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## Financial Globalization: A Reappraisal

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## **IMF Working Paper**

Research Department

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#### **Abstract**

**This Working Paper should not be reported as representing the views of the IMF.**

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The literature on the benefits and costs of financial globalization for developing countries has exploded in recent years, but along many disparate channels and with a variety of apparently conflicting results. For instance, there is still little robust evidence of the growth benefits of broad capital account liberalization, but a number of recent papers in the finance literature report that equity market liberalizations do significantly boost growth. Similarly, evidence based on microeconomic (firm- or industry-level) data shows some benefits of financial integration and the distortionary effects of capital controls, while the macroeconomic evidence remains inconclusive. We attempt to provide a unified conceptual framework for organizing this vast and growing literature. This framework allows us to provide a fresh synthetic perspective on the macroeconomic effects of financial globalization, in terms of both growth and volatility. Overall, our critical reading of the recent empirical literature is that it lends some qualified support to the view that developing countries can benefit from financial globalization, but with many nuances. On the other hand, there is little systematic evidence to support widely cited claims that financial globalization by itself leads to deeper and more costly developing country growth crises.

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## EXECUTIVE SUMMARY

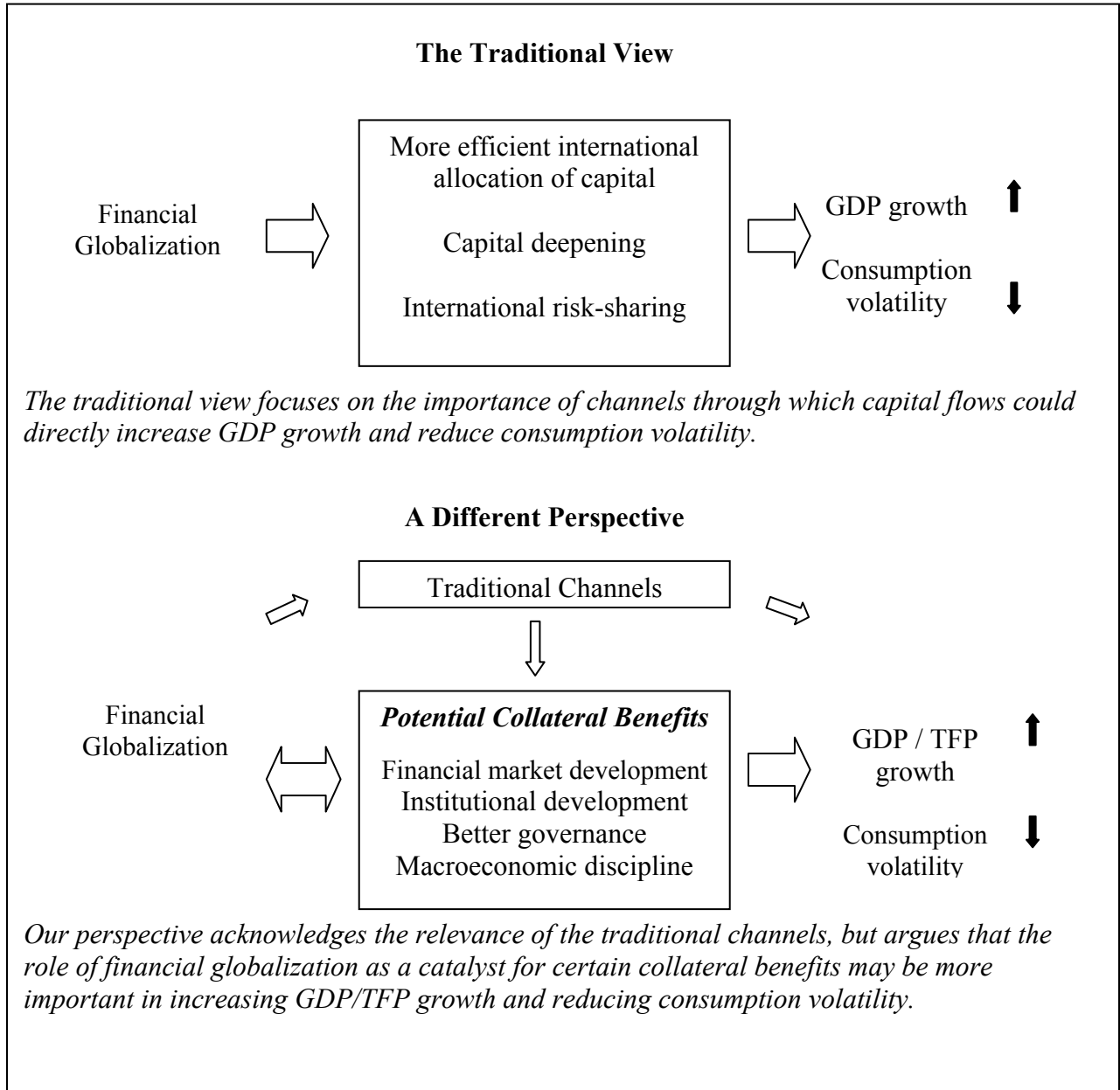
*This paper attempts to provide a unified conceptual framework for organizing the vast literature about the costs and benefits of financial globalization. Can developing countries benefit from financial globalization? Yes, but with many nuances. Does financial globalization by itself lead to economic crises? Almost certainly no! The bottom line is that some of the extreme polemic claims made about the effects of financial globalization on developing countries, both pro and con, are far less easy to substantiate than either side generally cares to admit.*

The framework we present provides a fresh synthetic perspective on the macroeconomic effects of financial globalization, both in terms of growth and volatility. The main points are as follows:

- The majority of empirical studies are unable to find robust evidence in support of the growth benefits of capital account liberalization. However, studies that use measures of de facto integration or finer measures of de jure integration tend to find more positive results. More importantly, studies using micro data are better able to detect the growth and productivity gains stemming from financial integration.
- There is little formal empirical evidence to support the oft-cited claims that financial globalization in and of itself is responsible for the spate of financial crises that the world has seen over the last three decades.
- The conceptual framework we present suggests that in addition to the traditional channels (e.g., capital accumulation), the growth and stability benefits of financial globalization are also realized through a broad set of “collateral benefits” (see Figure A). These collateral benefits affect growth and stability dynamics indirectly, implying that the associated macroeconomic gains may not be fully evident in the short run and may be difficult to uncover in cross-country regressions.
- Various threshold effects play important roles in shaping the macroeconomic outcomes of financial globalization (see Figure B). Countries meeting these threshold conditions are better able to reap the growth and stability benefits of financial globalization.
- The framework also points to a fundamental tension between the costs and benefits of financial globalization that may be difficult to avoid. Financial globalization appears to have the potential to play a catalytic role in generating an array of collateral benefits that may help boost long-run growth. At the same time, premature opening of the capital account in the absence of some basic supporting conditions can delay the realization of these benefits, while making a country more vulnerable to sudden stops of capital flows.

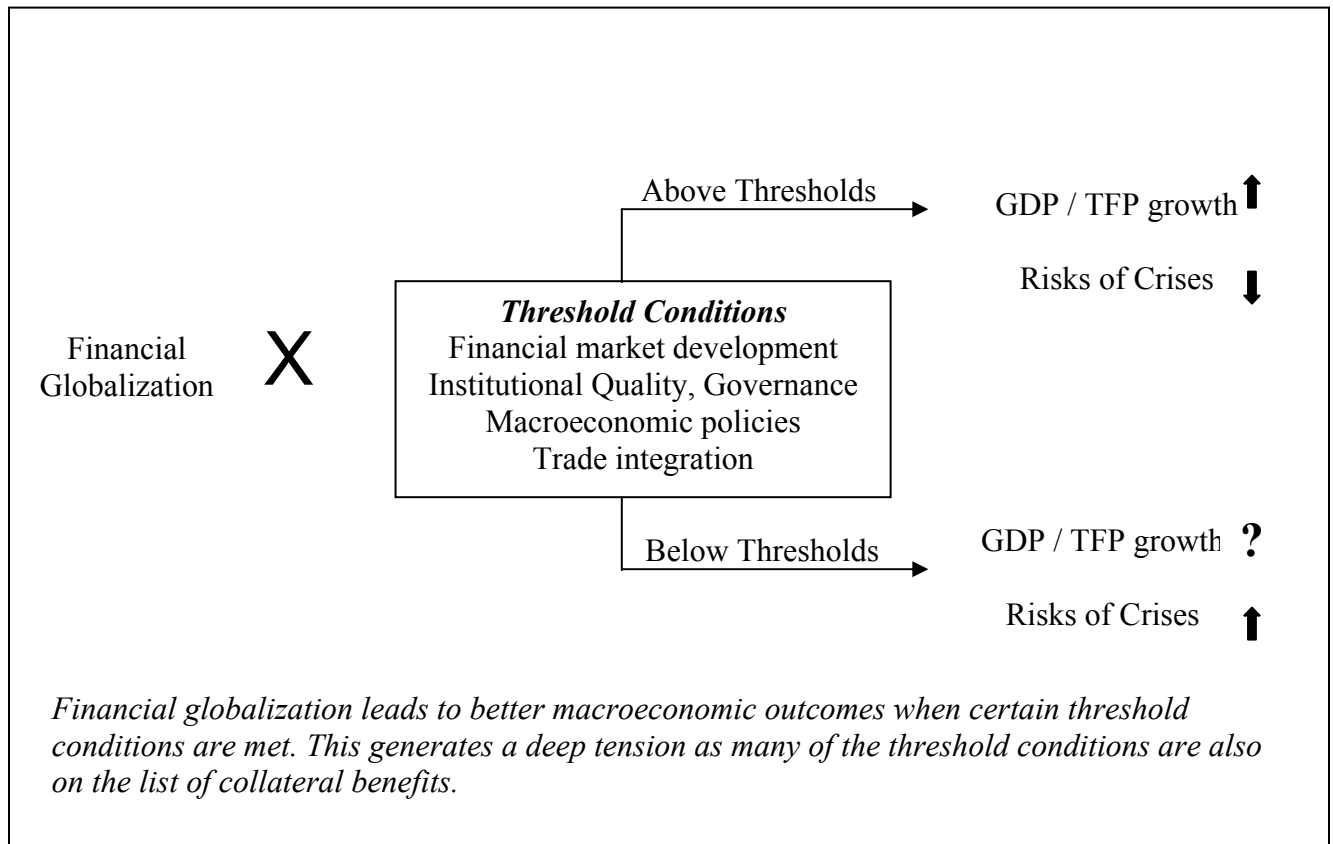
**Figure A**

***Two Views of Impact of Financial Globalization on Developing Countries ...***



**Figure B**

*... But There Are Thresholds*





## I. INTRODUCTION

The recent wave of financial globalization got started in earnest in the mid-1980s, with rising cross-border financial flows among industrial economies and between industrial and developing economies. This was spurred by liberalization of capital controls in many of these countries, in anticipation of the benefits that cross-border flows would bring in terms of better global allocation of capital and improved international risk-sharing possibilities. The strong presumption was that these benefits ought to be large, especially for developing countries that tend to be relatively capital-poor and have more volatile income growth.

With the surge in financial flows, however, came a spate of currency and financial crises in the late 1980s and 1990s. There is a widely held perception that developing countries that opened up to capital flows have been more vulnerable to these crises than industrial economies, and have been much more adversely affected. These developments have sparked a fierce debate among both academics and practitioners on the costs and benefits of financial globalization. This debate has intensified and become more polarized over time, in contrast to the debate on trade liberalization, which has more or less moved toward a consensus.<sup>2</sup>

Some academic economists view increasing capital account liberalization and unfettered capital flows as a serious impediment to global financial stability (e.g., Rodrik, 1998; Bhagwati, 1998; Stiglitz, 2002), leading to calls for capital controls and the imposition of frictions, such as “Tobin taxes,” on international asset trade. Others argue that increased openness to capital flows has, by and large, proven essential for countries aiming to upgrade from lower- to middle-income status, while significantly enhancing stability among industrialized countries (e.g., Fischer, 1998; Summers, 2000). This is clearly a matter of considerable policy relevance, especially with major economies like China and India recently taking steps to open up their capital accounts. Although consensus may be too much to hope for, some clarity on what theory and data do tell us—and what they do not tell us—is important for informing the ongoing debate.

A central conclusion of this paper is that although the rapidly-growing empirical literature is gradually tilting toward supporting a significant positive role for financial globalization, there are many unanswered questions about how a country should organize and pace its move. At the same time, we find there is very little meaningful empirical support to underpin the more polemical claims of those who argue that capital account liberalizations (as opposed to, say, inappropriately rigid exchange rate regimes) are the root problem underlying most developing country financial crises of the past fifteen years. We hope, in this paper, to provide a synthetic perspective on this literature so the reader may judge for herself. At the same time, we try to develop a few organizing principles that will perhaps point the way to where future research is most needed.

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<sup>2</sup> For empirical evidence showing that trade openness has a direct and positive effect on economic growth, see, for example, Frankel and Romer (1999) and Dollar and Kraay (2003). Rodriguez and Rodrik (2002) present a contrarian view, but, as summarized in recent surveys by Berg and Krueger (2003), Baldwin (2004), and Winters (2004), the weight of the evidence supports the by-now conventional wisdom that trade is good for growth.

The fundamental point we make in this paper is that the main benefits from successful financial globalization are probably catalytic and indirect, rather than consisting simply of enhanced access to financing for domestic investment. Of course, this perspective differs from the standard neoclassical framework, which views the key benefit of financial globalization as arising from long-term net flows of capital from industrial to developing economies. Since the former group of countries is capital rich while the latter is relatively capital poor, this would generate welfare gains for both groups of countries. Yet a survey of the literature on capital account liberalization by Eichengreen (2001) concludes that there is no empirical substantiation of the conventional theoretical tenets about the growth benefits of capital account liberalization.

A subsequent survey by us (Prasad, Rogoff, Wei, and Kose, 2003) on the broader dimensions of financial globalization deepens the puzzle. Even after taking into account the fundamental distinction between *de jure* and *de facto* financial globalization (which we shall discuss later in this paper), we still conclude that, taken as a whole, the vast empirical literature provides little robust evidence of a causal relationship between financial integration and growth. Moreover, we find that, among developing countries, the volatility of consumption growth relative to income growth appears to be positively associated with financial integration, the opposite of what canonical theoretical models would predict. In theory, access to international markets should allow all countries to smooth consumption by insuring against country-specific income risk. What accounts for these discrepancies between the advertised benefits of financial globalization and the mixed empirical evidence?<sup>3</sup>

We argue here that far more important than the direct growth effects of access to more capital is how capital flows generate a number of what we label the “potential collateral benefits” of financial integration. There is now a rapidly growing literature showing that financial openness can—in many but not all circumstances—promote development of the domestic financial sector, impose discipline on macroeconomic policies, generate efficiency gains among domestic firms by exposing them to competition from foreign entrants, and unleash forces that result in better government and corporate governance.

The notion that financial globalization mainly influences growth through indirect channels has important implications for empirical analysis of its benefits. For one thing, building institutions, enhancing market discipline, and deepening the financial sector takes time, and so does the realization of growth benefits through such channels. This may explain why, over relatively short periods, it seems much easier to detect the costs but not the benefits of financial globalization. More fundamentally, even at long horizons, it may be difficult to detect the productivity-enhancing benefits of financial globalization in empirical work if one includes structural, institutional, and macroeconomic policy variables in cross-country regressions that attempt to explain growth of GDP or productivity. For then, by construction, there can be little added explanatory power left for the financial openness measure. Indeed, this could explain why simple correlations tend to show that financially integrated economies

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<sup>3</sup> We emphasize up front that our analysis focuses largely on private capital flows and does not encompass the effects of official flows, including foreign aid, and other flows, such as remittances (which should, strictly speaking, appear in the current account of the balance of payments).

have higher growth rates, on average, than less integrated economies, yet it has proven difficult to find a causal effect of financial integration on growth once the other factors mentioned previously are controlled for.

The approach we have outlined above helps to link a number of other pieces of the literature. For instance, a majority of the papers looking at the effects of overall capital account liberalization have relied on de jure measures of capital account openness, which reflect legal restrictions on capital movements (or lack thereof). But the collateral benefits are likely to be realized at least as much through de facto integration, which, as we show, can be quite different. In practice, the distinction between de jure and de facto openness can be very important. Many countries have capital controls that are quite strict on paper but toothless in practice, so their de facto level of integration—as measured by capital flows or stocks of foreign assets and liabilities—is quite high; this, in itself, could act as a disciplining device on the government and firms. In contrast, many other countries are quite open to global capital markets on a de jure basis, but in practice capital flows are minimal. In our survey, we consider results based on both kinds of measures and argue that the choice of measure has important consequences for empirical analysis.

Our approach could help understand why recent research that focuses on the growth effects of equity market liberalizations seems to find such strong positive effects despite the fact that portfolio equity inflows are typically small relative to other types of flows. For instance, one possibility is that equity market liberalizations typically take place in tandem with various other domestic reforms and when national governments have confidence in their own ability to adequately supervise domestic financial markets. Besides, equity inflows are precisely the ones that, along with foreign direct investment (FDI), are most likely to confer the sort of collateral benefits discussed earlier. Our analysis may help explain why there is much stronger evidence based on microeconomic (firm- or industry-level) data on the distortionary effects of capital controls and the benefits of capital account liberalization.

The collateral benefits perspective also ties in with the literature on thresholds in the effects of financial globalization. It has become a mantra in academic and policy circles that financial globalization can in principle, be good for any country—in terms of delivering the benefits and minimizing the risks—but that the benefits-to-cost calculus is much more compelling for countries with robust institutions and good macroeconomic policies. The set of prescribed requirements tends to be vast—encompassing sound monetary and fiscal policies, depth and sophistication of financial markets, the quality of financial sector regulation and supervision, transparency and good governance, and so on.

Most developing countries clearly do not measure up to all of these desiderata, and, for many of them, the length of this list makes things look hopeless at the outset. Does this imply that developing countries would do best to shield themselves from external influences while trying to improve the quality of their domestic policies and institutions to attain some acceptable level? The academic literature we survey does not seem to offer a simple answer, in part because the links are bidirectional. In theory (and with some supporting evidence, as we shall see), financial opening may, in fact, play an important catalytic role in improving institutions, allowing for transfer of good governance practices, strengthening macroeconomic discipline, and so on. But there remain a number of unresolved questions in

the literature that make it difficult to draw firm policy conclusions. We list some of these questions that require further research in the final section of the paper.

## **II. A BRIEF OVERVIEW OF THEORY**

We begin with a very brief review of the basic implications from theoretical models about how financial globalization should affect growth, volatility, and comovement of output and consumption.

### **A. Growth**

As we have already noted, the simplest benchmark one-sector neoclassical framework suggests that financial globalization should lead to flows of capital from capital-rich economies to capital-poor economies since, in the latter, the returns to capital should be higher.<sup>4</sup> These flows should complement limited domestic saving in capital-poor economies and, by reducing the cost of capital, allow for increased investment. Certain types of financial flows could also generate technology spillovers and serve as a conduit for imbibing managerial and other forms of organizational expertise from more advanced economies.

There are also a number of indirect channels through which financial globalization could enhance growth. It could help promote specialization by allowing for sharing of income risk, which could in turn increase productivity and growth as well.<sup>5</sup> Financial flows could foster development of the domestic financial sector and, by imposing discipline on macroeconomic policies, lead to more stable policies. We discuss the mechanisms and evidence for some of these channels later in the paper.

### **B. Volatility**

The effects of financial integration on *output* volatility are not obvious in theory. In principle, financial integration allows capital-poor countries to diversify away from their narrow production bases that are often agricultural or natural resource-dependent. This should reduce macroeconomic volatility. At a more advanced stage of development, however, trade and financial integration could simultaneously allow for enhanced specialization based on

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<sup>4</sup> Indeed, the fact that the actual volumes of such flows do not come anywhere near what might be predicted by neoclassical growth models has been characterized as a puzzle by Lucas (1990), with many subsequent papers trying to resolve this puzzle.

<sup>5</sup> Concerns about increases in volatility that may result from a specialized production structure could discourage countries from taking up growth-enhancing specialization activities; higher volatility might also reduce investment rates. Financial globalization could facilitate international risk sharing and thereby reduce countries' consumption volatility. Among developed countries and across regions within developed countries, better risk sharing appears to be associated with greater specialization (Acemoglu and Zilibotti, 1997; Obstfeld, 1994; and Kalemli-Ozcan, Sorensen, and Yosha, 2001).

comparative advantage considerations. This could make countries more vulnerable to industry-specific shocks.<sup>6</sup>

Theory does have a strong prediction, however, about the relationship between financial integration and *consumption* volatility. Since consumers and, by extension, economies are risk-averse, consumption theory tells us that they should desire to use financial markets to insure against income risk, thereby smoothing the effects of temporary idiosyncratic fluctuations in income growth on consumption growth. In theory, the benefits of international risk-sharing could be quite large (Lewis, 1999; van Wincoop, 1999). But this issue is far from settled (see the discussion in Obstfeld and Rogoff, 2004, Chapter 5). Lucas's (1987) claim that macroeconomic stabilization policies that reduce consumption volatility can have only minimal welfare benefits continues to be influential (see Barlevy, 2004). Some authors have shown that, even within Lucas's framework, the higher volatility that developing countries experience implies that they can potentially reap large benefits from international risk-sharing arrangements (Pallage and Robe, 2003)

### C. Comovement

Another prediction of theory, related to the consumption smoothing issue, concerns the cross-country comovement of major macroeconomic aggregates. In theory, the effect of increased financial integration on cross-country correlations of output growth is uncertain, since it depends on the nature of shocks and specialization patterns. In any case, financial integration should in theory help countries diversify away country-specific risk and should, therefore, result in stronger comovement of consumption growth across countries. Thus, in parallel to the discussion of volatility, economic theory has clear implications for how financial integration should affect cross-country consumption correlations but not for correlations of output or income.

In summary, there is a strong presumption in theory that financial integration is good for growth and, although its effects on output volatility are unclear, it should unambiguously lead to reductions in the relative volatility of consumption (and increase the cross-country comovement of fluctuations in consumption).

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<sup>6</sup> See Kose, Prasad, and Terrones (2004) for a more detailed exposition. Imbs and Wacziarg (2003) show that the degree of diversification has an inverted U-shaped relationship with per capita income level. The relationship between financial openness and macroeconomic volatility could also be affected by certain features of developing countries that may make them more vulnerable to external shocks. First, the limited diversification of their exports and imports could make them susceptible to terms of trade and foreign demand shocks (Kose, 2002). Second, sharp changes in world interest rates might induce large fluctuations in highly indebted countries (Blankenau, Kose, and Yi, 2001; Neumeyer and Perri, 2005). Third, country size is an important factor as external shocks have a larger impact on volatility in small open developing countries (Crucini, 1997).

### III. MEASURING FINANCIAL OPENNESS

The traditional approach to measuring financial openness is to use measures of legal restrictions on cross-border capital flows. Such capital controls come in many varieties (controls on inflows versus controls on outflows, quantity controls versus price controls, restrictions on foreign equity holdings, etc.). Indeed, the IMF's widely used *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER) measures over 60 different types of controls. Appendix I summarizes the different categories of restrictions in the AREAER and shows how wide-ranging these controls can be.

One issue in the literature is whether to use a 0/1 measure of capital account openness (as in, say, the well-known work of Rodrik, 1998) or a finer measure (as pioneered by Quinn, 1997). Another question is whether to stick with using one of these types of de jure measures (as most of the literature does) or look for alternatives. It is worth noting that the range of available de jure measures is not as broad as it may seem since most of them, in one way or another, essentially just summarize the information in the IMF's AREAER reports.

An alternative approach (advocated, for example, in Prasad, Rogoff, Wei, and Kose, 2003) is to use a de facto measure that tries to take into account how much a country is integrated into international capital markets in practice. We will argue in this section that there is important information in both the de jure and de facto measures, but that for many applications the de facto measure is more suitable. The availability of a de facto integration measure that is consistently defined across countries owes a great deal to the pioneering work of Lane and Milesi-Ferretti, which we discuss in greater detail below.

#### A. De Jure Measures Based on IMF Indicators

Measuring capital account openness has long been a challenge (see Edison and others, 2004). Some researchers utilize the summary information provided by the AREAER to construct a "share" measure, reflecting the fraction of years in the sample in which a country's capital account was open (see Grilli and Milesi-Ferretti, 1995; Rodrik, 1998; and Klein and Olivei, 2006). Quinn (1997, 2003) use the narrative descriptions in the AREAER to develop a quantitative measure of capital account openness. Raising the level of technical sophistication a notch, Chinn and Ito (2005) develop an index of financial openness based on principal components extracted from disaggregated capital and current account restriction measures in the AREAER. Mody and Murshid (2005) also utilize the measures involving restrictions on capital and current account transactions and construct a different measure. Edwards (2005) combines the measures in Mody and Murshid (2005) and Chinn and Ito (2005) with information from country-specific data sources and proposes a new index.<sup>7</sup> After the expansion of the set of categories reflecting the existence of capital controls in the 1997 issue of the AREAER, there have been some refinements of the earlier measures (see Johnston and Tamirisa, 1998, and Miniane, 2004).

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<sup>7</sup> Edison and Warnock (2003) construct measures of capital account restrictions related to just equity flows. Bekaert and Harvey (2000) and Henry (2000a) compile dates of equity market liberalizations for developing countries. We discuss some of these narrower measures in more detail later.

## B. Shortcomings of De Jure Measures

All of these measures, despite their increasing sophistication and fineness, suffer from a variety of similar shortcomings. First, they do not accurately reflect the degree of openness of the capital account because they are partially based on various restrictions associated with foreign exchange transactions that may not necessarily impede capital flows. Second, they do not capture the degree of enforcement of capital controls (or the effectiveness of that enforcement), which can change over time even if the legal restrictions themselves remain unchanged.<sup>8</sup> Third, and most importantly, these measures do not always reflect the actual degree of integration of an economy into international capital markets, as we have already noted. As another example, China, despite its extensive regime of capital controls, has not been able to stop inflows of speculative capital in recent years (see Prasad and Wei, 2007).

A further complication is that, despite the extensive coverage of the IMF's annual AREAER publication, there could be other regulations that effectively act as capital controls but are not counted as controls. For instance, prudential regulations that limit the foreign exchange exposure of domestic banks could, under certain circumstances, have the same effect as capital controls.

This discussion suggests that the distinction between de jure and de facto financial integration is a crucial one. After all, what matters in analyzing the effects of financial globalization, is not how integrated economies seem on paper but how integrated they are in practice.<sup>9</sup> But how does one go about measuring de facto integration?

## C. De Facto Measures Based on Price Differentials

One approach has been to look at price-based measures of asset market integration. The logic is that, irrespective of the volume and direction of flows, true integration of capital markets should be reflected in common prices of similar financial instruments across national borders.<sup>10</sup> While the logic is sound, there are serious practical problems in using such

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<sup>8</sup> Edwards (2005) notes that binary measures suggest similar levels of capital account restrictiveness in Chile, Mexico, and Brazil during the period 1992–94. In fact, Mexico had a rather open capital account, Brazil employed a complex set of controls on capital flows, and there were some controls on short-term flows in Chile.

<sup>9</sup> Collins (2005) argues that de facto and de jure measures are both relevant in measuring the effects of financial integration. She also notes that de facto indicators are likely to be endogenous in growth regressions, making it difficult to pin down causal effects. As we discuss below, de jure measures also have a strong element of endogeneity to them, in addition to their various other deficiencies. Aizenman and Noy (2006) report that de jure measures of capital account liberalization have differential effects on de facto measures of trade and financial integration. They find that de jure restrictions on *current account* transactions adversely affect the extent of de facto *trade* openness while de jure restrictions on *capital account* transactions have no impact on de facto *financial* integration. Similarly, Magud and Reinhart (2006) survey a number of studies on the effectiveness of capital controls and conclude that controls on inflows do not reduce the volume of net flows.

<sup>10</sup> This is of course a simplistic description of a sophisticated approach (see Karolyi and Stulz, 2003, for a survey).

measures for emerging markets and even more so for low-income developing economies. Returns on financial instruments in these economies may incorporate a multitude of risk and liquidity premia that are difficult to quantify. For example, stocks of firms in many emerging market economies trade at low price earnings ratios due to investor concerns about corporate governance and contract problems. Yet, it is not easy to separate this form of segmentation from differential pricing due to high project risk. In general, domestic financial markets may simply not be deep or liquid enough to allow for efficient arbitrage of price differentials.

Other measures of capital market integration include saving-investment correlations and, related to the price-based approach discussed above, various interest parity conditions (see Frankel, 1992; and Edison, Klein, Ricci, and Sløk, 2002). However, these measures are also difficult to interpret and to operationalize for an extended period of time and for a large group of countries.

#### **D. De Facto Measures Based on Quantities**

This leaves quantity-based measures of integration based on actual flows which, in our view, provide the best available measure of a country's integration with international financial markets. One issue is whether to measure integration using net or gross capital flows. Gross flows provide a relatively less volatile and more sensible picture of integration. Indeed, this measure has the advantage of capturing two-way flows which one would expect to see if economies were in fact sharing risk efficiently in a world with multiple financial instruments and agents with different risk profiles. Using the sum of gross inflows and outflows as a ratio to national GDP also yields a nice symmetry with the widely-used measure of trade openness, which is the sum of imports and exports as a ratio to GDP.

However, such annual flows tend to be quite volatile and are prone to measurement error. To mitigate these problems, it may be preferable to use a measure of the sum of gross stocks of foreign assets and liabilities as a ratio to GDP. These stocks are essentially just a refined cumulated version of the underlying flows corrected for valuation effects. This preserves the spirit of measuring de facto integration and obviates many of the problems associated with flow data. Moreover, for some purposes—particularly risk sharing—the stock measures are clearly more appropriate. For instance, if countries have large gross stocks of assets and liabilities, small exchange rate changes can have large valuation effects and serve as a mechanism for risk-sharing even if net asset positions are small.

The measures of financial integration that we use in the next section draw upon the work of Milesi-Ferretti and Lane (2006). These authors have carefully constructed an extensive dataset of stocks of gross liabilities and assets for 145 countries covering the period 1970–2004.<sup>11</sup> Their dataset contains information about the composition of international financial

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<sup>11</sup> In this paper, Lane and Milesi-Ferretti substantially extend their widely-used *External Wealth of Nations* database (Lane and Milesi-Ferretti, 2001) by employing a revised methodology and utilizing a larger set of sources. While their benchmark series are based on the official estimates from the International Investment Position, they compute the stock positions for earlier years using data on capital flows and account for capital gains and losses. In a series of papers, they analyze the various  
(continued...)



positions, including foreign direct investment, portfolio equity investment, external debt, and official reserves. In addition, the dataset has the virtue of accounting for valuation effects and other problems that typically plague raw country-level data, and also corrects for cross-country differences in data definitions and variable construction.

#### **IV. PATTERNS OF FINANCIAL GLOBALIZATION**

Measures of de facto integration based on the Lane—Milesi-Ferretti data show a surge in financial globalization over the last two decades. Emerging markets have accounted for the lion's share of inflows to developing economies. This is of course not a surprise since their level of integration into financial markets is the main ex-post criterion used to define emerging markets—the point to note here is that only a relatively small group of developing economies has actively participated in the process of financial globalization. FDI and portfolio equity flows have become the dominant form of new flows into developing economies, with the relative importance of debt flows declining over time (although, as we shall see, debt still accounts for more than half the stock of all external liabilities.)

##### **A. Evolution of Financial Globalization Across Different Country Groups**

Figure 1 shows the absolute level of integration of different country groups into global financial markets, calculated as the sum of gross international financial assets and liabilities.<sup>12</sup> While the level of integration into global capital markets is clearly highest for advanced economies, emerging market economies have accounted for the bulk of the integration experienced by developing economies in terms of the accumulation of foreign liabilities through capital inflows (Figure 2). Of the total stock of outstanding foreign liabilities at the end of 2004, industrial countries accounted for 91 percent and emerging markets for 8 percent. Both figures show that the recent wave of financial globalization really got started in earnest only in the mid-1980s.<sup>13</sup>

Figure 3 compares the evolution of de jure integration based on the IMF's binary capital account restrictiveness measure, averaged across all countries in each group, and corresponding group averages of the de facto financial openness measure (stock of international financial assets and liabilities expressed as a ratio to GDP). By both measures, advanced economies have become substantially integrated into global financial markets. For emerging market economies, average de jure openness has not changed much based on the IMF measure, but de facto integration has increased sharply over the last two decades. For other developing economies, de jure openness on average rose sharply over the last decade, to a level higher than that for emerging market economies, but the de facto measure has

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features of the data and document the implications of changes in external asset positions for exchange rates, financial integration, and global imbalances (see Lane and Milesi-Ferretti, 2002, 2003, 2005).

<sup>12</sup> The sample of countries used in our analysis is listed in the Data Appendix.

<sup>13</sup> A much earlier wave of financial globalization, which took place between 1880 and 1914, has been analyzed by Bordo, Taylor, and Williamson (2003); Obstfeld and Taylor (2004); and Mauro, Sussman, and Yafeh (2006).

stayed flat over this period. This figure highlights the different informational content in the two types of integration measures and the importance of taking these differences into account in analyses of the effects of financial globalization.

## **B. Composition of Stocks and Flows**

Table 1 shows that the share of debt in gross stocks of foreign assets and liabilities has declined from 75 percent in 1980–84 to 59 percent in 2000–2004. Among advanced economies, the biggest increase has been in the share of portfolio equity. For emerging markets, the share of FDI and portfolio equity has risen from a total of 13 percent in 1980–84 to 37 percent in 2000–2004. In recent years, accumulation of official international reserves has accounted for a significant portion of the increase in gross foreign assets of emerging and other developing economies; consequently, the share of the “other” category has jumped over the last decade.

Some of these patterns are even stronger when one looks at gross inflows (rather than total stocks of assets and liabilities). Table 2 shows that, while debt financing remains the most important source of inflows for advanced economies, FDI now accounts for almost half of total inflows into developing economies. Equity flows have become quite important for emerging markets, accounting for almost 12 percent of inflows, while this category still remains virtually non-existent for other developing economies, reflecting their underdeveloped stock markets.

In short, there are important differences across country groups in the relative importance of different types of inflows, although there has been a broad shift away from debt financing towards FDI and equity flows in all groups.

## **C. Volatility of Inflows**

Table 3 looks at the volatility of different types of inflows, calculated as the cross-country averages of the standard deviations of different types of inflows (measured as ratios to GDP) over the period 1985–2004. The top panel shows that, in all country groups, gross inflows of debt financing are substantially more volatile than FDI or equity inflows, or the sum of FDI and equity inflows.

However, the standard deviation is not a scale-free measure and could be affected by the magnitude of different types of flows. In the lower panel of Table 3, we examine a different measure of volatility—the coefficient of variation (the standard deviation divided by the mean). The results using this measure are less clear-cut. For emerging markets, FDI and the sum of FDI and equity are slightly less volatile than debt flows. Some of these results turn out to be sensitive to the choice of sample as a few countries have very small shares of certain types of flows, which distorts some of the results (by blowing up the coefficients of variation).

## V. MACROECONOMIC EVIDENCE ON EFFECTS OF FINANCIAL GLOBALIZATION

In this section, we review macroeconomic evidence on the effects of financial globalization in the three dimensions discussed in the theoretical overview—growth, volatility and comovement. The evidence based on cross-country regression frameworks has been inconclusive in some respects and, as we discuss below, has a number of conceptual limitations that can not easily be overcome just by using better cross-country datasets or more sophisticated econometric techniques. Nevertheless, this is a useful starting point as the aggregate evidence has been at the center of various debates on financial globalization.

### A. Effects on Growth

Perceptions about the growth benefits of financial integration owe much to the fact that emerging market economies have, as a group, experienced far higher cumulative growth since 1970 than other developing countries or even industrial countries, despite the crises that some in the former group have experienced (Figure 4). Excluding China and India from the list of emerging markets makes the cumulative growth performance of this group over this period look less spectacular, although it is still much better than that of the group of other developing countries.

Figure 5A shows that there is no systematic relationship between the average *level* of de facto financial openness and growth during the period of globalization (defined here as 1985–2004).<sup>14</sup> Controlling for standard growth determinants makes little difference (right panel). When one compares average GDP growth with the *change* in the financial openness measure from 1985 to 2004, however, there appears to be a weak positive association, consistent with the general wisdom that economies that integrated into global financial markets grew faster (Figure 5B). But once other growth determinants are controlled for, this relationship vanishes. There is of course considerable endogeneity embedded in regressions of this sort, but they do clarify the point taken from the literature based on cross-country growth regressions that financial integration by itself may not be the key to high growth.<sup>15</sup>

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<sup>14</sup> We excluded from these plots a few countries that were outliers, mostly those with very high levels of financial openness relative to GDP (see the Data Appendix). Including all of the countries in our sample strengthened (or left essentially unchanged) all of the results reported here. We do not formally examine the effects of outliers as these plots are meant just to be descriptive and do not constitute formal empirical evidence.

<sup>15</sup> An alternative approach is to look at specific country experiences. Prasad, Rogoff, Wei, and Kose (2003) analyze the growth performance of the fastest and slowest-growing (or fastest-declining) economies during 1980–2000 and the status of their financial openness. They conclude that a high level of financial integration is *not a necessary condition* for attaining high growth. China and India achieved high growth rates despite limited and selective capital account liberalization. Mauritius and Botswana also had strong growth rates despite being relatively closed to financial flows. Financial integration is apparently also *not a sufficient condition* for attaining high growth. For example, Jordan and Peru became relatively open to foreign capital flows during this period; yet their economies contracted. Bakker and Chapple (2002) and Ariyoshi and others (2000) review the experiences of several industrial and developing countries, respectively, with the process of capital account liberalization.

In Table 4A, we provide an overview of the literature that aims to establish a causal relationship between financial openness and growth. While some of these studies conclude that there are growth benefits associated with international financial integration, the majority of them tend to find no effect or a mixed effect (results that are not robust across alternative specifications) for developing countries. This confirms our earlier claim that, if financial integration has a positive effect on growth, it is apparently not robust, once the usual determinants of growth are controlled for.

### **Growth effects of coarse versus finer de jure measures**

Why do different studies reach such diverse conclusions about the importance of financial integration in affecting long-run economic performance? A key issue that we noted earlier is related to the measurement of financial integration. Some widely used de jure measures are quite coarse and may not capture the true extent of international financial integration. As discussed by Edison, Klein, Ricci, and Sløk (2004), empirical studies using finer (more informative) de jure measures of capital account openness appear to reach more positive results about the impact of financial integration on economic growth than those that employ binary measures. For example, Rodrik (1998) finds that capital account liberalization has no significant effect on economic growth, but his analysis is based on a binary measure of capital controls. Employing a finer, and presumably more informative, version of the same openness measure, Quinn (1997) documents a positive association between capital account liberalization and economic growth.

### **De facto versus de jure measures**

Among the studies that use both de jure and de facto measures, specifications where capital account openness is measured using de facto measures tend to lend more support for the potential growth enhancing effects of financial integration than those employing de jure measures (see Kraay, 1998; O'Donnell, 2001; and Edison, Levine, Ricci, and Sløk, 2002). The fact that studies using finer de jure measures and de facto measures find more evidence of positive growth effects suggests that appropriate measurement of financial integration is crucial for uncovering growth effects. It also suggests that the nature of financial integration—what types of inflows and outflows are permitted—may have an important bearing on the growth outcomes. We return to this later, but flag this as an area where more systematic research would be useful.

### **Country coverage**

There are also materially important differences in the coverage of countries across studies. Some studies focus exclusively on advanced countries, a few consider developing and emerging market countries, and others use a combination of all three groups. Although Quinn (1997) finds that capital account liberalization tends to have a positive impact in all countries, Edwards (2001) and Edison, Klein, Ricci, and Sløk (2004) argue that its effect is very limited in less developed countries. Arteta, Eichengreen, and Wyplosz (2003), on the other hand, find no relationship between the level of development and the growth effects of capital account liberalization. We return to this issue in Section IX, when we discuss in more

detail how the growth benefits of capital account liberalization may be influenced by specific country characteristics, many of which are of course related to the level of development.

### **Time period**

The time period covered by different empirical analyses is another source of variation in results. Some studies use data going back to the early 1950s (Alesina, Grilli, and Milesi-Ferretti, 1994), while others limit their examination to the post-1986 period (Klein and Olivei, 2006). Longer time spans are presumably more appropriate for studying the impact of international financial integration on economic growth. At the same time, one must keep in mind that capital flows to developing countries have really taken off only in the last two decades. The choice of sample period appears to make a big difference. For example, comparing the studies by Rodrik (1998) and Quinn (1997) which arrive at diametrically opposed conclusions, Eichengreen (2001) observes that Quinn's sample coverage begins in 1960 and Rodrik's in 1975. Even though both studies use a sample ending in 1989, the impact of the debt crises of the 1980s receives a higher weight in Rodrik's study since the span of his dataset is much shorter.

### **Differences in methodologies**

Differences in empirical methodologies could also account for some of the variations in results across papers, especially given the large number of potential pitfalls in reduced-form cross-country regressions. While some studies point to the importance of capturing temporal effects associated with financial integration using dynamic regression models (McKenzie, 2001), others emphasize the need to account for nonlinear interactions between financial integration and various factors affecting economic growth (Klein, 2005). Edison, Levine, Ricci, and Sløk (2002) employ a variety of statistical methodologies that allow them to deal with several econometric problems, including possible reverse causality—i.e., the possibility that any observed association between financial integration and growth could result from the mechanism that faster growing economies are more likely to liberalize their capital accounts.<sup>16</sup> After a battery of statistical analyses, they conclude that there is no robustly significant effect of financial integration on economic growth, although *de facto* measures of integration do tend to generate some results showing positive growth effects.

### **Investment as an alternative dependent variable**

Another important difference across empirical studies is related to the choice of dependent variable. The studies we have summarized so far look at the relationship between financial integration and GDP growth. Is there evidence that financial integration boosts investment growth, as predicted by the neoclassical model? Bosworth and Collins (1999) and Borensztein, De Gregorio, and Lee (1998) find that there is a strong positive association between certain types of financial integration and investment growth. In particular, their

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<sup>16</sup> They use a generalized method of moments estimation procedure in which, under certain assumptions, lagged values of changes in the explanatory variables can be used as instruments to control for potential endogeneity of all of the explanatory variables.

findings suggest that there exists an almost one-for-one relationship between FDI flows and domestic investment. The relationship between aggregate financial flows (as opposed to just FDI) and investment growth appears to be smaller and less robust. Mody and Murshid (2005) confirm the positive relationship reported in earlier results, but their results suggest that the impact of capital inflows on growth has been declining over time.

### **Summary of evidence on growth benefits**

Our reading of this large literature based on aggregate data is that it remains difficult to find robust evidence that financial integration systematically increases growth, once other determinants of growth are controlled for. Nevertheless, the weight of the evidence seems to be gradually shifting towards finding positive marginal effects on growth, especially when financial integration is measured using *de facto* or finer *de jure* measures, when data over longer time periods are used, and when interaction terms accounting for supportive conditions (such as good policies and institutions) are properly included in cross-country regression frameworks. We will expand on these themes later in the paper.

We should note, however, that potential endogeneity between financial integration and growth remains a problematic issue even in studies that do find a positive association between these variables. This problem may ultimately be intractable if one relies solely on macroeconomic data; looking at more disaggregated data may be one way out. Another possibility, as we will discuss later, is that it is very difficult, even at a conceptual level, to make strong causal statements about the consequences of financial globalization, independent of whether macro or micro data are used.

## **B. Effects on Volatility**

Capital account liberalization is believed to have played an important role in fomenting financial crises and has been indicted by some observers as the proximate cause for the crises experienced by various emerging markets over the last decades. Interestingly, there is little empirical evidence to support the view that capital account liberalization by itself increases vulnerability to crises. While crisis episodes receive most of the attention, however, they are just particularly sharp manifestations of the more general phenomenon of macroeconomic volatility. Here the results are less favorable—there is no evidence that financial globalization has delivered on the promised benefit of improved international risk sharing and reduced volatility of consumption.

### **Crises**

Some papers that have analyzed the effects of capital controls on susceptibility to financial crises have found that countries *with* capital controls are in fact more subject to crises. But this could simply be because of a “selection effect”—often it is countries with poor macroeconomic fundamentals that put controls in place to try and insulate themselves from crises. Glick, Guo, and Hutchison (2006) address this issue—they find that capital account openness reduces the probability of currency crises, even after controlling for selection bias

in terms of how macroeconomic policies influence the existence of capital controls.<sup>17</sup> The relationship between capital controls and crises could also reflect the fact that some of the countries are actually more integrated in terms of de facto measures of integration (capital flight) and that capital controls therefore do not insulate them from crises.

Edwards (2005) examines this issue using a more sophisticated measure of de jure financial openness that attempts to incorporate some notion of the intensity of capital controls. He looks at two manifestations of external crises—sudden stops of capital inflows and current account reversals. He finds no systematic evidence that countries with higher capital mobility tend to have a higher incidence of crises, or tend to face a higher probability of having a crisis, than countries with lower mobility. In subsequent work, Edwards (2006) concludes that there is no evidence that the output costs of currency crises are smaller in countries that restrict capital mobility.

While currency crises have been emphasized in the literature on the risks of capital account liberalization, it is worth noting that banking crises account for about one-third of financial crises over the last three decades and that their frequency increased in the 1980s and 1990s (Kaminsky and Reinhart, 1999). Banking crises tend to be more disruptive—Hutchison and Noy (2005), for instance, find that banking crises generally have larger adverse effects on output growth than currency crises. Glick and Hutchison (2001) explore the relationships between these two types of crises—one of their conclusions is that banking crises are a good indicator of future currency crises, while the reverse is not necessarily true. Furthermore, there appears to be little evidence that capital account liberalization by itself affects vulnerability to banking crises; moreover, the adverse effects of banking crises seem to be weaker for countries with open capital accounts (Bonfiglioli and Mendicino, 2004).

In sum, there is little formal empirical evidence to support the oft-cited claims that financial globalization in and of itself is responsible for the spate of financial crises that the world has seen over the last three decades. Of course, as we will discuss in more detail below, the interaction between capital account liberalization and other policy choices (e.g., fixed exchange rate regimes that are not well supported by other macroeconomic policies) could, under certain circumstances, spell trouble for a developing economy.

## **Volatility**

Turning to volatility more broadly, there has been a well-documented trend decline in macroeconomic volatility in most of the major industrial economies since the mid-1980s (Doyle and Faust, 2005), although the reasons for this decline are still a matter of debate. Output volatility seems to have been on a declining trend in emerging market and developing economies as well. However, the existing evidence based on papers using a variety of regression models, different country samples and time periods leads to the conclusion that

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<sup>17</sup> These authors use a binary capital account openness indicator based on the IMF's AREAER. Whether this relationship holds up with de facto measures, which we have argued are more appropriate measures of integration, remains to be seen.

there is no systematic empirical relationship between financial openness and output volatility, which is, in a sense, consistent with the predictions of theory.<sup>18</sup>

Kose, Prasad, and Terrones (2003b) confirm the major trends in the evolution of volatility dynamics reported in earlier studies, but also find that, during the 1990s, average declines in output growth volatility were smaller for emerging markets than for either industrial or low-income developing economies. More importantly, they find that the ratio of consumption growth volatility to income growth volatility increased during the recent period of globalization for emerging market economies (and remained flat for the other two groups). What is surprising is not just that the volatility of consumption rose (perhaps because of crises experienced by some of these economies, and the associated rise in income volatility) but that it increased by *more* than income volatility. This is a striking result in that it runs exactly counter to one of the presumed theoretical benefits of financial integration—that it allows countries to share income risk and smooth consumption.<sup>19</sup>

These authors also find that the relative volatility of consumption growth increases with the degree of financial openness, but only up to a certain threshold level of integration. At higher levels of financial integration, countries do seem to accrue the benefits of financial integration in terms of improved risk sharing and better consumption smoothing relative to autarky. Most emerging market economies are, however, below this threshold level of financial integration while most industrial economies are above it.<sup>20</sup>

### C. Comovement

A number of papers show that the synchronicity of national business cycle fluctuations (in both industrial countries and emerging market economies) and the relative importance of global factors for these fluctuations have increased during the period of globalization.<sup>21</sup> Imbs (2006) documents that financial integration has led to higher cross-country consumption and

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<sup>18</sup> See Razin and Rose (1994); Easterly, Islam, and Stiglitz (2001); and Buch, Dopke, and Pierdzioch (2005).

<sup>19</sup> A number of recent theoretical papers have attempted to explain the positive association between financial integration and the relative volatility of consumption growth documented by Kose, Prasad, and Terrones (2003b). For instance, Levchenko (2004) and Leblebicioglu (2006) consider dynamic general equilibrium models where only some agents have access to international financial markets. In both models, capital account liberalization leads to an increase in the volatility of aggregate consumption since agents with access to international financial markets stop participating in risk-sharing arrangements with those who do not have such access.

<sup>20</sup> Bekaert, Harvey, and Lundblad (2006) find that, following equity market liberalizations, there is a decline in consumption volatility. These results differ from those of Kose, Prasad, and Terrones (2003b) due to differences in the definitions of financial integration, the measures of consumption volatility, data samples, and methodologies. The results in Bekaert, Harvey, and Lundblad (2006) suffer from the same problems noted about their work on the impact of equity market liberalizations on economic growth (see discussion in Section VI).

<sup>21</sup> See Stock and Watson (2003); Bordo and Helbling (2003); Kose, Otrok, and Whiteman (2005); and Kose, Otrok, and Prasad (2006).



output correlations among industrialized economies. Kose, Prasad, and Terrones (2003a) document changes in output comovement across a broader group of industrial and developing economies and link these changes to financial integration. Contrary to the predictions of theory, however, Kose, Prasad, and Terrones (2003a, 2004) document that, on average, cross-country correlations of consumption growth did not increase in the 1990s, precisely when financial integration would have been expected to result in better risk-sharing opportunities for developing economies.

These findings on the cross-country comovement of output and consumption complement the results on the effects of financial integration on consumption and output volatility and suggest that, in order to utilize the risk-sharing benefits of financial integration, developing economies may have to attain higher levels of financial integration.

To summarize, the macroeconomic evidence on the growth and volatility effects of financial integration remains sobering although there are some grounds for optimism in more recent work. But most of the evidence so far is based on cross-country regressions that lump together different types of capital flows. Is there a different way to approach the issue?

## **VI. HOW DOES THE COMPOSITION OF CAPITAL FLOWS MATTER?**

An alternative line of inquiry into the effects of financial globalization is based on the notion that not all types of capital flows are created equal. Flows that have equity-like features—i.e., FDI and portfolio equity flows—are not only presumed to be more stable and less prone to reversals (Wei, 2005), but are also believed to bring with them many of the indirect benefits of financial globalization such as transfers of managerial and technological expertise. As we discussed in Section IV, the evidence for the former proposition—that FDI and equity flows are more stable than debt financing—is far from conclusive.

In any case, portfolio debt flows have acquired black-sheep status, especially since currency and maturity mismatches related to external debt are seen as proximate determinants of many emerging market crises. As we have documented earlier, there have been substantial changes in the composition of financial flows over time. So what does the evidence show about the macroeconomic effects of different types of flows? We now review the literature on this question, studying the impact of each of these types of flows in turn.

### **A. Portfolio Equity Flows**

The rising importance of portfolio equity flows to emerging markets has motivated a number of researchers to examine the growth effects of equity market liberalizations. Most of the papers in this rapidly expanding literature suggest that portfolio equity flows have a significant positive impact on output growth. Whether the estimated growth effects (in macroeconomic data) of equity market liberalizations could be picking up the effects of other factors—especially other reforms that tend to accompany these liberalizations—remains, in our view, an open question. On the other hand, there is now a growing body of micro evidence (using industry- and firm-level data) supporting the macro evidence on the benefits of equity liberalizations. Some of these papers also document the empirical relevance of various theoretical channels linking equity market liberalization to economic growth—

including through increases in investment growth and total factor productivity (TFP) growth. Table 4B provides a summary of the key papers discussed in this section.

### *Evidence from macro data*

Bekaert, Harvey, and Lundblad (2005; hereinafter referred to as BHL) document that equity market liberalizations have a positive effect on growth.<sup>22</sup> Using a sample that covers 95 countries over the period 1980–97, they conclude that equity market liberalizations increase GDP growth by about 1 percentage point. Using a longer sample and a different methodology, Li (2003) finds that such liberalizations lead to a 0.6 percentage point increase in GDP growth.

A potential concern related to this work based on cross-country regressions is that many emerging markets undertook equity market liberalizations around the same time that they instituted numerous other policy and structural reforms. Henry (2003a, 2003b) argues that it is not possible to explain the strong result in BHL using standard growth accounting techniques as this would require an elasticity of output with respect to capital of about 1. He notes that equity market liberalizations are often part of a larger reform program and that these reforms could have a positive impact on productivity, leading to an increase in output growth that is compatible with the predictions of standard production theory.

To address these concerns, BHL control for other determinants of growth, including financial development, quality of legal institutions, macroeconomic policies, and broader capital account and trade liberalizations. They find that capital account liberalization has no significant effect on growth. The inclusion of other factors dampens the magnitude of the growth effects of equity market liberalizations but the effect is still statistically significant and in the range of 0.7–0.9 percentage points.<sup>23</sup> Henry (2003a), however, finds these sensitivity experiments unconvincing since BHL do not use binary variables to capture the effect of many other one-off reforms, especially trade reforms and inflation stabilizations (for instance, they use a continuous measure of trade openness). Henry argues that, since BHL undertake a before-and-after evaluation of the growth effects of equity market liberalizations, they should conduct the same before-and-after event analysis for other reforms as well.

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<sup>22</sup> Equity market liberalizations are defined as events that make shares of common stock of local firms available to foreign investors. Commonly-used dates, drawn from Henry (2000) and Bekaert and Harvey (2000), include official liberalization dates and dates of “first sign” of liberalization based on events such as the launching of a country fund or American Depositary Receipt (ADR) announcement. ADRs are securities that are traded in the United States but represent underlying stocks listed in a foreign country.

<sup>23</sup> BHL also attempt to tackle potential endogeneity between the liberalization decision and growth performance—an issue emphasized by Martell and Stulz (2003). They create a proxy for a country’s exogenous growth opportunities, based on a country’s industry mix and global growth prospects for each industry (inferred from the price to earnings ratios of global industry portfolios). They find that inclusion of this variable in the regressions, which they argue is an indirect way of controlling for the endogeneity of the liberalization decision, does not affect their main result.

Other macroeconomic evidence on the growth effects of equity market liberalizations is more mixed. Martell and Stulz (2003) note that equity market liberalizations can be seen as country initial public offerings (IPOs) since, like company IPOs, these events make shares in existing firms available to a new class of investors—foreign investors. These authors examine country excess returns, defined as excess returns on a dollar-denominated total return index for each country, relative to excess returns of a global portfolio and an emerging markets index. They report that, following equity market liberalizations, country excess returns are high for the first 2–4 years but then turn marginally negative over longer horizons. Edison, Klein, Ricci, and Slok (2004) confirm the positive association between equity market liberalization and output growth but find that this result disappears when they introduce a measure of government reputation as a regressor. When they interact the liberalization measure with income, they recover its positive impact on growth in middle income countries.

Recent research also provides some cross-country evidence about the empirical relevance of various channels linking equity market liberalization to economic growth. There is evidence, consistent with the predictions of international asset pricing models, that stock market liberalizations reduce the cost of capital.<sup>24</sup> Using a sample of 12 emerging market countries and an event study approach, Henry (2000a) shows that, on average, equity price indexes register a substantial increase in the months preceding equity market liberalizations, implying that these liberalizations are associated with a fall in the cost of equity capital. Bekaert and Harvey (2000) analyze changes in the dividend yield after liberalizations and report that the cost of capital goes down by 5 to 75 basis points.

There is also some evidence that equity market liberalizations promote investment growth. Henry (2000b), for instance, finds that, in 9 (10) out of 11 emerging market countries in his sample, growth rates of private investment are larger in the first (second) year after an equity market liberalization than they were before liberalization. Moreover, he finds that the mean growth rate of real private investment in the three years immediately following equity market liberalizations is 22 percentage points higher than the sample mean. Alfaro and Hammel (2006) find that equity market liberalizations boost imports of machinery going into domestic equipment investment.

### **Evidence from micro data**

We view research using industry- and firm-level data as a more promising way of getting a handle on the growth-enhancing effects of equity market liberalizations. This line of empirical research has turned up encouraging results. For example, using industry-level panel data from the manufacturing sectors of 31 emerging market economies over the period 1981–98, Gupta and Yuan (2005) find that, following such liberalizations, industries that are technologically more dependent on external finance (the difference between investments and

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<sup>24</sup> First, such a liberalization could increase the volume of capital inflows, which, in turn, should decrease the domestic risk-free rate. Second, increased risk sharing opportunities between foreign and domestic investors might help to diversify risks, reducing the equity risk premium. Third, as capital flows increase and liquidity in the domestic stock market increases, the equity risk premium could fall further. See Stulz (1999a, 1999b) and Kim and Singal (2000) for additional empirical evidence.

cash generated from operations) experience higher growth. They also find that liberalizations have a larger impact on the growth of industries facing better growth opportunities (based on industry-level global demand indicators). When the liberalization decision is assumed to be endogenous, however, only the former result survives, suggesting that countries may time the liberalization decision to coincide with high growth in certain industries.

Hammel (2006) provides additional evidence that, following equity market liberalizations, industries that are more dependent on external finance grow faster in countries with relatively higher stock market capitalization rates. She also examines the impact of other reforms, including domestic financial reforms and capital account liberalization, on the robustness of her main findings. She concludes that, while such reforms do have significantly positive effects on industry growth, their interaction terms with dependence on external finance are not significant, and they do not affect the growth impact of equity market liberalizations.<sup>25</sup>

Using firm-level data, Chari and Henry (2004, 2005) find that equity market liberalizations reduce the cost of equity capital and increase investment in a sample of 11 emerging market countries. They find that these events reduce the systematic risk associated with holding stocks in emerging markets and leads to an average stock price increase of about 15 percent. The latter paper documents that the growth rate of the capital stock of a typical firm exceeds its pre-liberalization mean by an average of 5.4 percentage points in the three-year period following liberalization.

Mitton (2006) argues that equity market liberalization gives firms in emerging markets access to a new financing channel, increasing opportunities for investment and growth. Moreover, foreign investors tend to demand higher governance standards, which could have a positive impact on profitability, efficiency, and other measures of operating performance. In his empirical work, Mitton finds that firms with stocks that are open to foreign investors register higher levels of sales growth, investment, and efficiency, and lower leverage ratios.<sup>26</sup>

### **Summary, and a caveat**

Our view is that research on the effects of equity market liberalizations is quite promising, although even in this area disaggregated evidence may have a better chance of pinning down the channels through which such liberalizations generate positive effects. In addition to the problem that much of this literature is still focused on macroeconomic evidence, virtually all of it is based on de jure measures of equity market liberalization. We have already noted, in

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<sup>25</sup> Gupta and Yuan (2005) and Hammel (2006) use the Rajan and Zingales (1998) criterion to determine the level of dependence of different industries on external finance.

<sup>26</sup> Mitton employs firm-specific liberalization dates on which individual stocks become open to foreign investors. These dates are based on data from the International Finance Corporation, which specifies the extent of openness of each stock to foreign investors and determines dates on which a firm's stock can gain "investable" status, after analyzing country- and firm-level investment barriers. The use of firm-specific liberalization dates allows Mitton to account for the gradual nature of liberalization programs. It also mitigates potential contamination of the results by other liberalization and reform programs, although the firm-specific dates may still create endogeneity problems.

the context of the measurement of broader capital account liberalization, why de facto measures may be more meaningful in many circumstances.

Why is it that, using similar de jure measures, the growth effects of broader capital account liberalization are found to be quite weak while those of equity market liberalization are remarkably and uniformly strongly positive? As noted above, one possibility is that equity market reforms may take place only when governments feel they have supportive conditions in place. Analyses based on micro data indicate that the productivity-enhancing effects of equity market liberalizations are greater than those of broader capital account liberalizations. Nevertheless, while the evidence does suggest that equity market liberalizations may have an independent impact on growth, we are skeptical that these liberalizations by themselves can generate as large growth effects as has been reported by some authors such as BHL.

## **B. Foreign Direct Investment (FDI)**

We turn next to the presumed poster child for the benefits of financial globalization—FDI. As we discussed earlier, the relative importance of FDI flows has risen significantly in recent years, making it the most important form of private international financing for emerging market economies. There is a strong presumption in theory that FDI should yield more benefits than other types of financial flows since, in addition to augmenting domestic capital stock, it has a positive impact on productivity through transfers of technology and managerial expertise. It has also been argued that FDI tends to be the least volatile of the various types of capital flows, making countries less vulnerable to sudden stops or reversals of flows.<sup>27</sup>

In parallel with the rapid growth of FDI flows, a large empirical literature has flourished seeking to find evidence in support of the theoretical benefits of these flows. Although the evidence has in general been mixed, recent studies, using more sophisticated methodologies and micro-level datasets, find more favorable evidence of benefits from FDI. More importantly, the literature has been reasonably successful in identifying the conditions necessary to help developing countries fully utilize the potential benefits of these flows.<sup>28</sup> Table 4C provides a summary of the key studies in this literature.

### **FDI and growth: Evidence from macro data**

Studies using aggregate data have been unable to provide conclusive evidence about the positive impact of FDI on economic growth. While some papers show that FDI enhances GDP growth, others report that there is no direct evidence of such a relationship.<sup>29</sup> How can we reconcile these disparate findings?

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<sup>27</sup> Moreover, FDI could help ease firms' financing constraints. Harrison, Love, and McMillan (2004) document that FDI is associated with a significant reduction in financing constraints, especially in low income countries. Blalock and Gertler (2005) find that FDI could mitigate the adverse effects of financial crises by helping firms maintain continuous access to credit through their parent companies.

<sup>28</sup> Recent surveys of this literature include Lipsey (2004) and Moran, Graham, and Blomstrom (2005).

<sup>29</sup> On the former, see Haveman, Lei, and Netz (2001). On the latter, see Carkovic and Levine (2005).

Blonigen and Wang (2005) show that inappropriate pooling of data from developed and developing countries could dampen the estimated growth effects of FDI. Since FDI is more likely to crowd in domestic investment in developing countries than in developed ones, it could have larger effects on growth in the former group. Some empirical studies note that FDI seems to boost growth only in economies that have the right initial conditions, including high levels of human capital, financial sector development and policies fostering free trade.<sup>30</sup>

The growth benefits of FDI also depend on its sectoral composition and its interactions with domestic investment (see Aykut and Sayek, 2005). FDI flows into the primary sector may have limited beneficial spillovers, since they often involve mega projects that scarcely employ domestically-produced intermediate goods. FDI in the manufacturing sector, on the other hand, tends to have a significant effect on GDP growth because of stronger linkages between this sector and the rest of the economy.

Carkovic and Levine (2005) provide a comprehensive analysis of the growth effects of FDI. Using panel GMM estimators and a dataset covering the period 1960–1997, they conclude that, after controlling for the joint determination of FDI and growth, FDI has no robust causal effect on economic growth. Melitz (2005) points out that the baseline results of Carkovic and Levine in fact suggest a positive association between FDI and economic growth, but this positive link disappears when they introduce controls for trade and domestic financial credit. Melitz notes that there are strong linkages between FDI and trade flows; more importantly, joint changes in FDI and trade flows are correlated with economic growth. He concludes that Carkovic and Levine's results imply that an expansion of FDI flows accompanied by an increase in trade could indeed enhance growth.

### **FDI and productivity: Evidence from micro data**

FDI can in principle generate productivity spillovers through several channels, including imitation (adoption of new production methods), skill acquisition (education/training of workers), competition (efficient use of existing resources by domestic firms), and exports (expansion of export potential of domestic firms).

The evidence on the role of horizontal spillovers—productivity spillovers from foreign firms to domestic firms in the same sector—in transmitting the productivity benefits of FDI has been inconclusive.<sup>31</sup> Lipsey and Sjolhom (2005) conclude that the differences in results

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<sup>30</sup> The importance of these three initial conditions is shown by Borensztein, De Gregorio, and Lee (1998); Hermes and Lensink (2003) and Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2006); and Balasubramanyan, Salisu, and Sapsford (1996), respectively. The growth effects of FDI also depend on the complementarity/substitutability between FDI and domestic investment (De Mello, 1999).

<sup>31</sup> Papers by Haddad and Harrison (1993) on Morocco; Aitken and Harrison (1999) on Venezuela; Djankov and Hoekman (2000) on the Czech Republic find that the net effect of FDI on sectoral productivity appears to be small. However, other studies by Haskel, Pereira, and Slaughter (2002) on the United Kingdom; Keller and Yeaple (2003) on the United States; and Blalock and Gertler (2005) on Indonesia document significant horizontal spillovers from FDI to sectoral productivity.

across such studies are related to various country characteristics, including level of human capital, degree of competition in the sector, ability of the sector to adopt new technologies, institutional factors, and trade and investment policies. Lipsey (2004) emphasizes the importance of the trade regime. He notes that Morocco and Venezuela were relatively closed to trade during the periods covered by the panel datasets used in the widely-cited studies by Haddad and Harrison (1993) and Aitken and Harrison (1999), respectively.<sup>32</sup>

The research program on horizontal spillovers has, however, stalled for a number of reasons. Gorg and Greenaway (2004) note that studies employing cross-section data can not truly establish causality since they are unable to account for differences in productivity across sectors. If foreign firms tend to locate in high-productivity sectors, these studies might conclude that there is a positive association between FDI and productivity even if there are no productivity spillovers. More importantly, studies looking for horizontal spillovers do not account for the possibility that foreign firms may try to minimize technological spillovers to domestic firms in the same sector in order to protect their firm-specific advantages.

However, foreign firms might have incentives to transfer knowledge to their local suppliers and customers, implying that productivity spillovers from FDI may occur through “vertical” rather than horizontal linkages. This is a promising line of research that has picked up steam in recent years. For instance, Javorcik (2004) uses enterprise-level data from Lithuania and employs semiparametric estimation methods to account for simultaneity and sample selection problems affecting ordinary-least squares (OLS) estimates. Her results suggest that, although there are positive spillovers from FDI occurring through backward linkages, there are few spillovers through horizontal channels. She reports that the magnitude of the spillover effect is economically meaningful—a 10 percent increase in foreign presence in downstream sectors is associated with a 0.38 percent increase in the output of firms in the supplying industry.<sup>33</sup>

### **Summary of evidence on benefits of FDI**

Despite the theoretical presumption that, of the different types of inflows, FDI has the strongest benefits, it has not proven easy to document these benefits. Recent empirical research that takes a more nuanced approach, especially by accounting for the role of various initial conditions (human capital, trade openness), has been more successful at showing the potential links between FDI and growth. Similarly, at the micro level, a reassessment of the channels through which technological spillovers from FDI inflows should take place has begun to turn up more positive evidence of such spillovers.

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<sup>32</sup> Based on those two studies, Rodrik (1999) argues that FDI has no extra benefit to host country development. Moran (2005) dismisses this argument, noting that both of these countries practiced import-substitution based trade policies during the periods analyzed in these papers. He provides several case studies showing that the full benefits of FDI are realized only in an environment with minimal distortions from trade barriers and other protectionist policies.

<sup>33</sup> Other studies showing positive FDI spillovers through backward linkages include Lopez-Cordova (2003) on Mexico; Alfaro and Rodriguez-Clare (2004) on Brazil, Chile, and Venezuela; and Blalock and Gertler (2005) on Indonesia.

### **C. Debt Flows**

There is a general consensus in the literature on financial globalization that debt flows, which include portfolio bond flows and commercial bank loans, generate the greatest risks from financial openness. Even at a conceptual level, it is easy to see why debt flows do not have the positive attributes of equity-like flows. They do not solve certain agency problems, can lead to inefficient capital allocation if domestic banks are poorly supervised, and generate moral hazard as debt is implicitly guaranteed by the government (in the case of corporate debt) and/or international financial institutions (both corporate and sovereign debt).

#### **Volatility of debt flows**

Debt flows appear to be more volatile than other types of inflows and easily reversible in times of crises. Wei (2006) argues that sudden reversals of international capital flows are more likely to occur among countries that rely relatively more on portfolio debt flows, including bank loans, and less on FDI. Moreover, short-term bank loans to developing countries are procyclical, i.e., they tend to increase during booms and rapidly decrease during economic slowdowns (World Bank, 2000). The procyclical and highly volatile nature of these flows can magnify the adverse impact of negative shocks on economic growth.

Furthermore, opening up to debt flows can give profligate governments and weakly supervised financial sectors a lot more room to increase their vulnerability to shocks. For instance, McKinnon and Pill (1996) describe the problem of overborrowing by banks in the event of financial liberalization without adequate supervision. They show in a theoretical model that moral hazard in domestic financial markets and unrestricted capital flows can together create a potential for disaster. McKinnon and Pill (1998) extend the model to show that open capital accounts can exacerbate the adverse effects of poor financial sector supervision by allowing banks to expose their balance sheets to currency risk and also by permitting them to take speculative open positions in foreign exchange.

Interestingly, countries with unfavorable conditions tend to rely more on short-term external debt denominated in foreign currencies as their main source of foreign capital.<sup>34</sup> This creates vulnerabilities, especially when the domestic financial system through which this capital is intermediated is underdeveloped, poorly supervised, and subject to governance problems.

#### **Risks of short-term debt**

There appears to be a systematic empirical link between exposure to short-term debt and the likelihood of financial crises. For example, the literature on early warning systems generates a clear result that high levels of short-term external debt denominated in foreign currencies substantially increase vulnerability to financial crises (see Berg, Borenzstein, and Pattillo, 2004 for a review of this literature). This finding is not unexpected, since currency and

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<sup>34</sup> Eichengreen, Hausmann, and Panizza (2006) argue that this is the only form of international capital inflows available to certain countries, so they may have little say in this outcome.



maturity mismatches of debt structures have been shown to frequently tip countries over into crises. Rodrik and Velasco (2000) find that the ratio of short-term debt to reserves is a robust predictor of financial crises among emerging market economies. They report that countries with a larger short-term debt stock than reserves are three times more likely to experience a sudden and massive reversal in financial flows. Their results also indicate that the severity of crises becomes more acute as the exposure to short-term debt increases.

However, even if debt flows—especially of short maturity—are more likely to be associated with less desirable outcomes, one cannot automatically infer that a ban on debt flows would be beneficial in all cases. Diamond and Rajan (2001) posit that banks in developing countries have little choice but to generate liquidity through short-term debt in order to finance illiquid projects in a low-quality investment environment. The implication is that the greater vulnerability of developing countries to financial crises is not the result of their large stock of short-term debt, but a byproduct of the illiquidity and low creditworthiness of the investment opportunities in these countries. A capital-poor country that has no access to equity or FDI inflows might still be able to benefit from debt inflows to finance illiquid investments, even though it could potentially face more risks. Similarly, Jeanne (2003) argues that short-term debt could serve as a useful commitment device to foster good macroeconomic policies, although debt would of course increase vulnerability to external shocks.

#### **D. Synthesis**

The literature that we have summarized thus far suggests that, in the macroeconomic data, it is difficult to find robust causal evidence that financial integration boosts growth. But there is apparently strong indication that equity market liberalizations boost growth. The evidence that FDI increases growth is less conclusive, although more recent work has begun to come up with more positive evidence. There are two related strands of literature that help round out the picture. The first looks jointly at the effects of different flows in a common framework. The second analyzes the costs of capital controls—this constitutes another approach to examining the costs/benefits of financial integration.

##### **Joint analyses of effects of different types of flows**

A number of authors have attempted to disentangle the effects of different types of flows by looking at them in a unified empirical framework. The results are largely consistent with those from papers looking at each of these types of flows individually. For instance, Reisen and Soto (2001) conclude that FDI and portfolio equity flows increase growth while portfolio bond flows and official flows do not. They also find that foreign bank lending—both short-term and long-term—is negatively associated with growth, except in countries where local banks are well capitalized. By contrast, Durham (2004) finds that both FDI and total portfolio flows (bond and equity) could have growth-enhancing effects, depending on the level of a country's financial and institutional development. Portfolio flows have a larger growth impact in countries that have higher stock market capitalization or are more open to trade.

A different theme that emerges from the evidence we have reviewed thus far is that many of the benefits of financial openness seem to be masked in cross-country analysis using macroeconomic data but are more apparent in disaggregated analyses using micro data. The

latter approach has the advantage of being able to provide more detailed analyses of how capital account opening affects the allocation of capital and overall efficiency. However, even using micro data it is difficult to separate out the effects of capital account liberalization from those of other reforms. In addition, micro data are usually available only for a limited set of countries. Nevertheless, this literature has the potential of enabling a closer look at how capital account liberalization affects life in the corporate trenches—how firms are affected and what some of the distributional consequences might be.

### **Costs of capital controls**

One strand of the literature using micro data has focused on estimating the costs of capital controls, an enterprise that is very complicated in aggregate data owing to endogeneity, timing and other problems.<sup>35</sup> Forbes (2005a) provides a comprehensive survey of this literature and concludes that capital controls can cause distortions in the behavior of firms (and individuals) as they adjust their behavior to evade capital controls. By insulating an economy from competitive forces, they may also reduce market discipline.<sup>36</sup> In addition, the administration of capital controls imposes a cost on the government, especially since the controls often have to be continually updated in order to close loopholes and limit evasion.

Forbes (2005b) argues further that capital controls may reduce vulnerability to crises but have large costs in terms of not just efficiency losses and less market discipline but also reduced capital flows. She acknowledges that these effects are difficult to detect at the macroeconomic level but notes that the costs are apparent in microeconomic data. Desai, Foley, and Hines (2004) use firm-level data to argue that the cost of capital is higher for multinationals when capital controls are in place.<sup>37</sup> The wedge arises because capital controls typically result in costs of avoidance of those controls as well as higher domestic interest rates. Multinational affiliates located in countries with capital controls are found to face interest rates that are about 5 percentage points higher than affiliates of the same parent company borrowing locally in countries without capital controls. These authors also conclude, based on the cross-country investment patterns of multinationals, that the level of FDI inflows into a country is adversely affected by capital controls.

In short, the existence of capital controls appears to result in significant efficiency costs at the level of individual firms or sectors. We find this evidence plausible although, as before, the fact that this strand of the literature largely uses de jure measures of integration gives one

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<sup>35</sup> Magud and Reinhart (2006) argue that the literature analyzing the macroeconomic implications of capital controls using aggregate data has only limited value added since the studies in this literature suffer from various problems, including the use of heterogeneous samples, differences in methodologies, and multiple definitions of outcomes associated with the success of controls.

<sup>36</sup> For instance, Johnson and Mitton (2002) argue that capital controls reduced market discipline among Malaysian firms and created a screen for cronyism.

<sup>37</sup> These authors use the IMF 0-1 capital account openness indicator and also a measure of openness to FDI that reflects restrictions on capital repatriation and remittances of profits.

pause. A mitigating circumstance is that some of the papers noted above (including many in the survey by Forbes, 2005a) are based on data from individual countries or small groups of countries where one has good reason to believe that the capital controls really had a bite, although this might generate subtle sample selection problems.

## **VII. ORGANIZING PRINCIPLES**

To put together the disparate strands of evidence that we have assembled thus far, we now introduce a framework that may help reconcile some of the apparently inconsistent results in the literature and also shed some light on why empirical evidence at different levels of disaggregation may reach different conclusions.

### **A. Collateral Benefits**

A key component of our argument is that it is not just the capital inflows themselves, but what comes along with the capital inflows, that drives the benefits of financial globalization for developing countries. (See Box 1.) There is considerable evidence, as we discuss later on, that financial integration serves as an important catalyst for a number of indirect benefits, which we term potential “collateral benefits” since they may not generally be the primary motivations for countries to undertake financial integration. These collateral benefits could include development of the domestic financial sector, improvements in institutions (defined broadly to include governance, the rule of law, etc.), better macroeconomic policies, etc. These collateral benefits then result in higher growth, usually through gains in allocative efficiency.

The empirical implications of this perspective are powerful. First of all, it suggests that the beneficial impact of financial integration on growth may take a while to show up because it operates through these indirect channels rather than just directly through financing of domestic investment.<sup>38</sup> More importantly, it suggests that, in a regression framework, it may be difficult to disentangle the effects of financial integration if one includes measures of institutional quality, financial sector development, quality of macroeconomic policies etc. After all, it is these very channels through which financial integration generates growth benefits. This problem cannot be resolved simply by using a technique such as instrumental variables estimation; that would entirely miss the logic of the scheme above since our interest is in how financial integration affects growth through all channels, direct and indirect.

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<sup>38</sup> A number of papers have explicitly taken the tack that the costs of financial globalization—including crises—are in the nature of growing pains that will recede once globalizing economies achieve fuller integration. Krugman (2002) contends that “In the long run, integration may solve the problems it initially creates.” Martinez, Tornell, and Westermann (2004) argue that crises are the price that must be paid to attain rapid growth in the presence of contract enforceability problems. These authors present some evidence that developing economies that have registered higher growth rates have typically experienced boom-bust cycles (also see Kaminsky and Schmukler, 2003, and Bussiere and Fratzscher, 2004).

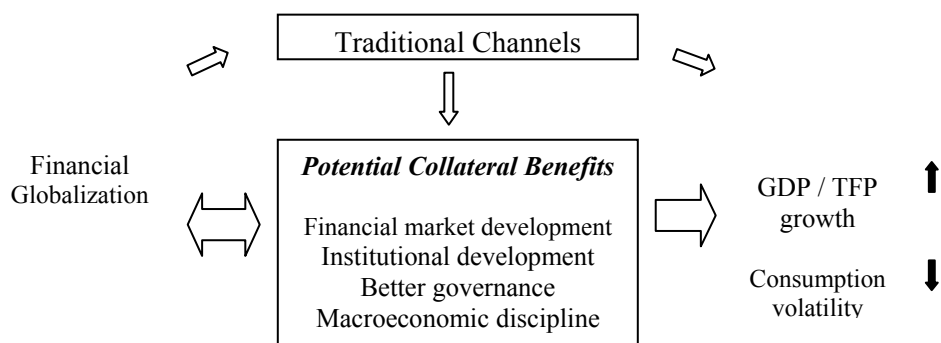
### Box 1. Two Views of Impact of Financial Globalization on Developing Countries

#### The Traditional View



The traditional view focuses on the importance of channels through which capital flows could directly increase GDP growth and reduce consumption volatility.

#### A Different Perspective



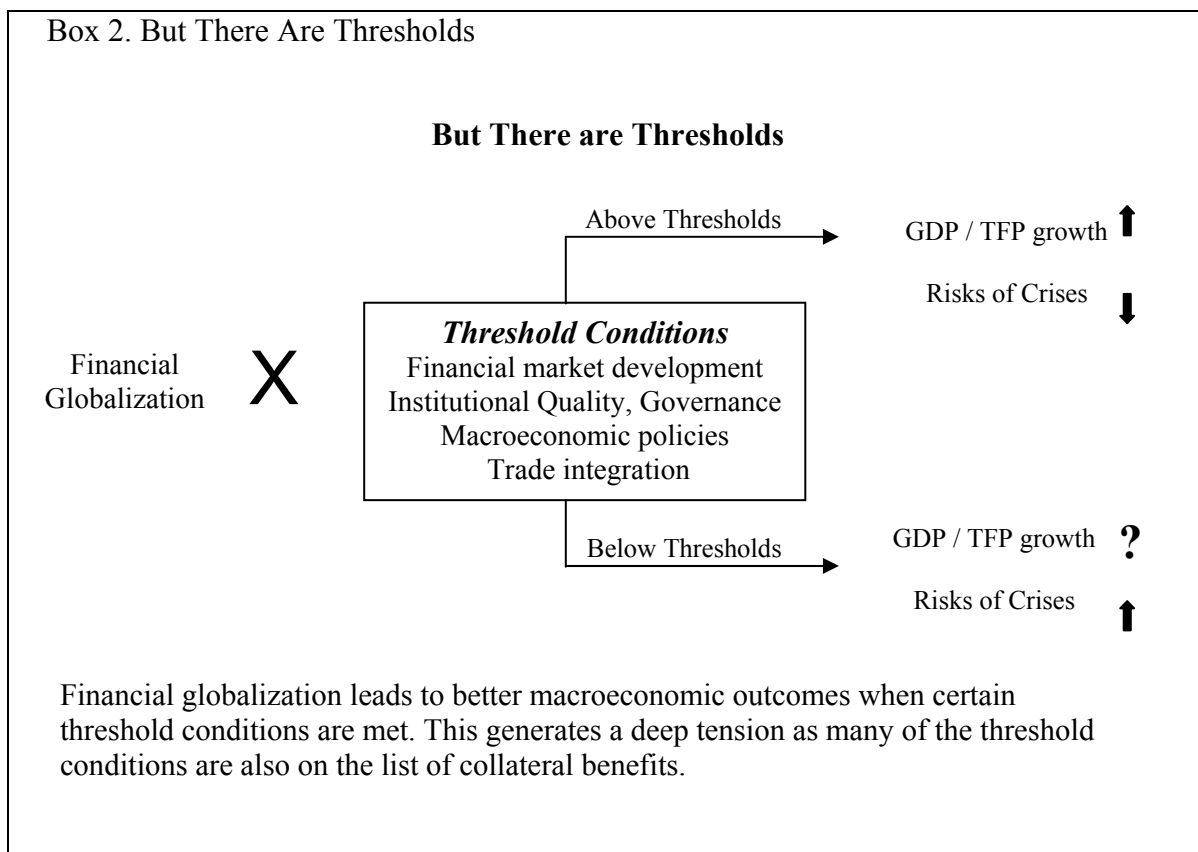
Our perspective acknowledges the relevance of the traditional channels, but argues that the role of financial globalization as a catalyst for certain collateral benefits may be more important in increasing GDP/total factor productivity (TFP) growth and reducing consumption volatility.

One can not, of course, overstate the case that financial integration leads to the collateral benefits. It is equally plausible, for instance, that, all else being equal, more foreign capital tends to flow to countries with better-developed financial markets and institutions. As the literature that we discuss later in the paper shows, however, there is a fair amount of evidence to support the proposition that financial integration serves as a catalyst for many collateral benefits. We also do not dismiss the importance of traditional channels—that financial integration may increase investment by relaxing the constraints imposed by low levels of domestic saving and by reducing the cost of capital. But our view is that the importance of this direct channel by which financial integration influences growth may have been overemphasized in previous literature.

#### B. Thresholds

A large related literature has attempted to tackle the question of what initial conditions help prepare the ground for financial openness to generate good growth benefits for a country and lower the risks. There is plenty of evidence that premature opening of the capital account

without having in place well-developed and well-supervised financial sectors, good institutions, and sound macroeconomic policies can hurt a country by making the structure of inflows unfavorable and by making the country vulnerable to sudden stops or reversals of flows. Furthermore, the process of globalization seems to proceed more smoothly when trade liberalization precedes financial integration. Thus, it is the interaction between financial globalization and this set of initial conditions that determines growth and volatility outcomes.



Comparing Box 2 to that of the previous one on collateral benefits highlights a deep tension between the costs and benefits of financial globalization. Note that most (but not all) of the elements on the list of threshold conditions are identical to the list of collateral benefits. In other words, financial globalization serves as a catalyst for a number of important collateral benefits but can greatly elevate the risks to benefits ratio if the initial conditions in these dimensions are inadequate.

Unfortunately, as we discuss in detail later in the paper, existing papers have identified only the importance of threshold effects in specific dimensions. There is as yet little work on the relative importance of different thresholds and the trade-offs among different threshold conditions. What would be most useful for a country contemplating liberalization of its capital account would be a composite threshold measure that would determine its preparedness to undertake this policy change. In the absence of such a measure, it is hard to determine when a country is ready for financial integration.

Does this imply that there is simply no alternative for a country desirous of benefiting from the collateral benefits of financial globalization but to expose itself to substantial risks of crises? Or to remain closed and stay on what might be a much lower growth path? Our view is that, while the risks can never be totally avoided, there are ways to improve the benefit-risk calculus of financial globalization. There is, however, unlikely to be a uniform approach to opening the capital account that will work well for all countries. Indeed, the collateral benefits perspective may provide a way for moving forward on capital account liberalization that takes into account individual country circumstances (initial conditions) as well as the relative priorities of different collateral benefits for that country.

### **C. A Corollary: Collateral Benefits Enhance Productivity Growth**

The collateral benefits that we have identified above should enhance efficiency and, by extension, TFP growth. Thus, our approach ties in nicely with the recent literature emphasizing the importance of TFP growth as the main driver of long-term growth.<sup>39</sup> But there is as yet little empirical work looking at whether financial integration boosts TFP growth.

This has important implications for analyzing how international capital mobility can affect growth. The classical notion that capital mobility allows capital-poor countries to grow faster through higher investment has been challenged, for instance, by Gourinchas and Jeanne (2006), who argue that the welfare gains from capital mobility are likely to be small. Their key proposition is that capital controls constitute a transitory distortion since even a financially closed economy eventually accumulates capital domestically, so the distortion vanishes over time. Hence, viewing the benefits of capital account liberalization as those resulting from a permanent reduction in this distortion (as captured, for instance, by the wedge between domestic and international interest rates) is an overstatement of the benefits. These authors conclude (as do Hall and Jones, 1999) that developing countries have lower per capita income because they are less productive (in terms of TFP) or have more distortions; not because they are capital scarce. Caselli (2005) and Gourinchas and Jeanne (2005) provide further theoretical support (and some evidence based on parameterizations of growth models) for the notion that it is TFP growth rather than capital accumulation that is crucial for long-term growth.

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<sup>39</sup> The question of what determines the large cross-country differences in output growth has motivated an extensive literature. Mankiw, Romer, and Weil (1992) come down strongly on the side of factor accumulation as the key determinant. The influential paper of Hall and Jones (1999) changed the terms of the debate and it has now come to be accepted as conventional wisdom that TFP growth is far more important than factor accumulation. The debate is far from settled, however. Bosworth and Collins (2003) argue that many previous studies over-estimate the importance of TFP growth; they argue that factor accumulation and TFP growth are about equally important, even for long-run growth. By contrast, Jones and Olken (2005) present evidence that TFP growth fluctuations constitute the primary determinant of not just long-term but also short-term growth. In the context of the Asian newly industrialized countries, Young (1995) argues that capital accumulation was the main driver of growth in those countries during the miracle years, a view disputed by Hsieh (2002).

Indeed, this literature may provide a useful guide to where one should be looking for the benefits of financial integration. Ultimately, if financial integration is to have a lasting effect on growth, it must be by moving economies closer to their production possibility frontiers by eliminating various distortions and creating efficiency gains, including in financial intermediation, technological adoption etc.

The hypothesis that financial integration raises TFP growth has not yet been investigated carefully in the literature. An early exception is a paper by Edwards (2001a), who looks at this issue rather cursorily and concludes that, while there is some evidence that financial integration increases TFP growth, the evidence is not robust. More recently, Bonfiglioli (2006) and Kose, Prasad, and Terrones (2006b) have assembled some preliminary evidence suggesting that financial integration raises TFP growth. Some of the literature on the effects of equity market liberalization and FDI flows discussed above does show, using micro data, how capital inflows result in efficiency gains at the micro level. Clearly, there is more work to be done and this seems to us an important dimension of the future research program on the macroeconomic effects of financial integration.

#### **D. Summary**

Our conceptual framework can be summarized as follows. The first point is that financial integration should generate a number of indirect but important benefits; the second is that these benefits should then boost growth. Indeed, these ancillary benefits could, in some ways, be more important than the direct effects of external financing on investment growth. The fact that well-developed and efficient financial sectors, good institutions, and sound macroeconomic policies contribute to higher growth is, in our view, relatively non-controversial (although there may not be a consensus about the magnitude of these causal relationships).

Hence, we turn our attention next to building the case for the first piece of our argument—that financial globalization has significant collateral benefits. As noted above, a corollary of our reasoning is of course that these benefits should show up in TFP growth; this we leave to future research.

Following that, we review the literature on threshold conditions. The basic idea here is that whether or not initial conditions are above threshold levels in some dimensions is crucial for determining growth and volatility outcomes. This literature could be important for understanding why the macroeconomic evidence on the growth effects of financial integration is rather mixed, while the microeconomic evidence finds more positive effects.

### **VIII. COLLATERAL BENEFITS OF FINANCIAL GLOBALIZATION**

Although financial globalization is, in theory, supposed to work its magic through increased capital flows, there are, as discussed above, indirect benefits to undertaking financial globalization that are arguably of greater potential importance than the direct benefits. We now review the evidence for three key areas in which the indirect benefits ought to be important—financial sector development, institutional quality, and macroeconomic policies.

Figure 6 shows that, during the recent period of financial globalization (1985–2004), there is indeed a strong positive correlation between financial openness and measures of financial development and institutional quality, and a negative correlation between financial openness and log inflation. The correlation with the government budget deficit is, however, essentially zero.<sup>40</sup>

Formal empirical evidence suggests strongly that financial integration boosts domestic financial market development, although this does not, of course, rule out the possibility that *de facto* financial integration is fostered by a well-developed financial sector. Although there is a strong presumption in the literature that financial globalization improves institutional quality and governance, the empirical evidence—most of which is very recent—is limited. The evidence that financial globalization disciplines macroeconomic policies is weak and fraught with a number of problems.

### **A. Financial Sector Development**

An area that has received a fair amount of attention is the issue of whether international financial flows indeed serve as an important catalyst for domestic financial market development, as reflected in both straightforward measures of the size of the banking sector and equity markets as well as broader concepts of financial market development, including supervision and regulation.

There is a large body of theory suggesting that foreign ownership of banks can, in principle, generate a variety of benefits (e.g., Levine, 1997, 2005; Mishkin, 2006). First, foreign bank participation can make a country's access to international financial markets easier. Second, it can help improve the regulatory and supervisory frameworks of the domestic banking industry. Third, it can improve the quality of loans as the influence of the government on the financial sector should decline in more open economies. Fourth, in practice, foreign banks may introduce new financial instruments and technologies which can increase competition and improve the quality of financial services. The presence of foreign banks can also provide a safety valve when depositors become worried about the solvency of domestic banks.

What does the empirical evidence say? Work based on a variety of techniques, including country case studies, does seem to support the notion that increased foreign bank presence raises competition and appears to lead to a decline in both bank overhead costs and profits.<sup>41</sup> As for equity markets, the overwhelming theoretical presumption is that foreign entry increases efficiency and the evidence seems to support this channel. For example, applying

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<sup>40</sup> As in Figure 5, we excluded a few countries that were outliers. Inclusion of all the countries in our sample strengthened all of the unconditional results reported here. We emphasize that these plots show only unconditional correlations, so we do not wish to make too much of them.

<sup>41</sup> See Claessens, Demirgüç-Kunt, and Huizinga (2001); Errunza (2001); Levine (2001); Claessens and Laeven (2003); Clarke, Cull, Martinez Peria, and Sanchez (2003); and Schmukler (2003). One cannot, however, rule out the view that, in very poor countries, the entry of foreign banks could wipe out domestic banks and thereby have detrimental effects on access to financing for small- and medium-sized enterprises (Detragiache, Gupta, and Tressel, 2006).



an event study approach to data from 16 emerging markets, Levine and Zervos (1998) report that stock markets tend to become larger and more liquid after equity market liberalizations. In the same vein, Karolyi (2004) finds that the growth of ADRs in emerging markets could have a positive impact on the development of the local stock markets. In a cross-country regression framework, Chinn and Ito (2005), however, identify one possible caveat. While they find that financial openness contributes to equity market development once a certain moderate level of legal and institutional development has been attained (a hurdle cleared by most emerging markets), less developed countries do not necessarily gain this benefit.

A number of studies also find that international financial integration helps overall financial sector development.<sup>42</sup> For instance, Bailliu (2000) and Klein and Olivei (2006) find that, in financially integrated economies, the degree of domestic financial sector development is higher than in countries that maintain restrictions on capital account transactions.

## **B. Institutional Quality and Governance**

Another focus of the recent literature on “collateral benefits” has been on the relationship between financial globalization and corporate governance. More recent work has started to examine the implications of financial globalization for broader public governance, as well as for the relationship between corporate and public governance. However, the evidence on these two latter points is rather limited at this stage.

### **Corporate governance**

Stulz (2005) discusses some channels through which globalization could improve corporate governance and thereby reduce the cost of capital. Foreign investors may have skills and information technologies that allow them to monitor management better than local investors. Globalization also transforms the market for corporate control—it increases the monitoring of managers both by existing shareholders and potential external bidders. Stulz (2005) argues that financial globalization weakens certain agency problems by reducing the cost of outside finance, thereby creating incentives for firms that use more external finance to improve their governance. A missing step in this logic is that improved governance gives firms more access to external capital—there is as yet little evidence on this. Doidge, Karolyi, and Stulz (2004) note that financial globalization may lead to greater investment in governance for another reason, namely that it reduces the cost of such investments.

The empirical evidence on financial globalization and corporate governance, while still relatively sparse, does seem to support the notion that increased foreign competition leads to better corporate governance. A volume edited by Cornelius and Kogut (2003) has a set of papers by academics and practitioners discussing how financial globalization has induced some countries to adjust their corporate governance structures in response to demands from

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<sup>42</sup> Mishkin (2006) enumerates various direct and indirect channels through which financial globalization could have a positive impact on financial sector development. He argues that foreign financial institutions could lead to improvements in the quality of domestic prudential supervision and could be instrumental in the reform of domestic regulatory institutions.

international investors. Goldberg (2004) surveys the literature about the implications of financial-sector FDI and argues that financial-sector FDI from well-regulated and well-supervised source countries can support emerging market institutional development and governance. Morck, Wolfenzen, and Yeung (2005) document that, in many countries, small numbers of controlling shareholders (often a few wealthy families) tend to govern a vast number of listed public companies through corporate pyramids, cross-holdings, and other devices. The corporate governance problems associated with this phenomenon can be mitigated by financial globalization, in part by raising expectations and demands among local investors through exposure to better standards of governance. Kim, Sung, and Wei (2006) report some evidence that foreign investment has improved corporate governance in the Republic of Korea.

### **Public governance and corruption**

There is a nascent body of research on the linkage between financial globalization and public governance (as measured by corruption, red tape, transparency of government policies, etc.). For example, poor public governance as measured by severity of bureaucratic corruption discourages inward FDI (Wei, 2000a) while poor governance as measured by lack of government transparency discourages portfolio equity inflows (Gelos and Wei, 2005).

Of course, public and corporate governance issues are deeply interconnected. Doidge, Karolyi, and Stulz (2005) explore the relative importance of country and firm characteristics in explaining firm-level variations in corporate governance around the world. They find that, for two out of their three measures of corporate governance, country characteristics explain over seventy percent of the variation. This suggests that, without good overall public governance, there is limited hope of improvements in corporate governance.

They also find, however, that listing on a stock exchange in a country with a substantially better court system, less corrupt bureaucracy, and stricter disclosure requirements is one way to “rent” good public governance in order to improve corporate governance. Doidge, Karolyi, and Stulz (2004) present some evidence that, when a foreign firm lists in the United States, its value increases. This suggests that by listing in the United States and subjecting itself to U.S. laws and regulations, a foreign firm can make a credible commitment to better governance practices, including protection of the rights of minority shareholders.

Political economy considerations enter into the picture as well, with financial integration helping to shake loose power structures that allow certain groups to thwart reforms. Rajan and Zingales (2003) propose an interest group theory wherein financial sector development is obstructed by incumbents who could be hurt by the competition that it fosters. When an economy allows cross-border trade and financial flows, it weakens incumbents’ opposition to reforms and facilitates financial sector development. These authors find some support in the cross-sectional and time-series dimensions of historical data to support this theory.

### **C. Macroeconomic Policies**

We have already discussed how capital account liberalization might impose discipline on macroeconomic policies since it increases the potential costs associated with weak policies

and enhances the benefits of good ones. Precisely because capital account liberalization makes a country more vulnerable to sudden shifts in global investor sentiment, it can serve as a signal of commitment to better macroeconomic policies.<sup>43</sup> Indeed, even skeptics about the benefits of financial integration such as Stiglitz (2000) have accepted that this is likely to be one of the most important potential benefits of capital account liberalization. Unfortunately, while the empirical evidence is suggestive, it remains sparse.

### **Monetary and fiscal policies**

The fact that the recent period of financial globalization has been marked by disinflationary trends in virtually all economies around the world has led some authors to contend that financial globalization improves monetary policy outcomes. Rogoff (2004) argues forcefully that globalization has fostered rising competition in goods and labor markets (which reduces price levels and also increases wage and price flexibility), thereby making the real effects of unanticipated monetary policy actions smaller and more transitory. Consequently, there is less incentive for central banks to pursue inflationary policies (and less incentive for politicians to pressure them to do so).

In any event, financial openness appears to complicate monetary policy implementation in developing countries (Wagner, 2002; and Hawkins, 2005). For instance, globalization increases uncertainty about the output gap (more exposure to productivity shocks emanating abroad), the inflation gap (through the effects of inflows on asset prices) and the monetary transmission mechanism (central banks have less control over the operations of domestic commercial banks). Whether these factors improve monetary policy outcomes is, however, not clear, although the fact that so many emerging markets have successfully instituted more independent, inflation-focused central banks, is quite noteworthy.

The very limited research on how globalization affects fiscal outcomes has been done mostly by political scientists. For instance, using data on member countries of the Organization for Economic Cooperation and Development (OECD) for the period 1960–94, Garrett and Mitchell (2001) find some weak evidence that capital account openness may be negatively associated with government consumption or spending. Kim (2003) finds some evidence that capital account liberalization helps to reduce fiscal deficits. Unfortunately, such papers typically use only *de jure* measures of capital account openness and rarely deal with potential problems of spurious correlations, reverse causality, or endogeneity bias.

Tytell and Wei (2004) systematically examine the disciplining effect of capital flows on both monetary and fiscal policies. They attempt to account for potential endogeneity of observed capital flows in a given country with respect to macroeconomic policies in that country. They

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<sup>43</sup> See Bartolini and Drazen (1997), Tytell and Wei (2004), and Gourinchas and Jeanne (2006). Many countries have, in fact, received significant capital inflows upon removing restrictions on outflows (see Mathieson and Rojas-Suarez, 1993; Laban and Larrain, 1997). Rodrik (2001) and Tytell and Wei (2004) note that the policy discipline effect would be weaker if international investment were driven by herding, momentum trading, or other patterns of flows that are not related to economic fundamentals.

find that countries with higher levels of financial openness are more likely to generate better monetary policy outcomes in terms of lower inflation. However, there is no evidence of a systematic relationship between financial openness and better fiscal policies.

### **Choice of exchange rate regime**

Openness to capital flows can have important implications for the trade-offs among different exchange rate regimes. We will, however, defer this discussion until Section IX, where we will point to the fact that countries are much better able to handle international capital flows if they either have a more flexible exchange rate regime or meet the extremely stringent pre-conditions to sustain a peg.

### **D. Implications**

While we can hardly argue that the evidence that we have surveyed in this section is decisive, it does consistently point to a role for international financial integration as a catalyst for financial sector and institutional development, in line with our schematic view about the channels through which financial globalization affects growth. Some evidence of a catalytic role in improving macroeconomic policies is also present. Given the difficulties that we have identified in interpreting the cross-country growth evidence, it is useful to see that financial market integration seems to be operating through some of the indirect channels. Before turning to the implications of this line of reasoning, we review the literature on a closely-related matter—the main factors that affect the benefits and risks of financial globalization.

## **IX. THRESHOLD EFFECTS IN OUTCOMES OF FINANCIAL GLOBALIZATION**

We turn now to a fuller discussion of four sets of structural and policy-related features that appear to interact with financial globalization in important ways to determine the eventual macroeconomic outcomes and also influence the short-run tradeoffs. This list includes financial sector development, overall institutional quality, the macroeconomic policy framework and trade integration.<sup>44</sup> Each of these factors has in its own right been shown to influence growth, but our interest here is in the narrower question of how they affect the outcomes (in terms of growth and volatility) of financial integration. As we noted earlier, there is a great deal of similarity between the list of collateral benefits of financial integration and the list of threshold conditions that we discuss below. Indeed, this discussion highlights the difficulties involved in trying to make strong causal statements about the effects of financial integration.

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<sup>44</sup> Another threshold effect, on which the literature is still rather limited, is related to human capital. Borensztein, De Gregorio, and Lee (1998), and Blonigen and Wang (2005) find that countries that have more human capital get larger growth benefits from FDI. Xu (2000) finds that U.S. multinational enterprises (MNEs) make a larger contribution to productivity growth in developed countries than in developing ones; his interpretation is that, in order to benefit from technological spillovers from MNEs, a country needs good human capital.

## **A. Interaction Between Financial Sector Development and Financial Integration**

Financial sector development is a key determinant of the extent of growth and stability benefits associated with financial globalization. It not only enhances the growth benefits but also reduces vulnerability to crises, through both direct and indirect channels.<sup>45</sup> Mishkin (2006) emphasizes that inadequate or mismanaged domestic financial sector liberalizations have been a major contributor to crises that may be associated with financial integration.

### **Evidence**

Recent research provides empirical evidence supportive of the view that financial sector development amplifies the growth benefits associated with FDI flows. Using a large sample of developing countries over the period 1970–95, Hermes and Lensink (2003) find that, in order to enjoy the growth benefits of FDI, a threshold level of financial sector development is a prerequisite. While more than half of the countries in their sample (mostly in Latin America and Asia) appear to meet the necessary threshold, almost all of the countries in sub-Saharan Africa, with their relatively weak financial systems, are below this level. Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004) and Durham (2004) also find that the growth impact of FDI is stronger in economies with well-developed financial sectors.<sup>46</sup>

Financial sector development also improves the growth benefits of equity flows. BHL find that financial market development enhances the growth benefits of equity market liberalizations. Oddly, however, their results are weaker when they use equity market turnover rather than the ratio of private credit to GDP to measure financial development.

Another major benefit of financial sector development is its positive impact on macroeconomic stability, which in turn has implications for the volume and composition of capital flows. In theory, by expanding the scope of diversification possibilities, developed financial markets moderate the effects of shocks and help reduce macroeconomic volatility.<sup>47</sup> Economic crises in emerging markets have repeatedly demonstrated the importance of deep and well-supervised domestic financial markets during the process of financial integration.

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<sup>45</sup> Well-developed domestic financial markets are instrumental in efficiently allocating foreign financial flows to competing investment projects (see Aoki, Benigno, and Kiyotaki, 2006). Deep domestic financial markets can also provide the necessary credit to local firms when they need financing to take advantage of technological spillovers associated with FDI. Developed financial markets enhance macroeconomic stability—an important determinant of the volume and composition of foreign financial flows.

<sup>46</sup> In the sample of Alfaro and others, a one standard deviation increase in financial development (the ratio of private sector credit to GDP) would raise the annual growth rate of a country receiving the mean level of FDI inflows by 0.6 percentage points. Durham reports that an increase from the minimum to the average (maximum) level of financial development in his sample is associated with a 0.4 (4.3) percentage points increase in per capita GDP growth, for the average in-sample level of FDI flows.

<sup>47</sup> See Easterly, Islam, and Stiglitz (2001); Beck, Lundberg, and Majnoni (2001); Denizer, Iyigun, and Owen (2002); and Larrain (2004).

Mishkin (2006) discusses how, after capital account liberalization, excessive risk taking by domestic banks played a major role in triggering the financial crises in Mexico in 1994 and many East Asian countries in 1997. Ishii and others (2002) document that countries with stronger financial systems generally avoided crises following capital account liberalization. However, countries with underdeveloped and poorly supervised financial markets suffered financial crises after liberalizing their capital accounts. Sudden changes in the direction of capital flows tend to induce or exacerbate boom-bust cycles in developing countries which lack deep financial sectors that could help cope with the volatility of these flows (Caballero and Krishnamurthy, 2001; Aghion and Banerjee, 2005).

### **B. Role of Institutions and Governance in Driving Growth Benefits of Financial Integration**

Institutional quality appears to play an important role in determining not just the outcomes of financial integration but the level of de facto integration itself. Furthermore, institutional quality also appears to have a strong influence on the composition of inflows into developing economies, which is another channel through which it affects macroeconomic outcomes.

Klein (2005) finds evidence of a non-monotonic interaction between institutional quality and the responsiveness of growth to capital account liberalization. Interestingly, he finds a statistically significant and economically meaningful effect of capital account openness on growth among countries that have better (but not the best) institutions. He notes a strong correlation between institutional quality and income per capita, implying that countries that get the most growth benefits from capital account liberalization are upper-middle-income countries. Chanda (2005) finds that the cross-country relationship between capital controls and growth depends on the degree of ethnic heterogeneity, which he interprets as a proxy for rent-seeking and common pool problems. For countries with more heterogeneity (more competing groups), capital controls lead to greater inefficiencies and lower growth.

#### **Effects on levels of total flows**

Alfaro, Kalemli-Ozcan, and Volosovych (2006) analyze why capital doesn't flow from rich to poor countries, as predicted by neoclassical models. They conclude that institutional quality is the most important factor determining capital flows to developing countries. Financial globalization could even result in capital flows from poor (and poorly governed) countries to rich ones. Collier, Hoeffler, and Pattillo (2001) report regression results, based on data for the 1980s from 43 countries, that worsening governance is linked with a rise in capital flight.

#### **Effects on levels of FDI and equity inflows**

Governance and institutional indicators seem to have a quantitatively significant influence on FDI inflows. Based on the distribution of U.S. multinational firms around the world, Hines (1995) reports that American companies tend to invest less in destination countries where levels of corruption are higher. Using bilateral stocks of FDI from 12 OECD source countries to 45 host countries, Wei (2000c) shows that countries' corruption levels are negatively associated with inward FDI. An increase in the corruption level from that of Singapore to that

of Russia has the same negative effect on FDI as raising the marginal corporate tax rate by as much as 50 percentage points. Moreover, for any given level of corruption, less centralized and more arbitrary types of corruption tend to discourage FDI even more strongly. Better governance also appears to lead to more equity inflows. Based on country allocations of over 300 international mutual funds, Gelos and Wei (2005) find that better institutions—measured by high degrees of government and corporate transparency—attract more foreign equity investment relative to the prediction of the international capital asset pricing model.

### **Effects on composition of inflows**

There is a considerable body of evidence that institutions affect the structure of a country's capital inflows in a systematic way. This has important consequences since the composition of inflows seems to have strong predictive power for currency crashes. In particular, the share of FDI in a country's total capital inflows is negatively associated with the probability of a currency crisis (see, e.g., Frankel and Rose, 1996; Frankel and Wei, 2005). Other dimensions of composition are the maturity structure of external debt (the greater the share of short-term debt, the more likely a crisis), and the currency denomination of external debt (the greater the share of foreign currency debt, the more likely a crisis).

Wei (2000a, 2000b, 2001) and Wei and Wu (2002) suggest that countries with better public institutions are more likely to attract more direct investment relative to bank loans. These authors provide evidence based on total inflows (based on data from the IMF's Balance-of-Payments Statistics) and bilateral flows from source to destination countries (based on bilateral FDI data from the OECD and bilateral bank lending data from the BIS).

Faria and Mauro (2005) find that better institutional quality helps tilt a country's capital structure towards FDI and portfolio equity flows which, as noted earlier, tend to bring more of the collateral benefits of financial integration. These authors find that, in a cross-section of emerging markets and other developing countries, equity-like liabilities as a share of countries' total external liabilities (or as a share of GDP) are positively associated with indicators of institutional quality.<sup>48</sup>

### **Do institutions really tilt inflows toward FDI?**

Hausmann and Fernandez-Arias (2000) provide a contrarian view on the determinants and implications of the composition of flows to developing countries. They argue that countries that are poorer, riskier, more volatile, less financially developed, and have weaker institutions tend to attract less capital, but more of it in the form of FDI. Hence, a declining share of FDI in the context of rising overall flows may be a good sign. Albuquerque (2003) argues that financially constrained countries are likely to get more FDI than other types of flows since it

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<sup>48</sup> Their measure of institutional quality is an average of six indicators—voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption—from Kaufmann, Kraay, and Mastruzzi (2003). Faria and Mauro instrument the institutional index using settler mortality (Acemoglu, Johnson, and Robinson, 2001) and ethno-linguistic fragmentation. The IV approach reaffirms their basic conclusion.

is harder to expropriate—not because it is more productive or intrinsically less volatile. Using measures of creditworthiness and credit risk ratings as measures of financing constraints, he finds some evidence in support of this hypothesis.

To reconcile the results of these two papers with those of other authors, it turns out to be crucial to distinguish between two classes of institutions: (i) property rights institutions, as proxied by control of corruption, control of expropriation risks, judicial independence, and government transparency; and (ii) financial institutions, as represented by measures of stock market and/or banking sector development, credit worthiness, and credit risk rating.

Ju and Wei (2006) provide a framework to think about how different institutions may affect patterns of international capital flows. In their model, a developing country that is financially underdeveloped would experience an exodus of domestic savings. However, because the country has a low capital-to-labor ratio, multinational firms come in to take advantage of low wage rates and high profit opportunities as they do not have to rely on inefficient local financial institutions for financing. Thus, a country may simultaneously experience a large FDI inflow and an outflow of domestic financial capital. By contrast, poor property rights institutions could lead to an exodus of domestic savings but, by reducing profit opportunities for both foreign and domestic firms, would not generate compensating inflows of FDI.

Viewed from this angle, Albuquerque's (2003) finding of a negative association between financial institutions and the share of FDI in total inflows as attributable to his focus on financial development. Hausmann and Fernandez-Arias (2000) confound financial development and property rights institutions, which is why they fail to find a clear-cut relationship between institutions and the share of FDI in total inflows. It is also worth noting that neither of these papers uses IV estimation to deal with potential endogeneity issues.

Re-examining how institutions affect the composition of capital inflows, but distinguishing between property rights and financial institutions, Wei (2006) finds that weaker property rights and higher levels of corruption do reduce the share of FDI in total foreign liabilities, consistent with earlier papers. On the other hand, lower financial sector development is associated with a higher share of FDI in total foreign liabilities.

### **C. Why Do Macroeconomic Policies Affect the Outcomes of Financial Integration?**

There is a large literature tying the quality of domestic macroeconomic policies to the level and composition of inflows as well as vulnerability to crises.<sup>49</sup> A number of papers focusing

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<sup>49</sup> The importance of macroeconomic policies is not uniformly accepted. Acemoglu, Johnson, Robinson, and Thaicharoen (2003) note that countries with high inflation, large budget deficits and misaligned exchange rates do appear to have suffered more macroeconomic volatility (and posted lower growth) during the postwar period. But they argue that weak macroeconomic policies are symptoms of underlying institutional problems including the absence of institutions that restrain rent-seeking political elites, ineffective enforcement of property rights, widespread corruption, and political instability. Albouy (2006) has contested the consistency of the data underlying the instrument—settler mortality—used by these authors for the institutional quality variable. Glaeser, (continued...)



on sequencing of liberalization argue that capital account liberalization is more likely to be successful if it is implemented in an environment supported by sound fiscal, monetary, and exchange rate policies (e.g., Eichengreen, 2000).

Ishii and others (2002) presents a case study analysis that underscores the importance of stable macroeconomic policies for averting crises in countries with open capital accounts.<sup>50</sup> Mody and Murshid (2005) examine how policies affect the relationship between financial flows and domestic investment growth in a larger dataset covering 60 countries over the period 1979–99 (they use a composite variable of macroeconomic policy quality constructed by the World Bank). They conclude that financial flows have a stronger impact on investment growth in countries with better macro policies. In models of early warning systems, proxies for exchange rate and monetary policies appear to be important for predicting financial crises.<sup>51</sup>

Arteta, Eichengreen, and Wyplosz (2003) examine whether bad macroeconomic policies can hurt growth. They are unable to find evidence to support this proposition. But they report some evidence that is consistent with the importance of threshold effects in generating *positive* growth effects of financial openness. These positive effects are present only when macroeconomic imbalances that lead to inconsistencies between the administered exchange rate and other policies have first been eliminated (i.e., if there is no large black market premium). They find no evidence that the effects of capital account liberalization vary with financial depth, but do find that its effects vary with the rule of law.

### **Exchange rate regime**

Fixed exchange rate regimes in principle provide a transparent and credible monetary anchor, an important consideration for many developing economies. But it comes at a significant cost—the loss of monetary independence. The trade-off between monetary stability and independence is one where it is difficult to draw general prescriptive conclusions. What the evidence does show is that an open capital account puts a greater burden on other policies and structural features of the economy (e.g., product and labor market flexibility) to support a fixed exchange rate. In particular, for economies with weak financial systems, an open capital account and a fixed exchange rate regime are not an auspicious combination. Indeed, there is a compelling case to be made that rigid exchange rate regimes can make a country

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La Porta, Lopez-de-Silanes, and Shleifer (2004) argue that the importance of institutions has been overplayed and that the level of human capital may be a far more important determinant of growth.

<sup>50</sup> Austria and Hungary, for example, were able to avoid crises after they liberalized their capital accounts since they had relatively stable macroeconomic policies. Mexico and Turkey ran into difficulties in the mid-1990s after liberalizing their capital accounts since they had tightly managed exchange rates for a prolonged period, along with uncertain policy settings and growing imbalances.

<sup>51</sup> See Berg, Borenzstein, and Pattillo (2004). Eichengreen, Rose, and Wyplosz (1995) show that these issues are relevant for more advanced economies as well. Using quarterly panel data for 20 OECD countries over the period 1959–93, they document that high money and credit growth as well as large deficits in current account and fiscal positions tend to raise the probability of devaluations.

more vulnerable to crises when it opens its capital markets (Obstfeld and Rogoff, 1995). It can be argued that, in the absence of de facto or de jure fixed rates, most of the crises of the 1990s, from Mexico to Asia to Russia to Brazil, might have been much less virulent, or might even have been avoided entirely. Fischer (2001) also comes around to this conclusion.

The problems posed by fixed exchange rates for monetary independence has been emphasized in the context of China by Eichengreen (2005) and Prasad, Rumbaugh and Wang (2005). These authors argue that moving toward greater exchange rate flexibility would give China some degree of monetary independence from the United States. But they note that capital account liberalization should be a lower priority given the weak state of the domestic banking system. Appendix I in the paper by Prasad, Rumbaugh, and Wang surveys a number of industrial and developing country experiences showing that the combination of capital account liberalization and a fixed exchange rate regime have often ended in forced and messy exits to more flexible exchange rate regimes.

However, the literature does not imply that fixed exchange rates are necessarily a problem for countries that are at early stages of domestic financial development or that they are inappropriate prior to international capital market liberalization. Husain, Mody, and Rogoff (2005) and Aghion, Bacchetta, Ranciere, and Rogoff (2006) find that poorer developing countries seem to enjoy faster growth and lower inflation with relatively fixed rates.

Using the de facto approach to classifying exchange rate regimes developed by Reinhart and Rogoff (2004), Husain, Mody, and Rogoff (2005) find that pegged exchange rate regimes confer some advantages such as lower inflation upon developing countries that do not have much exposure to international capital. For emerging markets, standard measures of macroeconomic performance are not systematically associated with the nature of the exchange rate regime, but the likelihood of financial crises is higher for countries with pegged or nearly pegged exchange rates. Husain, Mody, and Rogoff attribute the latter result under a regime with “hard commitment” to the inability to adapt to changed circumstances, the incentives of economic agents including entrepreneurs and financial intermediaries to undertake risky activities on the presumption that exchange rates will not change, and speculative pressures from investors who seek to test the commitment.<sup>52</sup>

Wyplosz (2004) highlights the difficulties and risks associated with maintaining currency pegs when the capital account is open. As a short-term strategy for developing economies, he recommends a combination of a soft peg or managed exchange rate regime along with well-designed limits on capital mobility. Maintaining either a free float or a hard peg along with capital account openness requires a strong commitment to fostering good institutions, especially with respect to financial market regulation and supervision.

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<sup>52</sup> These authors also find that that banking crises are more likely under rigid exchange rate regimes. They note that this result is opposite to that of Ghosh, Gulde, and Wolf (2003) and trace the differences to the latter authors’ use of a de jure exchange rate regime classification.

#### **D. Does the Level of Trade Openness Matter for the Effects of Financial Openness?**

Trade integration appears to have a better cost-benefit tradeoff than financial integration. It also reduces the probability of crises associated with financial openness and mitigates the costs of such crises if they do occur. Thus, the recent literature strengthens the case made by the old sequencing literature for putting trade liberalization ahead of financial integration.

Recent research shows how interactions between trade and financial integration could affect macroeconomic outcomes. Trade integration reduces the likelihood of financial crises associated with sudden stops and current account reversals. Less open economies have to undergo larger real exchange rate depreciations for a given current account adjustment, face more severe balance sheet effects stemming from these depreciations, and, as a result, are more likely to default on their debt obligations. This creates a link between the probability of sudden stops and the likelihood of default, implying that more open economies are less vulnerable to sudden stops because of their lower probability of default.

Is the impact of trade openness on the likelihood of sudden stops empirically important? Calvo, Izquierdo, and Mejia (2004) show that trade openness indeed makes countries less vulnerable to financial crises, including sudden stops and currency crashes; controlling for the endogeneity of trade strengthens this effect. Frankel and Cavallo (2004) and Cavallo (2005) report similar findings. They conclude that a 10 percentage point increase in trade openness reduces the probability of a sudden stop by about 30 percent.<sup>53</sup>

Some papers argue that trade integration should play an important role in mitigating the adverse growth effects of financial crises and in facilitating recoveries from crises. The real costs of financial crises depend on the degree of openness of an economy since less open economies have to go through larger contractions of aggregate demand and/or larger changes to the real exchange rate change in order to adjust to large shocks. Trade integration could help a developing economy to export its way out of a recession since a given exchange rate depreciation would have a larger impact on its export revenues than in a less open economy.<sup>54</sup> Export revenues could also help service external debt, which is quite substantial in a number of developing countries. These predictions are supported by recent empirical research showing that, among countries that have experienced sudden stops and current account reversals, those that are more open to trade suffer smaller adverse growth effects.<sup>55</sup>

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<sup>53</sup> For a more detailed analysis of the causes and effects of sudden stops, see Mendoza (2006) and references therein.

<sup>54</sup> Calvo and Talvi (2005) argue that this is why the collapse of capital flows to Argentina and Chile in the 1990s had a smaller impact on Chile. Kose, Meredith, and Towe (2004) analyze the impact of NAFTA and argue that trade integration has made the Mexican economy more resilient to shocks and contributed to its faster recovery from the 1994–95 peso crisis than from the 1982 debt crisis.

<sup>55</sup> See Edwards (2004, 2005), Desai and Mitra (2004), and Guidotti, Sturzenegger, and Villar (2004). Edwards (2005) reports that a decline in trade openness by roughly 30 percentage points increases the negative effect of a current account reversal on growth by approximately 1.2 percentage points. He finds that capital account restrictiveness, on the other hand, does not affect the intensity with which

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While trade integration can apparently proceed well even in the absence of financial integration, financial integration in the absence of trade integration could lead to a misallocation of resources. Eichengreen (2001) notes that, under these circumstances, capital inflows may be directed to sectors in which a country doesn't have a comparative advantage.

Indeed, trade integration in general seems to be less risky than financial integration. Martin and Rey (2006) highlight this point in a model in which trade integration has a positive growth effect, but financial integration can lead to asset price crashes and financial crises. While earlier models in the literature point to various types of market failures—including credit constraints and moral hazard problems—as the main culprits of financial crises, these authors argue that costs associated with international trade in goods and assets alone could increase the vulnerability of developing countries to financial crises.<sup>56</sup> The model has a clear implication—consistent with the received wisdom—that developing countries should liberalize trade in goods before trade in financial assets.

### **E. Threshold Effects and Composition of Inflows: A Summary**

Our discussion of the factors that improve the cost-benefit calculus of financial globalization indicates that there are some basic supporting conditions—thresholds—that determine where on the continuum of potential costs and benefits a country ends up. As described in the sub-sections above, the literature has emphasized threshold effects in different dimensions and there is as yet no unified framework to think about the relative importance of each of these individual thresholds and what sort of tradeoffs there might be among these thresholds in terms of prioritization for a country that wants to seek the benefits of financial globalization without exposing itself to too much risk.<sup>57</sup>

An alternative way of posing the question about thresholds is to ask if there is any direct evidence that capital account openness is bad for growth in countries with underdeveloped financial markets, weak institutions or severe macroeconomic imbalances. For instance, Eichengreen (2001) conjectures that capital account liberalization can be counterproductive if it takes place before severe policy-related distortions have been removed and before domestic financial markets, institutions and administrative capacity are strong enough to ensure that capital inflows can be channeled productively. Arteta, Eichengreen, and Wyplosz (2003) look at this question explicitly and, somewhat comfortably, find no evidence to support this proposition. But, as noted earlier, their results do confirm the importance of threshold effects in generating *positive* growth effects of financial openness.

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current account reversals affect real economic activity. He also shows that capital account restrictions do not affect the probability of experiencing current account reversals in the first place.

<sup>56</sup> Obstfeld and Rogoff (2001) emphasize the importance of frictions related to trade costs (broadly defined) for explaining a number of puzzles in international macroeconomics.

<sup>57</sup> There isn't a consensus, however, on the importance of threshold effects. Edison, Levine, Ricci, and Sløk (2004) are unable to show that financial integration has a larger growth impact in countries with more developed financial markets and better macroeconomic policies and institutions.

A different threshold is related to the level of integration itself. Industrial economies, which are far more integrated into global financial markets are clearly able to do better than emerging markets in terms of using international capital flows to efficiently allocate capital, using it to generate TFP gains and share income risk. Does this mean that the only hope for developing countries to realize the full benefits is to attain high levels of financial integration similar to that of industrial economies and that the risks en route are unavoidable? After all, if the short-term costs take the form of crises, they could have persistent negative effects that detract from the long-term growth benefits. Furthermore, the distributional effects associated with these short-term consequences can be particularly painful for low-income countries.

Some comfort may still be provided by a newly developing literature on how globalization affects the relationship between growth and volatility. While macroeconomic volatility does have a negative effect on growth, this relationship is attenuated for more open economies (Kose, Prasad, and Terrones, 2005, 2006a). That is, economies that are more open to trade and financial flows are able to tolerate higher levels of volatility—other things being equal—than less open economies, without this volatility having an adverse effect on growth.<sup>58</sup> Furthermore, some of the collateral benefits generated by financial integration, including macroeconomic discipline and financial market development, could also reduce volatility.

## **X. CONCLUDING REMARKS**

We conclude by highlighting our main findings and then noting some areas where we think future research could have significant payoffs.

### **A. Main Findings**

Measuring the extent of a country's integration into global financial markets is an important but complicated issue. In particular, the distinction between de jure and de facto integration appears to matter a great deal in understanding the macroeconomic implications of financial globalization. The basic problem with de jure measures that capture legal and regulatory restrictions on capital flows is that implementation and enforcement differ so greatly across countries that international comparisons are dubious. Thus, although most empirical papers analyzing the effects of financial integration rely on de jure measures of openness, de facto integration measures may be more relevant for analyzing the direct and indirect benefits associated with financial globalization.

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<sup>58</sup> Ramey and Ramey (1995), Aghion and Banerjee (2005), and Aizenman and Pinto (2006) document the negative relationship between growth and volatility. Kose, Prasad, and Terrones (2005, 2006a) confirm this result for the recent period of globalization. However, they find that the unconditional relationship between growth and volatility is positive for industrial economies. For emerging market economies, this relationship is negative before trade and financial liberalization and weakly positive after liberalizations have taken place in both dimensions. Formal econometric analysis shows that the negative growth-volatility relationship is weakened by trade openness and financial openness, although the result for financial openness is weaker and less robust than that for trade openness.

It is notable that whereas the majority of cross-country empirical studies are unable to find robust evidence in support of the growth benefits of capital account liberalization, studies that use measures of de facto integration or finer measures of de jure integration tend to find more positive results. At the same time, using either approach, there is little systematic evidence that capital account liberalization, by itself, increases vulnerability to financial crises.

The composition of capital inflows has a substantial influence on the growth benefits of financial globalization for developing countries, although the evidence is far from decisive. Studies based on both macroeconomic and microeconomic (industry- or firm-level) data find that equity market liberalizations have positive effects on output growth. Interestingly, despite the general consensus that FDI is the form of capital inflow most likely to spin off positive growth benefits, these benefits are harder to detect in aggregate data than is the case for equity flows. Fortunately, recent work using micro data is starting to confirm that FDI flows do have significantly positive effects on output and productivity growth, especially through spillover effects associated with vertical linkages. Overall, studies using micro data are better able to detect the growth and productivity gains stemming from financial integration as well as the distortionary effects of capital controls.

In addition to the traditional channels such as efficient allocation of capital and expanded international risk-sharing opportunities, the growth and stability benefits of financial globalization are also realized through a broad set of “collateral benefits”—financial market development, better institutions and governance, and macroeconomic discipline. These collateral benefits affect growth and stability dynamics indirectly, implying that the associated macroeconomic gains may not be fully evident in the short run and may be difficult to uncover in cross-country regressions.

Various threshold effects play important roles in shaping the macroeconomic outcomes of financial globalization. Some key thresholds are related to the level of development of domestic financial markets, the quality of institutions and corporate governance, the nature of macroeconomic policies (including the exchange rate regime), and the extent of openness to trade. Recent research suggests that countries meeting these threshold conditions are better able to reap the growth and stability benefits of financial globalization.

## **B. Issues for Further Research**

Our synthesis of the literature on financial globalization, while offering a guardedly positive overall assessment, points to some major complications during the transition from low to high levels of financial integration. For developing countries, financial globalization appears to have the potential to play a catalytic role in generating an array of collateral benefits that may help boost long-run growth and welfare. At the same time, premature opening of the capital account in the absence of some basic supporting conditions can delay the realization of these benefits, while making a country more vulnerable to sudden stops of capital flows. Still, we see this as a fundamental tension between the costs and benefits of financial globalization that may be difficult to avoid.

The collateral benefits perspective presented in this paper does suggest a way for moving forward on capital account liberalization. If one can identify which reform priorities are the key ones for a particular country, then one can design an approach to capital account liberalization that could generate specific benefits while minimizing the associated risks. Further research is clearly needed in a number of areas, however before one can derive strong policy conclusions about the specifics of such an approach.

First, it is imperative to extend the research program on measuring financial openness. Additional work on constructing measures that line up with theoretical notions of what integration means would be useful. Understanding the specific channels through which different types of inflows affect growth dynamics would also be an important step in evaluating their relative benefits.

Research on many of the potential collateral benefits of financial globalization is still in its infancy but is growing rapidly. The links between certain aspects of open capital accounts (e.g., unrestricted foreign bank entry) and domestic financial sector development have been analyzed extensively, but evidence on other indirect benefits is limited. In particular, despite the existence of a theoretical literature positing a link between financial globalization and governance (both public and corporate), the empirical literature remains sparse.

It is clear from the discussion here that the benefits of financial openness should be more apparent in terms of the effects on TFP growth, since per capita income growth also depends on physical and human capital accumulation. Empirical evidence on how different types of flows affect productivity growth would be an integral part of the research agenda on financial openness. Another promising research avenue is a more detailed analysis of threshold effects—especially the relative importance of different threshold conditions and the trade-offs among them for a country contemplating liberalization of its capital account.

A key theme that comes out of our survey of existing empirical studies is that macro-level data often do not, and perhaps cannot, offer definitive answers about the effects of financial globalization. Further research based on industry- and firm-level data as well as event and case studies may provide useful corroborative evidence and, often, more informative insights about the channels through which these effects operate. In the meantime, we should recognize that some of the more extreme polemical claims made about the effects of financial globalization on developing countries, both pro and con, are far less easy to substantiate than either side generally cares to admit.

Table 1. International Financial Integration: Gross Stocks of Foreign Assets and Liabilities  
(in percent unless otherwise specified)

	1980–84	1985–89	1990–94	1995–99	2000–2004
<b>All countries (billion U.S. dollars)</b>	7,124	14,957	26,411	46,638	76,133
Share of FDI	15.6	16.6	17.9	20.9	21.8
Share of equity	4.9	7.5	9.5	15.7	15.9
Share of debt	75.1	72.5	69.4	60.0	58.7
Share of other	4.4	3.4	3.3	3.3	3.6
<b>Advanced economies (billion U.S. dollars)</b>	6,100	13,492	23,969	42,052	69,432
Share of FDI	16.1	16.9	17.9	20.7	21.4
Share of equity	5.5	8.1	9.9	16.5	16.5
Share of debt	74.8	72.0	69.7	60.5	59.8
Share of other	3.6	3.0	2.5	2.3	2.3
<b>Emerging markets (billion U.S. dollars)</b>	859	1,259	2,167	4,236	6,221
Share of FDI	12.0	13.3	17.6	23.2	26.6
Share of equity	1.3	2.1	6.1	9.4	10.6
Share of debt	77.9	76.6	64.6	54.4	46.6
Share of other	8.8	8.0	11.7	13.0	16.2
<b>Other developing economies (billion U.S. dollars)</b>	165	207	276	351	480
Share of FDI	16.0	14.0	14.4	18.7	22.7
Share of equity	0.2	0.3	0.3	0.6	1.0
Share of debt	73.8	79.9	78.5	71.3	58.3
Share of other	10.0	5.7	6.8	9.4	18.0

Notes: Data shown in this table are based on cross-country averages of annual data over the relevant five-year period for each group of countries. The sample comprises 21 industrial, 20 emerging market, and 30 other developing countries. See Appendix II for a listing of countries in each group. The category "other" includes financial derivatives and total reserves minus gold. Shares are in percentage of total. The raw data are based on a dataset constructed by Lane and Milesi-Ferretti (2006).



Table 2. International Financial Integration: Gross Inflows  
(in percent unless otherwise specified)

	1980–84	1985–89	1990–94	1995–99	2000–2004
<b>All countries (billion U.S. dollars)</b>	397	803	1,209	2,453	3,564
Share of FDI	12.9	15.8	15.6	21.7	19.6
Share of equity	3.9	7.7	9.4	12.2	12.0
Share of debt	83.2	76.5	75.0	66.1	68.4
<b>Advanced economies (billion U.S. dollars)</b>	325	739	1,008	2,112	3,260
Share of FDI	12.3	14.9	13.9	18.6	16.9
Share of equity	4.4	8.1	9.0	12.5	12.1
Share of debt	83.3	77.0	77.2	68.9	71.0
<b>Emerging markets (billion U.S. dollars)</b>	66	60	194	328	288
Share of FDI	15.5	27.3	24.4	40.7	48.6
Share of equity	1.5	3.4	11.7	11.0	12.1
Share of debt	83.0	69.3	63.9	48.2	39.3
<b>Other developing economies (billion U.S. dollars)</b>	6	4	7	13	16
Share of FDI	15.1	17.2	27.7	40.9	44.2
Share of equity	1.1	0.6	0.5	0.5	0.4
Share of debt	83.8	82.2	71.8	58.6	55.4

Notes: Data shown in this table are based on cross-country averages of annual data over the relevant five-year period for each group of countries. Shares are in percentage of total. The sample comprises 21 industrial, 20 emerging market, and 30 other developing countries. See Appendix II for a listing of countries in each group. Authors' calculations are based on flow data from Lane and Milesi-Ferretti (2006).

Table 3. Volatility of Different Types of Inflows, 1985–2004

	<u>FDI</u> GDP	<u>Equity</u> GDP	<u>Debt</u> GDP	<u>FDI+Equity</u> GDP
<i>Standard deviation</i>				
<b>All countries</b>				
Mean	1.90	1.42	4.42	2.78
Median	1.52	0.71	3.15	1.75
<b>Advanced economies</b>				
Mean	2.43	2.36	6.18	4.38
Median	1.66	0.87	4.84	2.57
<b>Emerging markets</b>				
Mean	1.45	0.84	3.38	1.87
Median	1.31	0.69	2.57	1.83
<b>Other developing economies</b>				
Mean	1.76	0.11	3.36	1.76
Median	1.24	0.12	2.65	1.25
<i>Coefficients of variation</i>				
<b>All countries</b>				
Mean	0.85	0.98	0.76	0.80
Median	0.77	0.98	0.66	0.75
<b>Advanced economies</b>				
Mean	0.92	0.99	0.64	0.84
Median	0.87	0.98	0.64	0.77
<b>Emerging markets</b>				
Mean	0.75	1.07	0.85	0.71
Median	0.76	1.00	0.67	0.66
<b>Other developing economies</b>				
Mean	0.89	0.65	0.80	0.87
Median	0.77	0.70	0.70	0.77

Notes: Data shown in this table are the cross-country means and medians for each group of countries of the standard deviation and coefficient of variation of the different categories of gross capital inflows over the period 1985–2004. The coefficient of variation is the standard deviation divided by the mean. The sample comprises 21 industrial, 20 emerging market, and 30 other developing countries. See Appendix II for a listing of countries in each group. The raw data are based on a dataset containing flow data constructed by Lane and Milesi-Ferretti (2006).

Table 4A. Summary of Key Empirical Studies on Financial Integration and Growth

Study	Number of Countries / Time Period	Dependent Variable / Regression Methodology	Financial Openness Measure	Main Findings
Alesina, Grilli, Milesi-Ferretti (1994)	20 1950–1989	$\Delta Y$ and $\Delta Y_c$ <i>Annual panel pooled OLS</i>	Binary	NO EFFECT: No clear impact of capital controls on growth in the OECD countries.
Grilli and Milesi-Ferretti (1995)	61 1966–1989	$\Delta Y_c$ <i>5-yearly panel pooled IV</i>	Share	NO EFFECT: No evidence of a robust correlation of capital account restrictions with growth.
Quinn (1997)	64 1960–1989	$\Delta Y_c$ <i>Cross section OLS</i>	$\Delta$ Quinn	POSITIVE: There is a robust positive association between capital account liberalization and growth.
Kraay (1998)	117 1985–1997	$\Delta Y_c$ <i>Cross section OLS and IV</i>	Share, Quinn, Volume	MIXED: Change in financial openness is not significantly related to growth (coefficient on Volume significantly positive but result not robust).
Rodrik (1998)	95 1975–1989	$\Delta Y_c$ <i>Cross section OLS</i>	Share	NO EFFECT: No evidence of a significant effect of financial openness on growth.
Bosworth and Collins (1999)	58 1978–1995	I/Y, S/Y <i>Annual panel FE and IV</i>	Volume	MIXED: FDI is highly beneficial for domestic investment while portfolio flows have no discernible effect and loans lie in between. Insignificant impact of international flows on saving.
Bailliu (2000)	40 1975–1995	$\Delta Y_c$ <i>5-yearly panel dynamic GMM</i>	Volume	MIXED: Capital inflows foster higher economic growth but only for economies where the banking sector has reached a certain level of development.
Arteta, Eichengreen and Wyplosz (2001)	61 1973–1992	$\Delta Y_c$ <i>Cross section OLS and IV; sub-period panel pooled OLS</i>	Quinn, $\Delta$ Quinn	MIXED: Evidence on positive association between capital account liberalization and growth fragile but stronger correlation with growth when openness measures are interacted with trade openness and rule of law.
Edwards (2001)	62 1980–1989	$\Delta Y_c$ , $\Delta$ TFP <i>Cross section WLS, IV WLS</i>	Share, Quinn, $\Delta$ Quinn	MIXED: Capital account openness positively affects growth only after a country has achieved a certain degree of economic development and financial development.

Table 4A. Summary of Key Empirical Studies on Financial Integration and Growth (continued)

Study	Number of Countries / Time Period	Dependent Variable / Regression Methodology	Financial Openness Measure	Main Findings
McKenzie (2001)	112 1960–1989	$\Delta Y_c$ <i>Cross-sectional OLS; 5-yearly panel dynamic GMM</i>	Binary	MIXED: No robust evidence of significant impact of capital controls on economic growth.
O'Donnell (2001)	94 1971–1994	$\Delta Y_c$ <i>Cross section OLS, IV</i>	Share, Volume	MIXED: No evidence of capital controls on growth, but volume is sometimes significant.
Quinn, Inclan and Toyoda (2001)	76 1960–1998	$\Delta Y_c$ <i>5-yearly panel FE</i>	Quinn, $\Delta$ Quinn	POSITIVE/MIXED: Capital account liberalization has a robust positive impact on growth in most countries.
Reisen and de Soto (2001)	44 1986–1997	$\Delta$ GNP <sub>c</sub> <i>Annual panel dynamic GMM</i>	Volume	MIXED: Both FDI and portfolio equity flows have a significant positive impact on growth, but bank lending contributes to growth only if banking system is well capitalized.
Edison, Levine, Ricci, and Slok (2002)	57 1980–2000	$\Delta Y_c$ <i>Cross section OLS, IV; 5-yearly panel dynamic GMM</i>	Share, Volume	NO EFFECT/MIXED: With isolated exceptions, unable to reject the null hypothesis that international financial integration does not accelerate growth even when controlling for particular economic, financial, institutional, and policy characteristics.
Eichengreen and Leblang (2003)	47 1975–1995	$\Delta Y_c$ <i>5-yearly panel dynamic system GMM</i>	Binary	MIXED: An open capital account boosts growth in periods of financial stability in international markets with controls playing insulating role during instability. Similar results for 27 economies, 1880–1997.
Bonfiglioli and Mendicino (2004)	90 1975–1999	$\Delta Y_c$ <i>5-yearly panel dynamic system GMM</i>	Binary	MIXED: Capital liberalization has positive effect on growth but mainly via indirect channels, e.g. mitigating effects of banking crises (whereas equity market liberalization has direct effect but no interaction with banking crises).
Durham (2004)	80 1979–1998	$\Delta Y_c$ <i>Cross section OLS</i>	Volume	MIXED: Growth effects of FDI and portfolio flows depend on the absorptive capacity of host countries, especially financial or institutional development.

Table 4A. Summary of Key Empirical Studies on Financial Integration and Growth (concluded)

Study	Number of Countries / Time Period	Dependent Variable / Regression Methodology	Financial Openness Measure	Main Findings
Edison, Klein, Ricci, and Slok (2004)	73 1976–1995	$\Delta Y_c$ <i>Cross section OLS</i>	Share, Quinn	MIXED: Capital account liberalization has positive growth effect in middle income countries.
Fratzscher and Bussiere (2004)	45 1980–2002	$\Delta Y_c$ <i>5-yearly panel dynamic GMM</i>	KS, Volume	MIXED: Positive short-run growth impact of capital account liberalization but longer term effect depends on institutional quality, FDI flows, and liberalization sequencing.
Vanassche (2004)	45 1980–1997	$\Delta IND$ <i>Cross section OLS, IV</i>	Share, Quinn	POSITIVE: Financial openness has a positive effect on sectoral value added growth but with greater relative impact on those sectors more reliant on external financing.
Chanda (2005)	82 1976–1995	$\Delta Y_c$ <i>Cross section OLS</i>	Share	MIXED: Capital account liberalization significantly raises growth in more ethnically homogeneous countries.
Klein (2005)	71 1976–1995	$\Delta Y_c$ <i>Cross section OLS, IV, NLLS</i>	Share	MIXED: Capital account openness has a statistically significant impact on growth in countries with better (not the best) institutions.
Mody and Murshid (2005)	60 1979–1999	I/Y <i>Annual and 3-yearly panels FE, IV, dynamic GMM</i>	Volume, A Sum	MIXED: FDI had strongest positive impact on domestic investment. Positive relationship between capital flows and investment growth is more emphasized with stronger policies.
Vlachos and Waldenström (2005)	42 1980–1990	$\Delta IND$ <i>Cross section with FE, OLS and IV</i>	Volume, Binary	MIXED: Value added growth in sectors more dependent on external finance no higher post-liberalization but positive effects on growth in output and number of firms.
Klein and Olivei (2006)	70 1976–1995	$\Delta Y_c$ <i>Cross section OLS, IV</i>	Share	MIXED: Developed countries with open capital accounts enjoyed greater growth and financial deepening (with latter effect not present for developing economies).

Notes:

Dependent variable:

EBITDA: Earnings Before Interest, Taxes, Depreciation and Amortization;  $\Delta GNP_c$ : Growth rate of real per-capita GNP; I: Investment; I/Y: Investment over GDP;  $\Delta I_c$ : Growth rate in investment per capita;  $\Delta IND$ : Growth rate of industry-level measures, e.g., real value added, output or number of firms;  $\Delta InI$ : Growth rate of real private investment; S/Y: Saving over GDP;  $\Delta TFP$ : Growth rate of total factor productivity;  $\Delta Y_c$ : Growth rate of real per-capita GDP;  $\Delta Y$ : Growth rate of real GDP.

Regression methodology:

Cross-section: Single observation for each country over entire period; FE: Country and/or industry fixed effects; GMM: Generalized Method of Moments; IV: Instrumental Variables; NLS: Non-Linear Least Squares; OLS: Ordinary Least Squares; Panel: Repeated observations on countries (or country industries) observed over multiple periods (which may be, for example, annual, five years or a decade); Pooled: Assumes no country-specific fixed effects; RE: Country random effects; SUR: Seemingly Unrelated Regressions; WLS: Weighted Least Squares.

Financial openness measure:

A Sum: Sum of four binary AREAER liberalization indicators across the following categories – capital account; current account; export proceeds and multiple exchange rates; Binary: 0/1 dummy variable from AREAER taking the value of one when capital controls in place; KS: Measure based on Kaminsky and Schmukler (2003); Quinn: Measure based on Quinn (1997);  $\Delta Quinn$ : Change in Quinn measure; Share: The proportion of years in which countries had liberalized capital accounts based on the binary variable from AREAER; SMLD: Official Date of Stock Market Liberalization; Volume: Variable based on actual flows/stocks of financial flows.

Main findings:

NO EFFECT: No evidence of a significant effect of greater financial integration on growth; MIXED: Evidence of positive effect of financial integration on growth is conditional upon other economic characteristics (for example, financial development or human capital) or otherwise non-robust (for example, conditional on different country samples); POSITIVE: Significant positive effect of greater financial integration on growth.

Table 4B. Summary of Key Empirical Studies on Equity Market Liberalization and Growth

Study	Number of Countries / Time Period	Dependent Variable / Regression Methodology	Financial Openness Measure	Main Findings
Henry (2000)	11 1977–1994	$\Delta \ln I$ <i>Annual panel FE</i>	SMLD	POSITIVE: Positive growth of real private investment following stock market liberalization.
Bekaert, Harvey and Lundblad (2001)	30 1980–1997	$\Delta Y_c$ <i>5-yearly panel GMM (overlapping periods)</i>	SMLD	POSITIVE: Positive effect on growth following equity market liberalization which is greater for countries with above median education levels.
Li (2003)	95 1975–2000	$\Delta Y_c, I/Y, \Delta Y_c / \Delta I_c$ <i>Annual panel FE, IV</i>	SMLD	POSITIVE: Positive growth impact of opening equity markets due mainly to productivity channel ( $\Delta Y_c / \Delta I_c$ ) in middle- and high-income countries and to capital accumulation ( $I/Y$ ) in low-income.
Bekaert, Harvey and Lundblad (2005)	95 1980–1997	$\Delta Y_c$ <i>5-yearly panel pooled OLS; 5-yearly panel (overlapping periods) GMM, IV</i>	SMLD	POSITIVE: Equity liberalizations increased growth (controlling for policy endogeneity) with stronger effects in better legal and investment environment and financial development.
Gupta and Yuan (2005)	31 1981–1998	$\Delta \ln D$ <i>Annual panel dynamic GMM, IV</i>	SMLD	POSITIVE/MIXED: Stock market liberalization leads to higher real value added growth in sectors more dependent on external finance (but, controlling for liberalization endogeneity, not in those with higher growth opportunities).
Mitton (2006)	28 1980–2000	Firm-level indicators, e.g. $\Delta \log(\text{sales}), \text{EBITDA}/\text{total assets}; \log(\text{sales}/\text{employees})$ . <i>Annual panel FE</i>	Firm-specific SMLD	POSITIVE: Significant improvement in sales performance associated with liberalization of a firm's equity to foreign investors (controlling for growth opportunities).
Hammel (2006)	13 1982–1995	$\Delta \ln D$ <i>3-yearly panel FE</i>	SMLD	MIXED: Real value added in sectors more dependent on external finance grows faster following equity liberalization in countries with larger stock market capitalization to GDP.

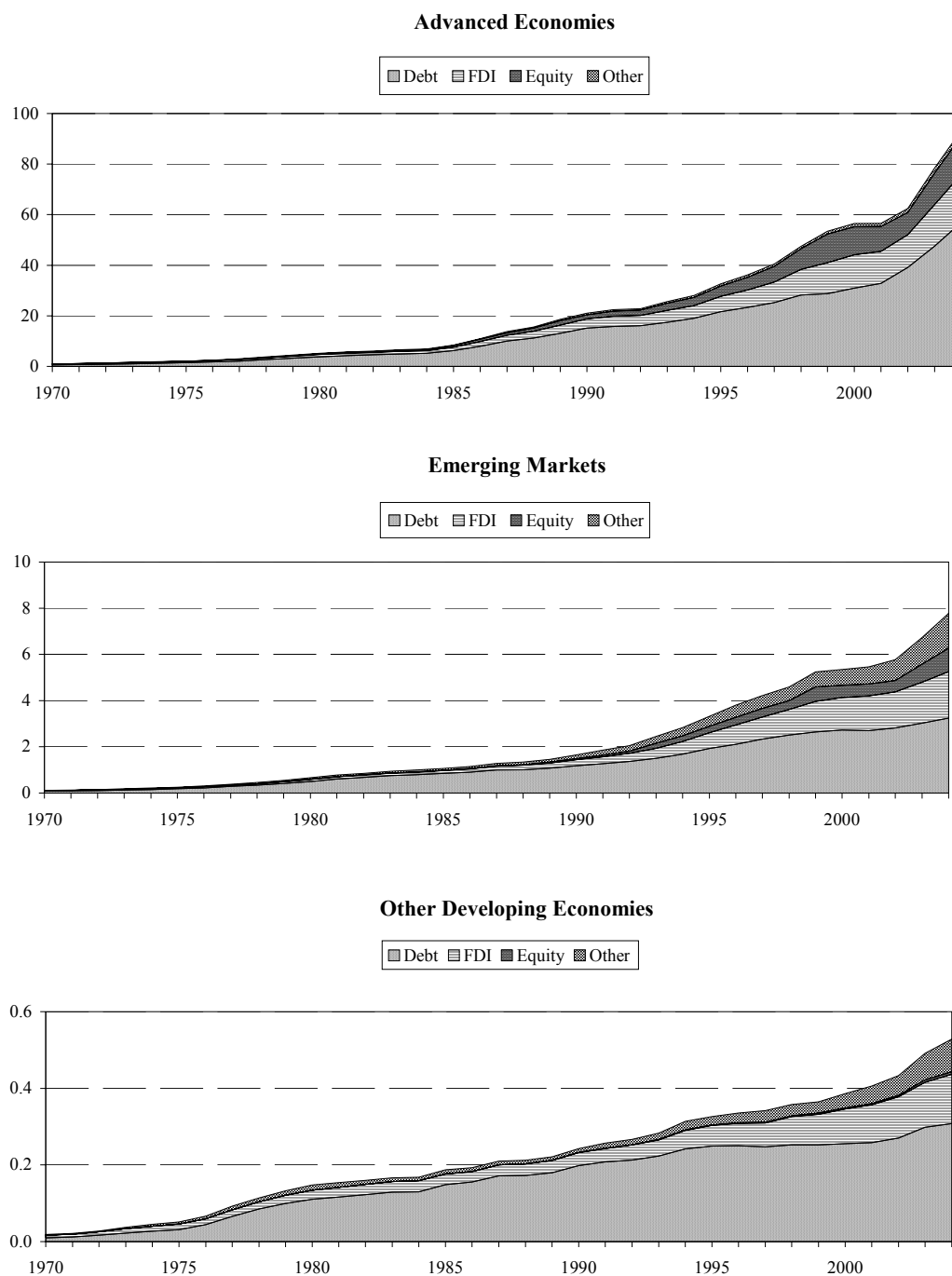
Notes: See notes to Table 4A.

Table 4C. Summary of Key Empirical Studies on FDI and Growth

Study	Number of Countries / Time Period	Dependent Variable / Regression Methodology	Financial Openness Measure	Main Findings
Balasubramanyam, Salisu, and Sapsford (1996)	46 1970–1985	$\Delta Y$ <i>Cross section OLS, IV</i>	FDI/Y	MIXED: FDI has a positive impact on economic growth in countries which have export-oriented rather than import substituting trade policies.
Borensztein, De Gregorio, and Lee (1998)	69 1970–1989	$\Delta Y_c$ <i>Cross-section IV; decade panel pooled SUR, IV</i>	FDI/Y	MIXED: FDI contributes to growth in countries with a higher level of human capital.
De Mello (1999)	31 1970–1990	$\Delta Y, I, \Delta TFP$ <i>VARs, cointegration; annual panel FE IV, pooled group</i>	FDI	MIXED: Growth effects of FDI depend on the degree of complementarity and substitution between FDI and domestic investment.
Haveman, Lei, and Netz (2001)	74 1970–1989	$\Delta Y_c$ <i>5-yearly panel FE</i>	FDI/Y	POSITIVE: FDI leads to increased growth.
Lensink and Morrissey (2002)	88 1970–1998	$\Delta Y_c$ <i>Cross section OLS, decade panel FE, IV</i>	FDI/Y	MIXED: FDI has a positive impact on growth, but evidence is weak in developing countries. FDI volatility has a negative growth effect.
Hermes and Lensink (2003)	67 1970–1995	$\Delta Y_c$ <i>Cross section OLS, 5-yearly panel FE, RE</i>	FDI/Y	MIXED: FDI has a positive growth impact if financial system sufficiently developed.
Choe (2003)	80 1971–1995	$\Delta Y_c$ <i>5-yearly panel VAR</i>	FDI/Y	MIXED: FDI Granger-causes economic growth, and vice versa, but effects are more emphasized from growth to FDI than from FDI to growth.
Alfaro, Chanda, Kalemli-Ozcan and Sayek (2004)	71 1975–1995	$\Delta Y_c$ <i>Cross section OLS, IV</i>	FDI/Y	MIXED: FDI has a significantly positive effect on growth in countries with well-developed financial markets.
Carlovic and Levine (2005)	72 1960–1995	$\Delta Y_c$ <i>Cross section OLS, 5-yearly panel dynamic system GMM</i>	FDI/Y	MIXED: FDI inflows do not exert an independent influence on economic growth.
Blonigen and Wang (2005)	69 1970–1989	$\Delta Y_c$ <i>10-yearly panel RE, pooled SUR</i>	FDI/Y	MIXED: FDI has a positive impact on growth in less developed countries provided education levels are high enough, but not in developed countries.
Aykut and Sayek (2005)	37 1990–2002	$\Delta Y_c$ <i>Cross section OLS IV</i>	FDI/Y	MIXED: While manufacturing sector FDI has a positive impact on growth, primary or service sector FDI has no significant impact.

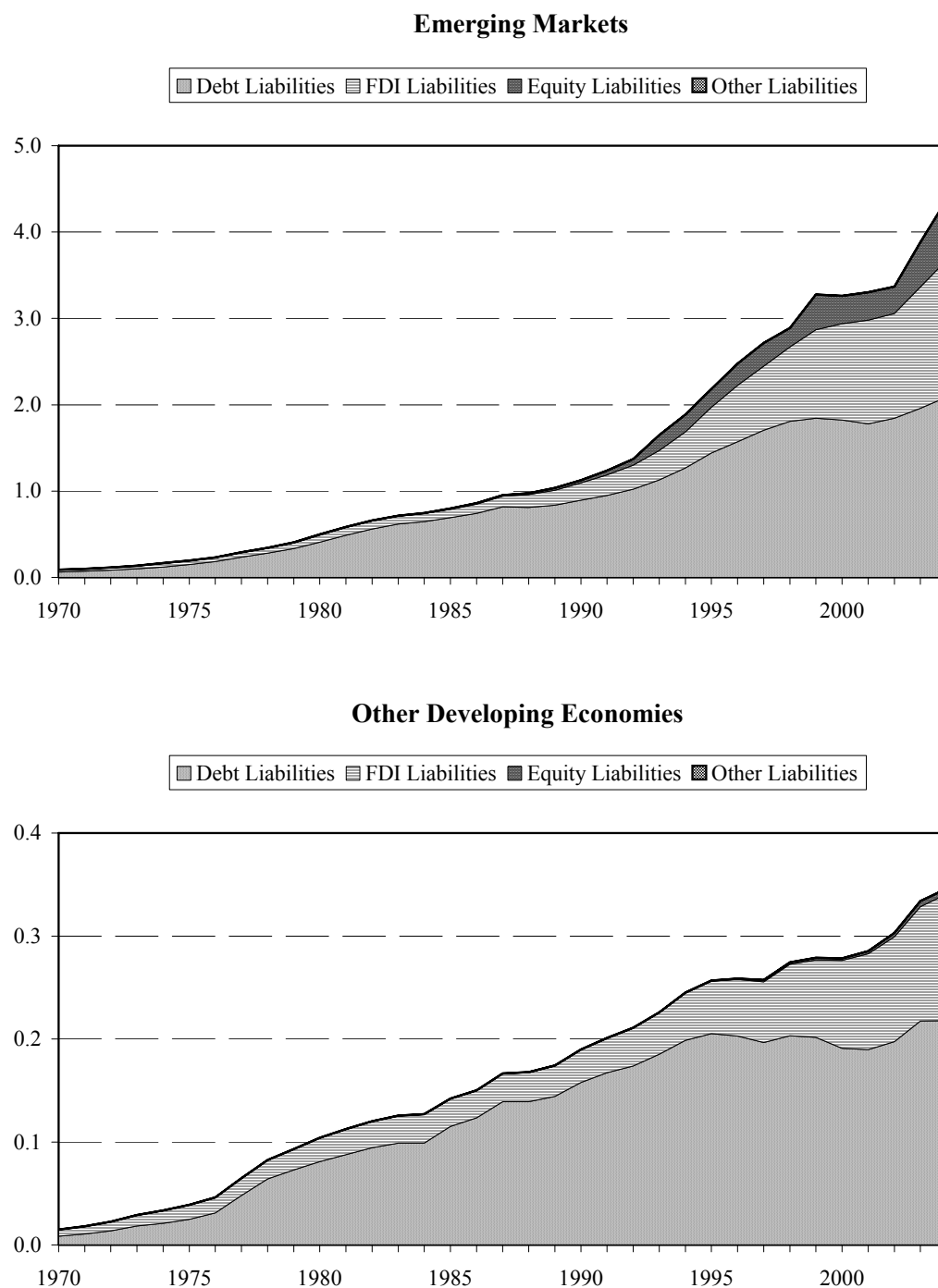


Figure 1. Gross International Financial Assets and Liabilities, 1970–2004  
(trillions of U.S. dollars)



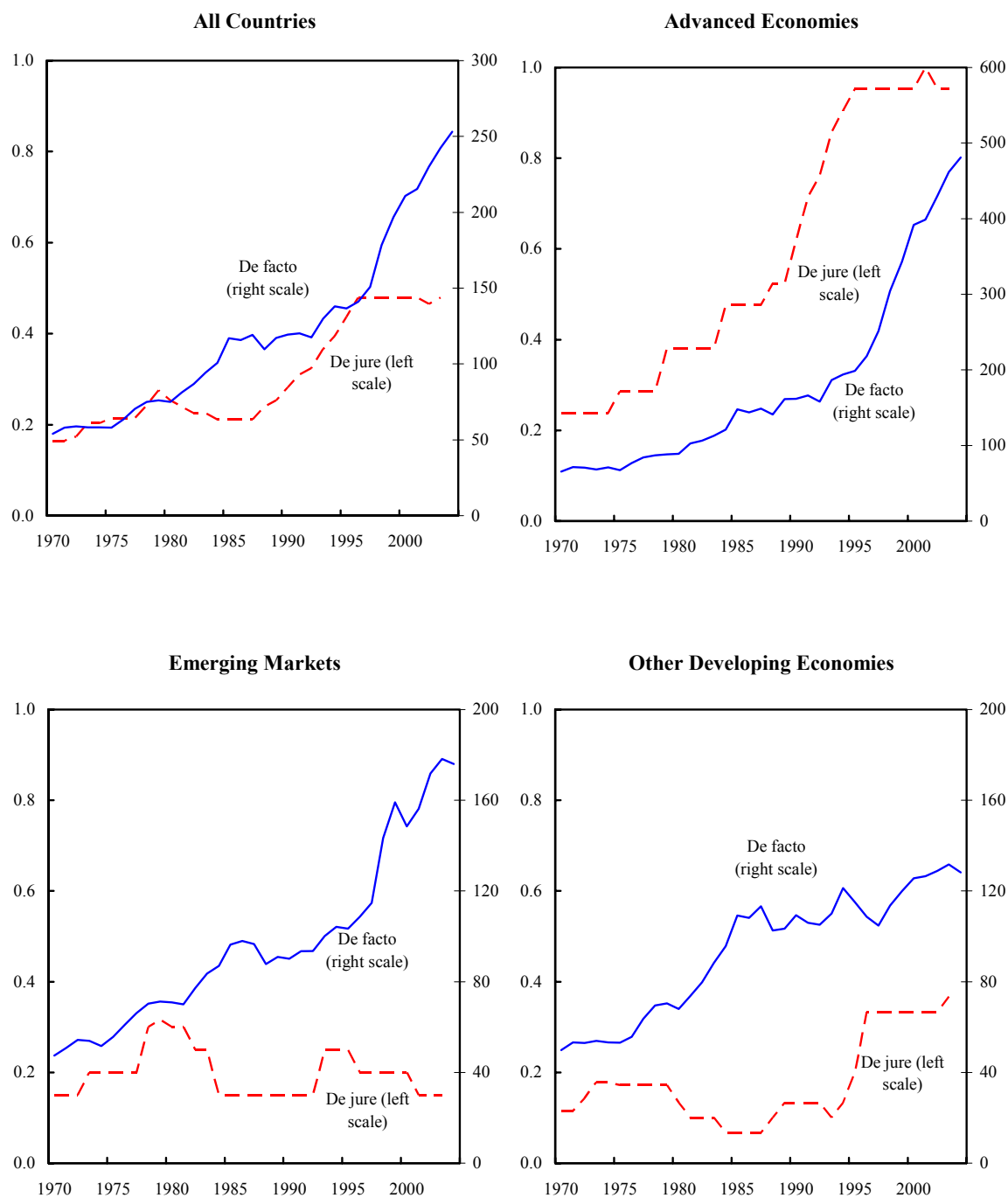
The financial integration data are based on a dataset constructed by Lane and Milesi-Ferretti (2006). The charts show how the components add up to the total integration measure in each period. Debt includes both official and unofficial debt. The category "Other" includes financial derivatives and total reserves minus gold. See the Data Appendix for a listing of countries in each group.

Figure 2. Gross International Financial Liabilities of Developing Economies, 1970–2004  
(trillions of U.S. dollars)



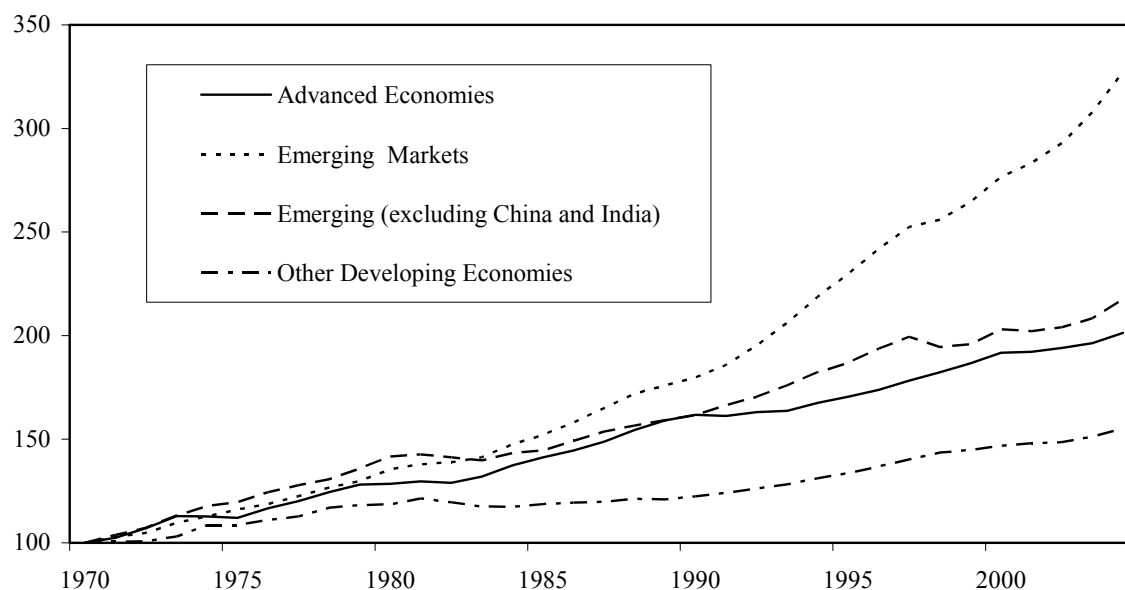
Notes: The financial integration data are based on a dataset constructed by Lane and Milesi-Ferretti (2006). The charts show how the components add up to the total integration measure in each period. Debt includes both official and unofficial debt. The category "Other" includes financial derivatives and total reserves minus gold. See the Data Appendix for a listing of countries in each group.

Figure 3. Evolution of International Financial Integration, 1970–2004



Notes: This figure shows unweighted cross-country averages, within each group, of two measures of capital account openness. The de jure measure is based on the IMF 0-1 capital account restrictiveness classification, with 1 representing countries that have open capital accounts. The de facto measure is based on the ratio of gross stocks of foreign assets and liabilities to GDP, with the raw data taken from Lane and Milesi-Ferretti (2006). See the Data Appendix for a listing of countries in each group.

Figure 4. GDP (per capita, PPP weighted), 1970–2004



Notes: This plot shows cumulative changes in indexes of per capita GDP for each group of countries, computed using growth rates of real GDP for each country and weighting these by a PPP adjustment factor. The indexes are set to 100 in the base period. See the Data Appendix for a listing of countries in each group.

Figure 5A. Level of Financial Openness and GDP Growth, 1985–2004

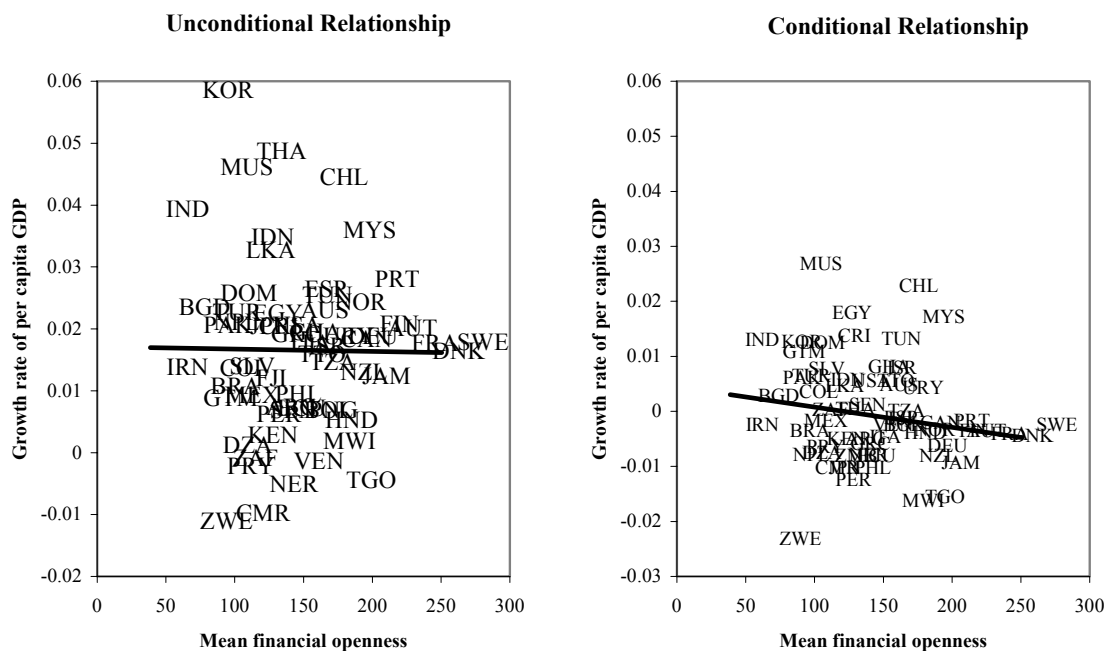
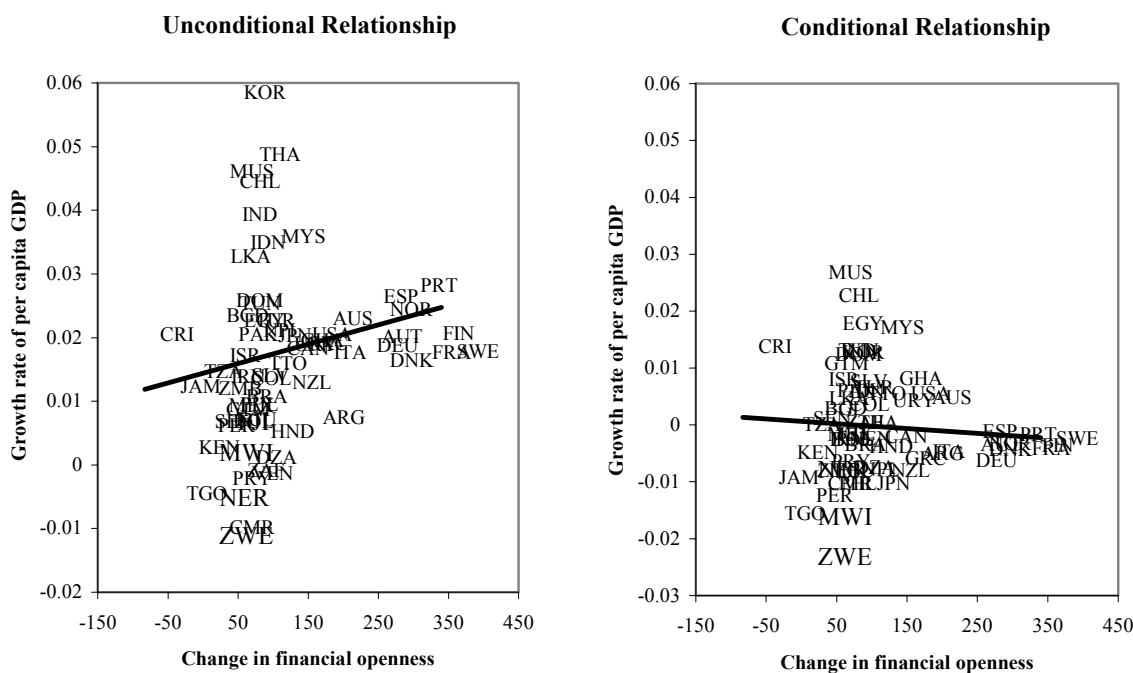


Figure 5B. Change in Financial Openness and GDP Growth, 1985–2004



Notes: Growth refers to the average real per capita GDP growth. Financial openness is defined as the ratio of gross stocks of foreign assets and liabilities to GDP and is based on a dataset constructed by Lane and Milesi-Ferretti (2006). The second panel uses residuals from a cross-section regression of growth on initial income, population growth, human capital and the investment rate. See Appendix II for abbreviated country names.

Figure 6A. Financial Openness and Financial Development, 1985–2004

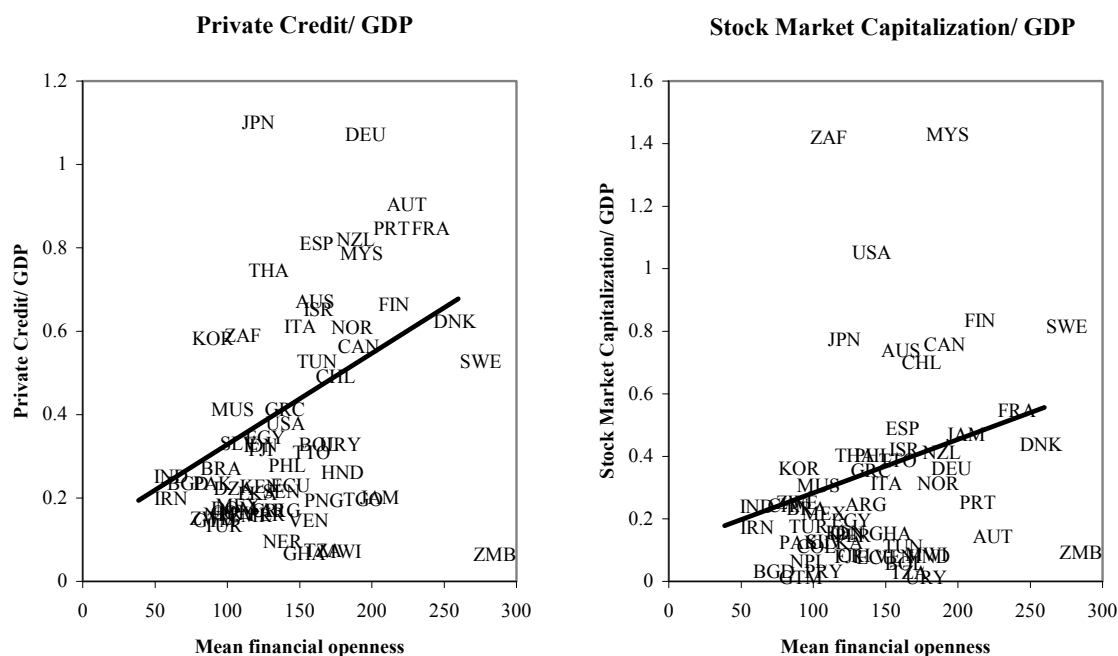


Figure 6B. Financial Openness and Institutional Quality, 1985–2004

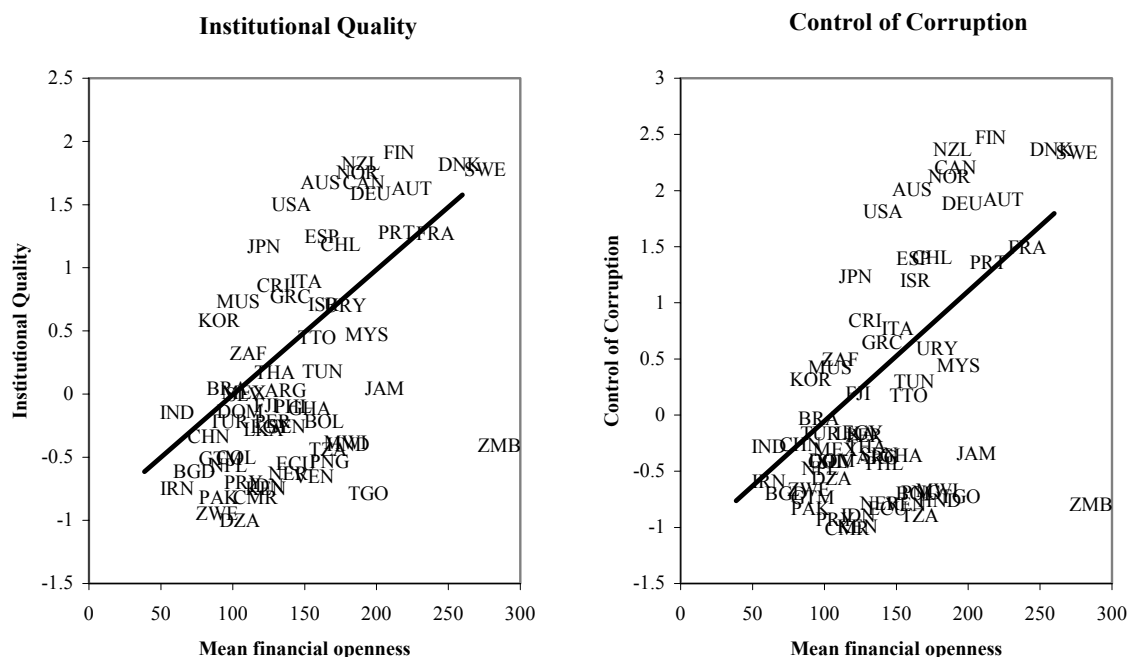
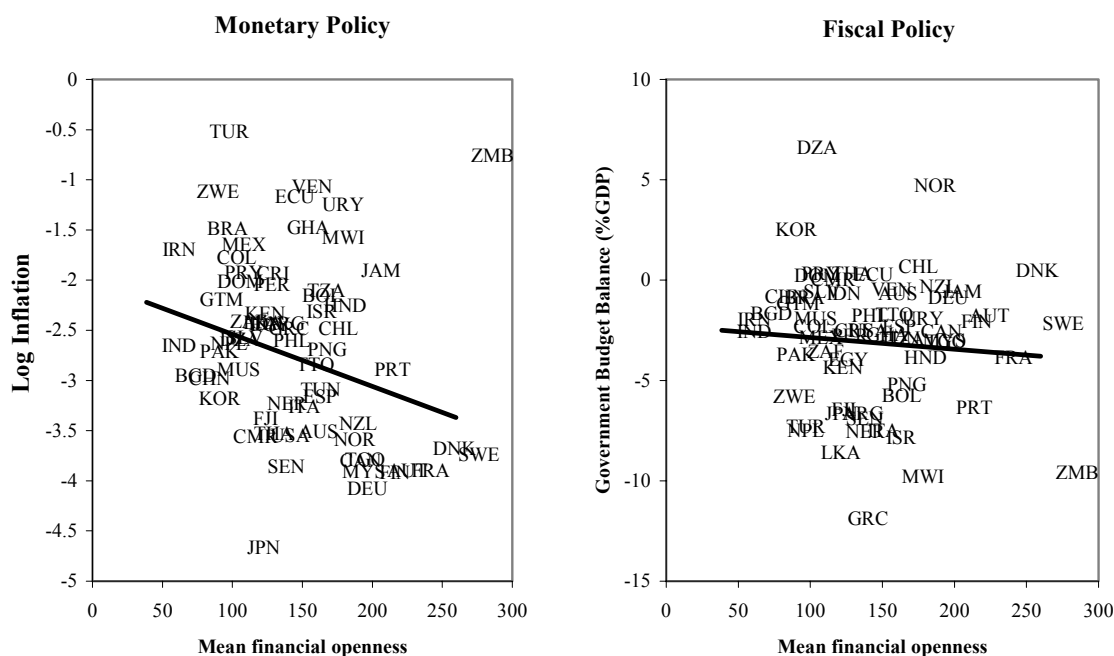


Figure 6C. Financial Openness and Macroeconomic Policies, 1985–2004



Notes: The financial integration data are based on a dataset constructed by Lane and Milesi-Ferretti (2006). Financial Development data are taken from Beck and Al-Hussainy (2006). Private Credit refers to credit given to the private sector by deposit money banks and Stock Market Capitalization is defined as the value of listed shares. Institutional quality data are from Daniel Kaufmann, Aart Kraay and Massimo Mastruzzi (2005) and cover the period 1996-2004. Institutional Quality is the average of the following indicators: Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. Monetary and fiscal data are from the World Bank's World Development Indicators and the IMF's International Financial Statistics and World Economic Outlook databases. Inflation is defined as the annual change in CPI. Government Budget Balance is the difference between government revenues and government expenditures. See Appendix II for abbreviated country names.

## APPENDIXES

### I. Capital Controls

As we discuss in the text, a number of papers in the literature use de jure measures of financial openness that are mostly based on the extent of various forms of capital controls. This appendix provides some basic information about de jure capital controls and their measurement in practice. We first analyze the main categories of capital controls. Next, we discuss how detailed capital control measures are presented in the main data sources and explain how these measures are utilized in empirical studies. We conclude with a brief discussion about the overlap between capital controls and prudential measures.

#### A. Capital Controls: Direct Versus Indirect Controls

Controls on capital account transactions can be studied under two main categories: direct (or administrative) controls and indirect (market-based) controls. Direct controls are associated with administrative measures, such as direct prohibitions, explicit limits on the volume of transactions, or approval procedures to limit capital account transactions. These controls often aim at restricting the volume of financial flows.

Indirect (or market-based) capital controls include dual or multiple exchange rate systems, explicit or implicit taxation of cross-border financial flows (e.g., Tobin taxes), and other—mainly price-based—measures. While these measures primarily affect the price of a financial transaction, they could also affect the volume (see Ariyoshi and others 2000).

#### B. Measuring Capital Controls

Capital control measures in most of the studies discussed in the text are based on the information provided by the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER). Since 1996, the AREAER publishes detailed descriptions about exchange rate policies, arrangements for payments and receipts, and controls on capital transactions of each member country of the IMF. The publication also includes a summary table of codes about the features of exchange rate arrangements and regulatory frameworks for current and capital account transactions. The main categories relating to exchange rate arrangements and regulatory frameworks for current account transactions are as follows (these are drawn from the compilation guide of the 2005 AREAER):

- Exchange rate arrangements: Various categories of arrangements, including regimes such as pegged exchange rate, crawling band, and independently floating rates.
- Exchange rate structure: Dual versus multiple exchange rates.
- Arrangements for payments and receipts: Bilateral and regional arrangements for international payments and receipts; controls on exports and imports of gold and banknotes.



- Resident/nonresident accounts: Regulations about the nature and operation of different types of accounts.
- Imports and import payments/Exports and export proceeds: Restrictions on the nature and extent of exchange and trade restrictions on imports/Restrictions on the use of export proceeds, as well as regulations on exports.
- Payments for (Proceeds from) invisible transactions and current transfers: Procedures and regulations governing a wide set of payments, such as trade- and investment-related payments, and repatriation requirements from various transactions and transfers.

In addition, the summary table provides information about controls and provisions involving capital account transactions in the following 13 categories:

- Capital market securities: Shares and other securities of a participating nature, and bonds and other securities with an original maturity of more than one year.
- Money market instruments: Securities with an original maturity of one year or less, such as certificates of deposit and bills of exchange.
- Collective investment securities: Share certificates and registry entries or other evidence of investor interest in an institution for collective investment, such as mutual funds and investment trusts.
- Derivatives and other instruments: Refers to operations in other negotiable instruments and nonsecuritized claims not covered under the subsections above.
- Commercial credits: Covers operations directly linked to international trade transactions or with the rendering of international services.
- Financial credits: Includes credits other than commercial credits granted by all residents, including banks, to nonresidents, or vice versa.
- Guarantees, sureties, and financial backup facilities: Includes those provided by residents to nonresidents and vice versa. Also includes securities pledged for payment of a contract, such as warrants, performance bonds, and letters of credit.
- Direct investment: Refers to investments for the purpose of establishing lasting economic relations both abroad by residents and domestically by nonresidents.
- Liquidation of direct investment: Refers to the transfer of principal, including the initial capital and capital gains, of a direct investment defined above.
- Real estate transactions: Refers to the acquisition of real estate not associated with direct investment, including, for example, investments of a purely financial nature in real estate or the acquisition of real estate for personal use.

- Personal capital transactions: Transfers initiated on behalf of private persons and intended to benefit other private persons, e.g., gifts, endowments, loans, inheritances.
- Provisions specific to commercial banks and other credit institutions: Describes regulations that are specific to these institutions, such as monetary, prudential controls, and foreign exchange controls.
- Provisions specific to institutional investors: Describes controls specific to institutions such as insurance companies and pension funds, such as a limit on the share of the institution's portfolio that may be held in foreign assets.

Since most of the de jure based studies we cite draw on the AREAER issues published before 1996, it is important to note that the coverage in prior years was similar in scope, but less detailed.<sup>59</sup> For example, before 1996, the summary table of codes presented information about restrictions involving payments, exports and imports in only six categories:

- Restrictions on payments on capital account transactions
- Restrictions on payments for current account transactions
- Bilateral payments arrangements with members and nonmembers
- Import surcharges
- Advance imports deposits
- Surrender/repatriation requirements for export proceeds

The information in the AREAER has been used to produce various de jure measures of financial openness (see Edison et. al., 2004). Most of the studies first produce a binary measure of financial openness based on the information in the line labeled "Restrictions of payments on capital account transactions" in the summary table. This binary measure is then used to generate a "share" variable measuring the proportion of years in which countries had no restrictions on payments on capital accounts (see Grilli and Milesi-Ferretti, 1995 and Rodrik, 1998). Other studies consider more comprehensive de jure measures by analyzing the information content of other lines in the AREAER involving restrictions on payments on current account transactions, exchange rate arrangements, and surrender requirements of export proceeds in addition to restrictions on payments on capital account transactions (see Chinn and Ito, 2005). Instead of just relying on the summary table, some others construct measures by translating the information content of the narrative descriptions in the AREAER into binary variables (see Quinn, 1997). As we discuss in the text, there are advantages and disadvantages associated with each of these measures.

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<sup>59</sup> Miniane (2004) extends the summary measures of disaggregated capital controls in the AREAER's post-1996 format back to 1983 for a small group of countries.

### **C. Capital Controls and Prudential Measures**

In addition to the long-list of problems involving de jure measures that are discussed in the text, a further complication is that these measures are unable to capture the full extent of controls since they do not necessarily differentiate a prudential measure from a capital control even though some prudential policies could effectively restrict capital flows (see Ishii et. al., 2002). For example, prudential measures such as reserve and deposit requirements, maturity restrictions, reporting requirements, limits on the use of derivatives can be considered capital controls under certain circumstances. Some prudential measures include treating deposit accounts held by residents and nonresidents differently by imposing discriminatory reserve requirements and interest rate controls. Reporting requirements for specific transactions are also employed to monitor and control capital movements (e.g., derivative transactions, non-trade-related transactions with nonresidents).

## **II. Data**

This appendix lists the countries included in the analysis and also indicates the acronyms used for each country. The full sample of 71 countries is divided into three groups.<sup>60</sup>

### **A. Advanced Economies**

The 21 advanced industrial economies in our sample 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), the Netherlands (NLD), New Zealand (NZL), Norway (NOR), Portugal (PRT), Spain (ESP), Sweden (SWE), Switzerland (CHE), the United Kingdom (GBR), and the United States (USA).

### **B. Emerging Market Economies**

This group includes 20 countries—Argentina (ARG), Brazil (BRA), Chile (CHL), China (CHN), Colombia (COL), Egypt (EGY), India (IND), Indonesia (IDN), Israel (ISR), the Republic of Korea (KOR), Malaysia (MYS), Mexico (MEX), Pakistan (PAK), Peru (PER), the Philippines (PHL), Singapore (SGP), South Africa (ZAF), Thailand (THA), Turkey (TUR), and Venezuela (VEN).

### **C. Other Developing Economies**

This group has 30 countries—Algeria (DZA), Bangladesh (BGD), Bolivia (BOL), Cameroon (CMR), Costa Rica (CRI), the Dominican Republic (DOM), Ecuador (ECU), El Salvador (SLV), Fiji (FJI), Ghana (GHA), Guatemala (GTM), Honduras (HND), Iran (IRN), Jamaica (JAM), Kenya (KEN), Malawi (MWI), Mauritius (MUS), Nepal (NPL), Niger (NER), Papua New Guinea (PNG), Paraguay (PRY), Senegal (SEN), Sri Lanka (LKA), Tanzania (TZA), Togo (TGO), Trinidad and Tobago (TTO), Tunisia (TUN), Uruguay (URY), Zambia (ZMB), and Zimbabwe (ZWE).

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<sup>60</sup> For presentational reasons, in Figures 5 and 6 we excluded the following countries that were outliers: the United Kingdom (GBR), the Netherlands (NLD), Belgium (BEL), Singapore (SGP), Switzerland (CHE), Ireland (IRL), Zambia (ZMB), and China (CHN). Inclusion of outliers did not change our qualitative findings.

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