a negative shock to another. Even when different countries export the same commodities, they are affected in opposite ways when shocks are to commodity supply. A frost in Brazil's coffee growing regions is a negative shock to Brazil but a positive shock to other coffee producers. An aggregate of emerging market real exchange rates is thus more stable than the individual components.[66]

In sum, the EM index has three characteristics – trend appreciation, low volatility, and a negative correlation with consumption growth in industrial countries – that should make it attractive for global investors. The question is how to create a liquid market in claims denominated in this index. The answer begins with Step 2.

Step 2. Have the World Bank and other international financial institutions issue debt denominated in the EM index. By borrowing in the currencies that comprise the EM index, the IFIs would gain the ability to extend loans to the countries issuing those currencies in inflation-adjusted local-currency terms without incurring balance-sheet mismatches themselves. And by issuing high-grade debt securities denominated in a basket of EM currencies, the IFIs would provide investors with a claim on a more stable unit than could be achieved by issuing in an individual currency.[67]

In practice, the process by which a select number of countries have acquired the ability to issue external debt denominated in their own currencies has been led not by residents but by foreigners and often by international financial institutions issuing obligations denominated in the currencies of these countries. This pattern reflects the need to separate credit risk from currency risk and the difficulty that the residents of countries with original sin have in doing so themselves. Foreigners, in contrast, can issue instruments with currency risk that is uncorrelated with credit risk.

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[65] That is, it is related to more than offsets in random, uncorrelated shocks to real exchange rates.

[66] The more countries that are included, other things equal, the more stability one would expect. In the limit (when all countries are included), the real exchange rate would not fluctuate, since the real exchange rate of the world as a whole is constant, by definition. Moreover, the inflation-indexed local currency is just the value of the domestic consumption basket which is itself much more diversified than the export basket, hence is also more stable.

[67] In a world of costless transactions, an investor could create an implicit index by himself. Individuals could in theory create an S&P or a Nasdaq based portfolio by themselves. In practice transaction costs imply that it is more efficient for somebody to create the portfolio and sell shares in it. In addition, an attempt to replicate the EM index privately by purchasing the underlying instruments in the market would involve buying securities that have much more credit risk than the AAA rated IFIs, as no EM member is AAA rated.

Eichengreen and Hausmann therefore propose that the nonconcessional windows of the World Bank and other international financial institutions should issue debt in the index described above.[68] Their AAA rating allows them to access institutional investors, as noted in the main body of the text. These bonds would be attractive as a result of the trend appreciation of the EM index, its relatively low volatility, and its negative correlation with consumption in the countries in which they are marketed. To be sure, they would be less attractive initially insofar as they would be relatively illiquid. However, given the mandate of the international financial institutions to foster economic growth and stability, not to mention their self- interest in the development of this market, it can be argued that the IFIs should subsidize issuance until sufficient liquidity develops to make the new bonds easily tradable.[69]

The argument that it is in the self-interest of the IFIs to develop the capacity to lend to their clients in local-currency inflation-indexed terms runs as follows. Currently the World Bank and other IFIs lend in dollars to finance projects relevant to the borrowers' development needs. All lending by the World Bank and the regional development banks (RDBs) is in dollars, other major currencies, and Special Drawing Rights (which are themselves a basket of major currencies).[70] This means that IFI lending creates a currency mismatch in the balance sheets of the corporations whose investment projects are funded by these institutions. They similarly create a mismatch for governments by loaning in dollars to fund schooling, transport, water and energy projects whose costs are ultimately paid through local-currency-denominated taxes and service charges.

For nonconcessional lending, the practice of dollar lending has a clear explanation. The development banks borrow on international capital markets in the major currencies. By lending in those same currencies, they neatly match the currency denomination of their assets and liabilities.[71]

However, the concessional windows of these institutions – the International Development Agency (IDA) and the Poverty Reduction and Growth Facility (PRGF) of the IMF and its equivalent in the RDBs – are not financed by borrowing on capital markets but by grants from the high-income countries.[72] This makes it hard to argue that the reason for denominating these loans in dollars is to permit the development banks to avoid incurring currency mismatches. In this context, lending in dollars and SDRs is more difficult to rationalize.

Hausmann and Rigobon (2003) show that one result of the practice of denominating concessional loans in dollars is that repayments to IDA have undesirable

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[68] International financial institutions usually operate through two main windows: a non-concessional window that is funded by borrowing in international capital markets using their capital base as collateral and a concessional window that is funded with fiscal resources of donor governments. In the case of the World Bank, the non-concessional window is known as the International Bank of Reconstruction and Development (IBRD) and the concessional window is called the International Development Agency (IDA).

[69] Moreover, since the World Bank would calculate the index, it would have a fiduciary responsibility to its investors in assuring that there is no opportunistic manipulation of the estimates of exchange rates or the CPI by member countries. This will impart more credibility to the index.

[70] In the interest of simplicity, the text that follows refers to these alternatives as dollar lending.

[71] To put the point another way, they lend in dollars because, absent an initiative of the sort we develop here, original sin prevents them from issuing debt in the currencies of their borrowers.

[72] They are then supplemented by reflows from their own lending operations.

cyclical characteristics. IDA loans become more burdensome precisely when it is harder for countries to pay, i.e. when the dollar value of the GDP of the borrowing countries declines significantly. Compare this with a situation in which IDA lending is denominated in inflation-indexed local-currency units of each country. In this case, the dollar value of debt service would decline (rise) when exchange rate depreciates (strengthens). Occasions on which a borrowing country was forced to suspend its repayment to IDA might then become less frequent because the tendency for the exchange rate to collapse at the same time output fell (making it doubly difficult to repay dollar debts) would no longer be relevant for debt servicing capacity. This improved outcome might even be achieved without any additional subsidization of concessional loans, insofar as its improved risk characteristics caused the net present value of the IDA portfolio to rise rather than falling.[73]

Note that foreign currencies would maintain their function as means of payment. Borrowing countries would still receive loans and repay the World Bank in dollars. The only difference is that the unit of account on which those payments were based would now be inflation-indexed local currency.[74]

Hausmann and Rigobon propose that the concessional window of the World Bank – the IDA – should move rapidly in this direction by converting all dollar- and SDR-denominated loans into inflation-indexed local currency. Our proposal is directed to the nonconcessional window of the World Bank – the IBRD – and would imply moving in the same direction, albeit more gradually. The problem with moving quickly is that, as just noted, the Bank finances its nonconcessional lending by borrowing on international capital markets. If the Bank were to redenominate its loans into inflation-indexed currencies of emerging markets while continuing to borrow in dollars, it would incur a currency mismatch. The solution to this is for the IBRD to begin funding itself by issuing bonds denominated in EMs. Because this market would be relatively illiquid initially, this part of the adjustment would take time. Hence there is an argument for moving more gradually.

Note that the World Bank would not be required to take on additional currency risk if it funded itself by issuing EM-denominated debt. By converting some of its already-outstanding loans to EM members into inflation-indexed local currency loans, it could match the currency composition of the asset and liability sides of its balance sheet.

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[73] Hausmann and Rigogon (2003) show that the currency risk of the portfolio of inflation-indexed local currency IDA loans between 1985 and 2000 would have been low, given the low and often negative correlations among real exchange rate movements of IDA countries. This is the same pattern that holds for our EM index, as noted above. In addition they show for IDA that the inflation-indexed local currency portfolio would exceed the value of the dollar portfolio if the sum of the U.S. inflation plus the real appreciation of the IDA basket of currencies exceeds 1.37 percent. U.S. inflation has been running at approximately 2 percent. If this rate is maintained going forward, there would be scope for some long-run real depreciation of the basket while still generating a larger net present value. However, if developing countries' income levels exhibit a trend towards convergence – as has been the case in China, India, East Asia and Eastern Europe, the Balassa-Samuelson effect would imply that they should also exhibit some trend appreciation. In this case, the move to local currency inflation-indexed lending should generate an even larger expected repayment stream, even better risk characteristics, and an even lower volatility in the total dollar value of the portfolio (given the low volatility of the basket).

[74] In other words, while dollars and other foreign currencies would be delivered, the amount of the obligation would be related to the inflation indexed-local currency value of the debt.

Regional development banks (RDBs) such as the Inter-American Development Bank, the European Bank for Reconstruction and Development, the Asian Development Bank and the African Development Bank lend only to subsets of the countries whose currencies are included in the EM index, as the latter is a globally balanced index. This would make it more difficult for them to align the currency composition of the asset and liability sides of their balance sheets if they started borrowing in EMs. But it would still be relatively straightforward for them to off-load the currency exposure associated with not lending to members of the EMs basket that are not in their region. They could do so by swapping currency exposures among themselves or with the World Bank. Each RDB would then have nicely matched EM-denominated debts and EM-denominated assets.[75] They would thereby eliminate the currency mismatch generated by their own lending, and at the same time become part of the solution to the financial-instability problem.[76]

Once issuance by the World Bank and the RDBs reached significant levels, claims denominated in the EM index would form part of standard global bond indexes. This would then increase the demand for EM bonds by institutional fixed-income investors with a mandate to form portfolios that track the index.

Step 3. Have G-10 countries issue debt denominated in the index. If this effort succeeds in creating space in the global portfolio for EM debt, there will then be an opportunity for other high-grade non-residents to develop the market further. The governments of the United States, Euroland, Japan, the UK and Switzerland, the issuers of the five major currencies, are natural candidates to do so.[77] The debt denominated in their currencies is significantly greater than the debt issued by their residents. They are at the opposite end of the currency-of-denomination spectrum from emerging markets, which should make some portfolio diversification toward EMs relatively attractive. More broadly, they are not immune from the systemic consequences of original sin, giving them an interest in solving the problem.

Thus, these countries could issue EM debt in order to further transform the structure of the global portfolio. Following issuance, they would presumably wish to swap out of some or all of the EM currency exposure in order to avoid adding an inconvenient currency mismatch to their own fiscal accounts.[78] To do this, they would

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[75] Conceivably, if the issuance of EM debt by the World Bank is very large, the Bank might be unable to hedge the resulting currency exposure by converting some of its old loans into the member currencies of the index because the required amounts would exceed the volume of loans in its books to at least some of the EM members. But the Bank could still hedge its excess exposure to that currency by arranging a swap with another international financial institution – say a regional development bank – that would similarly wish to convert its dollar loans to local currency. Alternatively, the World Bank could purchase inflation-indexed local currency government obligations or ask an investment bank to offer it a hedge. All these operations would have the beneficial effect of reducing the currency mismatch of the respective countries.

[76] Hausmann and Rigobon (2003) simulate the impact on the IDA portfolio of converting IDA loans into inflation indexed local currency in the 1985-2000 period. They find that diversification implies a very large reduction in the overall currency risk of the portfolio of IDA. In addition, debt service becomes less procyclical and less correlated with the real exchange rate, moving the debt burden to states of nature where the capacity to pay is larger. Monte Carlo simulations show that under the counterfactual the same shocks to output, inflation and the real interest rate are associated with a more predictable evolution of the debt to GDP ratio than under dollar-based lending.

[77] In what follows these countries are referred to as the G-10 for short.

[78] That is to say that may not want debt service denominated in EMs when their tax revenues were denominated in domestic currency.

negotiate currency swaps with the countries whose currencies make up the index. In turn, this would allow emerging markets to swap out of (to hedge) their dollar exposures. Eventually, these swaps could be intermediated by the investment banks, although in the initial stages the World Bank may have to organize them.[79]

The net cost of borrowing for the G-10 countries, after taking into account the swap, might actually be less than borrowing in their own currencies. The swap would entail a transfer of resources from the country that is most anxious to pay in order to hedge its currency exposure to the country that is most indifferent about the transaction. In other words, the first country would be especially willing to pay for the privilege of concluding the transaction, while the second one would be relatively indifferent and could therefore negotiate more favorable terms. Since countries suffering from original sin would be particularly anxious to pay for the privilege of off-loading their currency exposures, the G-10 countries could presumably obtain relatively attractive terms.

However, the swap may be expensive to organize. If the cost of the swap exceeds the benefit to EM member countries of hedging their currency exposures, then the transaction may not take place. Anticipating this outcome, G-10 countries may not be willing to issue EM debt in the first place. A solution to this problem would be for EM member countries to commit to swap their exposures with G-10 countries at a pre-announced price. G-10 governments could then exercise this de-facto put option in the event that they did not find a more attractive swap alternative in the market.

The development of a private market in swaps will depend on the existence of liquid long-term fixed rate bond markets in local currency. These exist in some emerging markets and not in others. While this initiative would facilitate the development of local markets, the regional development banks could accelerate the process further, by issuing instruments denominated in the (inflation-indexed) currencies of individual member countries in order to help create a benchmark long-term bond that would be devoid of sovereign and convertibility risk. The existence of a market in these claims would encourage investment banks to create and price the relevant swaps.

Step 4. Further develop the EM index market. Imagine that as a result of the preceding steps there develops a market in claims denominated in the EM index. It is reasonable to think that institutional investors and mutual funds will then create products that add credit risk to the index. They will be able to do so by buying local currency debt of the countries in the index. This will facilitate the development of these markets, further helping to erode original sin. It is conceivable that once the market has developed sufficiently, the role of industrial country governments and international institutions can

[79] In particular, the Bank's AAA rating would allow it to provide greater assurances to the treasuries of developed countries. It is useful to consider the performance risk associated with these swaps. Emerging markets would pay into the swaps when their currencies were strong while getting money from them when their currencies were weak. Since real appreciation (depreciation) tends to occur in good (bad) times, the performance risk will be concentrated in good times. In times of crisis, when their currencies weaken significantly, emerging markets would be receiving net income from their swaps. This minimizes the relevance of ability to pay for performance risk, which is the opposite of what happens with dollar debts. A swap can be thought of as an exchange of bonds between the two final parties to the transaction. Hence, if the emerging market were to default on its swap obligation, i.e. on the bond that it issued, then the industrial country would simply take back the bond that it had committed to the swap. Default risk would be limited to the change in value of the two bonds since the time they were issued. Again, performance risk would be limited.

be scaled back, as has happened with the issuance by nonresidents of debt denominated in the currencies of the Czech Republic, Hong Kong, Poland, Slovakia and South Africa.

Table 1
Annual Average Output Loss
From Banking and Currency Crises

	1980s	1990s
Asia	0.1	1.4
Latin America	2.2	0.7

Source: Dobson and Hufbauer (2001).

Table 2. Korean Social Indicators Following the Crisis

	Divorces	Crimes	Crimes per 100,000	Drug Addicts per 100,000	Suicides
1996	79,895	1,494,846	3,282	6,189	5,777
1997	91,159	1,588,613	3,454	6,947	5,957
1998	116,727	1,765,887	3,803	8,350	8,496
1999	118,014	1,732,522	3,697	10,589	7,014

Source: Lee (2004).

Table 3. Macroeconomic Effects of Capital Account Liberalization

Author	Impact on	Controls	Measured as	Countries	Period	Findings
Alesina, Grilli & Milesi-Ferretti (1994)	Growth, debt, inflation, real interest rates,	Government stability, majority government, CB independence, exchange rate regime, government turnover	Binary	20 Industrial	1950-1989	Less debt, lower real interest rates, higher inflation, possibly faster growth
Garrett (1995)	Budget deficit, government spending, capital taxation, interest rates	U.S. interest rates, left-labor power, unemployment, inflation, trade openness	Four-point scale, with a point each for capital account restrictions, bilateral payments to IMF members, bilateral payments to members, and foreign deposits	15 Industrial	1967-1990	Lower government spending, budget deficits and interest rates except where Left-labor is powerful
Grilli & Milesi-Ferretti (1995)	Growth, investment	CB independence, trade openness, democracy, black market premium, per capital income, government consumption	Binary plus measure of separate exchange rates for capital account transactions and for current account restrictions	61 Industrial and Developing	1966-1989	Higher inflation, lower real interest rates, possible positive impact on growth from capital account restriction; negative effect of current account restrictions on growth
Lewis (1997)	Risk sharing	Theoretical restrictions	Binary	72 Industrial and Developing	1967-1992	Greater risk sharing
Quinn (1997)	Growth, inequality, corporate taxation, government expenditure	Per capita income, population growth, primary and secondary education, investment, socialist economy, revolutions/coups, regional dummies	Quinn	21 Industrial and 43 Developing	1959-1988	Positive impact on corporate taxation, government spending income inequality, growth
Bordo & Eichengreen (1998)	Growth, public debt, inflation, real interest rates, export growth, current account, investment	Per capita income, government consumption, trade openness, democracy, turnover of central bankers, CB independence	Binary	63 Industrial and Developing	1959-1989	Weaker current account, some evidence of faster (slower) growth in industrial (developing) countries, higher inflation in industrial countries; lower real interest rates, higher investment

Garrett (1998)	Growth, budget deficit, interest rates, unemployment, inflation	Old age population, CB independence, Left-labor power, oil dependence, labor market institutions, trade openness	Quinn	15 Industrial	1966-1990	Larger budget deficits, lower interest rates, lower unemployment and slower growth except where Left is powerful
Kraay (1998)	Growth, investment, inflation, maturity of debt	Per capita income, secondary education, population growth, regional dummies	Quinn, Binary, Actual inflows and outflows	117 Industrial and Developing	1985-1997	No impact except when openness is interacted with rate of return. Positive impact on share of short-term debt.
Levine & Zervos (1998)	Stock market size, liquidity, volatility and integration	Theroretical	Binary (alternative sources)	16 Emerging markets	1980-1993	Stock markets become larger, more liquid, more volatile and more integrated
Rodrik (1998)	Growth, investment, inflation	Per capita income, secondary education, quality of government, regional dummies	Binary, per cent of years capital account was restricted	100 Industrial and Developing	1975-1989	No impact on growth, investment or inflation
Swank (1998)	Corporate taxation, payroll taxation	Inflation, trade openness, profitability, investment, GDP growth, election year, Left cabinet members, government spending	Quinn	17 OECD	1966-1993	Positive, not negative, impact on level of business taxation
Klein & Olivei (1999)	Financial depth	Government spending, regional controls	Binary, and per cent of years capital account was restricted	92 Industrial and Developing	1986-1995	Positive impact on liquid liabilities and claims on nonfinancial private sector for OECD countries only
Tamirisa (1999)	Volume of trade	Per capita income, population, distance, tariffs	3-way categorization of controls on current payments, capital movements, and both	40 Industrial, Developing and Transition	1996	Capital controls reduce trade for developing and transition economies. Restrictions on current payments have negligible effect
Wyplosz (1999)	Interest rate levels and volatility, budget surplus	Credit ceilings, exchange rate regime, U.S. interest rates	Binary	9 European	1957-1997	Lower and more volatile interest rates, larger primary deficits

Montiel & Reinhart (1999)	Volume and composition of capital inflows	U.S. interest rate, Japanese interest rate, domestic financial depth, sterilization policies	0-2 index of intensity of capital account restrictions	15 Developing	1990-1996	Some estimates suggest that controls reduce share of portfolio and short term flows, increase share of FDI, in total inflows
Edwards (2001)	GDP growth, growth of total factor productivity	Investment, schooling, GDP per capita	Binary (per cent of years capital account was restricted) and Quinn	20 Industrial and 45 Emerging	1980s	Capital account liberalization raises (lowers) growth in high (low) income countries
Garrett (2000)	Government spending, budget deficit, capital tax rate, labor tax rate, consumption tax rate	Trade openness, unemployment, growth, dependency ratio, exchange rate regime	Quinn	21 OECD	1973-1994	Smaller budget deficits, lower rates of labor taxation when currency is pegged; higher government spending and capital taxation but no impact on budget deficit when it floats
Garrett & Mitchell (2000)	Public spending, taxation	Unemployment, growth, dependency ratio	Quinn	18 OECD	1961-1994	Rates of capital taxation not lower where capital account is open, though public spending is lower

Table 4. Crises and Capital Account Liberalization

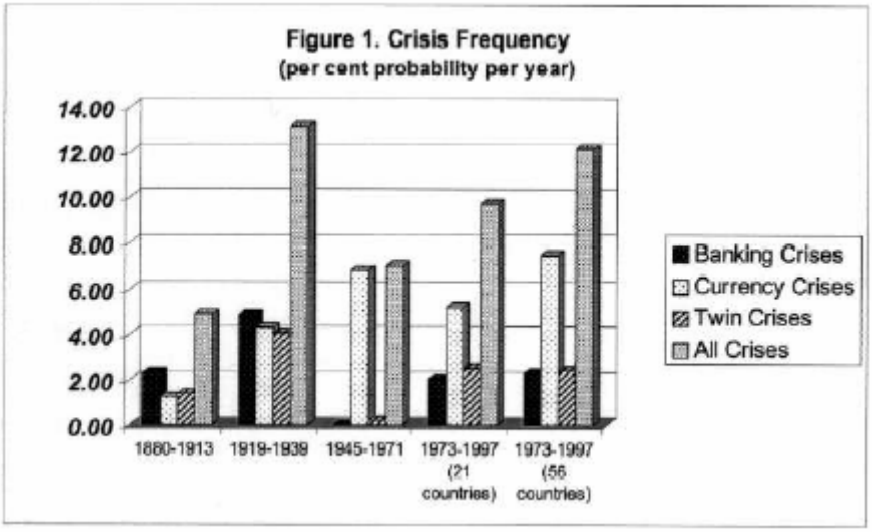
Author	Impact on	Controls	Measured as	Countries	Period	Findings
Eichengreen, Rose & Wyplosz (1995)	Currency Crises	Political events, lagged inflation, growth, employment, budget and current accounts	Binary	20 OECD	1959-1993	Controls increase (reduce) likelihood of failed (successful) attack
Rossi (1999)	Currency crises and Banking crises	GDP per capita, growth, real interest rate, change in terms of trade, domestic credit, M2 to reserves, openness, current account balance, government consumption, corruption, strength of supervision	Separate indices of intensity of inflow and outflow controls	15 Developing	1990-1997	Inflow controls reduce currency crisis risk. Some specifications suggest outflow controls associated with greater risk of both banking and currency crises
Eichengreen & Arteta (2000)	Banking crises	Reserves, current account balance, budget balance, overvaluation, domestic credit, M2, per capita growth, OECD growth, OECD interest rate	Binary, Sum of capital inflows and outflows	122 Developing	1972-1997	Binary measure suggests no effect, while gross flows suggest negative (positive) effect when domestic markets are not (are) liberalized
Glick & Hutchinson (2000)	Currency crises	Export growth, M2 to reserves, credit growth, current account ratio, recent banking crisis, exchange rate regime	Binary, plus measure of current account restrictions and export surrender requirements	69 Developing	1975-1997	Capital market liberalization appears to reduce crisis likelihood
Leblang & Bernhard (2000)	Currency crises	Current account balance, inflation, trade openness, real overvaluation, Left power, changes in unemployment, shift in government orientation	Binary, Quinn	16 Industrial	1973-1995	No impact
Leblang (2000)	Currency Crises	International reserves, domestic credit growth, debt service, openness, US interest rates, contagion proxy, prior attacks, political variables	Binary	90 Developing	1985-1998	Presence of capital controls appears to raise crisis risk but also increase the likelihood of a successful defense

Wyplosz (2000)	Currency crises/pressure	Domestic financial liberalization, current account convertibility, export surrender requirements	Four-point scale	61 Industrial and Developing	1966-1998	Following initial inflows, capital account liberalization intensifies pressure on the exchange rate

Table 5. Summary of Costs and Benefits

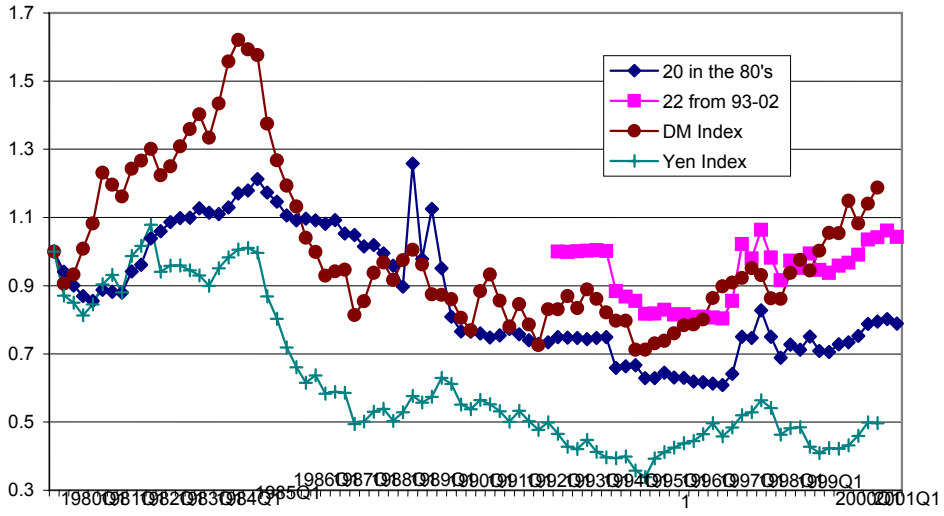
Opportunity	Annual Gross Benefits, 2003	Annual Gross Costs, 2003	Annual Initial Benefits -Costs	Remarks
Re-regulate financial markets	$46 billion	$153 billion	-$107 billion	Note that costs exceed benefits[a]
Re-impose capital controls	$107 billion	$153 billion	-$46 billion	Again, costs exceed benefits[a]
Create a single world currency	$107 billion	$16 billion	$91 billion	Political feasibility is seriously questionable
Have IFIs borrow and lend in emerging-market currencies	$107 billion	$0.5 billion	$106 billion	Not surprisingly, the author's preference

[a] Which is the point of the analysis.



Source: Bordo, Eichengreen, Klingebiel and Martinez-Peria (2001).

Figure 2: Exchange rates vis a vis the dollar: the EM indexes, the yen and the mark



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