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Some Empirical Evidence

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Contents

The following symbols have been used throughout this paper:

. . . to indicate that data are not available;

— to indicate that the figure is zero or less than half the final digit shown, or that the item does not exist;

– between years or months (e.g., 1998–99 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

/ between years (e.g., 1998/99) to indicate a fiscal (financial) year.

"n.a." means not applicable.

"Billion" means a thousand million.

Minor discrepancies between constituent figures and totals are due to rounding.

The term "country," as used in this paper, does not in all cases refer to a territorial entity that is a state as understood by international law and practice; the term also covers some territorial entities that are not states, but for which statistical data are maintained and provided internationally on a separate and independent basis.

Preface

Financial globalization is a vast and complex topic. Understanding the effects of financial globalization on developing countries, in particular, is of considerable importance. Although there has been a great deal of debate on this issue, the evidence on which the debate is based has not been uniform and unambiguous. This paper attempts to provide a systematic and critical review of recent empirical evidence, including some new research, on this subject. The main findings are the following:

- *In spite of an apparently strong theoretical presumption, it is difficult to detect a strong and robust causal relationship between financial integration and growth.*
- *Contrary to theoretical predictions, financial integration sometimes appears to be associated with increases in consumption volatility in some developing countries, at least in the short run.*
- *There appear to be threshold effects in both of these relationships that may be related to absorptive capacity. Some recent evidence suggests that governance is quantitatively, as well as qualitatively, important in affecting developing countries' experiences with financial globalization.*

This paper was prepared by Eswar S. Prasad, Kenneth Rogoff, Shang-Jin Wei, and M. Ayhan Kose at the International Monetary Fund. Additional contributions came from Eduardo Borensztein, Robin Brooks, R. Gaston Gelos, Olivier Jeanne, Paolo Mauro, and Marco Terrones. The paper has also benefited from useful comments and suggestions from Tamim Bayoumi, Andrew Berg, Peter Clark, Hali Edison, Aasim Husain, Olivier Jeanne, Manmohan Kumar, Gian Maria Milesi-Ferretti, Ashoka Mody, James Morsink, Carmen Reinhart, David J. Robinson, Ratna Sahay, Miguel Savastano, and numerous other colleagues in the Research Department and other departments at the IMF. Priya Joshi, Young Kim, Pedro Rodriquez, and Yi Wu provided efficient research assistance. Hali Edison and Gian Maria Milesi-Ferretti generously shared their data with the team. Maria Orihuela and especially Marlene George and Dawn Heaney provided able assistance in the preparation of this paper. Paul Gleason edited the manuscript and coordinated production of the publication.

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Kenneth Rogoff
Economic Counsellor and Director
IMF Research Department

Summary

This paper provides a review of recent empirical evidence, including some new research, on the effects of financial globalization for developing economies. The paper focuses on three questions:

(i) Does financial globalization promote economic growth in developing countries?;

(ii) What is its impact on macroeconomic volatility in these countries?; and

(iii) What factors can help to harness the benefits of financial globalization?

Developing economies' financial linkages with the global economy have risen significantly in recent decades. A relatively small group of these countries, however, has garnered the lion's share of private capital flows from industrial to developing countries, which surged in the 1990s. Despite the recent sharp reversals in such "North-South" capital flows, various structural forces are likely to lead to a revival of these flows and continued financial globalization over the medium and long term.

Theoretical models have identified a number of channels through which international financial integration can promote economic growth in developing countries. A systematic examination of the evidence, however, suggests that it is difficult to establish a strong causal relationship. In other words, if financial integration has a positive effect on growth, there is as yet no clear and robust empirical proof that the effect is quantitatively significant.

There is some evidence of a "threshold effect" in the relationship between financial globalization and economic growth. The beneficial effects of financial globalization are more likely to be detected when the developing countries have a certain amount of absorptive capacity. Preliminary evidence also supports the view that, in addition to sound macroeconomic policies, improved governance and institutions have an important impact on a country's ability to attract less volatile capital inflows and on its vulnerability to crises.

International financial integration should, in principle, also help countries to reduce macroeconomic volatility. The available evidence suggests that developing countries have not fully attained this potential benefit. Indeed, the process of capital account liberalization appears to have been accompanied, in some cases, by increased vulnerability to crises. Globalization has heightened these risks, since cross-country financial linkages amplify the effects of various shocks and transmit them more quickly across national borders. A type of threshold effect appears here as well—reductions in volatility are observed only after countries have attained a particular level of financial integration.

The evidence presented in this paper suggests that financial integration should be approached cautiously, with good institutions and macroeconomic frameworks viewed as important. The review of the available evidence does not, however, provide a clear road map for the optimal pace and sequencing of integration. For instance, there is an unresolved tension between having good institutions in place before undertaking capital market liberalization and the notion that such liberalization can, itself, help a country import best practices and provide an impetus to improve domestic institutions. Such questions can best be addressed only in the context of country-specific circumstances and institutional features.

I Overview

The recent wave of financial globalization that has occurred since the mid-1980s has been marked by a surge in capital flows among industrial countries and, more notably, between industrial and developing countries. Although capital inflows have been associated with high growth rates in some developing countries, a number of them have also experienced periodic collapses in growth rates and significant financial crises that have had substantial macroeconomic and social costs. As a result, an intense debate has emerged in both academic and policy circles on the effects of financial integration on developing economies. But much of the debate has been based on only casual and limited empirical evidence.

The main purpose of this paper is to provide an assessment of empirical evidence on the effects of financial globalization for developing economies. It will focus on three related questions:

(i) Does financial globalization promote economic growth in developing countries?;

(ii) What is its impact on macroeconomic volatility in these countries?; and

(iii) What are the factors that appear to help countries obtain the benefits of financial globalization?

The principal conclusions that emerge from the analysis are sobering but, in many ways, informative from a policy perspective. It is true that many developing economies with a high degree of financial integration have also experienced higher growth rates. It is also true that, in theory, there are many channels through which financial openness could enhance growth. A systematic examination of the evidence, however, suggests that it is difficult to establish a robust causal relationship between the degree of financial integration and output growth performance. From the perspective of macroeconomic stability, consumption is regarded as a better measure of well-being than output; fluctuations in consumption are therefore regarded as having negative impacts on economic welfare. There is little evidence that financial integration has helped developing countries to better stabilize fluctuations in consumption growth, notwithstanding the theoretically large benefits that could accrue to developing countries if such stabilization were achieved. In fact, new evidence presented in this paper suggests that low to moderate levels of financial integration may have made some countries subject to greater volatility of consumption relative to that of output. Thus, while there is no proof in the data that financial globalization has benefited growth, there is evidence that some countries may have experienced greater consumption volatility as a result.

Although the main objective of this paper is to offer empirical evidence, and not to derive a set of definitive policy implications, some general principles nevertheless emerge from the analysis about how countries can increase the benefits from, and control the risks of, globalization. In particular, the quality of domestic institutions appears to play a role. A growing body of evidence suggests that it has a quantitatively important impact on a country's ability to attract foreign direct investment and on its vulnerability to crises. Although different measures of institutional quality are no doubt correlated, there is accumulating evidence of the benefits of robust legal and supervisory frameworks, low levels of corruption, a high degree of transparency, and good corporate governance.

A review of the available evidence does not, however, provide a clear road map for countries that have either started on or desire to start on the path to financial integration. For instance, there is an unresolved tension between having good institutions in place before capital market liberalization and the notion that such liberalization in itself can help a country import best practices and provide an impetus to improve domestic institutions. Furthermore, neither theory nor empirical evidence has provided clear-cut general answers to related issues, such as the desirability and efficacy of selective capital controls. Ultimately, these questions can be addressed only in the context of country-specific circumstances and institutional features.

The remainder of this section provides an overview of the structure of this paper. Section II documents some salient features of global financial integration

from the perspective of developing countries. Sections III and IV analyze the evidence on the effects of financial globalization on growth and volatility, respectively, in developing countries. Section V discusses the relationship between the quality of institutions and the benefit-risk trade-off involved in undertaking financial integration.

Definitions and Basic Stylized Facts

Financial globalization and financial integration are, in principle, different concepts. Financial globalization is an aggregate concept that refers to increasing global linkages created through cross-border financial flows. Financial integration refers to an individual country's linkages to international capital markets. Clearly, these concepts are closely related. For instance, increasing financial globalization is perforce associated with increasing financial integration on average. In this paper, therefore, the two terms are used interchangeably.

Of more relevance for the purposes of this paper is the distinction between de jure financial integration, which is associated with policies on capital account liberalization, and actual capital flows. For example, indicator measures of the extent of government restrictions on capital flows across national borders have been used extensively in the literature. On the one hand, using this measure, many countries in Latin America would be considered closed to financial flows. On the other hand, the volume of capital actually crossing the borders of these countries has been large relative to the average volume of such flows for all developing countries. Therefore, on a de facto basis, these Latin American countries are quite open to global financial flows. By contrast, some countries in Africa have few formal restrictions on capital account transactions but have not experienced significant capital flows. The analysis in this paper will focus largely on de facto measures of financial integration, as it is virtually impossible to compare the efficacy of various complex restrictions across countries. In the end, what matters most is the actual degree of openness. However, the paper will also consider the relationship between de jure and de facto measures.

A few salient features of global capital flows are relevant to the central themes of the paper. First, the volume of cross-border capital flows has risen substantially in the last decade. There has been not only a much greater volume of flows among industrial countries but also a surge in flows from industrial to developing countries. Second, this surge in international capital flows to developing countries is the outcome of both "pull" and "push" factors. Pull factors arise from changes in policies and other aspects of opening up by developing countries. These include liberalization of capital accounts and domestic stock markets, and large-scale privatization programs. Push factors include business-cycle conditions and macroeconomic policy changes in industrial countries. From a longer-term perspective, this latter set of factors includes the rise in the importance of institutional investors in industrial countries and demographic changes (for example, the relative aging of the population in industrial countries). The importance of these factors suggests that notwithstanding temporary interruptions during crisis periods or global business-cycle downturns, the past twenty years have been characterized by secular pressures for rising global capital flows to the developing world.

Another important feature of international capital flows is that the components of these flows differ markedly in terms of volatility. In particular, bank borrowing and portfolio flows are substantially more volatile than foreign direct investment. Although accurate classification of capital flows is not easy, evidence suggests that the composition of capital flows can have a significant influence on a country's vulnerability to financial crises.

Does Financial Globalization Promote Growth in Developing Countries?

This subsection of the paper will summarize the theoretical benefits of financial globalization for economic growth and then review the empirical evidence. Financial globalization could, in principle, help to raise the growth rate in developing countries through a number of channels. Some of these directly affect the determinants of economic growth (augmentation of domestic savings, reduction in the cost of capital, transfer of technology from advanced to developing countries, and development of domestic financial sectors). Indirect channels, which in some cases could be even more important than the direct ones, include increased production specialization owing to better risk management, and improvements in both macroeconomic policies and institutions induced by the competitive pressures or the "discipline effect" of globalization.

How much of the advertised benefits for economic growth have actually materialized in the developing world? As documented in this paper, average per capita income for the group of more financially open (developing) economies grows at a more favorable rate than that of the group of less financially open economies. Whether this actually reflects a causal relationship and whether this correlation is robust to controlling for other factors, however, remain unre-

solved questions. The literature on this subject, voluminous as it is, does not present conclusive evidence. A few papers find a positive effect of financial integration on growth. The majority, however, find either no effect or, at best, a mixed effect. Thus, an objective reading of the results of the vast research effort undertaken to date suggests that there is no strong, robust, and uniform support for the theoretical argument that financial globalization per se delivers a higher rate of economic growth.

Perhaps this is not surprising. As noted by several authors, most of the cross-country differences in per capita incomes stem not from differences in the capital-labor ratio but from differences in total factor productivity, which could be explained by "soft" factors such as governance and the rule of law. In this case, although embracing financial globalization may result in higher capital inflows, it is unlikely, by itself, to cause faster growth. In addition, as is discussed more extensively later in this paper, some of the countries with capital account liberalization have experienced output collapses related to costly banking or currency crises. An alternative possibility, as noted earlier, is that financial globalization fosters better institutions and domestic policies but that these indirect channels can not be captured in standard regression frameworks.

In short, although financial globalization can, in theory, help to promote economic growth through various channels, there is as yet no robust empirical evidence that this causal relationship is quantitatively very important. This points to an interesting contrast between financial openness and trade openness, since an overwhelming majority of research papers have found that the latter has had a positive effect on economic growth.

What Is the Impact of Financial Globalization on Macroeconomic Volatility?

In theory, financial globalization can help developing countries to better manage output and consumption volatility. Indeed, a variety of theories imply that the volatility of consumption relative to that of output should decrease as the degree of financial integration increases; the essence of global financial diversification is that a country is able to shift some of its income risk to world markets. Since most developing countries are rather specialized in their output and factor endowment structures, they can, in theory, obtain even bigger gains than developed countries through international consumption risk sharing—that is, by effectively selling off a stake in their domestic output in return for a stake in global output.

How much of the potential benefits, in terms of better management of consumption volatility, has actually been realized? This question is particularly relevant in terms of understanding whether, despite the output volatility experienced by developing countries that have undergone financial crises, financial integration has protected them from consumption volatility. New research presented in this paper paints a troubling picture. Specifically, although the volatility of output growth has, on average, declined in the 1990s relative to the three preceding decades, the volatility of consumption growth relative to that of income growth has, on average, *increased* for the emerging market economies in the 1990s, which was precisely the period of a rapid increase in financial globalization. In other words, as is argued in more detail later in the paper, procyclical access to international capital markets appears to have had a perverse effect on the relative volatility of consumption for financially integrated developing economies.

Interestingly, a more nuanced look at the data suggests the possible presence of a threshold effect. At low levels of financial integration, an increment in the level of financial integration is associated with an increase in the relative volatility of consumption. Once the level of financial integration crosses a threshold, however, the association becomes negative. In other words, for countries that are sufficiently open financially, relative consumption volatility starts to decline. This finding is potentially consistent with the view that international financial integration can help to promote domestic financial sector development, which, in turn, can help to moderate domestic macroeconomic volatility. Thus far, however, these benefits of financial integration appear to have accrued primarily to industrial countries.

In this vein, the proliferation of financial and currency crises among developing economies is often viewed as a natural consequence of the "growing pains" associated with financial globalization. The latter can take various forms. First, international investors have a tendency to engage in momentum trading and herding, which can be destabilizing for developing economies. Second, international investors may (together with domestic residents) engage in speculative attacks on developing countries' currencies, thereby causing instability that is not warranted based on their economic and policy fundamentals. Third, the risk of contagion presents a major threat to otherwise healthy countries, since international investors could withdraw capital from these countries for reasons unrelated to domestic factors. Fourth, a government, even if it is democratically elected, may not give sufficient weight to the interest of future generations. This becomes a problem when the interests of future and current genera-

tions diverge, causing the government to incur excessive amounts of debt. Financial globalization, by making it easier for governments to incur debt, might aggravate this "overborrowing" problem. These four hypotheses are not necessarily independent and can reinforce each other.

There is some empirical support for these hypothesized effects. For example, there is evidence that international investors do engage in more herding and momentum trading in emerging markets than in developed countries. Recent research also suggests the presence of contagion in international financial markets. In addition, some developing countries that open their capital markets appear to accumulate unsustainably high levels of external debt.

To summarize, one of the theoretical benefits of financial globalization, other than enhancing growth, is allowing developing countries to better manage macroeconomic volatility, especially by reducing consumption volatility relative to output volatility. The evidence suggests, instead, that countries in the early stages of financial integration have been exposed to significant risks in terms of higher volatility of both output and consumption.

Role of Institutions and Governance in Effects of Globalization

Although it is difficult to find a simple relationship between financial globalization and growth or consumption volatility, there is some evidence of nonlinearities or threshold effects in the relationship. Financial globalization, in combination with good macroeconomic policies and good domestic governance, appears to be conducive to growth. For example, countries with good human capital and governance tend to do better at attracting foreign direct investment (FDI), which is especially conducive to growth. More specifically, recent research shows that corruption has a strongly negative effect on FDI inflows. Similarly, transparency of government operations, which is another dimension of good governance, has a strong positive effect on investment inflows from international mutual funds.

The vulnerability of a developing country to the risk factors associated with financial globalization is also not independent of the quality of macroeconomic policies and domestic governance. For example, research has demonstrated that an overvalued exchange rate and an overextended domestic lending boom often precede a currency crisis. In addition, lack of transparency has been shown to be associated with more herding behavior by international investors, which can destabilize a developing country's financial markets. Finally, evidence shows that a high degree of corruption may affect the composition of a country's capital inflows, thereby making it more vulnerable to the risks of speculative attacks and contagion effects.

Thus, the ability of a developing country to derive benefits from financial globalization and its relative vulnerability to the volatility of international capital flows can be significantly affected by the quality of both its macroeconomic framework and its institutions.

Summary

The objective of the paper is not so much to derive new policy propositions as it is to inform the debate on the potential and actual benefit-risk trade-offs associated with financial globalization by reviewing the available empirical evidence and country experiences. The main conclusions are that, so far, it has proven difficult to find robust evidence supporting the proposition that financial integration helps developing countries to improve growth rates and reduce macroeconomic volatility.

Of course, the absence of robust evidence on these dimensions does not necessarily mean that financial globalization has no benefits and carries only great risks. Indeed, most countries that have initiated financial integration have continued along this path despite temporary setbacks. This observation is consistent with the notion that the indirect benefits of financial integration, which may be difficult to pick up in regression analysis, could be quite important. Also, the long-run gains, which in some cases have not yet been realized, may exceed the short-term costs. For instance, although Europe's efforts to achieve monetary integration resulted in its being buffeted by severe and costly crises in the early 1990s, these efforts eventually brought about the transition to the single currency in use throughout much of Europe today.

Although it is difficult to distill new and innovative policy messages from the review of the evidence, there appears to be empirical support for some general propositions. Empirically, good institutions and quality of governance are important not only in their own right but also in helping developing countries derive the benefits of globalization. Similarly, macroeconomic stability appears to be an important prerequisite for ensuring that financial integration is beneficial for developing countries. In this regard, the IMF work in promulgating standards and codes for best practices on transparency and financial supervision, as well as sound macroeconomic frameworks, is crucial. These points may already be generally accepted; the contribution of this paper is to show that there is some systematic empirical evidence to support them. In addition, the analysis suggests that financial glob-

alization should be approached cautiously and with good institutions and macroeconomic frameworks viewed as preconditions.

This paper does not tackle the appropriate choice of an exchange rate regime or of monetary and fiscal policies. It is worth noting, however, that fixed or de facto fixed exchange rate regimes and excessive government borrowing appear to be major factors that have compounded the problems that some developing countries have had in managing capital flows. We leave a systematic examination of these issues for future research.

II Basic Stylized Facts

Measures of de jure restrictions on capital flows and actual capital flows across national borders are two indicators of the extent of a country's financial integration with the global economy. Understanding the differences between them is important when evaluating the effects of financial integration. By either measure, developing countries' financial linkages with the global economy have risen in recent years.[1] A relatively small group of developing countries, however, has garnered the lion's share of private capital flows from industrial to developing countries, which surged in the 1990s. Structural factors, including demographic shifts in industrial countries, are likely to provide an impetus to these North-South flows over the medium and long terms.

Measuring Financial Integration

Capital account liberalization is typically considered an important precursor of financial integration. Most formal empirical work analyzing the effects of capital account liberalization has used a measure based on the official restrictions on capital flows as reported to the IMF by national authorities. This binary indicator, however, directly measures capital controls but does not capture differences in the intensity of these controls.[2] A more direct measure of financial openness is based on the estimated gross stocks of foreign assets and liabilities as shares of GDP. The stock data constitute a better indication of integration, for our purposes, than the underlying flows, since they are less volatile from year to year and are less prone to measurement error (assuming that such errors are not correlated over time).[3]

Although these two measures of financial integration are related, they denote two distinct aspects. The capital account restrictions measure reflects the existence of de jure restrictions on capital flows while the financial openness measure captures de facto financial integration in terms of realized capital flows. This distinction is of considerable importance for the analysis in this paper and implies a 2x2 set of combinations of these two aspects of integration. Many industrial countries have attained a high degree of financial integration in terms of both measures. On the one hand, some developing countries with capital account restrictions have found these restrictions ineffective in controlling actual capital flows. Episodes of capital flight from some Latin American countries in the 1970s and 1980s are examples of such involuntary de facto financial integration in economies that are de jure closed to financial flows (that is, where integration has occurred without capital account liberalization). On the other hand, some countries in Africa have few capital account restrictions but have experienced only minimal levels of capital flows (that is, where liberalization has occurred without integration).[4] And, of course, it is not difficult to find examples of countries with closed capital accounts that are also effectively closed in terms of actual flows.

[1] For a historical perspective on international financial integration, see Appendix I.

[2] The restriction measure is available until 1995, when a new and more refined measure—not backward compatible—was introduced. The earlier data were extended through 1998 by Mody and Murshid (2002).

[3] These stock data were constructed by Lane and Milesi-Ferretti (2001). Operationally, this measure involves calculating the gross levels of FDI and portfolio assets and liabilities via the accumulation of the corresponding inflows and outflows, and making relevant valuation adjustments. A similar measure using the same underlying stock data has been considered by Chanda (2000) and O'Donnell (2001). Other measures of capital market integration include saving-investment correlations and various interest parity conditions (Frankel, 1992). These measures are difficult to operationalize for the extended time period and large number of countries in the data sample used for this paper.

[4] An analogy from the literature on international trade may be relevant here. Some countries, owing to their remoteness from major world markets or other unfavorable geographical attributes, have only small trade flows despite having minimal barriers to trade, even after controlling for various other factors. Similarly, certain countries—owing to their remoteness from major financial centers, in terms of either physical distance or historical relationships—may experience limited capital flows despite having relatively open capital accounts (see Loungani, Mody, and Razin, 2003).

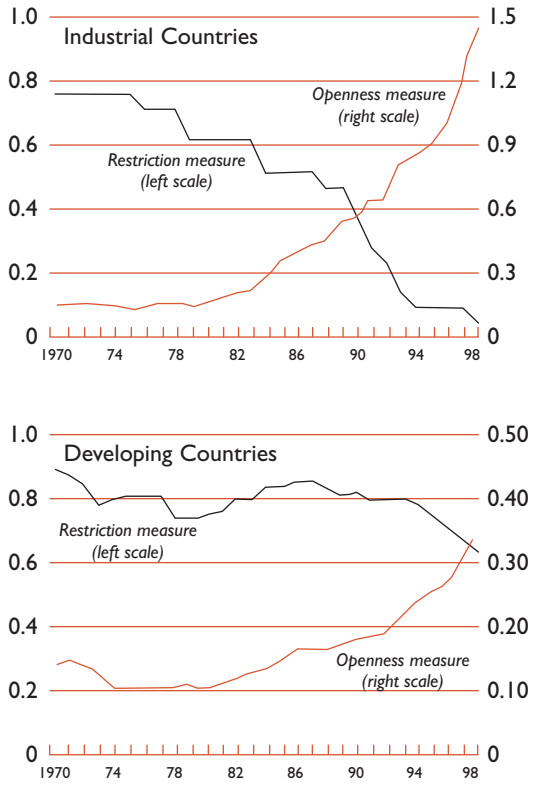
How has financial integration evolved over time for different groups of countries based on alternative measures?[5] By either measure, the difference in financial openness between industrial and developing countries is quite stark. Industrial economies have had an enormous increase in financial openness, particularly in the 1990s. Although this measure also increased for developing economies in that decade, its level remains far below that for industrial economies.

Unweighted cross-country averages of the two measures for industrial countries are mirror images and jointly confirm that these countries have undergone rapid financial integration since the mid-1980s (Figure 2.1).[6] For developing countries, the average restriction measure indicates that after a period of liberalization in the 1970s, the trend toward openness was reversed in the 1980s. Liberalization resumed in the early 1990s, but at a slow pace. In contrast, the average financial openness measure for these countries, based on actual flows, shows a modest increase in the 1980s, followed by a sharp rise in the 1990s. The increase in the financial openness measure for developing economies reflects a more rapid de facto integration than is captured by the relatively crude measure of capital account restrictions.

The effects of financial integration in terms of increased capital flows, however, have been spread very unevenly across developing countries.[7] To examine the extent of these disparities, it is useful to begin with a very coarse classification of the developing countries in the sample into two groups by ranking them according to the average of the financial openness measure over the last four decades and an assessment of other indicators of financial integration.

The first group, which comprises 22 countries, will hereinafter be referred to as the more financially integrated (MFI) countries and the second group, which includes 33 countries, as the less financially integrated (LFI) countries.[8] This distinction must be interpreted with some care at this stage. In particular, it is worth repeating that the criterion used for classifying countries is a measure of de facto integration based on actual capital flows rather than a measure of the strength of policies designed to promote financial integration. Indeed, a few of the countries in the MFI group do have relatively closed capital accounts in a de jure sense. In general, as argued later

Figure 2.1. Measures of Financial Integration



Sources: IMF (2001 and 2002); and Lane and Milesi-Ferretti (2003).

Notes: In each panel, the left-hand vertical axis displays scores on an index of capital account restrictions and the right-hand vertical axis displays ratios of foreign assets and liabilities to GDP.

[5]The dataset used in this paper consists of 76 industrial and developing countries (except where otherwise indicated) and covers the period 1960–99. Given the long sample period, several countries currently defined as industrial (for example, the Republic of Korea and Singapore) are included in the developing country group. The following were excluded from the dataset: most of the highly indebted poor countries (most of which receive official flows), the transition economies of Eastern Europe and the former Soviet Union (owing to lack of data), very small economies (with populations of less than 1.5 million), and the oil-exporting countries of the Middle East. See Appendix VI for a list of countries and further details on the dataset.

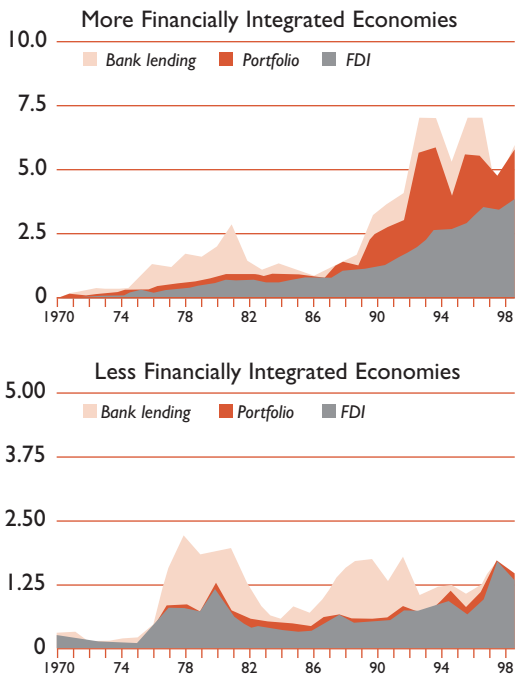
[6]A particularly rapid decline in controls occurred during the 1980s, when the members of the European Community, now the European Union, liberalized capital controls. A surge in cross-border capital flows followed.

[7]Ishii and others (2002) examine in detail the experiences of a number of developing countries.

[8]Not surprisingly, this classification results in a set of MFI economies that roughly corresponds to those included in the MSCI (Morgan Stanley Capital International) emerging markets stock index. The main differences are that we drop the transition economies because of limited data availability and add Hong Kong SAR and Singapore.

Figure 2.2. Gross Capital Flows

(Percent of GDP)



Sources: International Monetary Fund, *World Economic Outlook* and *International Financial Statistics*, various issues.

Notes: The left scales on the two panels are different. FDI denotes foreign direct investment.

in the paper, policy choices determine the degree and nature of financial integration. Nevertheless, for purposes of the analysis described in this paper, the degree of financial openness based on actual capital flows is a more relevant measure.

It should be noted that our main conclusions are not crucially dependent on the particulars of the classification of developing countries into the MFI and LFI groups. This classification is obviously a static one and does not account for differences across countries in the timing and degree of financial integration. It is used for some of the descriptive analysis presented here, but only in order to illustrate the conclusions from the more detailed econometric studies surveyed in the paper. The areas where this classification yields results different from those obtained from more formal econometric analysis are clearly highlighted. The regression results reported are based on the gross capital flows measure, which does capture differences across countries and changes over time in the degree of financial integration.

Figure 2.2 shows that the vast majority of international private gross capital flows of developing countries, especially in the 1990s, are accounted for by the relatively small group of MFI economies.[9] By contrast, private capital flows to and from the LFI economies have remained very small over the last decade and, for certain types of flows, even fallen below the levels of the late 1970s.

North-South Capital Flows

One of the key features of global financial integration over the last decade has been the dramatic increase in net private capital flows from industrial countries (the North) to developing countries (the South). Figure 2.3 breaks down the levels of these flows into the three main constituent categories. The main increase has been in terms of FDI and portfolio flows, while the relative importance of bank lending has declined somewhat. In fact, net bank lending turned negative for a few years during the Asian crisis.

The bulk of the surge in net FDI flows from the advanced economies has gone to MFI economies, with only a small fraction going to LFI economies (Figure 2.3, lower panels). Net portfolio flows show a similar pattern, although both types of flows to MFI economies fell sharply following the Asian crisis and have remained relatively flat since. LFI economies have been much more dependent on bank lending (and, although this is not shown in the figure, on official flows including loans and grants). There were surges in bank lending to this group of countries in the late 1970s and early 1990s.

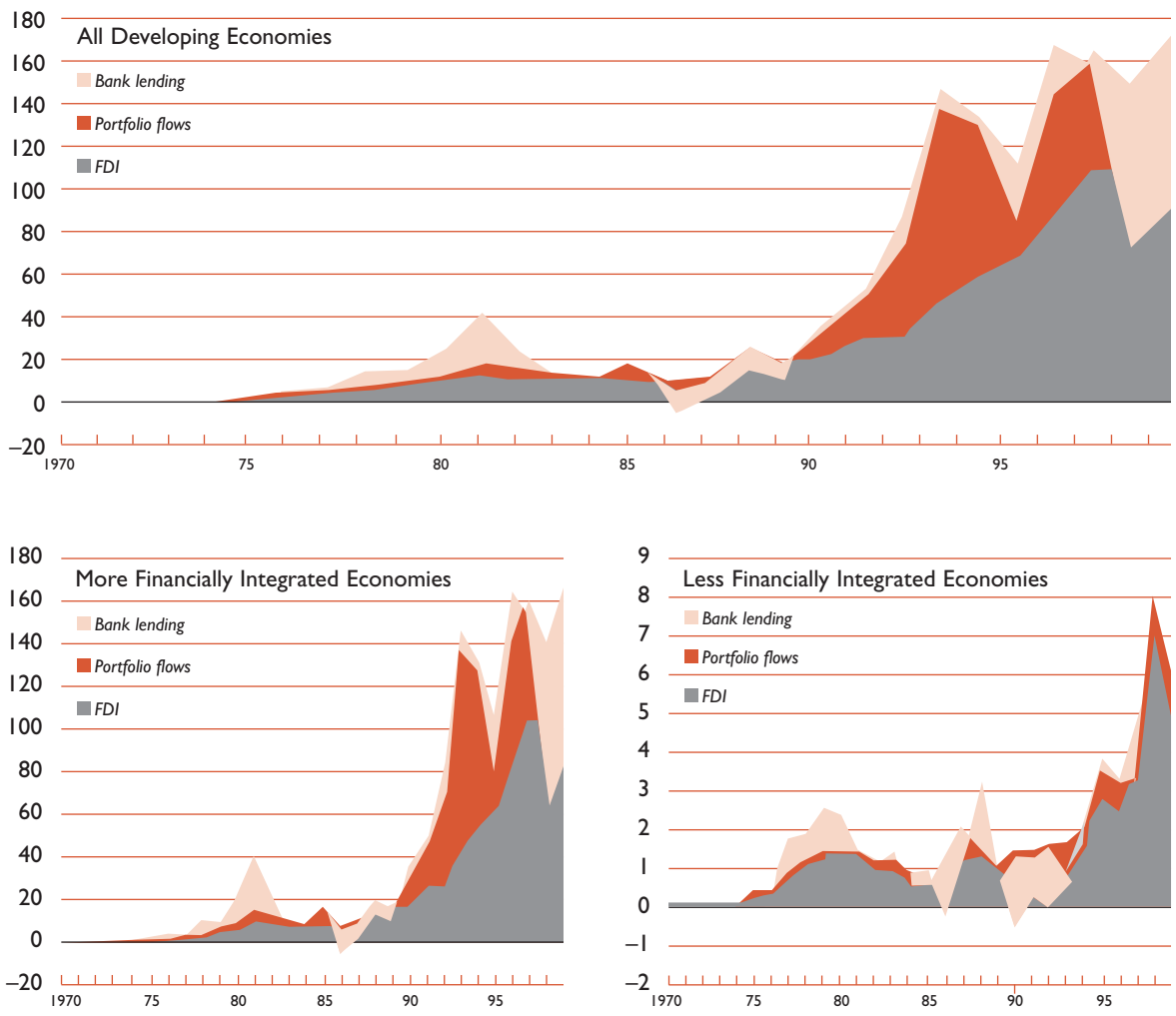
Another important feature of these flows is that they differ substantially in terms of volatility. Table 2.1 shows the volatility of FDI, portfolio flows, and bank lending to developing economies. FDI flows constitute the least volatile category of private capital flows to developing economies, which is not surprising given their long-term and relatively fixed nature. Portfolio flows tend to be far more volatile and prone to abrupt reversals than FDI. These patterns hold when the MFI and LFI economies are examined separately. Even for LFIs, the volatility of FDI flows is much lower than those of other types of flows.[10] These differences in the

[9]Note that the scale of the upper panel is twice as big as that of the lower one.

[10]Consistent with these results, Taylor and Sarno (1999) find that FDI flows are more persistent than other types of flows. Hausmann and Fernandez-Arias (2000) find weaker confirmation of this result and also note that although the volatility of FDI flows has been rising over time, it remains lower than those of

Figure 2.3. Net Private Capital Flows

(Billions of U.S. dollars)



Source: IMF, *World Economic Outlook*, various issues.
Notes: Bank lending to the more financially integrated economies was negative between 1997 and 1999. FDI denotes foreign direct investment.

relative volatility of different categories have important implications that will be examined in more detail later.

other types of flows. In interpreting these results, there is a valid concern about potential misclassification of the different types of capital flows. Since most of the studies cited here use similar data sources, this is not a problem that can be easily resolved by examining the conclusions of multiple studies.

Factors Underlying the Rise in North-South Capital Flows

The surge in net private capital flows to MFIs, as well as the shifts in the composition of these flows, can be broken down into pull and push factors (Calvo, Leiderman, and Reinhart, 1993). These are related to, respectively, (i) policies and other developments in the MFIs, and (ii) changes in global fi-

Table 2.1. Volatility of Different Types of Capital Inflows

	FDI/GDP	Loan/GDP	Portfolio/GDP
		Standard Deviations *(median for each group)*	
MFI economies	0.007	0.032	0.009
LFI economies	0.010	0.036	0.002
		Coefficients of Variation *(median for each group)*	
MFI economies	0.696	1.245	1.751
LFI economies	1.276	1.177	2.494
		Coefficients of Variation for Selected MFI Economies	
Indonesia	0.820	0.717	1.722
Korea, Republic of	0.591	2.039	1.338
Malaysia	0.490	4.397	3.544
Mexico	0.452	2.048	2.088
Philippines	0.921	0.956	1.979
Thailand	0.571	0.629	1.137

Source: Wei (2001).

Notes: Computed over the period 1980–96. Only countries with at least eight nonmissing observations during the period for all three variables and a population greater than or equal to one million in 1995 were kept in the sample. MFI denotes more financially integrated, and LFI less financially integrated, economies. Total inward foreign direct investment (FDI) flows, total bank loans, and total inward portfolio investments are from the IMF's *Balance of Payments Statistics* (Washington), various issues.

nancial markets. The first category includes factors, such as stock market liberalizations and privatization of state-owned companies, that have stimulated foreign inflows. The second category includes the growing importance of depositary receipts and cross-listings, and the emergence of institutional investors as important sources of international capital flows to emerging markets.

The investment opportunities afforded by stock market liberalizations, which have typically included the provision of access to foreign investors, have enhanced capital flows to MFIs. How much have restrictions on foreign investors' access to local stock markets in MFIs changed over time? To answer this question, it is useful to examine a new measure of stock market liberalization that captures restrictions on foreign ownership of domestic equities. This measure, constructed by Edison and Warnock (2001), is obviously just one component of capital controls, but an appropriate one for modeling equity flows. Figure 2.4 shows that stock market liberalizations in MFI economies in different regions have proceeded rapidly, in terms of both intensity and speed.[11]

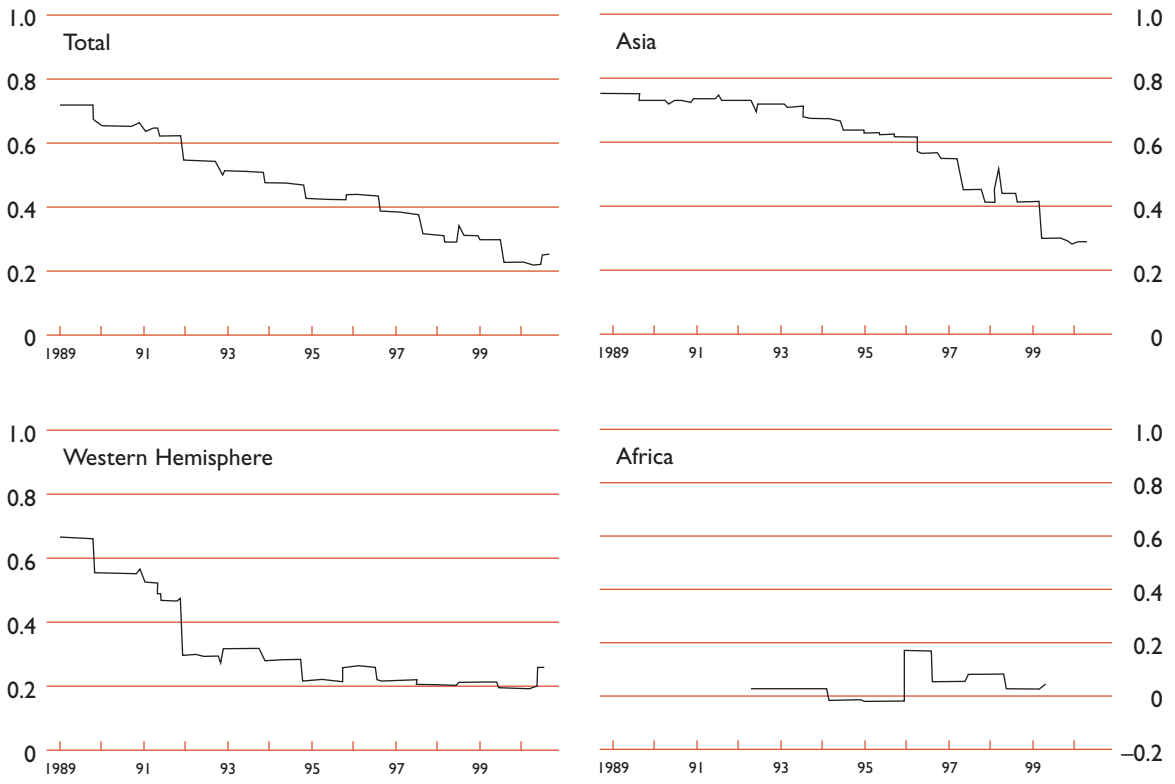
Mergers and acquisitions, especially those resulting from the privatization of state-owned companies, were an important factor underlying the increase in FDI flows to MFIs during the 1990s. The easing of restrictions on foreign participation in the financial sectors of MFIs have also provided a strong impetus for such activity.[12]

Institutional investors in the industrial countries—including mutual funds, pension funds, hedge funds, and insurance companies—have assumed an important role in channeling capital flows from industrial to developing economies. They have helped individ-

[11]The stock market liberalization index is based on two indices constructed by the International Finance Corporation (IFC) for each country—the Global Index (IFCG) and the Investable Index (IFCI). The IFCG represents the full market, while the IFCI represents the portion of the market available to foreign investors, where availability is determined by the IFC based on legal and liquidity criteria. Edison and Warnock (2001) propose using the ratio of the market capitalization of the IFCG to that of the IFCI as a measure of stock market liberalization. This ratio provides a quantitative measure of the degree of access that foreign investors have to a particular country's equity markets; one minus this ratio can be interpreted a measure of the intensity of capital controls in a country.

[12]The World Bank's *Global Development Finance* report for 2001 notes that FDI in Latin America's financial sector has come about through the purchases of privately owned domestic banks, which have driven up the share of banking assets under foreign control to 25 percent in 1999 from 8 percent in 1994. In East Asia, foreign investors have purchased many local banks in financial distress, leading to an increase in the share of banking assets under foreign control to 6 percent in 1999 from 2 percent in 1994.

Figure 2.4. Foreign Ownership Restrictions in More Financially Integrated Developing Economies



Source: Edison and Warnock (2001).
Note: This index measures the intensity of restrictions on the access that foreign investors have to a particular country's equity markets.

ual investors overcome the information and transaction cost barriers that previously limited portfolio allocations to emerging markets. Mutual funds, in particular, have served as an important instrument individuals can use to diversify their portfolios into developing country holdings.[13] Although international institutional investors devote only a small fraction of their portfolios to holdings in MFIs, they have an important presence in these economies, given the relatively small size of their capital markets. Funds dedicated to emerging markets alone hold, on average, 5–15 percent of the Asian, Latin American, and transition economies' market capitalizations.

Notwithstanding the moderation of North-South capital flows following recent emerging market crises, certain structural forces are likely to lead to a revival of these flows over the medium and long terms. Demographic shifts, in particular, have had an important effect on these flows. Projected increases in old-age dependency ratios reflect the major changes in demographic profiles under way in industrial countries. This trend is likely to intensify further in the coming decades, fueled both by advances in medical technology that have increased average life spans and the decline in fertility rates. Financing the post-retirement consumption needs of a rapidly aging population will require increases in current

[13]The presence of mutual funds in MFIs has grown substantially during the 1990s. For example, dedicated emerging market equity funds held $21 billion in Latin American stocks by the end of 1995. By the end of 1997, their holdings of these assets had increased to $40 billion. While mutual funds' growth in Asia has been less pronounced, the presence of mutual funds is still important in many countries in that region. See Eichengreen, Mathieson, and Chadha (1998) for a detailed study of hedge funds.

saving rates, both national and private, in these economies. If such increases in saving rates do materialize, however, they are likely to result in a declining rate of return on capital in advanced economies, especially relative to those in the capital-poor countries of the South. This will encourage capital flows to countries where higher returns are available.[14]

All of these forces imply that despite the recent sharp reversals in North-South capital flows, developing countries will eventually once again face the delicate balance of opportunities and risks afforded by financial globalization. Are the benefits derived from financial integration sufficient to offset the costs of increased exposure to the vagaries of international capital flows? The paper now turns to an examination of the evidence on this question.

[14]The relevant cross-country comparison would, of course, be in terms of *risk-adjusted* rates of reform on capital. Brooks (2000) examines the impact of demographic trends—including projections of fertility rates in different groups of countries—on North-South capital flows. Attanasio and Violante (2000) have argued that the global welfare effects of enabling such capital flows could be quite large. This assumes a lack of large labor mobility from the South to the North, which could dampen demographic shifts and also influence relative rates of return on capital.

III Financial Integration and Economic Growth

Theoretical models have identified a number of channels through which international financial integration can help to promote economic growth in the developing world. It has proven difficult, however, to empirically identify a strong and robust causal relationship between financial integration and growth.

Potential Benefits of Financial Globalization in Theory

In theory, there are a number of direct and indirect channels through which embracing financial globalization can help enhance growth in developing countries. Figure 3.1 provides a schematic summary of these possible channels. These channels are interrelated in some ways, but this delineation is useful for reviewing the empirical evidence on the quantitative importance of each channel.

Direct Channels

Augmentation of Domestic Savings

In principle, North-South capital flows benefit both groups. They allow for increased investment in capital-poor countries while providing a higher return on capital than is available in capital-rich countries. This effectively reduces the risk-free rate in the developing countries.

Reduction in Cost of Capital Through Better Global Allocation of Risk

International asset-pricing models predict that stock market liberalization improves the allocation of risk (Henry, 2000a; and Stulz, 1999a and b). First, increased risk-sharing opportunities between foreign and domestic investors might help to diversify risks. Second, the increased ability to diversify risk, in turn, would encourage firms to take on more total investment, thereby enhancing growth. Third, as capital flows increased, the domestic stock market would become more liquid, which could further reduce the equity risk premium, thereby lowering the cost of raising capital for investment.

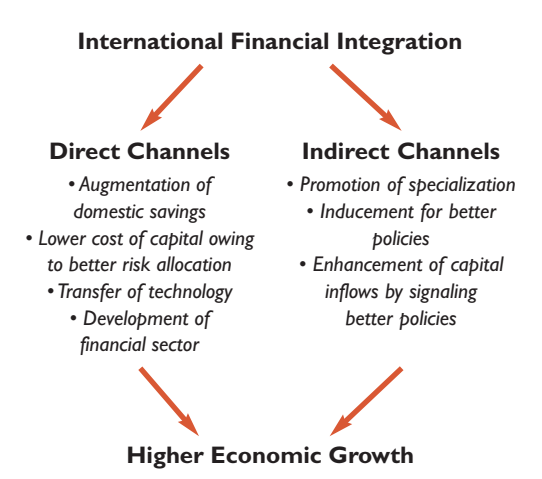
Transfer of Technological and Managerial Know-How

Financially integrated economies seem to attract a disproportionately large share of FDI inflows, which have the potential to generate technology spillovers and serve as a conduit for passing on better management practices. These spillovers can raise aggregate productivity and, in turn, boost economic growth (Borensztein, De Gregorio, and Lee (1998); MacDougall (1960); and Grossman and Helpman (1991b)).

Stimulation of Domestic Financial Sector Development

It has already been noted that international portfolio flows can increase the liquidity of domestic stock markets. Increased foreign ownership of domestic banks can also generate a variety of other benefits

Figure 3.1. Channels Through Which Financial Integration Can Raise Economic Growth



(Levine, 1996; Caprio and Honohan, 1999). First, foreign bank participation can facilitate access to international financial markets. Second, it can help improve the regulatory and supervisory framework of the domestic banking industry. Third, foreign banks often introduce a variety of new financial instruments and techniques and also foster technological improvements in domestic markets. The entry of foreign banks tends to increase competition, which, in turn, can improve the quality of domestic financial services as well as improve allocative efficiency.

Indirect Channels

Promotion of Specialization

The notion that specialization in production may increase productivity and growth is intuitive. Without any mechanism for risk management, however, a highly specialized production structure will produce high output volatility and, hence, high consumption volatility. Concerns about exposure to such increases in volatility may discourage countries from taking up growth-enhancing specialization activities; the higher volatility will also generally imply lower overall saving and investment rates. In principle, financial globalization could play a useful role by helping countries to engage in international risk sharing and thereby reduce consumption volatility. This point will be taken up again in the next section. Here it should just be noted that risk sharing would indirectly encourage specialization, which, in turn, would raise the growth rate. This logic is explained by Brainard and Cooper (1968), Kemp and Liviatan (1973), Ruffin (1974), and Imbs and Wacziarg (2003). Among developed countries and across regions within given developed countries, there is, indeed, some evidence that better risk sharing is associated with higher specialization (Kalemli-Ozcan, Sørensen, and Yosha, 2001).

Commitment to Better Economic Policies

International financial integration could increase productivity in an economy through its impact on the government's ability to credibly commit to a future course of policies. More specifically, the disciplining role of financial integration could change the dynamics of domestic investment in an economy to the extent that it leads to a reallocation of capital toward more productive activities in response to changes in macroeconomic policies. National governments are occasionally tempted to institute predatory tax policies on physical capital. The prospect of such policies tends to discourage investment and reduce growth. Financial opening can be self-sustaining and constrains the government from engaging in such predatory policies in the future, since the negative consequences of such actions are far more severe under financial integration. Gourinchas and Jeanne (2003a) illustrate this point in a theoretical model.

Signaling

A country's willingness to undertake financial integration could be interpreted as a signal that it is going to practice more friendly policies toward foreign investment in the future. Bartolini and Drazen (1997a) suggest that the removal of restrictions on capital outflows can, through its signaling role, lead to an increase in capital inflows. Many countries—including Colombia, Egypt, Italy, Mexico, New Zealand, Spain, the United Kingdom, and Uruguay—have received significant capital inflows after removing restrictions on capital outflows.[15]

Empirical Evidence

On the surface, there seems to be a positive association between embracing financial globalization and achieving economic development. In general, industrial countries are more financially integrated with the global economy than developing countries. Thus, embracing globalization is apparently part of being economically advanced.

Within the developing world, MFI economies grew faster than LFI economies over the last three decades. From 1970 to 1999, average per capita output rose almost threefold in the group of MFI developing economies, six times greater than the average increase experienced by LFI economies. This pattern of higher growth for the former group applies over each of the three decades and also to both consumption and investment growth.

There are two problems, however, with concluding from this data pattern that financial integration has a positive effect on growth. First, this hypothesis may not be able to stand up to closer scrutiny. Second, these observations may reflect only an association between international financial integration and economic performance rather than a causal relationship. In other words, these observations do not rule out the possibility that there is reverse causation: countries that manage to enjoy robust growth may also choose to engage in financial integration even if financial globalization does not directly contribute to faster growth in a quantitatively significant way.

To obtain an intuitive impression of the relationship between financial openness and growth, Table 3.1 presents a list of the fastest-growing developing economies during 1980–2000 and a list of the

[15]See Mathieson and Rojas-Suárez (1993) and Labán and Larraín (1997).

Table 3.1. Fastest- and Slowest-Growing Economies During 1980–2000 and Their Status of Financial Openness

	Fastest-Growing Economies, 1980–2000	Total Percentage Change in Per Capita GDP[1]	More Financially Integrated?	Slowest-Growing Economies, 1980–2000	Total Percentage Change in Per Capita GDP[1]	More Financially Integrated?
1	China	391.6	Yes/No	Haiti	–39.5	No
2	Korea, Rep. of	234.0	Yes	Niger	–37.8	No
3	Singapore	155.5	Yes	Nicaragua	–30.6	No
4	Thailand	151.1	Yes	Togo	–30.0	No
5	Mauritius	145.8	No	Côte d'Ivoire	–29.0	No
6	Botswana	135.4	No	Burundi	–20.2	No
7	Hong Kong SAR	114.5	Yes	Venezuela	–17.3	Yes/No
8	Malaysia	108.8	Yes	South Africa	–13.7	Yes
9	India	103.2	Yes/No	Jordan	–10.9	Yes
10	Chile	100.9	Yes	Paraguay	–9.5	No
11	Indonesia	97.6	Yes	Ecuador	–7.9	No
12	Sri Lanka	90.8	No	Peru	–7.8	Yes

Source: IMF staff calculations based on the World Bank's World Development Indicators (WDI) database.
[1]Growth rate of real per capita GDP, in constant local currency unit.

slowest-growing (or, rather, the fastest-declining) economies during the same period. Some countries underwent financial integration during this period, especially in the latter half of the 1990s.[16] Therefore, any result based on total changes over this long period should be interpreted with caution. Nonetheless, several features of the table are noteworthy.

An obvious observation that can be made from the table is that financial integration is *not a necessary condition* for achieving a high growth rate. China and India have achieved high growth rates despite somewhat limited and selective capital account liberalization. For example, although China became substantially more open to foreign direct investment, it was not particularly open to most other types of cross-border capital flows. Mauritius and Botswana have managed to achieve very strong growth rates during the period although they are relatively closed to financial flows.

The second observation that can be made is that financial integration is *not a sufficient condition* for a fast economic growth rate either. For example, Jordan and Peru became relatively open to foreign capital flows, yet their economies experienced negative rather than positive growth, during the period. Nonetheless, Table 3.1 also suggests that declining economies are more likely to be financially closed, though the direction of causality is not clear.

This way of looking at countries with extreme growth performances is only informative up to a point; it needs to be supplemented by a comprehensive examination of the experience of a broader set of countries using a more systematic approach to measuring financial openness. To illustrate this relationship more broadly, Figure 3.2 presents a scatter plot of the growth rate of real per capita GDP against the increase in financial integration over 1982–97. There is essentially no association between these variables. Figure 3.3 presents a scatter plot of these two variables after taking into account the effects of a country's initial income, initial schooling, average investment-to-GDP ratio, political instability, and regional location. Again, the figure does not suggest a positive association between financial integration and economic growth. In fact, this finding is not unique to the particular choice of time period or country coverage, as is reflected in a broad variety of other research papers on the subject.

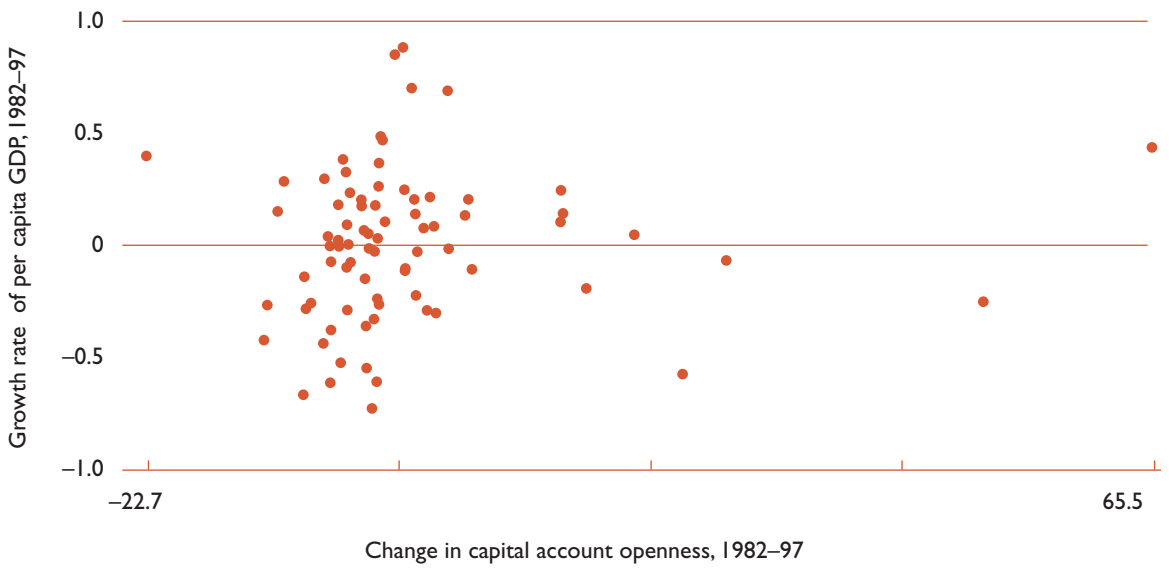
A number of empirical studies have tried to systematically examine whether financial integration contributes to growth using various approaches to dealing with the difficult problem of proving causation. Table 3.2 summarizes the 14 most recent studies on this subject.[17] Three of these papers report a positive effect

[16]Table 3.1 reports the growth rates of real per capita GDP in constant local currency units. The exact growth rates and country rankings may change if different measures, such as per capita GDP in dollar terms or on a PPP (purchasing power parity) basis, are used.

[17]This extends the survey in the IMF's *World Economic Outlook, October 2001* and Edison, Klein, Ricci, and Sløk (2002).

Figure 3.2. Increase in Financial Openness and Growth of Real Per Capita GDP

(Simple correlation, 1982–97)

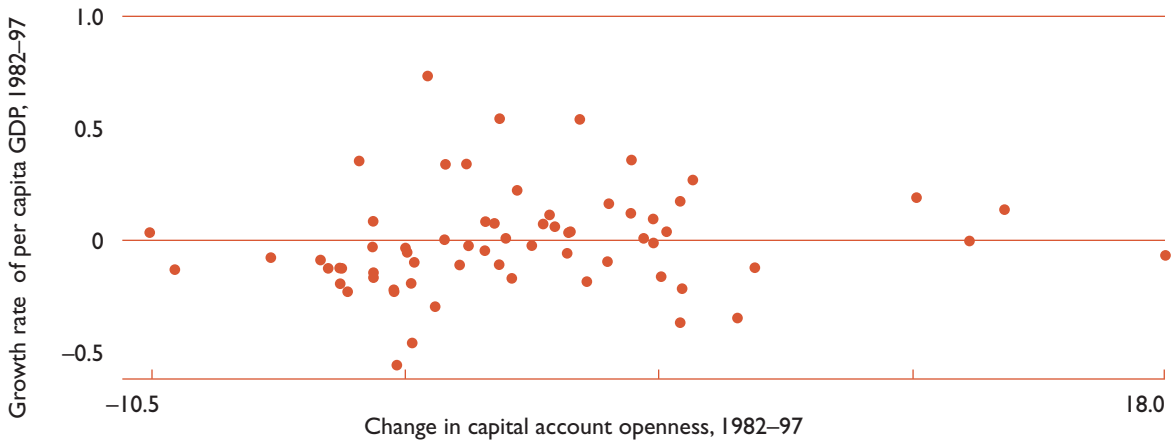


Source: IMF staff calculations based on the data documented in Wei and Wu (2002b).

Notes: Capital account openness is measured as (gross private capital inflows + gross private capital outflows) / GDP. Coef = 0.002; Robust SE = 0.003; and t-statistic = 0.67.

Figure 3.3. Increase in Financial Openness and Growth of Real Per Capita GDP: Conditional Relationship, 1982–97

(Conditioning on initial income, initial schooling, average investment/GDP, political instability (revolution and coup), and regional dummies)



Source: IMF staff calculations based on the data documented in Wei and Wu (2002b).

Notes: Capital account openness is measured by (gross private capital inflows + gross private capital outflows) / GDP. Coef = 0.006; Robust SE = 0.004; and t-statistic = 1.42.

Table 3.2. Summary of Recent Research on Financial Integration and Economic Growth

Study	Number of Countries	Years Covered	Effect on Growth
Alesina, Grilli, and Milesi-Ferretti (1994)	20	1950–89	No effect
Grilli and Milesi-Ferretti (1995)	61	1966–89	No effect
Quinn (1997)	58	1975–89	Positive
Kraay (1998)	117	1985–97	No effect or, at best, mixed
Rodrik (1998)	95	1975–89	No effect
Klein and Olivei (2000)	Up to 92	1986–95	Positive
Chanda (2000)	116	1976–95	Mixed
Arteta, Eichengreen, and Wyplosz (2001)	51–59	1973–92	Mixed
Bekaert, Harvey, and Lundblad (2001a)	30	1981–97	Positive
Edwards (2001)	62	1980s	No effect for poor countries
O'Donnell (2001)	94	1971–94	No effect or, at best, mixed
Reisen and Soto (2001)	44	1986–97	Mixed
Edison, Klein, Ricci, and Sløk (2002)	Up to 89	1973–95	Mixed
Edison, Levine, Ricci, and Sløk (2002)	57	1980–2000	No effect

Sources: Extended by IMF staff members from IMF (2001); and Edison, Klein, Ricci, and Sløk (2002).

of financial integration on growth. However, the majority of the papers tend to find no effect or a mixed effect for developing countries. This suggests that if financial integration has a positive effect on growth, it is probably neither strong nor robust (see Box 3.1).[18]

Of the papers summarized in Table 3.2, the one by Edison, Levine, Ricci, and Sløk (2002) is perhaps the most thorough and comprehensive in terms of measures of financial integration and in terms of empirical specifications. These authors measure a country's degree of financial integration both by the government's restrictions on capital account transactions as recorded in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* and by the observed size of capital flows crossing the border, normalized by the size of the economy. The dataset in that paper goes through 2000, the latest year analyzed in any existing study on this subject. Furthermore, the authors also employ a statistical methodology that allows them to deal with possible reverse causality—that is, the possibility that any observed association between financial integration and growth could occur because faster-growing economies are more likely to choose to liberalize their capital accounts. After a battery of statistical analyses, that paper concludes that, overall, there is no robustly significant effect of financial integration on economic growth.

[18]There is some evidence that different types of capital flows may have different effects on growth.

Synthesis

Why is it so difficult to find a strong and robust effect of financial integration on economic growth for developing countries, when the theoretical basis for this result is apparently so strong? Perhaps there is some logic to this outcome after all. A number of researchers have now concluded that most of the differences in per capita income across countries stem not from differences in capital-labor ratios but from differences in total factor productivity, which, in turn, could be explained by soft factors or social infrastructure such as governance, the rule of law, and respect for property rights.[19] In this case, although financial

[19]See Hall and Jones (1999); Senhadji (2000); Acemoglu, Johnson, and Robinson (2001); Easterly and Levine (2001); and Rogoff (2002) on the role of productivity differences in explaining cross-country differences in income. Gourinchas and Jeanne (2003b) is the only paper that has made a direct comparison between gains from international financial integration and those from a rise in productivity. In a calibrated model, they show that the welfare gain from perfect financial integration is roughly equivalent to a 1 percent permanent increase in consumption for the typical non-OECD economy. By contrast, a productivity increase of the order of magnitude experienced in postwar Republic of Korea yields a welfare benefit that is more than a hundred times larger. The low gains from international financial integration come from the fact that less developed countries are, on average, not very far from their potential level of capital. Non-OECD countries are less developed not primarily because they are capital scarce but because productivity is constrained by the quality of institutions, economic policies, and other factors (see Appendix II).

Box 3.1. Effects of Different Types of Capital Flows on Growth

The cumulative evidence from the literature does not offer clear-cut and robust support for the notion that capital flows generically provide a quantitatively big boost to economic growth. There have been several studies, however, that suggest that different types of capital flows may have different effects.

Using data for the 1980s, De Mello (1999) reports evidence that FDI flows appear to promote economic growth in developing as well as Organization for Economic Cooperation and Development (OECD) countries. Borenzstein, De Gregorio, and Lee (1998) find that the positive effect of FDI can be detected when the recipient countries have a sufficiently high level of human capital.

FDI and other types of capital flows into developing countries started to pick up momentum in the 1990s, which makes it highly desirable to look at the evidence based on more recent data. Reisen and Soto (2001) examine six types of capital flows: foreign direct investment, portfolio equity flows, portfolio bond flows, long-term bank credits, short-term bank credits, and official flows. They employ a dynamic panel regression framework to deal with potential endogeneity and missing variable problems and cover 44 countries over the period 1986–97. Of the six types of capital flows, only two, namely FDI and portfolio equity flows, are positively associated with subsequent economic growth rates.

Other studies have looked into the effects of different types of capital flows on domestic investment (and, hence, indirectly on growth). Bosworth and Collins (1999) analyzed such relationships using data covering 1979–95, focusing on variations within countries over time rather than variations across countries. These authors first removed the country means from the data and then regressed investment and savings shares on various forms of capital inflows (relative to GDP). They found that more FDI and bank lending are positively associated with increases in domestic investment. In contrast, the association between portfolio capital inflows and domestic investment, while positive, is not statistically significant. These authors made an attempt to deal with the possibility that capital flows are endogenous, meaning that capital flows and domestic investment can both be determined simultaneously by a common third factor.

The World Bank's *Global Development Finance* (2001) replicated the Bosworth-Collins study using a dataset with more countries and a longer time period (1972–98). It found that the association between FDI (or other long-term capital inflows or bank lending) and domestic investment is stronger than between short-term debt and domestic investment. The association between portfolio capital and domestic investment is not statistically significant.

To summarize, across different recent studies surveyed here, FDI is one form of capital inflow that tends to be positively associated with domestic investment and domestic growth in a relatively consistent manner. Other forms of capital inflows could also have a positive relationship, but their effects tend to be less robust or less strong.

integration may open the door for additional capital to come in from abroad, it is unlikely, by itself, to offer a major boost to growth. In fact, if domestic governance is sufficiently weak, financial integration could cause an exodus of domestic capital and, hence, lower the growth rate of an economy.

This logic can be illustrated using the results reported in Senhadji (2000). Over the period 1960 to 1994, the average growth rate of per capita output for the group of countries in sub-Saharan Africa was the lowest among regional groupings of developing countries. The difference in physical and human capital accumulation is only part of the reason why growth rates differ across countries. The gap in total factor productivity is the major element in explaining the difference in the growth rates.

Another possible explanation of why it is difficult to detect a causal effect of financial integration on growth is the costly banking crises that some developing countries have experienced in the process of financial integration. The results in Kaminsky and Reinhart (1999) suggest that a flawed sequencing of domestic financial liberalization, when accompanied by capital account liberalization, increases the chance of domestic banking crises and/or exchange rate crises. These crises are often accompanied by output collapses. As a result, the benefits from financial integration may not be evident in the data.[20]

It is interesting to contrast the empirical literature on the effects of financial integration with that on the effects of trade integration. Although there are some skeptics (Rodriguez and Rodrik, 2001), an overwhelming majority of empirical papers reach the conclusion that trade openness helps to promote economic growth. These studies employ a variety of techniques, including country case studies as well as cross-country regressions. In a recent paper that surveys all the prominent empirical research on the subject, Krueger and Berg (2002) conclude that "[v]aried evidence supports the view that trade openness contributes greatly to growth." Furthermore, "[c]ross-country regressions of the level of income on various

[20]See Ishii and others (2002) for relevant country cases.

Box 3.2. Do Financial and Trade Integration Have Different Effects on Economic Development? Evidence from Life Expectancy and Infant Mortality

As an alternative to examining the effect of openness on economic growth, this box asks whether trade and financial integration help to raise life expectancy and reduce infant mortality in developing countries and whether their effects are different.

There are three motivations for studying these questions. First, as life expectancy and infant mortality are important dimensions of a society's well-being, they are interesting objects to look at in their own right. Second, data on income level or growth come from national accounts, so all studies on economic growth have to make use of similar data sources. In comparison, vital statistics come from an entirely different data source (that is, birth and death records) and are typically collected by different government agencies. They therefore offer an independent and complementary check on the effect of openness on the livelihood of people. Third, to compare income levels or growth rates across countries, it is necessary to make certain purchasing power parity (PPP) adjustments to nominal income. However, existing PPP adjustments may not be reliable (Deaton, 2001). In contrast, the definitions of life and death are consistent across countries, so vital statistics have a higher degree of comparability than the data on poverty, income, or income distribution.

Data on 79 developing countries over the period 1962–97 are examined. This dataset covers all developing countries for which the relevant data exist and for which changes in infant mortality and life expectancy are not dominated by large-scale wars, genocides, famines, or major outbursts of AIDS. Panel regressions with country fixed effects and dynamic panel regressions are employed to account for other factors that may affect health and to account for possible endogeneity of the openness variables.

The results, summarized in Figure 3.4, suggest that the effects of trade and financial openness are different. There is no positive and robust association across developing countries between a faster increase in financial integration and a faster improvement in a society's health. By comparison, there are several pieces of evidence suggesting that higher trade integration is associated with a faster increase in life expectancy and a faster reduction in infant mortality. For example, an 11 percentage point reduction in the average statutory tariff rate—approximately equal to one standard deviation of the change in the statutory tariff rate over the 1962–97 period—is associated with between 3 and 6 fewer infants dying per thousand live births, even after controlling for the effects of changes in per capita income, average level of female education, and other factors.

Source: Wei and Wu (2002b).

determinants generally show that openness is the most important policy variable."

The differential effects between trade and financial integration are echoed in other empirical research (see Box 3.2). As an alternative to examining the effects on economic growth or level of income, one can examine the effects of trade and financial openness on a society's health status. Using data on 79 developing countries, Wei and Wu (2002b) report several pieces of evidence suggesting that a faster increase in trade openness—especially when measured by the reduction in tariff rates—is associated with a faster increase in life expectancy and a faster reduction in infant mortality, even after one takes into account the effects of income, institutions, and other factors. In contrast, greater financial integration is not associated with a faster improvement in a society's health status. This suggests that, as may be seen in the growth literature, trade integration appears to play a more beneficial role than financial integration in developing countries.

The contrast between financial and trade openness may have important lessons for policies. While there appear to be relatively few prerequisites for deriving benefits from trade openness, obtaining benefits from financial integration requires several conditions to be met. This is discussed in more detail in Section V.

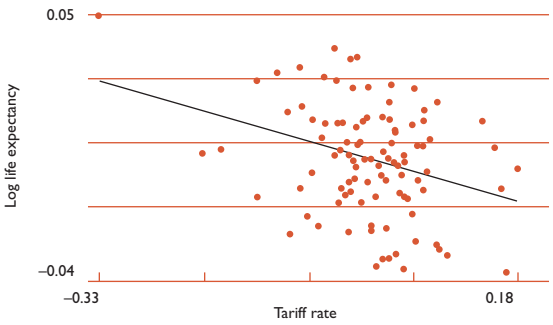
It is useful to note that there may be a complementary relationship between trade and financial openness.[21] For example, if a country has severe trade barriers protecting some inefficient domestic industries, then capital inflows may end up being directed to those industries, thereby exacerbating the existing misallocation of resources. Thus, there is a concrete channel through which financial openness without trade openness could lower a country's level of efficiency.

Of course, the lack of a strong and robust effect of financial integration on economic growth does not necessarily imply that theories that make this connection are wrong. One could argue that the theories are about the long-run effects, and most theories abstract from the nitty-gritty of institution building, governance improvement, and other soft factors that

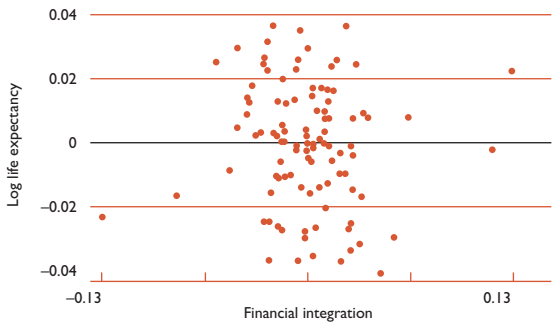
[21]This point is stressed in the IMF's *World Economic Outlook, September 2002*.

Figure 3.4. Differential Effects of Financial and Trade Integration on Improvements in Health

A lower trade barrier is associated with longer life expectancy, but higher financial integration is not.

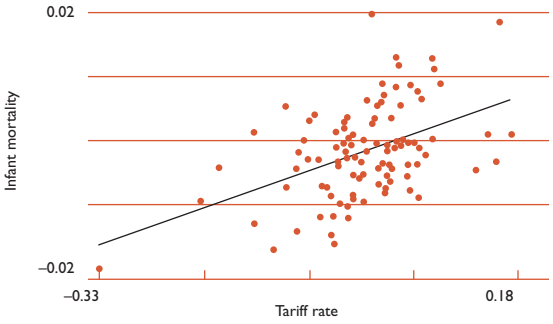


Notes: conditional on income per capita, years of schooling, physicians per 1,000 people, democracy, and country fixed effects. Coef = –0.090, SE = 0.035; and t = –2.58.

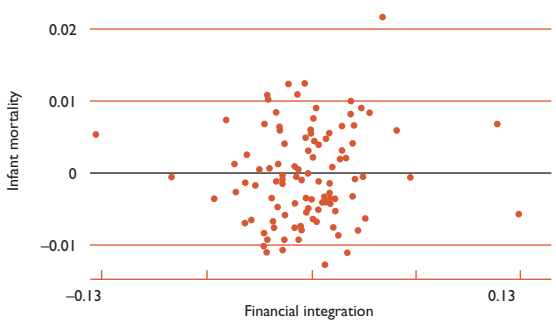


Notes: conditional on tariff rate, income per capita, years of schooling, physicians per 1,000 people, democracy, and country fixed effects. Coef = –0.028, SE = 0.081; and t = –0.35.

A lower trade barrier is associated with lower infant mortality, but higher financial integration is not.



Notes: conditional on income per capita, years of schooling, physicians per 1,000 people, democracy, and country fixed effects. Coef = 0.045, SE = 0.012; and t = 3.9.



Notes: conditional on tariff rate, income per capita, years of schooling, physicians per 1,000 people, democracy, and country fixed effects. Coef = 0.019, SE = 0.027; and t = 0.7.

Source: IMF staff calculations based on Wei and Wu (2002b).

Notes: On the vertical axes in the top two panels is log life expectancy at birth (in years). On the vertical axes in the bottom two panels is infant mortality, defined as the number of infants who die before reaching their first birthday per 1,000 live births. Tariff rate refers to average statutory tariff rate, and financial integration is measured by (gross private capital inflows + gross private capital outflows) / GDP.

are necessary for the hypothesized channels to operate. Indeed, developing countries may have little choice but to strengthen their financial linkages eventually in order to improve their growth potential in the long run. The problem is how to manage the short-run risks apparently associated with financial globalization. Financial integration without a proper set of preconditions might lead to few growth benefits and more output and consumption volatility in the short run.

IV Financial Globalization and Macroeconomic Volatility

International financial integration should, in principle, help countries to reduce macroeconomic volatility. The survey presented in this section, including some new evidence, suggests that developing countries, in particular, have not attained this potential benefit. The process of capital account liberalization has often been accompanied by increased vulnerability to crises. Globalization has heightened these risks, since financial linkages have the potential to amplify the effects of both real and financial shocks.

Macroeconomic Volatility[22]

One of the potential benefits of globalization is provision of better opportunities for reducing volatility by diversifying risk. Indeed, these benefits are presumably even greater for developing countries that are intrinsically subject to higher volatility on account of their having less diversified production structures than industrial economies. Recent crises in some MFIs suggest, however, that financial integration may, in fact, have increased volatility.

What is the overall evidence of the effect of globalization on macroeconomic volatility? In addressing this question, it is important to draw a distinction between output and consumption volatility. In theoretical models, the direct effects of global integration on output volatility are ambiguous. On the one hand, financial integration provides access to capital that can help capital-poor developing countries diversify their production bases. On the other hand, rising financial integration could also lead to increasing specialization of production based on comparative-advantage considerations, thereby making economies more vulnerable to industry-specific shocks (Razin and Rose, 1994).

Irrespective of the effects on output volatility, theory suggests that financial integration should reduce consumption volatility. The ability to reduce fluctuations in consumption is regarded as an important determinant of economic welfare. Access to international financial markets provides better opportunities for countries to share macroeconomic risk and, thereby, smooth consumption. The basic idea here is that since output fluctuations are not perfectly correlated across countries, trade in financial assets can be used to delink national consumption levels from the country-specific components of these output fluctuations (see Obstfeld and Rogoff (1998), Chapter 5). Appendix II provides a detailed analytical examination of this issue and shows that the gains from consumption smoothing are potentially very large for developing economies.[23]

Notwithstanding the importance of this issue, the empirical evidence on the effects of globalization on macroeconomic volatility is rather sparse and, in particular, the evidence concerning the effects of financial integration on volatility is limited and inconclusive (see Box 4.1). In addition, the existing literature has been largely devoted to analyzing the effects of financial integration on output volatility, with little attention paid to consumption volatility. Hence, this paper provides some new evidence on this topic.

Table 4.1 examines changes in volatility for different macroeconomic aggregates over the last four decades. Consistent with evidence presented in the September 2002 issue of the IMF's *World Economic Outlook*, MFI economies have, on average, lower output volatility than LFI economies. Interestingly, there is a significant decline in average output volatility in the 1990s for both industrial and LFI economies but a far more modest decline for MFI economies. The picture is similar for a broader measure of income that includes factor income flows and terms of trade effects, which are particularly important for developing countries. Figure 4.1's top panel, which shows the evolution of the average volatility of income growth for different groups of countries, confirms these results and shows that they are not

[22]This subsection draws heavily on Kose, Prasad, and Terrones (2003a).

[23]Appendix III discusses the possibility and the limitation of using contingent securities, such as GDP-index bonds, to help reduce income volatility, especially that associated with debt crises.

Box 4.1. Effects of Globalization on Volatility: A Review of Empirical Evidence

Unlike the rich empirical literature focusing on the impact of financial openness on economic growth, there are only a limited number of studies analyzing the links between openness and macroeconomic volatility. Moreover, existing studies have generally been unable to document a clear empirical link between openness and macroeconomic volatility. Razin and Rose (1994) study the impact of trade and financial openness on the volatility of output, consumption, and investment for a sample of 138 countries over the period 1950–88. They find no significant empirical link between openness and the volatility of these variables.

Easterly, Islam, and Stiglitz (2001) explore the sources of output volatility using data for a sample of 74 countries over the period 1960–97. On the one hand, they find that a higher level of development of the domestic financial sector is associated with lower volatility. On the other hand, an increase in the degree of trade openness leads to an increase in the volatility of output, especially in developing countries. Their results indicate that neither financial openness nor the volatility of capital flows has a significant impact on output volatility.

Buch, Döpke, and Pierdzioch (2002) use data for 25 OECD countries to examine the link between financial openness and output volatility. They report that there is no consistent empirical relationship between financial openness and the volatility of output. Gavin and Hausmann (1996) study the sources of output volatility in developing countries over the period 1970–92. They find that there is a significant positive association between the volatility of capital flows and output volatility. O'Donnell (2001) examines the effect of financial integration on the volatility of output growth over the period 1971–94 using data for 93 countries. He finds that a higher degree of financial integration is associated with lower (higher) output volatility in OECD (non-OECD) countries. His results also suggest that countries with more developed financial sectors are able to reduce output volatility through financial integration.

Bekaert, Harvey, and Lundblad (2002a) examine the impact of equity market liberalization on the volatility of output and consumption during 1980–2000. They find that following equity market liberalizations, there is a significant decline in both output and consumption volatility. Capital account openness reduces the volatility of output and consumption, but its impact is smaller than that of equity market liberalization. They also report, however, that capital account openness increases the volatility of output and consumption in emerging market countries. The IMF's *World Economic Outlook, September 2002* provides some evidence indicating that financial openness is associated with lower output volatility in developing countries.

sensitive to the decade-wise breakdown of the data, although there is a pickup in volatility for MFIs toward the end of the sample.[24]

The consumption rows of Table 4.1 show that average consumption volatility in the 1990s has declined in line with output volatility for both industrial economies and LFI economies. By contrast, for MFI economies, the volatility of private consumption has risen in the 1990s, relative to the 1980s. It is possible that looking at the volatility of private consumption is misleading, since public consumption could be playing an important smoothing role, especially in developing economies. It is true, as is shown in the total consumption rows of Table 4.1, that total consumption is generally less volatile than private consumption. These results, however, confirm the pattern that, on average, consumption volatility for industrial and LFI economies declined in the 1990s. By contrast, it increased for MFI economies over the same period. Figure 4.1's lower panel, which shows the evolution of the average volatility of total consumption growth over a 10-year rolling period, presents a similar picture. Could this simply be a consequence of higher income volatility for MFI economies?

Strikingly, for MFI countries, the volatility of total consumption relative to that of income actually increased in the 1990s relative to earlier periods. The bottom rows of Table 4.1 show the median ratio of the volatility of total consumption growth to that of income growth for each group of countries. For MFI economies, this ratio increases from 0.76 in the 1980s to 0.92 in the 1990s, while it remains essentially unchanged for the other two groups of countries. Thus, the increase in the 1990s of the ratio of the volatility of consumption to that of income for the MFI economies suggests that financial integration has not provided better consumption-smoothing opportunities for these economies.[25]

More formal econometric evidence is presented by Kose, Prasad, and Terrones (2003a), who use measures of capital account restrictions as well as gross financial flows to capture different aspects of financial integration, as well as differences in the degree of

[24]The figure shows the median standard deviation of income growth for each country group, based on standard deviations calculated for each country over a 10-year rolling period.

[25]It should be noted that despite the increase in the 1990s, the volatility of both private and total consumption for the MFI economies is, on average, still lower than for LFI economies.

Table 4.1. Volatility of Annual Growth Rates of Selected Variables
(Percentage standard deviations, medians for each group of countries)

	Full Sample	Decade			
	1960–99	1960s	1970s	1980s	1990s
Output (*Y*)					
Industrial countries	2.18	1.91	2.46	2.03	1.61
	(0.23)	(0.26)	(0.28)	(0.30)	(0.14)
MFI economies	3.84	3.31	3.22	4.05	3.59
	(0.20)	(0.42)	(0.37)	(0.44)	(0.62)
LFI economies	4.67	3.36	4.88	4.53	2.70
	(0.35)	(0.61)	(1.01)	(0.69)	(0.38)
Income (*Q*)					
Industrial countries	2.73	2.18	2.99	2.54	1.91
	(0.34)	(0.33)	(0.40)	(0.29)	(0.30)
MFI economies	5.44	3.60	5.43	5.45	4.78
	(0.50)	(0.47)	(0.45)	(0.65)	(0.72)
LFI economies	7.25	4.42	9.64	7.56	4.59
	(0.84)	(0.53)	(1.24)	(1.23)	(0.54)
Consumption (*C*)					
Industrial countries	2.37	1.47	2.16	1.98	1.72
	(0.30)	(0.27)	(0.25)	(0.28)	(0.20)
MFI economies	5.18	4.57	4.52	4.09	4.66
	(0.51)	(0.49)	(1.04)	(0.94)	(0.46)
LFI economies	6.61	5.36	7.07	7.25	5.72
	(0.78)	(0.58)	(0.11)	(0.81)	(0.78)
Total consumption (*C*+*G*)					
Industrial countries	1.86	1.38	1.84	1.58	1.38
	(0.23)	(0.28)	(0.18)	(0.19)	(0.20)
MFI economies	4.34	3.95	4.19	3.43	4.10
	(0.47)	(0.51)	(0.54)	(0.84)	(0.53)
LFI economies	6.40	4.85	6.50	6.34	4.79
	(0.56)	(0.55)	(0.93)	(0.91)	(0.82)
Ratio of total consumption (*C*+*G*) volatility to income (*Q*) volatility					
Industrial countries	0.67	0.75	0.56	0.61	0.58
	(0.02)	(0.09)	(0.03)	(0.06)	(0.06)
MFI economies	0.81	0.92	0.74	0.76	0.92
	(0.07)	(0.13)	(0.12)	(0.11)	(0.04)
LFI economies	0.80	0.95	0.68	0.82	0.84
	(0.08)	(0.06)	(0.10)	(0.51)	(0.14)

Source: Authors' calculations.

Notes: From the bottom group of rows, the ratio of total consumption growth volatility to that of income growth volatility is first computed separately for each country. The reported numbers are the within-group medians of those ratios. (Note that this is not the same as the ratio of the median of consumption growth volatility to the median of income growth volatility.) Standard errors are reported in parentheses. MFI denotes more financially integrated, and LFI less financially integrated, economies.

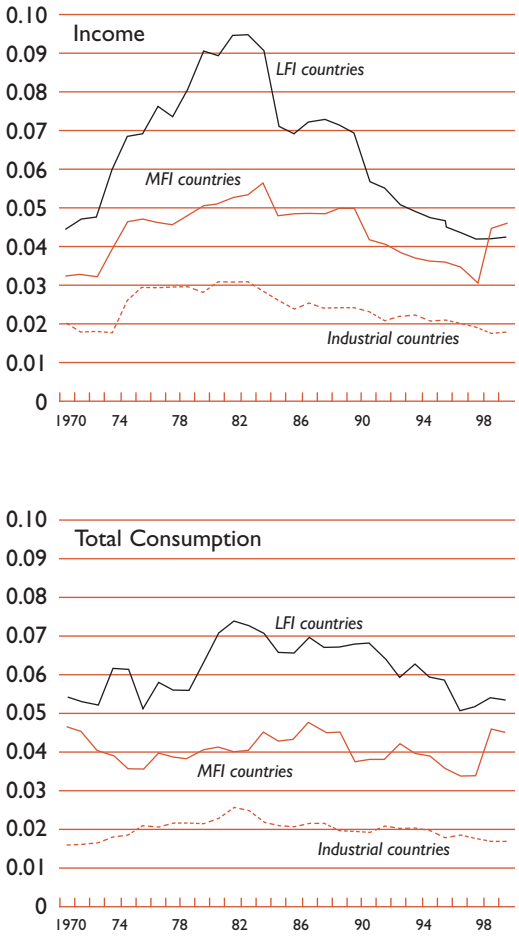
integration across countries and over time. This analysis confirms the increase in the relative volatility of consumption for countries that have larger financial flows, even after controlling for macroeconomic variables as well as country characteristics such as trade openness and industrial structure. These authors, however, also identify an important threshold effect—beyond a particular level, financial integration significantly reduces volatility. Most developing economies, including MFI economies, are unfortunately well below this threshold.[26]

Why has the relative volatility of consumption increased precisely in those developing countries that

[26]For the financial integration measure used in this paper, the threshold occurs at a ratio of about 50 percent of GDP. The countries in the sample that have degrees of financial integration above this threshold are all industrial countries.

Figure 4.1. Volatility of Income and Consumption Growth

(10-year rolling standard deviations; medians for each group of countries)



Source: Kose, Prasad, and Terrones (2003a).
Note: MFI denotes more financially integrated, and LFI less financially integrated, economies.

are more open to financial flows? One explanation is that positive productivity and output growth shocks in these countries during the late 1980s and early 1990s led to consumption booms that were willingly financed by international investors. These consumption booms were accentuated by the fact that many of these countries undertook domestic financial liberalization at the same time they opened up to international financial flows, thereby loosening liquidity constraints at both the individual and national levels. When negative shocks hit these economies, however, they rapidly lost access to international capital markets.

Consistent with this explanation, a growing literature suggests that the procyclical nature of capital flows appears to have had an adverse impact on consumption volatility in developing economies.[27] One manifestation of this procyclicality is the phenomenon of "sudden stops" of capital inflows (see Calvo and Reinhart, 1999). More generally, access to international capital markets has a procyclical element, which tends to generate higher output volatility as well as excess consumption volatility (relative to that of income). Reinhart (2002), for instance, finds that sovereign bond ratings are procyclical. Since the spreads on bonds of developing economies are strongly influenced by these ratings, this implies that costs of borrowing on international markets are procyclical as well. Kaminsky and Reinhart (2001) present more direct evidence on the procyclical behavior of capital inflows.[28]

Crises as Special Cases of Volatility

Crises can be regarded as particularly dramatic episodes of volatility. In fact, the proliferation of financial crises is often viewed as one of the defining aspects of the intensification of financial globalization over the last two decades. Furthermore, the fact that recent crises have affected mainly MFI economies has led to these phenomena being regarded as hallmarks of the unequal distribution of globalization's benefits and risks. This raises a challenging set of questions about whether the nature of crises has changed over time, what factors increase vulnerability to crises, and whether such crises are an inevitable concomitant of globalization.

Some aspects of financial crises have indeed changed over time, while in other respects it is "déjà vu all over again." Calvo (1998) has referred to such episodes in the latter half of the 1980s and 1990s as capital account crises, while earlier ones are referred to as current account crises. Although this suggests differences in the mechanics of crises, it does not necessarily imply differences in some of their fundamental causes. Kaminsky and Reinhart (1999) discuss the

[27]The notion of procylicality discussed here is that capital inflows are positively correlated with domestic business cycle conditions in these countries.

[28]The World Bank's *Global Development Finance* report for 2001 also finds some evidence of such procyclicality and notes that the response of capital inflows is typically twice as large when a developing country faces an adverse shock to GDP growth as when it faces a favorable shock. This is attributed to the fact that credit ratings are downgraded more rapidly during adverse shocks than they are upgraded during favorable ones.

phenomenon of "twin crises," which involve balance of payments and banking crises. These authors also make the important points that in the episodes that they analyze, banking sector problems typically precede a currency crisis and that the currency crisis then deepens the banking crisis, activating a vicious spiral. In this vein, Krueger and Yoo (2002) conclude that imprudent lending by Korean banks in the early and mid-1990s, especially to the chaebols, played a significant role in the 1997 Korean currency crisis. Opening up to capital markets can thus exacerbate such existing domestic distortions and lead to catastrophic consequences (Aizenman, 2002).

One key difference in the evolution of crises is that although the 1970s and 1980s featured crises that affected both industrial and developing economies, these have become almost exclusively the preserve of developing economies since the mid-1990s.[29] This suggests either that advanced economies have been able to better protect themselves through improved policies or that the fundamental causes of crises have changed over time, thereby increasing the relative vulnerability of developing economies. In this context, it should be noted that although capital flows from industrial economies to MFI economies have increased sharply, these flows among industrial economies have jumped even more sharply in recent years, as was noted earlier. Thus, at least in terms of volume of capital flows, it is not obvious that changes in financial integration can, by themselves, be blamed for crises in MFI economies.

Is it reasonable to accept crises as a natural feature of globalization, much as business cycles are viewed as a natural occurrence in market economies? One key difference between these phenomena is that the overall macroeconomic costs of financial crises are typically very large and far more persistent. Calvo and Reinhart (2000 and 2002) document that emerging market currency crises, which are typically accompanied by sudden stops or reversals of external capital inflows, are associated with significant negative output effects.[30] Such recessions following devaluations (or large depreciations) are also found to be much deeper in emerging markets than in developed economies. In addition, the absence of well-functioning safety nets can greatly exacerbate the social costs of crises, which typically have large distributional consequences (see, for example, Baldacci, de Mello, and Inchauste, 2002).

Has Financial Globalization Intensified the Transmission of Volatility?

What factors have led to the rising vulnerability of developing economies to financial crises? The risk of sudden stops or reversals of global capital flows to developing countries has increased in importance, since many developing countries now rely heavily on borrowing from foreign banks or portfolio investment by foreign investors. These capital flows are sensitive not just to domestic conditions in the recipient countries but also to macroeconomic conditions in industrial countries. For instance, Mody and Taylor (2002), using an explicit disequilibrium econometric framework, detect instances of "international capital crunch"—where capital flows to developing countries are curtailed by supply-side rationing that reflects industrial country conditions.[31] These North-South financial linkages, in addition to the real linkages described in earlier sections, represent an additional channel through which business cycles and other shocks that hit industrial countries can affect developing countries.

The effects of industrial country macroeconomic conditions, including the stage of the business cycle and interest rates, have different effects on various types of capital flows to emerging markets. Reinhart and Reinhart (2001) document that net FDI flows to emerging market economies are strongly positively correlated with U.S. business cycles. In contrast, bank lending to these economies is negatively correlated with U.S. cycles. Edison and Warnock (2001) find that portfolio equity flows from the United States to major emerging market countries are negatively correlated with both U.S. interest rates and U.S. output growth. This result is particularly strong for flows to Latin America and less so for flows to Asia. Thus, the sources of capital inflows for a particular MFI economy can greatly affect the nature of its

[29]In fact, in the 1990s, the ERM (exchange rate mechanism of the European Monetary System) crisis was the only significant one among industrial countries. The prolonged Japanese recession is, in some sense, a crisis, although the protracted nature of Japan's decline, which has not featured any sudden falls in output, would not be consistent with a standard definition of a crisis.

[30]Currency crises can also affect firms directly and, by exacerbating the problems of the banking sector, can lead to a broader credit crunch, even for productive and solvent firms. Mishkin (1999) argues that the credit crunches resulting from sharp contractions in domestic bank credit following financial crises have been instrumental in aggravating these crises and reducing investment and economic activity. Rodrik and Velasco (2000) note that difficulties in rolling over short-term debt during crises rapidly squeeze the availability of liquidity, with immediate effects on investment and output.

[31]This paper examines bond, equity, and syndicated loan flows to Brazil, Mexico, the Republic of Korea, and Thailand over the period 1990–2000.

vulnerability to the volatility of capital flows arising from industrial country disturbances.[32]

The increase in cross-country financial market correlations also indicates a risk of emerging markets being caught up in financial market bubbles. The rise in comovement across emerging and industrial country stock markets, especially during the stock market bubble period of the late 1990s, points to the relevance of this concern. This is a particular risk for the relatively shallow and undiversified stock markets of some emerging economies. For instance, as noted earlier, the strong correlations between emerging and industrial stock markets during the bubble period reflect the preponderance of technology and telecommunication sector stocks in the former set of markets. It is, of course, difficult to say conclusively whether this phenomenon would have occurred even in the absence of financial globalization, since stock market liberalizations in these countries often went hand in hand with their opening up to capital flows.

The increasing depth of stock markets in emerging economies could alleviate some of these risks but, at the same time, could heighten the real effects of such financial shocks. In this vein, Dellas and Hess (2002) find that a higher degree of financial development makes emerging stock markets more susceptible to external influences (both financial and macroeconomic) and that this effect remains important after controlling for capital controls and trade linkages.[33] Consequently, the effects of external shocks could be transmitted to domestic real activity through the stock market channel.

Even the effects of real shocks are often transmitted faster and amplified through financial channels. There is a large literature showing how productivity, terms of trade, fiscal, and other real shocks are transmitted through trade channels.[34] Cross-country investment flows, in particular, have traditionally responded quite strongly to country-specific shocks.[35] Financial channels constitute an additional channel through which the effects of such real shocks can be transmitted. Furthermore, since transmission through financial channels is much quicker than through real channels, both the speed and magnitude of international spillovers of real shocks are considerably heightened by financial linkages.[36]

Increasing financial linkages have also resulted in contagion effects. Potential contagion effects are likely to become more important over time as financial linkages increase and investors in search of higher returns and better diversification opportunities increase their shares of international holdings and, owing to declines in information and transaction costs, have access to a broader array of cross-country investment opportunities.[37]

There are two broad types of contagion identified in the literature—fundamentals-based contagion and "pure" contagion. The former refers to the transmission of shocks across national borders through real or financial linkages. In other words, while an economy may have weak fundamentals, it could get pushed into a financial crisis as a consequence of investors reassessing the riskiness of investments in that country or attempting to rebalance their portfolios following a crisis in another country. Similarly, bank lending can lead to such contagion effects when a crisis in one country to which a bank has significant exposure forces it to rebalance its portfolio by readjusting its lending to other countries. This bank transmission channel, documented in van Rijckeghem and Weder (2000) and Kaminsky and Reinhart (2001), can be particularly potent, since a large fraction of bank lending to emerging markets is in the form of short-maturity loans. While fundamentals-based contagion was once prevalent mainly at the regional level, the Russian crisis demonstrated its much broader international reach (Kaminsky and Reinhart, 2003).[38]

Pure contagion, however, represents a different kind of risk, since it cannot easily be influenced by domestic policies, at least in the short run. There is a good deal of evidence of sharp swings in international capital flows that are not obviously related to changes in fundamentals. Investor behavior during these episodes, which is sometimes categorized as

[32]Notwithstanding the differences in the types of sensitivities to industrial country business cycle conditions, the fact remains that FDI flows are generally less volatile and less sensitive to the factors discussed here than either portfolio flows or bank lending.

[33]These authors use standard measures of financial sector development that are based on the competitive structure and the size of the financial intermediation sector in each country.

[34]See Kouparitsas (1996); Blankenau, Kose, and Yi (2001); Kose and Riezman (2001); and Kose (2002).

[35]See Glick and Rogoff (1995) for an empirical analysis of how country-specific productivity shocks affect national investment and the current account. These authors show how the responses to such shocks depend crucially on the persistence of the shocks. Kose, Otrok, and Whiteman (2003) examine the impact of world and country-specific factors in driving fluctuations in output, consumption, and investment.

[36]For instance, a shock to GDP growth in one country may be transmitted gradually through trade channels but could far more quickly have an impact on economic activity in another country via correlations in stock market fluctuations. If the two countries were perfectly integrated through trade and financial linkages, this outcome could, of course, simply reflect an optimal risk-sharing arrangement.

[37]Contagion effects aside, Kose, Prasad, and Terrones (2003b) find that increasing financial linkages have only a small effect on cross-country output and consumption correlations.

[38] Kim, Kose, and Plummer (2001) examine the roles of fundamentals-based contagion and pure contagion during the Asian crisis.

Box 4.2. Herding and Momentum Trading by International Investors

The emerging market crises of the 1990s have raised concerns about excessive international capital flow volatility. In particular, international investors have been accused of acting in a destabilizing way, displaying a tendency to engage in herding behavior and momentum trading.

Herding is usually defined as investors mimicking each others' actions, sometimes ignoring socially valuable information. Rationalizations of herding include learning from others and incentive structures for fund managers. Herding owing to learning from others can occur when actions are observable but information is partly private. In such situations, it may be optimal to rely exclusively on others' actions. If the abilities of fund managers are unknown to investors, investors may choose to compensate managers based on relative performance. This, in turn, provides an incentive for managers to mimic the actions of their peers: fund managers do not tend to deviate too strongly from "benchmark" indices.

A related behavior of investors is given by *momentum trading*—strategies prescribing buying assets whose prices have been rising and selling assets whose prices have been falling. Such behavior can also be destabilizing.

The empirical evidence concerning herding and momentum trading at the international level is still sparse. A number of studies have looked at the case of the Republic of Korea. Choe, Kho, and Stulz (1999), for example, find evidence for return chasing and herding among foreign investors before the crisis period, but not over the entire sample period. Kim and Wei (2002) examine the transactions of different types of portfolio investors in Korea before and during the Asian crisis, finding that nonresident institutional investors engage in more herding and more momentum trading than foreign investors residing in Korea.

These have begun to be complemented by regional and global studies. Kaminsky, Lyons, and Schmukler (1999) find some evidence for momentum trading among equity mutual funds investing in Latin America, which appears to be accentuated during crises. Griffin, Nardari, and Stulz (2002) and Richards (2002) find that foreign investors' purchases in East Asian emerging markets is strongly influenced by both the stock return in those markets and the return in developed country markets. Borensztein and Gelos (2002) find moderate evidence for herding behavior and momentum trading among emerging market mutual funds. Gelos and Wei (2002) document that herding is less pronounced in countries that have more transparent macroeconomic policies and corporate sectors.

Despite these recent efforts, the picture obtained remains incomplete. For example, although the focus has been mainly on equity markets, little systematic knowledge has been accumulated on the behavior of banks and fixed-income investors.

Note: This box was prepared by Gaston Gelos.

herding or momentum trading, is difficult to explain in the context of optimizing models with full and common information. Informational asymmetries, which are particularly rife in the context of emerging markets, appear to play an important role in this phenomenon (see Box 4.2). A related literature suggests that pure contagion may reflect investors' shifting appetite for risk, but it is no doubt difficult to disentangle such changes in risk appetite from shifts in underlying risks themselves (Kumar and Persaud, 2001). Thus, in addition to "pure contagion," financial integration exposes developing economies to the risks associated with destabilizing investor behavior that is not related to fundamentals.[39]

Some Factors That Increase Vulnerability to Risks of Globalization

Empirical research indicates that the composition of capital inflows and the maturity structure of external debt appear to be associated with higher vulnerability to the risks of financial globalization. The relative importance of different sources of financing for domestic investment, as proxied by the following three variables, has been shown to be positively associated with the incidence and severity of currency and financial crises: the ratio of bank borrowing or other debt relative to foreign direct investment; the shortness of the term structure of external debt; and the share of external debt denominated in foreign currencies.[40] Detragiache and Spilimbergo (2001) find strong evidence that debt crises are more likely to occur in countries where external debt has short

[39]Claessens and Forbes (2001) contains a compilation of essays on the different dimensions of contagion effects. Boyer, Gibson, and Loretan (1999) and Forbes and Rigobón (2001) argue that the evidence for pure contagion, as opposed to the alternative of fundamentals-based contagion, is very weak. Corsetti, Pericoli, and Sbracia (2002) argue that, under more general assumptions, there is greater evidence of the former type of contagion. Bayoumi and others (2003) find evidence of "positive" contagion related to herding behavior in capital inflows to emerging markets.

[40]See, for example, Frankel and Rose (1996), Radelet and Sachs (1998), and Rodrik and Velasco (2000).

maturities.[41] The maturity structure may not entirely be a matter of choice, however, since, as argued by these authors, countries with weaker macroeconomic fundamentals are often forced to borrow at shorter maturities.

In addition to basic macroeconomic policies, other systemic policy choices can affect the vulnerability of MFI economies. Recent currency crises have highlighted one of the main risks in this context. Developing countries that attempt to maintain a relatively inflexible exchange rate system often face the risk of attacks on their currencies. While various forms of fully or partially fixed exchange rate regimes can have some advantages, the absence of supportive domestic policies can often result in an abrupt unraveling of these regimes when adverse shocks hit the economy.

Financial integration can also aggravate the risks associated with imprudent fiscal policies. Access to world capital markets could lead to excessive borrowing that is channeled into unproductive government spending. The existence of large amounts of short-term debt denominated in hard currencies then makes countries vulnerable to external shocks or changes in investor sentiment. The experiences of a number of MFI countries that have suffered the consequences of such external debt accumulation point to the heightened risks of undisciplined fiscal policies when the capital account is open.

Premature opening of the capital account also poses serious risks when financial regulation and supervision are inadequate.[42] In the presence of weakly regulated banking systems and other distortions in domestic capital markets, inflows of foreign capital could exacerbate the existing inefficiencies in these economies. For example, if domestic financial institutions tend to channel capital to firms taking excessive risks or having weak fundamentals, financial integration could simply lead to an intensification of such flows.[43] In turn, the effects of premature capital inflows on the balance sheets of the government and corporate sectors could have negative repercussions on the health of financial institutions in the event of adverse macroeconomic shocks.

[41]Some authors have found that the currency composition of external debt also matters. Carlson and Hernández (2002) note that during the Asian crisis, countries with more yen-denominated debt fared significantly worse. These authors attribute this to the misalignment between the countries' de facto currency pegs and the denomination of their debt.

[42]See Ishii and others (2002) and Bakker and Chapple (2002).

[43]Krueger and Yoo (2002) discuss the interactions of crony capitalism and capital account liberalization in setting the stage for the currency-financial crisis in the Republic of Korea. See also Mody (2002).

V Absorptive Capacity and Governance in the Benefits/Risks of Globalization

There is some evidence of a "threshold effect" in the relationship between financial integration and economic growth. Moreover, there is some preliminary evidence supporting the view that better national governance is associated with lower volatility and enhanced benefits from financial integration.

Threshold Effects and Absorptive Capacity

Although it is difficult to find a strong and robust effect of financial integration on economic growth, there is some evidence in the literature of various kinds of "threshold effect." For example, there is some evidence that the effect of foreign direct investment on growth depends on the level of human capital in a developing country. On the one hand, for countries with relatively low amounts of human capital, there is at best a small positive effect that can be detected in the data. On the other hand, for countries whose human capital has exceeded a certain threshold, there is some evidence that FDI promotes economic growth (Borenzstein, De Gregorio, and Lee, 1998).

More generally, one might think of a country's absorptive capacity in terms of its human capital, depth of domestic financial market, quality of governance, and macroeconomic policies. There is some preliminary evidence that foreign capital flows do not generate positive productivity spillovers to domestic firms for countries with relatively low absorptive capacities, but positive spillovers are more likely to be detected for countries with relatively high absorptive capacities (Aitken and Harrison, 1999; World Bank, 2001; Bailliu, 2000; Arteta, Eichengreen, and Wyplosz, 2001; and Alfaro and others, 2002). This evidence is consistent with the view that countries need to build up a certain amount of absorptive capacity in order to effectively take advantage of financial globalization.

The next subsection specifically discusses the role of domestic governance as a crucial element of this absorptive capacity. The importance of governance has been asserted repeatedly, particularly since the Asian crisis, but until recently relatively little systematic evidence has been documented on its relationship with financial globalization.

Governance as an Important Element of Absorptive Capacity

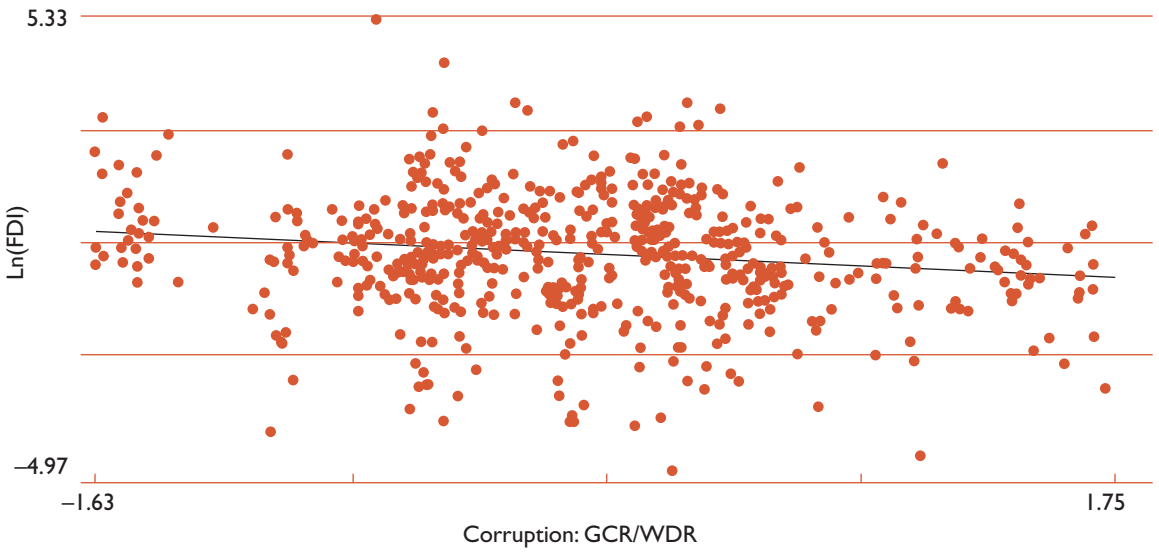
The term governance encompasses a broad array of institutions and norms. Although many of these are interrelated and complementary, it is nevertheless useful to try to narrow them down to a core set of governance dimensions most relevant for the discussion on financial integration. These are transparency, control of corruption, the rule of law, and financial sector supervision.

Recent evidence suggests that the quality of governance affects a country's ability to benefit from international capital flows. As discussed in Section III, of the various types of capital flows, FDI might be among the most helpful in boosting recipient countries' economic growth (Reisen and Soto, 2001).[44] There is an intimate connection between a country's quality of domestic governance and its ability to attract foreign direct investment. Recent evidence suggests that foreign direct investment tends to go to countries with good governance, if one holds constant the size of the country, labor costs, tax rate, laws, and incentives specifically related to foreign-invested firms and other factors. Moreover, the quantitative effect of bad governance on FDI is large.

To reach this conclusion, corruption in the FDI recipient countries can be measured in a variety of ways. These include a rating by Transparency International, which is a global nongovernmental organization devoted to fighting corruption; a measure derived from a survey of firms worldwide as published

[44]Of course, foreign direct investment could have its own problems, which one might discover in the future. Moreover, the distinction between FDI and other types of capital flows is not always straightforward (Hausmann and Fernandez-Arias, 2000).

Figure 5.1. Corruption and Foreign Direct Investment



Source: IMF staff calculations based on Wei (2001), Table 2, Column 2.

Notes: Bilateral foreign direct investment from 14 major source countries to 41 host countries, averaged over 1996–98. Index of host country corruption is derived by combining the measures from the World Economic Forum and Harvard University's *Global Competitiveness Report* for 1997 and the *World Bank's World Development Report* for 1997. Coef = –0.29; Robust SE = 0.08; and t-statistic = –3.53. More details can be found in Wei (2001).

jointly by Harvard University and the World Economic Forum in the *Global Competitiveness Report*; and a measure from a survey of firms worldwide conducted by the World Bank. The results from these different measures are consistent: all show a negative effect of corruption on the volume of inward foreign direct investment.[45] The quantitative effect of corruption is also significant when compared with the negative effect of the corporate tax rate on FDI. For example, an increase in host country corruption of one standard deviation might be equivalent to an increase of about 30 percentage points in the tax rate in terms of its negative effect on FDI (see Figure 5.1 and Wei (1997, 2000a, and 2000b) for details).[46]

Using firm-level data on foreign investment in Central and Eastern Europe, a different study suggests that poor quality of local governance, in addition to reducing the quantity of inward FDI, might also reduce the quality of FDI by discouraging technologically more advanced, wholly foreign-owned firms (Smarzynska and Wei, 2000).

Many developing country governments are now eager to attract FDI by offering generous tax concessions or exemptions. The previous evidence suggests that improving domestic governance, especially reducing corruption, would be more effective in attracting FDI, in addition to promoting more domestic investment, than taking measures that could reduce tax revenues.

Transparency of government operations is another dimension of good governance. More portfolio investment from international mutual funds tends to go to countries with a higher level of transparency (Gelos and Wei, 2002; and Figure 5.2). This is true even after one takes into account the liquidity of the market, exchange rate regime, other economic risks, and a host of other factors (see Box 5.1 for more details).[47]

[45]The term corruption should be regarded here as a shorthand for weak public sector governance. Existing empirical measures of different dimensions of public sector governance tend to be highly correlated with each other, making it difficult to identify their individual effects.

[46]Of the 45 host countries studied in Wei (2000a), corruption is rated by Business International in a range from 1 to 10. The average rating is 3.7, and the standard deviation is 2.5. The (highest marginal) corporate tax rate in the sample ranges between 10 percent and 59 percent, with a mean of 34 percent and a standard deviation of 11 percent.

[47]It is noteworthy that institutional investors, including such bellwethers as the California Public Employees' Retirement System (CalPERS) in the United States, are now explicitly linking their investment strategies to measures of good governance.

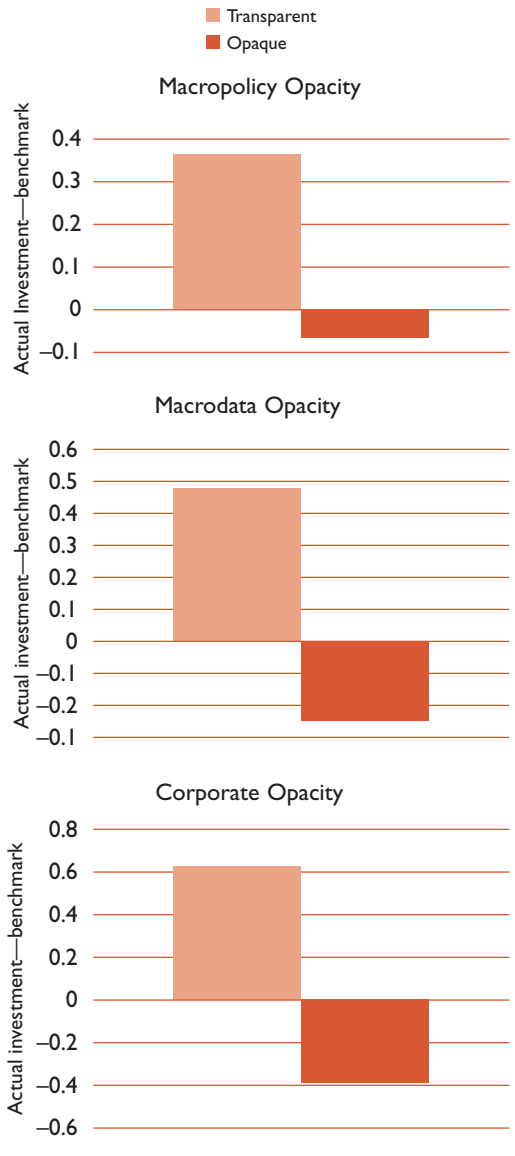
Domestic Governance and the Volatility of International Capital Flows

Previous sections of this paper have documented the fact that international capital flows can be very volatile. Different countries experience different degrees of volatility, however, and this may be systematically related to the quality of macroeconomic policies and domestic governance. In other words, with regard to the sudden stops or sudden reversals of international capital flows, developing countries are not purely passive recipients with no influence on the nature of capital inflows. For example, research has demonstrated that an overvalued exchange rate and an overextended domestic lending boom often precede a capital account crisis (Frankel and Rose, 1996; Schneider and Tornell, 2001). In this subsection, attention is focused on the evidence related to the role of local governance in mitigating the volatility of capital inflows that a developing country might experience.

There is plenty of evidence suggesting that weak domestic capacity in financial regulation and supervision is likely to be associated with a high propensity for banking and currency crises (Kaminsky and Reinhart, 1999; Arteta, Eichengreen, and Wyplosz, 2001). Without adequate financial supervision institutions in place, a premature opening of the capital account could increase the risk of a financial crisis, since domestic financial institutions might build up excessive risk. On the liability side, they might borrow excessively from international capital markets. On the asset side, they might expand lending for overly risky economic activities, especially where there are explicit or implicit government guarantees. These factors could result in various types of balance sheet weaknesses, such as mismatches in maturity or currency. Furthermore, owing to intersectoral linkages, balance sheet weaknesses of the government and corporate sectors could affect the health of financial institutions. The view that supervisory and regulatory capacities need to be strengthened before a country engages in full-fledged liberalization of the capital account is now widely accepted.

Transparency of a government's economic policies is another dimension of domestic governance. Recent evidence suggests that the degree of transparency might affect the degree of volatility of capital inflows that a country experiences. For example, herding behavior by international investors, which is alleged to have contributed to instability in developing countries' financial markets, tends to be more severe in countries with a lower degree of transparency (see Figure 5.3 and Box 5.1).

Figure 5.2. Difference Between Actual International Mutual Fund Investment and MSCI Benchmark: Transparent Versus Opaque Countries



Source: IMF staff calculations based on Gelos and Wei (2002).

Notes: On the horizontal axis on each figure is the difference between the share of global investment funds' actual investments in a country in their total portfolios, averaged across the funds, and the share of that country's stock market capitalization, adjusted for availability to foreign investors, in a global market portfolio based on the Morgan Stanley Capital International (MSCI) index (in percentage points). For information on macropolicy opacity, macrodata opacity, or corporate opacity, see Box 5.1.

Box 5.1. Transparency and International Mutual Funds

Gelos and Wei (2002) examine the investment behavior of international equity funds from January 1996 to December 2000—specifically whether and how their asset allocations across countries may be related to the transparency features of the countries.

Government transparency and corporate transparency are considered separately (even though they are somewhat related). On government transparency, the authors examine, in turn, two separate aspects: transparency of macroeconomic data release and transparency of macroeconomic policies.

Macro data transparency is measured by using the average of two indices developed by the IMF on the frequency and timeliness of national authorities' macroeconomic data dissemination (Allum and Agça, 2001).

Macro policy transparency was developed by Oxford Analytica based, in part, on the IMF's reports on standards and codes (ROSCs). The latter are largely an assessment of the degree to which a government's macro policies conform with the prescribed standards and codes (as opposed to actually realized inflation rates or fiscal deficits).

The corporate transparency index was derived by the authors based on the information in the *Global Competitiveness Report* produced by Harvard University's Center for International Development and the World Economic Forum. It measures the level of financial disclosure and the availability of information about business opportunities in a country.

The first major finding is that international equity investment tends to avoid less transparent countries (relative to the prediction of an international capital asset pricing model). This qualitative result holds when the authors control for the liquidity of the market, income level, and a host of other factors. This effect is also quantitatively important. For countries whose opacity (lack of transparency) exceeds the sample median, there would be a reduction in their weighting in the international funds by between 7 and 39 percentage points (relative to their actual weights in the world market portfolio).

The second major finding is that the tendency for international funds to engage in herding, a behavioral pattern that is sometimes blamed for contributing to instability in developing countries' financial markets, is, in fact, related to a country's transparency features. There is some evidence that herding by international funds is more severe in less transparent countries.

Third, there is also some evidence that capital flight during a financial crisis tends to be more severe in less transparent developing countries.

Overall, the data suggest that an improvement in transparency might very well reduce the "sudden stop" phenomenon of hot money and, hence, increase the stability of the domestic financial market in a developing country.

Source: Gelos and Wei (2002).

The literature on currency crises (for example, Frankel and Rose, 1996) points out that a country's structure of capital inflows is related to the likelihood of a crisis. More specifically, a country that relies more on foreign bank credits and less on foreign direct investment may be more vulnerable to the sudden stops of international capital flows and have a greater chance of experiencing a capital account crisis.

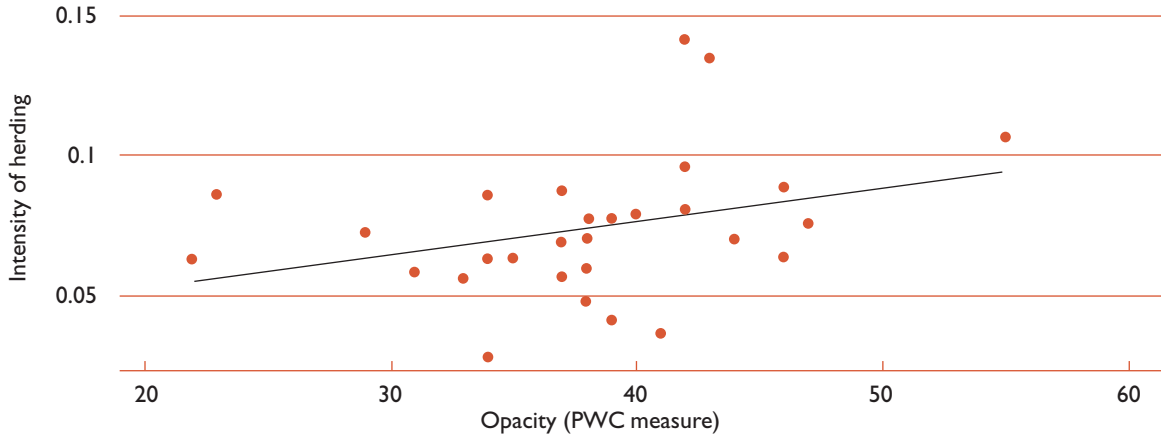
Recent research suggests that macroeconomic policies are an important determinant of the composition of capital inflows (Carlson and Hernández, 2002). Recent research also presents some evidence that domestic governance, as measured by the corruption indices, tilts the composition of capital flows. Specifically, holding other factors constant, countries with weaker governance, as reflected by a higher perceived level of corruption, are more likely to have a structure of capital inflows that is relatively light in FDI and relatively heavy in foreign bank credits (Wei, 2001). Figure 5.4 visually describes this relationship.

Governance is not the only element of domestic absorptive capacity, but it is an important one. Its importance has been emphasized by the IMF's Executive Board and in international policy circles at least since the Asian financial crisis. Recent systematic research documented in this paper has provided an empirical foundation for this view. Of course, the importance of domestic governance goes beyond its role in financial globalization. The quality of governance also affects economic growth and other social objectives through a variety of other channels (as documented in Mauro, 1995 and 1997 and Abed and Gupta, 2002).

Summary

The empirical evidence has not provided definitive proof that financial integration has enhanced growth for developing countries. Furthermore, financial integration may be associated with higher consumption volatility. Therefore, it may be worthwhile for developing countries to experiment with different paces and strategies in pursuing financial integration. Empirical evidence does suggest that improving governance, in addition to conducting sound macroeconomic frameworks and developing domes-

Figure 5.3. Herding and Opacity

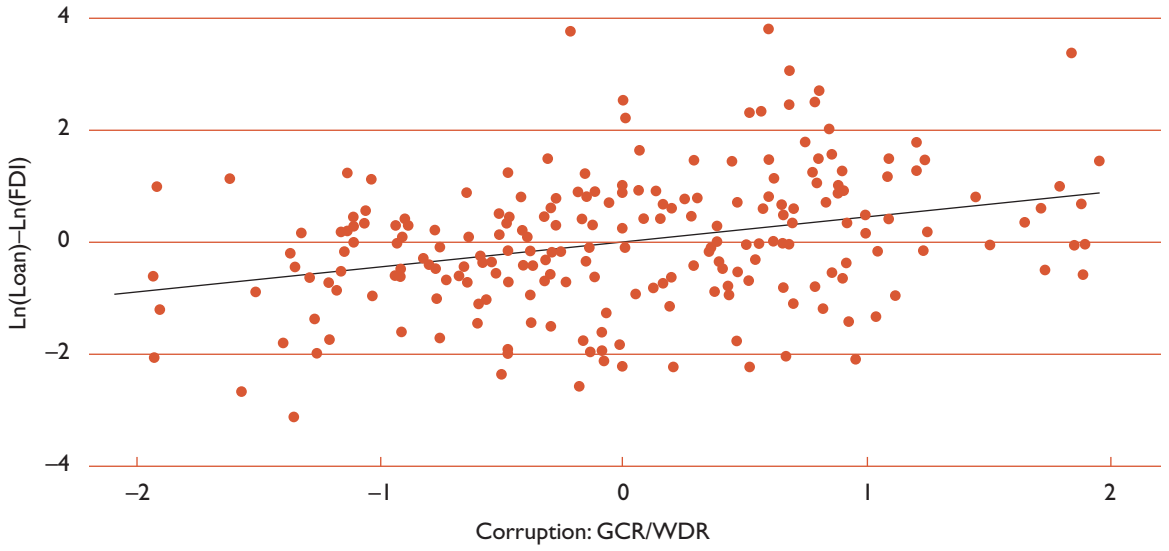


Source: Gelos and Wei (2002).

Note: Opacity index is a composite measure of corruption, legal opacity, economic opacity, accounting opacity and regulatory opacity (PriceWaterhouseCoopers (PWC), 2000).

Figure 5.4. Corruption Tilts the Composition of Capital Flows Toward Borrowing from Foreign Banks

(Controlling for recipient country fixed effects; size: level of development: policy incentives for, and restrictions on, FDI; and geographic and linguistic connections)



Source: IMF staff calculations based on Wei (2001).

Notes: Index of host country corruption is derived by combining the measures from the World Economic Forum and Harvard University's *Global Competitiveness Report* for 1997 and the *World Bank's World Development Report* for 1997. FDI denotes foreign direct investment.

tic financial markets, should be an important element of such strategies.

It might not be essential for a country to develop a full set of sound institutions matching the best practices in the world before embarking on financial integration. Doing so might strain the capacity of the country. An intermediate and more practical approach could be to focus on making progress on the core indicators noted previously—namely transparency, control of corruption, the rule of law, and financial supervisory capacity. The IMF and the World Bank—through financial sector assessment programs (FSAPs) and ROSCs, among other ways—help promulgate codes and standards on best practices for financial supervision and transparency, so that countries can implement the needed changes, supported by technical assistance.

Appendix I The First Era of International Financial Integration, 1870–1913

Despite the controversy surrounding today's trend toward greater globalization, the current degree of international financial integration is no greater than it was in 1870–1913. Technological developments in shipping and communications (such as the introduction of international telegraph links in the 1860s and 1870s) and massive needs for capital to finance investment (especially in railways) in the frontier economies sparked the beginning of the first era of international financial integration. Pre-World War I globalization was famously and colorfully depicted by Keynes (1919): "The inhabitant of London could order by telephone . . . the various products of the whole earth . . . ; adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share . . . in their prospective fruits and advantages; . . . [and] couple the security of his fortunes with . . . any substantial municipality in any continent that fancy or information might recommend." As Keynes pointed out, World War I (and, later, the Great Depression and World War II) and the imposition of capital controls reversed that state of affairs. The movement back toward integration was slow under the Bretton Woods system but accelerated in the 1970s. Arguably, the degree of integration experienced during 1870–1913 was reached again only in the 1990s.

Quantitative indicators of international financial integration support Keynes's informal description. Obstfeld and Taylor (1998, 2002) show that financial flows from the United Kingdom and some of the more advanced continental European economies to the "emerging markets" of the day (such as Argentina, Brazil, China, Japan, Russia, and Turkey, but also many smaller countries) were very large. For the countries for which data are available, current account surpluses and deficits amounted to substantially larger shares of GDP in 1870–1913 than they do today. Total market capitalization for bonds denominated in pounds sterling issued by emerging markets on the London Stock Exchange was equivalent to about half of the United Kingdom's annual GDP (Mauro, Sussman, and Yafeh, 2002). Secondary-market trading was active and liquid, with daily yields reported in the press. Newspapers provided timely and abundant information on relevant economic and political events in emerging markets.

Many researchers are comparing that first era of integration with the current era in an effort to obtain clues regarding potential reforms of the international financial architecture. Crises have been more frequent in the post-Bretton Woods era than they were during 1870–1913, but they have often been less costly in terms of output losses (Eichengreen and Bordo, 2002). Crises tended to be country-specific in the past, whereas today they tend to affect several emerging markets at the same time (Mauro, Sussman, and Yafeh, 2002). More generally, despite a similar degree of international integration in both trade and finance, comovement of financial and real variables is higher today than it was in the past. Spreads on bond yields in a common currency today comove across emerging markets to a much higher degree than they did in the past. Moreover, sharp changes in spreads in the 1990s tended to be mostly related to global events, whereas in 1870–1913 they were primarily related to country-specific events, such as major economic reforms or instances of political upheaval. Economic fundamentals (proxied by exports) also comove to a somewhat greater extent today than they did in the past (possibly because emerging markets now have more diversified trade structures and because individual emerging markets today specialize in a few stages of a good's production sequence). Nevertheless, today's investors seem to pay less attention to country-specific events than their predecessors did. One possible interpretation is that institutional investors, who seem to represent a greater share of overall investment today than they did in the past, tend to treat emerging markets as a package: when a crisis emerges in one country, they seem to disinvest from several emerging markets en bloc.

Note: This appendix was prepared by Paolo Mauro.

Appendix II Estimating the Benefits of International Financial Integration on Income Levels for Developing Countries Using a Neoclassical Economic Model

A number of papers have attempted to estimate the benefits of international financial integration on the basis of cross-country regressions. The studies that find the largest gains look at the impact of opening the stock market to foreign investors: for example, Bekaert, Harvey, and Lundblad (2002b) and Henry (2003) report growth increases of 1 to 2 percent for five years in a row. It is not obvious, however, how such a result translates into improved domestic welfare. How permanent is the impact of capital account opening on growth? Is the level of output affected in the long run? What share of the output increase is transferred to foreign investors? These questions are crucial in assessing the welfare impact of capital account opening and can be addressed only by looking at the data through the lenses of an explicit model.

Gourinchas and Jeanne (2003b) measure the gains from international financial integration using the neoclassical model of growth. This framework has increasingly been used in recent years to study development and convergence in an international perspective (Hall and Jones, 1999). The calibration methods developed by Hall and Jones and other authors in that literature are applied by Gourinchas and Jeanne (2003b) to estimate the gains from international financial integration.

On the one hand, the neoclassical model is appropriate to measure the gains from integration in terms of *international allocative efficiency*—for example, the gains that come from the fact that "free capital movements facilitate an efficient global allocation of savings and help channel resources to their most productive uses, thus increasing economic growth and welfare" (Fischer, 1998). On the other hand, this framework does not capture the gains that countries might derive from integration through other, more indirect channels, such as technological diffusion, or from the discipline of international markets on domestic policies.

In the neoclassical framework, cross-country differences in per capita GDP can be decomposed at a given point in time into differences in per capita physical and human capital and in productivity. International financial integration accelerates the growth and convergence of capital-scarce countries by allowing foreign capital to flow into them. In addition, it may accelerate the accumulation of human capital by increasing the real wage and the returns to education. These effects, however, are transitory: the long-run path of per capita GDP is entirely determined by the country's productivity, which is assumed to be exogenous to the capital account regime.

Thus, the extent to which countries benefit from international integration depends on their degree of capital scarcity. Using data on investment from the Penn World Tables and on human capital from the Barro and Lee datasets, Gourinchas and Jeanne (2003b) compute the level of physical capital, human capital, and productivity for 82 non-OECD countries. They then compare the observed level of physical capital to the theoretical level that should be observed if countries could freely lend or borrow at the world interest rate. The first column in Table A2.1 gives the ratio of observed capital to the level that should prevail under perfect financial integration for different country groupings. Africa, with a ratio larger than one, is found to be a natural exporter of capital.[48] Latin America is close to equilibrium and Asia seems to be

Note: This appendix was prepared by Olivier Jeanne.

[48]Although African countries have a much lower level of capital per capita than developed economies, they are not capital-scarce countries owing to their low total factor productivity as well as the low levels of efficiency with which they accumulate human and physical capital.

Table A2.1. Non-OECD Countries: Gains from International Financial Integration

Non-OECD Countries	Capital Ratio (1)	Gains from Integration (2)	Productivity Ratio Relative to United States (3)	Number of Observations (4)
		(In percent)		
All sample countries[1]	0.68	0.95	0.30	60
Low-income	0.66	0.96	0.28	21
Lower-middle-income	0.63	1.16	0.27	21
Upper-middle-income	1.03	0.35	0.49	13
Africa	1.20	0.83	0.35	25
Latin America	1.06	0.32	0.46	22
Asia	0.55	1.07	0.27	13
Except China and India	0.96	0.65	0.38	58
China and India	0.51	1.14	0.26	2

Source: This table is based on Tables 4, 8, and 9 in Gourinchas and Jeanne (2003b).

Notes: Population weighted averages, 1995. OECD denotes the Organization for Economic Cooperation and Development. Column (1) reports the ratio of the observed capital stock to the capital stock predicted by the neoclassical model under perfect financial integration. Column (2) reports the permanent percentage increase in consumption that yields the same welfare gain as switching from financial autarky to financial openness. Column (3) reports the ratio of labor-augmenting productivity to the U.S. level.

[1]The 82 non-OECD countries in the sample used in Gourinchas and Jeanne (2003b).

scarce in capital—mainly because of China and India.[49] Thus Latin America should be expected to benefit relatively little from international financial integration, Africa and Asia more so (the former as an exporter, and the latter as an importer, of capital).

These conjectures are vindicated in the second column of the table, which reports the gains from integration in 1995 expressed as a permanent increase in domestic consumption, assuming that countries have the same productivity growth as in the United States. For Latin American countries, opening is found to bring a welfare gain equivalent to a 0.32 percent permanent increase in domestic consumption. For Asian and African countries, the gain is not much larger (1.07 and 0.83 percent, respectively). These small gains (in spite of significant capital scarcity) were made because capital-scarce countries are predicted to eventually accumulate capital even under financial autarky.

Overall, these benefits seem to be considerably smaller than the gains that development economists and policymakers seek to achieve. For the sake of comparison, Gourinchas and Jeanne (2003b) show that eliminating 25 percent of the productivity gap with the United States—an increase in productivity smaller than that experienced in postwar Singapore, Hong Kong, or Israel—yields a welfare benefit that is more than one hundred times larger than that from international financial integration.

The neoclassical framework also suggests that international financial integration does not lead to a significant degree of convergence between developed and developing countries. The reason for that result is straightforward. For international financial integration to have a substantial impact on convergence, capital scarcity would have to be a significant determinant of cross-country inequality in per capita GDP. The data, however, suggest that the opposite is true: developing countries have lower per capita incomes mainly because they are less productive or their economies suffer from domestic distortions, not because they have capital-scarce economies.

To conclude with a caveat, the results in Gourinchas and Jeanne (2003b) should not necessarily be interpreted as evidence that the gains from integration are small in the real world. Rather, these results suggest that if these gains are large, they do not occur primarily through increased international allocative efficiency but through other, more indirect channels that are not captured by the neoclassical model.

[49]The averages are population weighted, and China and India represent more than one-half of the population in the sample.

Appendix III Calculating the Potential Welfare Gains from International Risk Sharing

International financial integration could result in potentially large welfare gains as it allows domestic residents, firms, and countries to smooth fluctuations in their consumption/revenue by diversifying away country-specific risks. For example, during recessions, countries can borrow from international markets and mitigate the adverse impact of declines in aggregate output on consumption and investment. During expansions, they can lend to other countries and/or pay back loans they received during the recessions. Domestic residents and firms can also utilize international financial markets for consumption smoothing and receive large welfare benefits as these markets significantly expand the set of financial instruments available for international risk-sharing purposes. Firms can also invest in plants abroad to protect themselves against shocks associated with domestic cost or productivity changes.

Developing countries, in particular, can obtain large welfare gains through international risk sharing in view of the highly volatile nature of their income and consumption dynamics. Generally speaking, the scope for benefiting from international risk sharing tends to be large when a country's consumption growth is volatile, positively correlated with domestic output growth, and not highly correlated with world consumption. Recent empirical studies suggest that these features tend to characterize most developing countries. This is particularly the case, on average, for LFI economies; somewhat less so for MFI economies; and still less so for advanced countries.

The potential welfare gains from international risk sharing and the consequent reduction in the volatility of consumption can be calculated using a simple model (details of which are provided later in this appendix).[50] In brief, the model compares two scenarios. The first one has no additional risk sharing (relative to what is already implied by observed consumption behavior), but in the second one there is perfect risk sharing so that each country consumes a (constant) fraction of total world consumption. Since total world consumption tends to be less volatile than the consumption of individual countries, the second scenario results in smoother national consumption patterns. The model can be used to generate quantitative estimates of the consumption-equivalent increase in welfare resulting from such reductions in consumption volatility.

Figure A3.1 reports the median gains (in per capita consumption) for each group of economies. The gains are generally inversely proportional to the group's current degree of financial integration with the world economy. The highly volatile consumption fluctuations faced by LFI economies imply that the benefits from financial integration and consequent reductions in consumption volatility would be very large for them. On average, these benefits would have the same effect as about a 6 percent permanent increase in per capita consumption.[51] Even for MFI economies, the potential gains from further international risk sharing are quite large.

Methodology

This section briefly explains the methodology underlying the calculations of welfare gains summarized above. During the past decade, a growing body of literature has examined the welfare implications of international risk sharing. While some studies focus on the welfare gains based upon consumption series, some others examine the gains from risk sharing using stock-returns data in this literature. In these studies, a consumer/investor is able to increase her current welfare because she is able to reduce the volatility of her marginal utility of consumption/wealth over her lifetime by pooling country-specific risk associated with the fluctuations in her consumption/wealth.

[50]The calculations closely follow the methodology employed in van Wincoop (1994 and 1999).

[51]Although the actual welfare estimates depend on the parameterization of the model, the general flavor of these results is unaffected by the choice of parameter values.

Most studies in this literature employ dynamic representative agent models and consider a variety of stochastic processes for consumption series.[52] The standard approach in these studies involves determining consumption allocations under two different scenarios. Under the first scenario, there is no risk sharing and domestic consumption is equal to domestic output. Under the second scenario, there is often perfect consumption risk sharing, since countries are able to diversify away all country-specific risk associated with fluctuations in domestic consumption.[53] Moving from the first scenario to the second one, the volatility of consumption in each country could go down; the pricing of the consumption streams of countries might change; and the cross-country correlations of consumption series could increase. The resulting welfare gains are associated with reductions in the volatility of consumption and/or changes in the pricing of the consumption series. The welfare-gain calculations generate a welfare estimate that is equal to the permanent relative increase in the expected level of consumption that would lead to the same level of welfare under international risk sharing.

As with several earlier studies, standard practice is followed here and consumption allocations under two scenarios are computed using a simple representative agent model economy. In particular, the welfare-gain calculations here closely follow the methodology employed in van Wincoop (1994 and 1999). In the model economy, there are N countries that can trade in claims on their endowment streams when there is perfect consumption risk sharing. Residents in each country have the same preferences and expected utility is equal to

$$U_i = E\int_0^H e^{-\beta t}\frac{(c_{it})^{1-\gamma}}{1-\gamma}\,dt$$

where H denotes the horizon (number of years), γ the rate of relative risk aversion, and c_{it} aggregate consumption by residents of country i.[54] The endowment is represented by y_{it} and follows a random walk with drift:

$$dy_{it} = \mu y_{it}dt + \sigma y_{it}d\eta_i$$

where η_i is a standard Brownian motion. The correlation between the innovations of endowment growth across two different countries is represented by $\rho = d\eta_i d\eta_k (i \neq k)$.

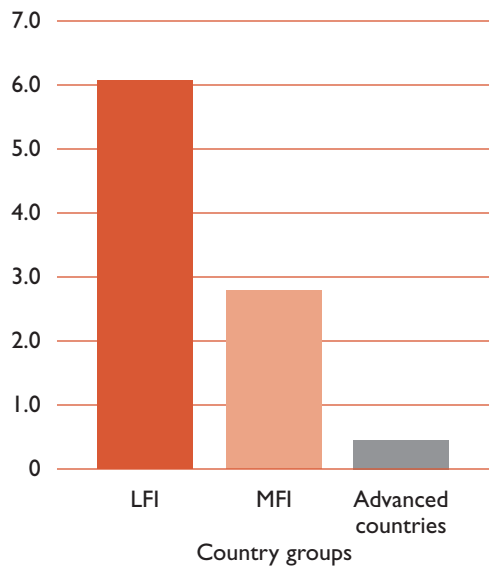
In the first scenario, there is no additional risk sharing relative to what is already implied by observed consumption behavior and domestic consumption is equal to domestic output, $c_{it}=\gamma_{it}$. This consumption allocation generates the following expected utility

$$U_i = \frac{1-e^{-\nu T}}{\nu}\frac{(c_{i0})^{1-\gamma}}{1-\gamma}$$

where $\nu=\beta+(\gamma-1)(\mu-0.5\gamma\sigma^2)$.

Figure A3.1. Potential Welfare Gains from International Risk Sharing

(Percent of consumption)



Source: Authors' calculations.
Notes: MFI denotes more financially integrated, and LFI denotes less financially integrated, economies.

[52]Whereas the literature based upon consumption/output series employs general-equilibrium models with utility depending on the level of consumption, the literature based upon equity returns generally uses partial-equilibrium models with utility directly depending upon wealth. The approach using equity-returns data involves devising an optimum portfolio composed of domestic and foreign stocks that minimizes variance and maximizes returns.

[53]Some studies also consider the welfare implications of imperfect risk-sharing arrangements involving transactions with risk-free bonds (see Kim and Kim, 2003; and Kim, Kim, and Levin, 2003).

[54]It is assumed that all consumption goods are tradable. It is possible to consider a utility formulation with separable tradable and nontradable consumption goods. Sharing of risk associated with the fluctuations in nontradables consumption is not possible, however, and our dataset does not allow us to make a distinction between tradable and nontradable consumption.

In the second scenario, there is perfect consumption risk sharing, since countries are able to diversify away all country-specific risk associated with domestic consumption. This implies that consumption in each country is equal to the per capita world endowment, which is denoted by γ^W. Aggregate consumption of a representative country in this case follows approximately a random-walk process with variance $\sigma_W^2 = \sigma^2((1/N)+(1-1/N)\rho)$ (see Lewis, 2000). The measure of the welfare gain is the permanent percentage increase in the expected level of consumption that produces an equivalent improvement in welfare. The approximate welfare gain for the representative country is computed using the following formula

$$Welfare\ gain \approx -\frac{0.5\gamma d\sigma^2}{r-\bar{\mu}}\left[1 - H(r-\bar{\mu})\frac{e^{-H(r-\bar{\mu})}}{1-e^{-H(r-\bar{\mu})}}\right]$$

where $\bar{\mu}=\mu-0.5\gamma\sigma^2$ denotes the risk-adjusted growth rate, $r=\beta+\gamma\bar{\mu}$ the risk-free interest rate, and $d\sigma^2 = \sigma_W^2-\sigma^2$ the change in the variance of consumption growth.

The main parameters of the model are also taken from van Wincoop (1999). In particular, the risk-free real interest rate is assumed to be 0.85 percent and the coefficient of relative risk aversion is set at 3.[55] For each country, the mean growth rate and the variance of per capita domestic consumption, and the correlation between per capita domestic consumption growth and world consumption growth are estimated and these values are used in the calculations. Since the dataset employed covers the 1970–97 period, these gains correspond to a horizon of 28 years. A decrease in the risk-free rate translates into larger welfare gains, and a decrease in the risk-aversion coefficient is associated with smaller gains. The welfare gains get smaller as the correlation between domestic consumption and the world consumption decreases, and they tend to increase as the volatility of consumption increases.

The welfare gains reported in the main text of this paper are consistent with the estimates found in some recent studies. Although some of these studies report relatively small gains, a majority of them find that gains from risk sharing are quite large, especially for developing countries, as is shown in Table A3.1. Van Wincoop (1994) provides a detailed explanation of why various studies report different results. There are four major parameters affecting the magnitude of welfare gains in these studies: (1) the volatility of domestic output, (2) the rate of relative risk aversion, (3) the risk-adjusted growth rate, and (4) the risk-free interest rate. It is easy to understand why some of the studies produce relatively low welfare gains. In some studies (Cole and Obstfeld, 1991; and Obstfeld, 1994b), the risk-free rate is quite high. Some studies assume certain stationary processes for consumption or shock series, which generate low welfare gains because of the low persistence or volatility associated with these processes (Tesar, 1995; and Mendoza, 1995).

Some studies use data for advanced countries and find large welfare gains through international risk

Table A3.1. Summary of Studies on Welfare Gains from International Risk Sharing

Study	Welfare Gains
Advanced Countries	
Lucas (1987)	Small
Cole and Obstfeld (1991)	Small
Backus, Kehoe, and Kydland (1992)	Small
Mendoza (1995)	Small
Tesar (1995)	Small
Kim, Kim, and Levine (2003)	Small
Obstfeld (1994b)	Large
van Wincoop (1994, 1996, and 1999)	Large
Pallage and Robe (2003b)	Large
Epaulard and Pommeret (2003)	Large
Lewis (1996a)	Large
Shiller and Athanasoulis (1995)	Large
Auffret (2001)	Large
Kim and Kim (2003)	Large
Advanced, MFI, and LFI Countries	
Obstfeld (1994a, 1995)	Large
Pallage and Robe (2003a)	Large
Athanasoulis and van Wincoop (1997 and 2000)	Large
de Ferranti and others (2000)	Large
Shiller and Athanasoulis (1995)	Large

Notes: "Small" refers to the studies that report welfare gains of 0.5 percent or less, and "large" refers to the studies that report welfare gains larger than 0.5 percent. MFI denotes more financially integrated, and LFI less financially integrated, countries.

[55]Since these approximate calculations ignore the pricing problem of international claims, they do not include the welfare changes associated with the pricing of countries' endowment streams. In countries with highly volatile consumption fluctuations, the welfare losses from price changes can be quite large. As the volatility of consumption increases, however, the welfare gain from risk sharing rapidly rises and outweighs the losses owing to the pricing of consumption streams. Van Wincoop (1994) provides an extensive discussion of the gains associated with these price changes using the data for the OECD countries.

sharing.[56] For example, van Wincoop (1996 and 1999) finds that for the OECD countries the potential welfare gains from international risk sharing are between 1.1 percent and 3.5 percent. Several recent studies consider the implications of international risk sharing for developing countries. Athanasoulis and van Wincoop (1997) calculate the estimates of the degree of uncertainty associated with the growth potential of an economy at various horizons. They find that the welfare gain from sharing of risk associated with the growth uncertainty is around 6.5 percent using the data of 49 developed and developing countries. Obstfeld (1995) finds that elimination of consumption variability through risk sharing can result in much larger welfare gains in developing countries and reports that these gains are between 0.54 percent and 5.31 percent for a selected group of developing economies. Pallage and Robe (2003a) find that the welfare gains associated with smoothing consumption fluctuations are much larger for African countries than for the United States and that, depending on the parameterization of the model economy, these gains can easily exceed 10 percent for several African countries.

[56]Calculations of the gains from international risk sharing based upon stock returns produce much larger welfare gains estimates than those based upon international consumption data. Lewis (1999) examines this issue and finds that the major differences are due to the much higher volatility of stock returns and the implied intertemporal substitution in marginal utility. She reports that the gains from international risk sharing based upon stock returns are quite large—between 10 and 50 percent. LeBaron (2002) claims that these gains have gotten smaller during the past 15 years.

Appendix IV Contingent Securities for International Risk Sharing

Although international risk sharing seems likely to provide substantial benefits, only a few securities are available to facilitate it. In particular, there exist no securities that allow the international transfer of GDP risk—that is, the risk associated with fluctuations in the aggregate income of the country where one works and lives.

Several ideas have been considered to fill this vacuum, with many authors suggesting a variety of securities whose return would depend on the evolution of a country's GDP. The best-known proposal has been put forward by Shiller (1993), who suggested the creation of a market for perpetual claims on countries' GDPs. By going short on these claims, individuals could insure against the aggregate risk of a fall in income in their own countries. This would bring substantial diversification benefits, because correlations of GDP across countries are relatively low. The market infrastructure for such perpetual claims would, however, have to be created essentially from scratch.

A more practical, if less ambitious alternative might be for countries to issue bonds whose returns were indexed to their own GDPs, as was proposed by several authors in the aftermath of the international debt crisis of the 1980s (see Borensztein and Mauro, 2002 for a review of these proposals). This would simply involve adding an indexation clause (for example, on the coupon rate) to otherwise standard debt contracts. Since sovereign debtors' debt-servicing problems often result from adverse macroeconomic conditions, indexed bonds providing for high interest payments in good times and low interest payments in bad times could help reduce the risk of debt crises. They would also provide more room for fiscal policy to respond to domestic economic conditions. Such an indexed bond would be equivalent to a combination of a "plain vanilla" bond and a claim on the country's GDP with the same maturity. While individual countries would obtain substantial insurance benefits from these indexed bonds, they would probably not have to pay a large insurance premium—compared with the rate on plain vanilla bonds—to induce international investors to hold them. In fact, from the point of view of international investors, GDP risk associated with individual countries is almost fully diversifiable.

Experience to date with GDP-indexed bonds has been limited to a few small issues in the context of Brady-style restructurings. Bosnia and Herzegovina, Bulgaria, and Costa Rica have included clauses in their Brady bonds providing for higher repayments once GDP or per capita GDP reaches a certain level. These clauses have been mainly intended as incentives for investors by enabling them to share in a potential improvement in the repayment capacities of the debtor countries, rather than as a device to make defaults less likely. Similar bonds have provided for an increase in the value of the claim (value recovery) if certain favorable conditions—such as high oil exports or oil prices—are met, notably for Mexico and Venezuela.

Use of this type of security has been limited for a number of reasons. Securities that are unusual or difficult to understand often result in shallow markets and an illiquidity premium. New instruments are costly to develop, yet they can be imitated at low cost. One could also question whether an instrument that provides extensive insurance against risks may result in diminished incentives to invest and effect policy reforms. Perhaps more tangibly, investors may also feel uneasy about an instrument whose return depends on statistics produced by the issuing government itself. One should note, however, that inflation-indexed bonds are used extensively, both by advanced economies such as the United Kingdom and emerging market economies such as Chile.

Official intervention has often been instrumental in facilitating financial innovation—for example, in the introduction of mortgage-backed securities in the United States—and it could also contribute to fostering the development of markets for international sovereign bonds indexed to GDP or related variables. International financial institutions might play a role by, for example, helping guarantee the reliability of national economic statistics.

Note: This appendix was prepared by Eduardo Borensztein and Paolo Mauro.

Appendix V Small States and Financial Globalization

There is no formal definition of a small state, but it is generally accepted that this label applies to sovereign economies with populations of less than 1.5 million people. By this criterion, 45 developing countries (41 of the IMF's 184 member countries) are small states. See Table A5.1 for some summary statistics comparing small states to other developing countries and industrial countries for the period 1960–2000. Small states are relatively more open to trade, which implies that they are generally more reliant on export earnings than other developing countries. Their production structures and export bases also tend to be less diversified. Although small states have been developing strong trade linkages with the global economy, their financial linkages are weaker. And although the average ratio of the volume of capital flows to GDP is larger for small states than for other developing countries, it is still roughly 25 percent smaller than that for industrial economies. Aid dependency is an important problem in several small states, since foreign aid is still a major source of income.

Average output growth has been higher in small states than in other economies over the last four decades. This outcome appears to have been the result of two main factors—the strong trade linkages of small states and their substantially higher investment ratios. Thus, trade openness has had significant benefits for small states.

Small states face a number of disadvantages arising from their narrow and undiversified production and export bases. They are vulnerable to external shocks, since they are relatively more open; their production and export structures are highly specialized; and they rely more on export earnings. In addition, small states have to cope with a variety of inherent disadvantages arising from their locations. Many of them are located far from the major trade centers, which significantly increases the costs of their exports and imports. Because of their locations, many small economies are highly susceptible to natural disasters, such as earthquakes and hurricanes, that can affect an entire country at the same time and, consequently, have devastating economic impacts.

Although there is a long list of special challenges associated with being a small state, most of these are ultimately related to the fact that small states have relatively high output volatility, even after controlling for income level and degree of openness. One reason may be that smaller economies tend to be less diversified and more vulnerable to external shocks. Indeed, the terms of trade fluctuations in small states tend to be more volatile and highly persistent. Consumption risk sharing seems to be a particularly important challenge for small states, since the average ratio of the standard deviation of consumption growth to that of output growth is even higher in these countries. Moreover, foreign aid flows to many small states are highly volatile and tend to be positively correlated with domestic GDP, implying that they might be further contributing to the volatility of income in these countries.

These findings imply that international risk sharing has significant welfare implications for small states. Indeed, for small states, such welfare gains are potentially very large and equivalent to the increase in welfare that would result from a 15 percent permanent increase in the level of consumption. The potential gains for small states are much larger even than those for other developing countries, since consumption is so much more volatile in the former than the latter.

Trade linkages have already helped many of these economies to increase the size of the markets for their products and benefit from economies of scale. Openness to capital flows would also offer them opportunities to diversify into new sectors, increase investment and growth, and achieve better risk sharing. Both trade and capital flows can also enhance the rate of technology transfers to these economies. Furthermore, globalization offers opportunities for these economies to absorb and adopt best international practices for governance and other institutional structures.

Traditional macroeconomic and structural policy measures are important for deriving benefits from, and reducing the risks associated with, globalization. Small states need to improve their macroeconomic frameworks in order to leave themselves

Table A5.1. Are Small States Different? Some Summary Statistics, 1960–2000

Groups of Countries	Integration and Aid Dependence			Measures of Volatility			
	Trade openness	Financial openness	Aid dependency	Output	Private consumption	Terms of trade	Welfare gains
	(In percent of GDP)			*(In percent)*			
Small states	111.5	7.9	19.5	5.8	12.6	5.6	15.3
Other developing countries	60.5	4.5	8.4	4.9	8.2	4.2	6.1
Industrial countries	63.3	10.4	—	2.5	2.6	1.5	0.7

Source: Kose and Prasad (2003).
Note: Financial openness is measured as the ratio of capital inflows and outflows to GDP.

room for maneuver when shocks hit. In addition, poor macroeconomic and structural frameworks could result in the accentuation and increased persistence of the effects of adverse external shocks. Given that aid flows are highly volatile and hard to predict, it is essential for small states to design flexible fiscal frameworks. Moreover, there is increasing evidence that aid flows are used more efficiently in countries with better governance structures and are accompanied by higher inflows of foreign direct investment in countries that employ sound macroeconomic policies.

Appendix VI Data

Unless indicated otherwise, the primary sources for the data used in this paper are the IMF's *International Financial Statistics* and the World Bank's *World Development Indicators*. The basic data sample comprises 76 countries—21 industrial and 55 developing.[57]

Industrial Countries

The 21 industrial countries are Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Denmark (DNK), Finland (FIN), France (FRA), Germany (DEU), Greece (GRC), Ireland (IRL), Italy (ITA), Japan (JPN), Netherlands (NLD), New Zealand (NZL), Norway (NOR), Portugal (PRT), Spain (ESP), Sweden (SWE), Switzerland (CHE), the United Kingdom (GBR), and the United States (USA).

Developing Countries

The developing countries are grouped into more financially integrated (22) and less financially integrated (33) countries as follows:

More Financially Integrated Countries

Argentina (ARG), Brazil (BRA), Chile (CHL), China (CHN), Colombia (COL), Egypt (EGY), Hong Kong SAR (HKG), India (IND), Indonesia (IDN), Israel (ISR), the Republic of Korea (KOR), Malaysia (MYS), Mexico (MEX), Morocco (MAR), Pakistan (PAK), Peru (PER), Philippines (PHL), Singapore (SGP), South Africa (ZAF), Thailand (THA), Turkey (TUR), and Venezuela (VEN); and

Less Financially Integrated Countries

Algeria (DZA), Bangladesh (BGD), Benin (GEN), Bolivia (BOL), Botswana (BWA), Burkina Faso (BFA), Burundi (BDI), Cameroon (CMR), Costa Rica (CRI), Côte d'Ivoire (CIV), the Dominican Republic (DOM), Ecuador (ECU), El Salvador (SLV), Gabon (GAB), Ghana (GHA), Guatemala (GTM), Haiti (HTI), Honduras (HND), Jamaica (JAM), Kenya (KEN), Mauritius (MUS), Nicaragua (NIC), Niger (NER), Nigeria (NGA), Panama (PAN), Papua New Guinea (PNG), Paraguay (PRY), Senegal (SEN), Sri Lanka (LKA), the Syrian Arab Republic (SYR), Togo (TGO), Tunisia (TUN), and Uruguay (URY).

[57]The following are excluded from the analysis: small countries (those with populations below one million), transition economies, some oil producers, and other countries with incomplete or clearly unreliable data.

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