

Patterns of International Capital Flows and Their Implications for Economic Development

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Introduction

Economic theory posits that capital should, on net, flow from richer to poorer countries. Specifically, in the benchmark neoclassical model, capital should flow from countries that have relatively high capital-to-labor ratios to countries that have relatively low ratios. In an influential paper, Lucas (1990) notes that flows of capital from the north to the south are nowhere near the levels predicted by theory. Financial globalization has taken off in the decade and a half since Lucas wrote his paper, with a substantial increase in cross-border capital flows. Nonindustrial countries, especially the group of emerging market economies, have become much more integrated into international financial markets. What has become of the empirical paradox that Lucas identified? Has increasing financial integration resolved it?

We show that the paradox has, if anything, intensified over time, with capital, in fact, flowing from poor to rich countries. This perverse pattern of flows has been particularly striking since the beginning of this decade. Foreign direct investment (FDI) flows have, in general, behaved more in line with theory, flowing from richer to poorer countries. But the pattern of overall flows is ultimately what is relevant in terms of financing of investment in a country.

The apparent perversity of overall foreign financing is even more dramatic when one examines the allocation of capital across developing countries. As Gourinchas and Jeanne (2006) argue, within this group, capital should flow in greater amounts to countries that have grown the fastest, that is, countries that are likely to have the best investment opportunities.¹ We show that, over the last three decades, the net amount of foreign capital flowing to relatively high-growth developing countries has been smaller than that flowing to the medium- and low-growth groups. During 2000–2004, the pattern is truly perverse, with high-growth and medium-growth countries exporting significant amounts of capital, while low-growth countries receive significant amounts. That capital does not follow growth has been dubbed the “allocation puzzle” by Gourinchas and Jeanne (2006).

These seemingly perverse patterns of global financial flows are closely related to the important question about whether foreign capital plays a helpful, benign, or malign role in the process of economic growth. To get at the possible answers, we first show that for nonindustrial countries, traditional measures of financial integration (such as stocks of foreign liabilities, sum of stocks of assets and liabilities, private capital inflows, FDI inflows, or measures of the extent to which capital flows are constrained by regulations) are not correlated with growth. This is consistent with a growing body of evidence that it is difficult to detect any direct growth benefits of financial integration in macroeconomic data (see Kose, Prasad, Rogoff, and Wei, 2006, for a survey).

We then examine the relationship between current accounts—a measure of total external capital financing available for investment in a country—and growth. We report an interesting new result—contrary to the predictions of standard theoretical models, there isn’t a negative cross-sectional correlation between current account balances and growth among nonindustrial countries. Indeed, for the sample of nonindustrial countries and most subsamples, the correlation is significantly positive. In other words, developing countries that have relied more on foreign finance have not grown faster in the long run and have typically grown more slowly. By contrast, we find that among industrial countries, those that rely more on foreign finance appear to grow faster.

None of this is to say that there are no episodes where nonindustrial countries grow fast and run large current account deficits—East Asia before the crisis is a clear counterexample. Our attempt is to look beyond short-run, foreign-funded booms (and possibly busts) to whether, on average and in the long run, nonindustrial countries that grow the fastest have depended most on foreign finance. They have not.

Indeed, even controlling for the standard determinants of growth in a regression framework, we find a positive association between average current account balances and average growth rates in our sample of nonindustrial countries over the period 1970-2000. The correlation appears to be largely driven by the savings component of the current account, not by the investment component—that is, nonindustrial countries that have higher savings for a given level of investment experience higher growth.²

These findings build upon existing work. Houthakker (1961), Modigliani (1970), and Carroll and Weil (1994) have shown there is a large positive correlation between savings and growth in the cross-section of countries. Of course, investment in high-saving countries also could be higher, so high domestic savings does not imply low reliance on foreign savings—indeed, Aghion, Comin, and Howitt (2006) see high domestic savings as a prerequisite for attracting foreign savings. Gourinchas and Jeanne (2006b) conclude that poorer countries have lower per capita income because they have lower productivity or more distortions than richer countries, not because they are capital-scarce—the implication being that access to foreign capital by itself would not generate much additional growth in these countries.

In addition to Gourinchas and Jeanne (2006a), our paper is closely related to that of Aizenman, Pinto, and Radziwill (2004), who constructed a “self-financing” ratio for countries and found that countries with higher self-financing ratios grew faster in the 1990s than countries with lower ratios. Thus, the connection of capital flows to growth seems to be more than just through financing. If that were all that were important (for example, foreign financing is good for growth

because it expands the resource envelope or is bad because it is excessively volatile), then only inflows or net foreign liability positions should matter. We find that neither of these measures of financial integration seems to matter much for growth.

We discuss a few possible explanations for the observed relationships. First, the positive correlation between current account balances and growth is stronger among less financially developed countries. In these countries, the range of profitable investment opportunities, as well as private consumption, for those that experience growth episodes, may be constrained by financial sector impediments. So, investment can be financed largely through domestically generated savings. Second, a developing country may actively choose not to absorb too much foreign capital in order to avoid exchange rate overvaluation. In turn, this ensures that the country's manufacturing/tradable goods sector is competitive, thus allowing it to play its customary important role in fostering growth.

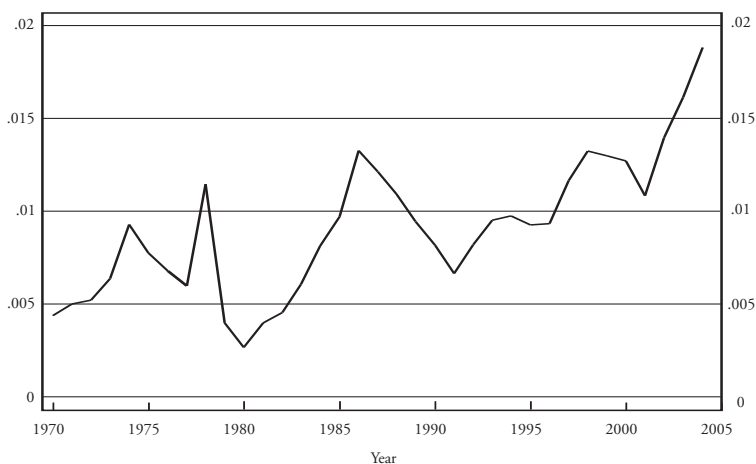
A logical implication of our analysis is that once one accounts for the financial and other structural impediments that limit a poor country's ability to absorb foreign capital, the seemingly perverse flow of capital from poor to rich countries today is not necessarily an artifact of a distorted international financial system. Indeed, it may merely be an accentuation of a historical pattern, whereby fast-growing poor countries have now turned to financing others, including the rich, as opposed to simply relying little on foreign finance as in the past.

Note that the critics of capital account openness (including Bhagwati, 1998; Rodrik, 1998; and Stiglitz, 2000) point to yet another reason countries may actively avoid foreign capital—the broader risks associated with opening up, including the risks of inducing greater economic volatility. We have little to say on this issue, except to note that there is little evidence that capital mobility by itself can precipitate crises (see Kose and others, 2006).

The paper is structured as follows. In the second section, we provide some stylized facts on the patterns of international capital flows to motivate our analysis. In the third section, we examine the correlation between foreign capital inflows and growth; in the fourth

Chart 1

World Current Account Surpluses as a Ratio to World GDP



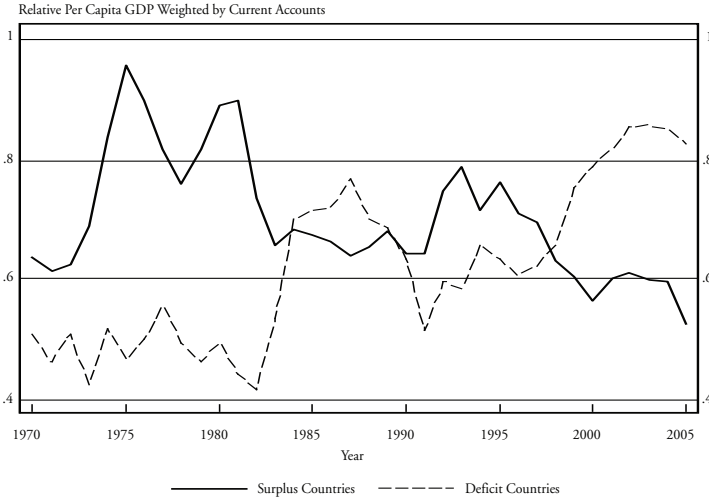
Note: This plot shows the sum of current account surpluses for countries in our sample that report a surplus in a given period as a ratio of the sum of world nominal gross domestic product (GDP) in that period.

section, we examine possible explanations for our findings. In the fifth section, we discuss what our paper might add to the debate about the current global imbalances, and then we conclude in the sixth section.

The direction of flows

We begin by presenting some stylized facts to motivate our analysis.³ Chart 1 shows that the quantum of net global cross-border financial flows, as measured by the sum of current account surpluses over all countries, has been steadily increasing over the last three decades. But even as cross-border capital flows have grown, suggesting a more financially integrated world, the distribution of flows has seemingly become more perverse relative to what standard economic theory would predict. Specifically, in the benchmark neoclassical model, capital should flow from rich countries that have relatively high capital-to-labor ratios to poor countries that have relatively low ratios. Yet, as Chart 2 suggests, the average relative per capita income of surplus countries (weighted by their surpluses, with per capita income measured relative to the richest country in that year) has been

Chart 2
Relative Incomes of Capital-Exporting and
Capital-Importing Countries



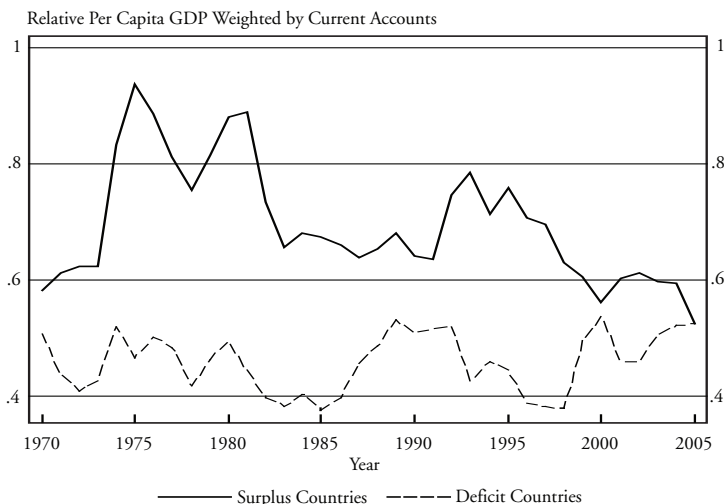
Notes: For each year, we separate our sample of countries into two groups—those with current account surpluses and those with deficits in that year. For the first group, we then take each country's share of the total current account surplus accounted for by all countries in that group. We then multiply that share by the relative purchasing power parity (PPP)-adjusted per capita income of that country (measured relative to the per capita income of the richest country in the sample in that year). This gives us a current account-weighted measure of the relative incomes of surplus countries. We do the same for current account deficit countries. This enables us to compare the relative incomes of surplus versus deficit countries in each year.

trending downward. By contrast, there has been an upward trend in the relative income level of deficit countries.

Indeed, in this century, the relative income of surplus countries has fallen below that of deficit countries. Not only is capital not flowing from rich to poor countries in quantities the neoclassical model would predict—a paradox pointed out by Lucas (1990)—but, in the last few years, it has been flowing from poor to rich countries. However, this is not a new phenomenon. Even in the late 1980s, the weighted average relative income of surplus countries was below that of deficit countries.

Is the pattern in Chart 2 entirely driven by the United States? In Chart 3, we exclude the United States from the calculations. Even without the United States, there is a narrowing in weighted average

Chart 3
**Relative Incomes of Capital-Exporting
and Capital-Importing Countries**
(Calculations Excluding the United States)

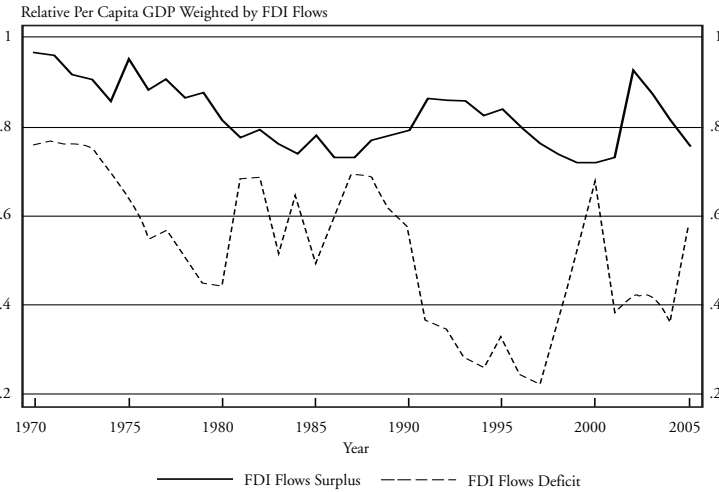


Notes: For each year, we separate our sample of countries into two groups—those with current account surpluses and those with deficits in that year. For the first group, we then take each country's share of the total current account surplus accounted for by all countries in that group. We then multiply that share by the relative PPP-adjusted per capita income of that country (measured relative to the per capita income of the richest country in the sample in that year). This gives us a current account-weighted measure of the relative incomes of surplus countries. We do the same for current account deficit countries. This enables us to compare the relative incomes of surplus versus deficit countries in each year. The calculations are the same as in Chart 2, except that we exclude the United States from the sample.

income levels between surplus and deficit countries by 2005, in contrast to the widening that would be predicted in an increasingly financially integrated world under a strict interpretation of the neoclassical benchmark model.⁴

Capital flows between developed and developing economies may increasingly be dominated by official flows (aid flows, accumulation of international reserves), which may be driven by factors other than the basic rate-of-return equalization motive considered in benchmark neoclassical models. FDI flows by themselves (Chart 4) do behave more in accordance with the models—the weighted average relative income of countries experiencing net FDI inflows is generally lower than that of FDI-exporting countries, though the relative income of

Chart 4
Relative Incomes of Countries that are Net Exporters
and Importers of FDI



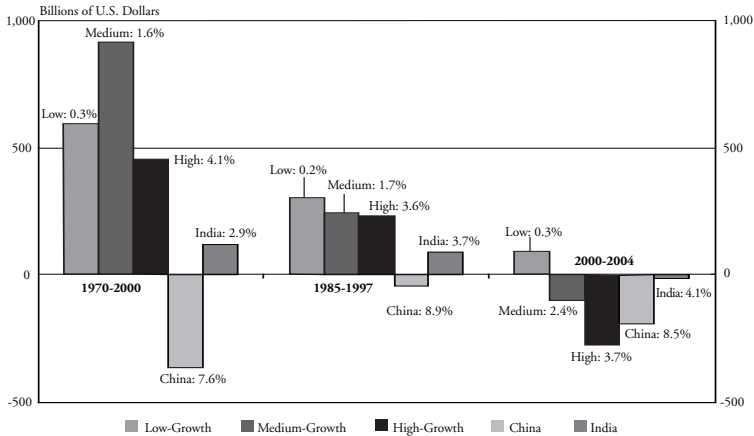
Notes: For each year, we separate our sample of countries into two groups—those with FDI flows surpluses and those with deficits in that year. For the first group, we then take each country's share of the total FDI flows surplus accounted for by all countries in that group. We then multiply that share by the relative PPP-adjusted per capita income of that country (measured relative to the per capita income of the richest country in the sample in that year). This gives us an FDI flows-weighted measure of the relative incomes of surplus countries. We do the same for FDI flows deficit countries. This enables us to compare the relative incomes of surplus versus deficit countries in each year.

senders has been trending down, while the relative income of recipients has been moving up since the mid-1990s.⁵

Next, we examine the allocation of capital across nonindustrial countries. Gourinchas and Jeanne (2006) argue that, within this group, capital should flow in greater amounts to countries that have grown the fastest, that is, countries that are likely to have the best investment opportunities. Does it? We divide nonindustrial countries into three equally sized (by aggregate population) groups, with China and India handled separately, and compute cumulative current account deficits for each group, deflating the computed flows in dollars by the U.S. Consumer Price Index (CPI).

Chart 5 shows that, over the period 1970-2004, as well as over subperiods, the net amount of foreign capital flowing to relatively high-growth developing countries has been smaller than that flowing

Chart 5
The Allocation of Capital Flows to Nonindustrial Countries

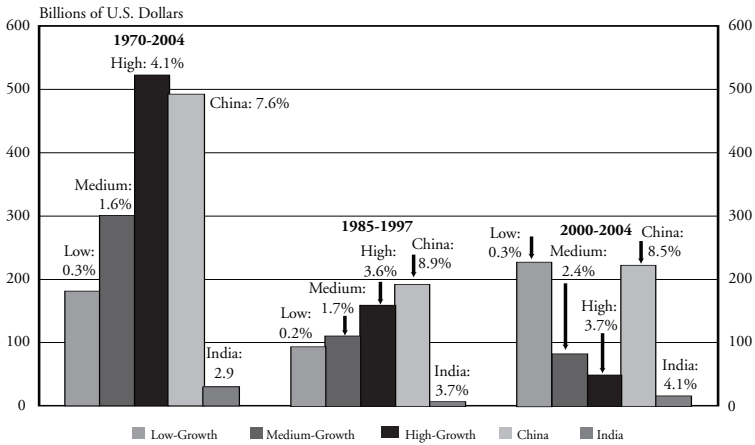


Notes: The nonindustrial countries in our sample are split into three groups with roughly equal total populations in each group. China and India are treated separately. Each panel shows the cumulative current accounts (in billions of U.S. dollars, deflated by U.S. CPI indexed to 1 in 2004) summed up within each group over the relevant period. A negative number indicates a surplus. Median real GDP growth rates for the countries in each group (after averaging over the relevant period for each country) also are shown.

to the medium- and low-growth groups. In fact, China, the fastest-growing country, runs a surplus in every period. During 2000-2004, the pattern is truly perverse, with China, India, high-growth countries, and medium-growth countries all exporting significant amounts of capital, while low-growth countries receive significant amounts. That capital does not follow growth has been dubbed the “allocation puzzle” by Gourinchas and Jeanne (2006).

The puzzle deepens when we examine net FDI flows (Chart 6). Even though during the most recent period (2000-2004) net FDI flows do not follow growth, by and large they do, with the fastest-growing group of nonindustrial countries receiving the most FDI over the period 1970-2004, and China receiving substantial amounts. This suggests that fast-growing countries do have better investment opportunities, which is why they attract more FDI. Yet they do not utilize more foreign capital overall, and, in the case of China, export capital on net.

Chart 6
The Allocation of FDI Flows (Net) to Nonindustrial Countries



Notes: The nonindustrial countries in our sample are split into three groups with roughly equal total populations in each group. China and India are treated separately. Each panel shows the cumulative net FDI inflows (in billions of U.S. dollars, deflated by U.S. CPI indexed to 1 in 2004) summed up within each group over the relevant period. Median real GDP growth rates for the countries in each group (after averaging over the relevant period for each country) are also shown.

Explanations of the Lucas paradox have relied on the notion that the risk-adjusted returns to capital investment may not be as high in poor countries as suggested by their low capital-labor ratios because they have weak institutions (Alfaro and others, 2005) because physical capital is costly in poor countries (Hsieh and Klenow, 2003; Caselli and Feyrer, 2005) or because poor governments default repeatedly on debt finance (Gertler and Rogoff, 1990; Reinhart and Rogoff, 2004). Yet the charts here suggest a deeper paradox. Why does more foreign capital not flow to poor countries that are *growing* more rapidly and where, by extension, the revealed marginal productivity of capital (and probably creditworthiness) is indeed high? More importantly, do these perverse flows of capital adversely affect growth in nonindustrial countries? To address these issues, in the next section, we investigate in more detail the relationship between foreign capital and growth.

The relationship between foreign capital and growth

In this section, we examine the correlations between measures of financial integration and growth. In theory, integration with international financial markets should provide more capital to relatively capital-scarce countries and also could increase the efficiency of that capital by allowing for greater specialization of production among countries. We then look at the relationship between current account balances, which can be regarded as the total amount of finance flowing in or out of a country, and growth.

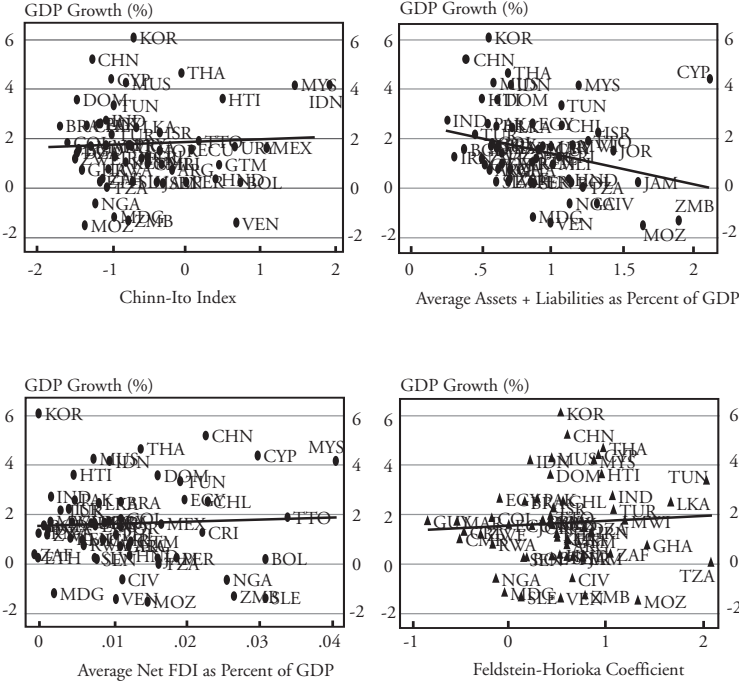
Measures of financial integration

The first task is determining how to measure financial integration. The most common method is to create an index of openness based on compilations of the restrictions a country imposes on capital account transactions—these are typically drawn from the International Monetary Fund's (IMF's) *Annual Reports on Exchange Arrangements and Exchange Restrictions*. But, as argued by Kose, Prasad, Rogoff, and Wei (2006), these *de jure* measures—no matter how sophisticated—cannot capture the enforcement and effectiveness of capital controls, and may, therefore, not be indicative of the true extent of financial integration. Indeed, actual capital flows may be more relevant for examining the role of foreign capital in the growth process. This is why, in addition to *de jure* measures of capital account openness, we also use measures of gross and net inflows of foreign capital, and its components. Because we are interested in long-term growth, we also use measures of stocks of foreign assets and liabilities—as measures of long-term outflows and inflows—constructed by Lane and Milesi-Ferretti (2006). These flow and stock measures can be scaled by gross domestic product (GDP) or the level of the population/workforce, depending on the theory being tested.

Clearly, we face a combinatorial explosion in terms of the appropriate measures. Our strategy will be to present results from a core specification, which we consider to be representative of the large

Chart 7

Financial Integration and Growth, 1970-2000



Notes: The Chinn-Ito Index is taken from Chinn and Ito (2006). Data for the second and third panels are from Lane and Milesi-Ferretti (2006). The Feldstein-Horioka coefficients are based on ordinary least squares regressions of Investment/GDP on Savings/GDP, run separately for each country using nonoverlapping five-year averaged data. These coefficients are plotted against average annual real per capita GDP growth over the full sample.

volume of results that we have obtained. Whenever there are departures from the core specification or when other combinations of the data showed markedly different results, we will mention them.

Financial integration and growth

The starting point in our analysis is that, consistent with Kose and others (2006), there is no relationship, in a broad sample of countries, between GDP growth and the levels of financial openness as measured by stock or flow measures, or between GDP growth and changes in these measures. In Chart 7, we plot the average growth of nonindustrial

countries in the Bosworth-Collins (2003) sample over the period 1970-2000 against the *de jure* Chinn-Ito (2006) measure of capital account restrictiveness, the average stock of gross foreign assets and liabilities to GDP, average net FDI inflows, and the Feldstein-Horioka (1980) correlation coefficient.⁶ In all cases, the slope is essentially flat and never significantly different from zero.

A more formal regression analysis of the cross-country relationship between growth and foreign capital, building on the work of Bosworth and Collins (2003), reveals a similar picture. The dependent variable in Table 1 is the annual average growth rate of per capita (purchasing power parity-adjusted) GDP, taken from the Penn World Tables. We include the following controls in the standard specification: log of initial (1970) per capita GDP, initial period life expectancy, initial period trade openness (the Sachs-Warner measure), the fiscal balance, a measure of institutional quality, and dummies for sub-Saharan African countries and oil exporters. In columns 1 to 5 of Table 1, we successively include different measures of stocks and flows of foreign capital and *de jure* measures of capital account openness in this specification.

With one exception, in column 3 of the table, when we use the sum of inflows and outflows of FDI and portfolio equity as a measure of capital openness, we do not find a positive and significant relationship. But even this result is fragile; dropping one outlier (Singapore) renders the coefficient statistically insignificant.

In interpreting these results, it is important to note that at least one form of reverse causation is not a serious issue. If anything, higher growth should lead to more capital account openness and higher capital inflows, which should generate a positive correlation between these measures and growth. The fact that the estimated coefficients are all insignificant, despite the positive bias that should result from reverse causation, is noteworthy.

One concern is that our results may be dominated by recent crises. We reestimated the regressions for the period 1985-1997, a period which could be considered the heyday of recent financial globalization

Table 1
Financial Integration and Growth
(Dependent Variable: Average Real
Per Capita GDP Growth, 1970-2000)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Initial income	-1.517 *** (0.296)	-1.484 *** (0.281)	-1.521 *** (0.282)	-1.442 *** (0.283)	-1.469 *** (0.278)	-1.273 *** (0.213)	-1.259 *** (0.208)	-1.242 *** (0.220)
Initial life expectancy	0.044 * (0.029)	0.059 ** (0.027)	0.053 ** (0.026)	0.050 ** (0.028)	0.055 ** (0.029)	0.016 (0.024)	0.026 (0.025)	0.026 (0.025)
Sachs-Warner	1.840 *** (0.615)	1.947 *** (0.676)	1.753 *** (0.664)	2.012 *** (0.736)	1.912 *** (0.619)	1.585 ** (0.631)	1.701 ** (0.582)	1.713 ** (0.617)
Fiscal balance/GDP	0.160 *** (0.061)	0.096 * (0.061)	0.112 *** (0.047)	0.166 *** (0.061)	0.154 *** (0.058)	0.047 (0.052)	0.062 (0.051)	0.064 (0.056)
Institutional quality	5.017 *** (1.614)	4.452 *** (1.603)	4.293 *** (1.531)	4.499 *** (1.835)	4.648 *** (1.724)	4.816 ** (1.504)	4.505 ** (1.590)	4.470 ** (1.595)
Stock of FDI liabilities /GDP	0.742 (0.873)							
Net FDI flows/GDP		-3.892 (11.304)						
Gross FDI+equity flows/GDP			8.895 ** (4.293)					
Chinn-Ito capital account openness measure				-0.137 (0.177)				
Stock of total foreign assets and liabilities/GDP					-0.152 (0.228)			
Stock of total foreign assets/GDP						0.019 *** (0.005)		
Stock of total foreign liabilities/GDP						-0.015 *** (0.003)		
Net foreign assets/GDP							0.014 *** (0.004)	
Net foreign assets/GDP if net foreign assets/GDP ≥ 0								0.011 * (0.006)
Net foreign assets/GDP if net foreign assets/GDP < 0								0.025 * (0.014)
Adjusted R squared	0.697	0.686	0.700	0.697	0.699	0.775	0.770	0.754
Number of observations	59	61	61	59	59	59	59	59

Notes: Financial integration measures are taken from Lane and Milesi-Ferretti (2006) and Chinn and Ito (2006). Regressions, including stock measures of financial integration, exclude two countries for which we did not have those data. In the last column, we interact dummies for countries with average net-foreign-assets-to-GDP ratios above and below zero, respectively, with the average net-foreign-assets-to-GDP ratio. Dummies for oil-exporting countries and sub-Saharan African countries are included in all regressions. One, two, and three asterisks indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

because there was a sharp increase in capital flows toward developing countries during this period. The period was also largely a tranquil one in financial markets (barring the Tequila Crisis in late 1994). Our results for this period (not shown here), however, were not qualitatively different from those for the period 1970-2000 that we have just reported. Finally, we checked that the slope on the financial integration variable is not different for emerging markets.

Admittedly, our approach here is a crude one, and we do not formally examine nonlinearities in the relationship between financial integration and growth, or the possibility of threshold effects—whereby the beneficial effects of financial integration may show up only when the right initial conditions are in place. Our main point here is that detecting the potential beneficial effects is hardly as straightforward as theory would suggest.⁷

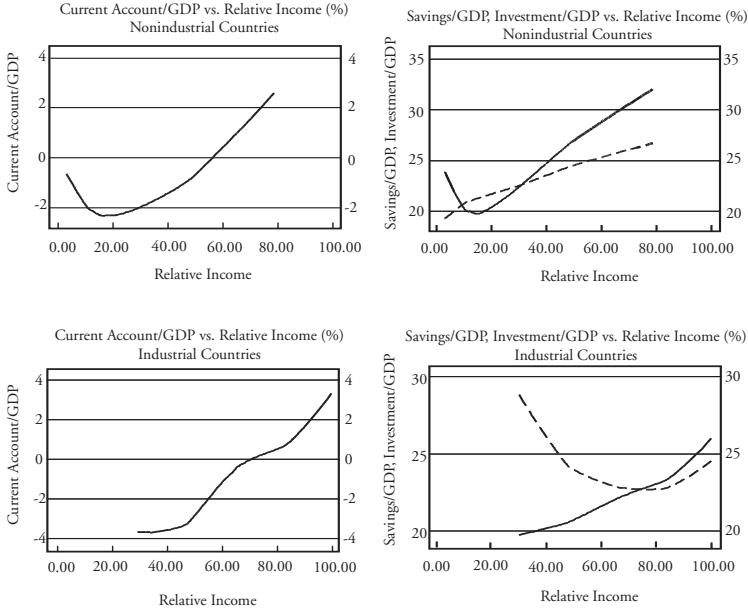
Current account balances and growth

We now will look at the correlation between current accounts and growth. Not only is the current account a summary of the net flows out of a country, but it is also the right measure when we consider issues like aggregate savings and investment, as well as exchange rate overvaluation, all of which will be important in what follows.⁸

There is a well-developed theory of the life cycle model applied to countries that has implications for the evolution of current account balances (see the discussion in Chinn and Prasad, 2003). Poor countries that open up to foreign capital early in the development process would be expected to run current account deficits as they import capital to finance their investment opportunities. Eventually, these countries would become relatively capital rich and begin to run trade surpluses, in part to pay off the obligations built up through their accumulated current account deficits. Thus, the relationship between the level of the current account and relative income across countries is likely to be U-shaped, with the very poor not being open or able to borrow, the moderately poor running large current account deficits, and the rich running surpluses.

Chart 8

Nonparametric Regressions of Saving-Investment Balances on Relative Income (Percent)



Notes: Country-year observations were stacked together over the period 1970-2000 and sorted by relative PPP-adjusted per capita income levels, with relative income measured against the richest country in the sample in that year (the United States or, in some years, Switzerland). The smoothed plot was obtained using the Lowess routine in Stata. The savings-investment plot for developing countries does not fully match the current account plot because (1) the curves were fitted independently for the three variables and (2) because of measurement problems, the current account to GDP ratio does not exactly match the difference between the ratios of savings and investment to GDP for the developing countries, especially in the early years of the sample.

What does the evidence show? Chart 8 contains smoothed plots of the relationship between relative income and the level of the current account balance for nonindustrial countries and industrial countries in the Bosworth-Collins sample.⁹ The lowest current account balance for developing countries is reached at fairly low levels of relative income, with a strong positive relationship between the current account balance and a country's level of relative income thereafter (top left panel). Note that, for this group of countries, the current account balance increases because the savings-to-GDP ratio rises even faster than investment with rising relative income (top right panel).

For industrial countries, though, the investment-to-GDP ratio falls with rising relative income, even while savings increases. So, there is the expected positive relationship between the current account balance and relative income. Indeed, these plots are consistent with the results of Lane and Milesi-Ferretti (2001), who show a positive correlation between countries' net foreign asset positions and their relative incomes.

While Chart 8 is about the relationship between the current account and relative income levels of countries, the next two charts offer a different way of characterizing the role of foreign capital in growth. In Chart 9A, we plot the simple correlation between growth and the current account balance for the sample of nonindustrial countries. Note that these are unconditional correlations that do not control for the typical variables that are associated with growth. We will include these variables shortly. But it is clear that even unconditionally, there is a strong positive correlation, suggesting that countries that rely less on foreign capital grow more. There may be a concern that the correlation is driven by underperforming countries that receive lots of aid, so in Chart 9B we drop countries that received average annual aid of more than 10 percent of GDP. The magnitude of the correlation is now larger.

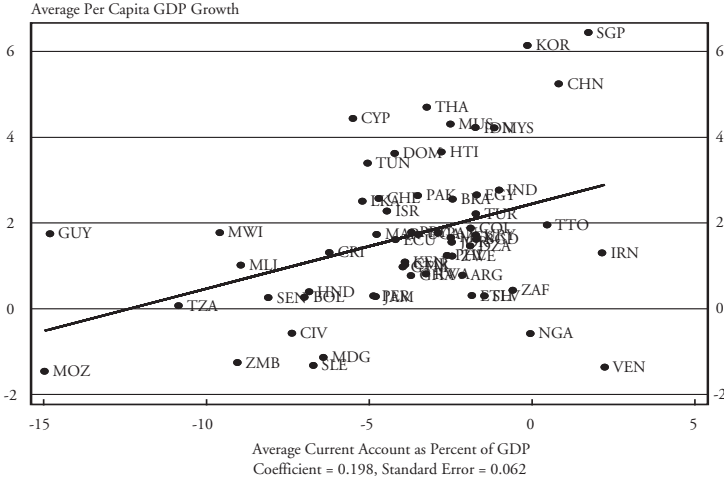
In Chart 10, we examine growth rates, splitting the sample of nonindustrial countries into four groups, depending on whether they are above or below the median levels of the ratios of investment to GDP and current account to GDP, respectively. The chart shows that countries with higher levels of investment fare better than those with lower levels, which is not surprising. What is noteworthy is that countries that had high investment ratios *and* lower reliance on foreign savings (lower current account deficits) grew faster—on average, by about 1 percent a year—compared with countries that had high investment but also a greater degree of reliance on foreign capital.

A similar picture from a different perspective is in Chart 11, where we plot the relationship between growth and the current account for countries that experienced growth spurts (as identified by Hausmann, Rodrik, and Pritchett, 2005), differentiating their performance before

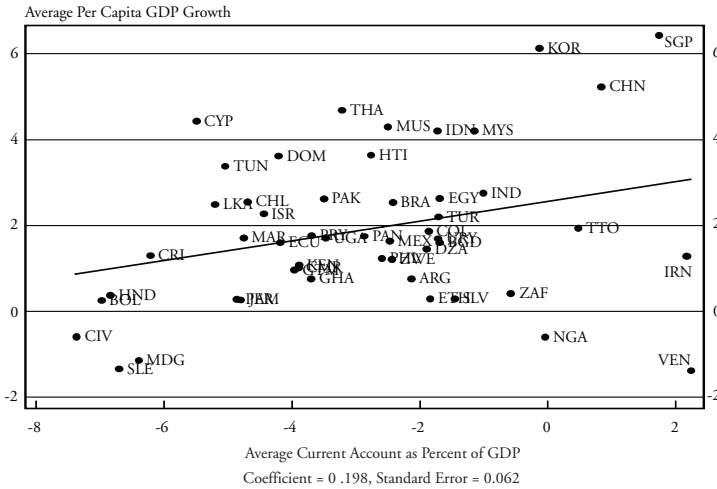
Chart 9

Current Account Balance and Growth in Developing Countries 1970-2000: Unconditional Relationship

A: Full Sample

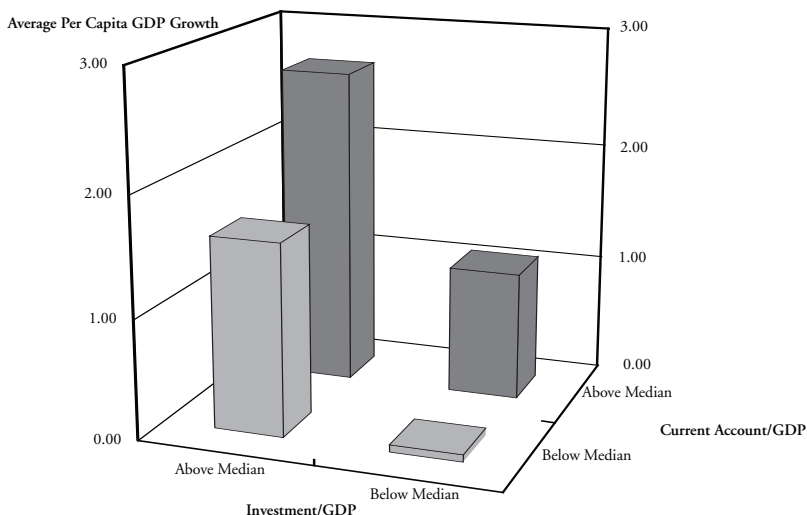


B: Sample Excluding Countries with Aid/GDP >0.10



Notes: Sample excludes Nicaragua. Including Nicaragua yields larger positive coefficient.

Chart 10
**Current Accounts, Investment, and Growth in
Developing Countries**

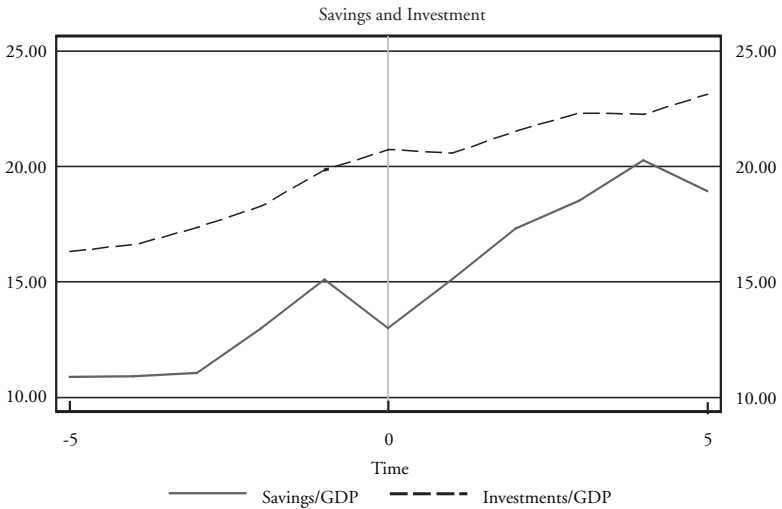
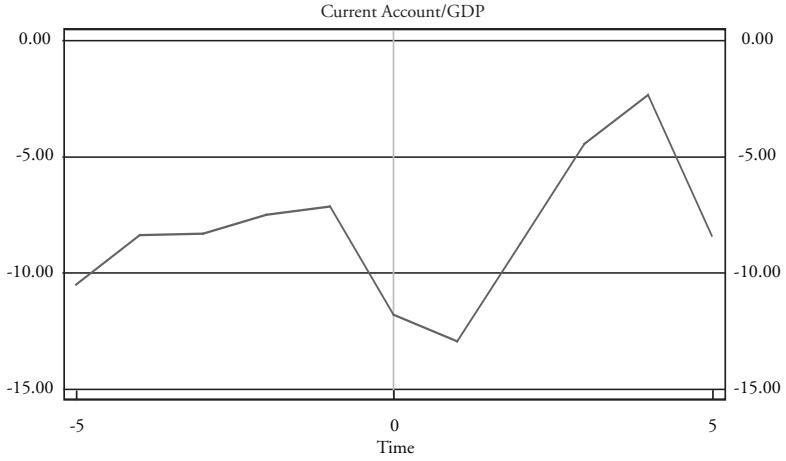


and during the growth spurt. On average, current account balances increase around the beginning of growth spurts (or, put differently, current account deficits narrow), with the lower panel showing savings growing faster than investment. In other words, while going from slow to faster growth, countries also reduce foreign financing of domestic investment.

This is not to say that all forms of foreign finance fall during growth spurts. Indeed, in the five years following the initiation of a growth spurt, the average FDI-to-GDP ratio rises from an annual average of 0.2 percent in the five years before to 0.7 percent. Similarly, using the Jones and Olken (2005) episodes of growth decelerations, we find that the average FDI-to-GDP ratio falls from an average of 1.7 percent in the five years before the deceleration to 1 percent in the five years after. But even these increases and decreases are small compared to the changes in domestic savings following a growth spurt or deceleration.

Chart 11

Savings-Investment Balances Around Growth Spurts: Developing Countries, 1970-2000



Notes: Timings of growth spurts are based on Hausmann, Pritchett, and Rodrik (2005).

Having identified what appears to be a clear association between current account balances and growth, we now turn to a more formal analysis of this relationship in a regression framework similar to the one used in the previous section to examine the effects of financial integration on growth. The regression results are presented in Table 2. The dependent variable is the average per capita GDP growth rate over the period 1970-2000, and the covariates are the standard ones as in the previous section. When we include the full nonindustrial country sample, the coefficient on the current account balance is positive and tightly estimated (column 1).

Nicaragua appears to be a significant outlier in such regressions. Dropping Nicaragua from the sample yields our core specification (column 2), in which the coefficient on the current account remains positive and significant at the 5 percent level. The coefficient estimate suggests that a 1 percent increase in the growth rate is associated with a 1 percentage point improvement in the current account. The regression estimates are robust to dropping different outliers or dummifying out groups like oil exporters.

Importantly, the correlation between growth and the current account balance is strongest and positive for poor countries, moderate and positive for emerging markets, and negative and significant for industrial countries (Table 2, column 3). The marginal relationship between growth and the current account suggested by the regression is as follows: For industrial countries, it is negative, -0.15 (0.12 minus 0.26), and both significantly different from that of nonindustrial countries and significantly different from zero. For emerging markets, it is positive, 0.06 (0.12 minus 0.06), but not statistically significantly different from the coefficient on other developing countries of 0.12 . Thus, it turns out that while developing countries grow faster by relying less on foreign savings, it is just the opposite for industrial countries. Put another way, neither China nor the United States, both fast-growing countries for their stage of development, are running perverse current account balances relative to the norm. They are just extreme examples of their respective class of country.

Table 2

Current Account Deficits and Growth: Cross-Section Regressions for Developing Countries (Dependent Variable: Average Real Per Capita GDP Growth, 1970-2000)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Current account/GDP	0.139 *** (0.037)	0.098 ** (0.046)	0.121 ** (0.053)	-0.002 (0.062)	0.112 *** (0.044)	0.082 * (0.048)		0.077 * (0.047)
Initial income	-1.293 *** (0.193)	-1.257 *** (0.203)						
Initial life expectancy	0.035 * (0.025)	0.032 * (0.024)						
Sachs-Warner	1.872 *** (0.649)	1.879 *** (0.649)						
Fiscal balance/GDP	0.019 (0.050)	0.023 (0.044)						
Institutional quality	4.054 *** (1.522)	4.252 *** (1.533)						
Industrial countries			-0.264 *** (0.078)					
Emerging markets			-0.062 (0.151)					
Savings/GDP				0.089 *** (0.033)				
Investment/GDP					0.076 ** (0.032)			
Overvaluation							-0.007 * (0.005)	-0.007 ** (0.004)
Ratio of working-age population to total population						0.150 *** (0.054)	0.141 *** (0.048)	0.134 *** (0.050)
Adjusted Rsquared	0.753	0.741	0.735	0.773	0.758	0.790	0.790	0.800
Number of observations	61	60	82	60	60	60	60	60

Notes: Column 2 and subsequent regressions exclude Nicaragua. Column 3 includes industrial countries. The regressions reported in columns 3 through 8 include the same set of basic controls (rows 2 through 6) as those in columns 1 and 2, including dummies for oil-exporting countries and sub-Saharan African countries. One, two, and three asterisks indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Robustness

We conducted a number of sensitivity experiments to ensure that the positive correlation between current account balances and growth is robust (detailed results are available from the authors). We first checked if the result is driven by failed states—countries that have very low growth and receive lots of foreign aid. Dropping countries that obtain an annual average aid of more than 10 percent of GDP shrank the sample size by 10 countries, but the coefficient estimate on the current account was larger than in the baseline and significant. We also confirmed that no single country or group drives the estimate. When we estimated slopes separately for each region, the coefficients were statistically significant both for Asia and sub-Saharan Africa, but not for Latin America.

A second concern could be that we are not picking up a cross-sectional result, but a time series result; the successful, rich countries may have started by running large deficits, but eventually become rich enough to run surpluses. When we restricted the sample to (ex post) middle-income countries—neither rich enough to be running large surpluses, nor poor enough to be drawing aid—the coefficient estimate on the current account was again higher than in the baseline and significant. We also restricted our analysis to the period 1985-1997, the heyday of recent global integration and before a number of emerging markets started building massive reserves. Again, we drop the high-aid countries. The coefficient estimate on the current account was once more higher than in the baseline.

It is worth emphasizing at this stage that we have identified a positive association between current account balances and long-run growth in nonindustrial countries that holds in many subsamples. At no point do we find a negative correlation, as might be suggested by standard theoretical models. Particularly puzzling is that we have some evidence that private capital inflows, such as FDI, do seem to be positively associated with growth—more in line with the theory (see, for instance, Borensztein, De Gregorio, and Lee, 1998). While correlation is not causation, a number of questions do arise. Why do fast-growing nonindustrial countries not rely much overall on foreign

finance, even though they do seem to rely on some forms of private finance?¹⁰ Put differently, fast-growing countries that get a lot of net FDI must be using proportionately less of other forms of capital, or even exporting these forms, so that their overall reliance on foreign finance is low. Why is this so?

Some conjectures about explanations

There are a few, not mutually exclusive, possible explanations. The first is that the factors that drive the investment opportunities that in turn lead to growth, such as exogenous increases in productivity or demographic changes, also produce the domestic savings needed to finance those opportunities—at least the fraction that is accessible given institutional constraints. For example, in industrial countries, unexpected but sustained increases in productivity will produce higher current and future incomes, as well as higher investment as corporations borrow to finance investment. In anticipation of higher future incomes, consumers will not just spend out of income but also borrow to consume more, and thus reduce savings. Therefore, higher growth should be correlated with larger current account deficits, a pattern we do see for industrial countries.

But what if the financial sector in a country is underdeveloped and domestic and foreign finance cannot be easily intermediated to firms or consumers? Then, corporate investment could be limited to the funds firms generate internally from past investment, while consumers save much of the increased income stemming from the increase in productivity. It is possible that an increase in productivity could be accompanied by some increase in investment but an even greater increase in savings, thus resulting in a positive correlation between growth and current accounts, as well as growth and savings. Savings, in this view, carries substantial information about a developing country's productivity, perhaps more than investment.

If foreign inflows responded largely to investment opportunities, there should be an unambiguously negative relationship between growth and the current account. The fact that the relationship is positive provides a hint that domestic savings is a driving force. Indeed, recall that Chart 8, which shows the smoothed plots of savings- and

investment-to-GDP ratios against relative income levels, provides suggestive evidence that savings and the current account track each other closely. The simple cross-sectional correlation between savings and the current account is positive and strong (0.72) while that between investment and the current account is much weaker (0.26).

When we included the savings-to-GDP ratio in our core specification, the coefficient on the current account is driven down to zero (results available from the authors). By contrast, when we included the investment-to-GDP ratio, the estimated coefficient on the current account is virtually unchanged relative to the baseline. This suggests that the behavior of savings, not investment, is key to understanding the relationship between the current account and growth. This is at odds with standard theoretical models. Given similar technologies for a pair of developing countries, the one that can invest more—presumably by borrowing foreign capital to supplement domestic savings—should grow faster during its transition or development phase, as its income level converges to that of advanced industrial countries. Yet, the level of investment seems not to matter in explaining growth, when the level of domestic savings is included.

As suggested above, the relative underdevelopment of the financial sector might explain the strength of the link between productivity and savings in a poor economy (as well as the correlation between growth and the current account). If the financial sector were strong, a sustained increase in productivity would not only result in more investment (as firms borrow to take advantage of investment opportunities), but also more consumption as consumers borrow in anticipation of their higher income. Conversely, a weak financial sector could translate a sustained increase in the productivity of certain sectors into weaker investment growth (Wurgler, 2000) and greater savings growth.¹¹ Note that this explanation requires that the sources of productivity growth for developing countries lie largely outside the financial system, or alternatively, that limited development of the financial system does not hold back productivity growth. This is not implausible, given that these countries are only catching up in technology, and the role of the financial system in fostering frontier innovation is relatively limited.¹²

The data suggest that the quality of the financial system does matter. When we estimated the core specification separately for nonindustrial countries that have below-median financial development and for those that have above-median financial development, the coefficient is almost twice as large for the former and statistically significant only in that case.

The explanations thus far constitute a relatively benign view of the pattern of global current account imbalances. The fastest-growing developing countries generate more savings than they can use, in part because their financial system may be underdeveloped. The surpluses (or the lower deficits) they run are both good news because they reflect the fact that investment is very productive and bad news because they reflect the need to develop the financial system (so as to permit more resources to be productively invested, as well as to permit more borrowing for consumption). Foreign capital could be beneficial in this view, but development of the domestic financial system is a necessary precondition.

A less-benign explanation is that excessive reliance on foreign capital (that is, large current account deficits) can result in currency overvaluation, especially if the quality of investment in a country is not particularly good (so that the supply of nontraded goods does not grow commensurately with the increasing demand for them as foreign capital flows in, leading to what is traditionally called “Dutch disease”—an increasing relative price of nontraded goods and exchange rate overvaluation). Such overvaluation can hurt the domestic manufacturing sector, which is important for growth in nonindustrial countries.

We find that overvaluation is negatively correlated with growth in nonindustrial countries.¹³ Interestingly, we do not find any significant correlation between overvaluation and growth for industrial countries. One possible explanation is that the imperative to avoid overvaluation is greater for developing countries because of their greater need to develop the low-value-added trade/manufacturing sector, an imperative that their industrial country counterparts have moved past as they have specialized to a much greater extent in high-value-added services.

Another possibility is that industrial countries are institutionally more advanced, open, and flexible, and this helps them avoid the deleterious effects of capital inflows on competitiveness.

But a country's ability to avoid overvaluation also is affected by openness to capital inflows. Preliminary evidence suggests that capital inflows (but not policy measures of capital account openness) do seem to be related to proneness to overvaluation.

Again, we do not find a similar relationship between foreign capital flows and the exchange rate for industrial countries. There could be many (deeper) causes for a tendency for foreign capital flows to induce overvaluation in developing countries but not in industrial ones. For example, in Africa and Latin America, openness to capital possibly reflects the power of political elites in imparting an urban/consumption bias to policies: In this view, openness to capital is part of a complex of policies that tends to support consumption and overvaluation. This differential correlation is nevertheless interesting for our purposes and sheds some light on the impact of foreign capital.

Thoughts on global imbalances

Before we conclude, let us speculate about the recent emergence of global imbalances in light of the findings of this paper. The now-standard view is that there were three distinct phases in the evolution of global current account imbalances. In the first stage, in the late 1990s, a variety of crises in the emerging markets and Japan led to a collapse in investment opportunities there, freeing up savings, while strong productivity growth made the United States an attractive place to invest in (Bernanke, 2005; *World Economic Outlook, WEO*, 2005). In the second stage, in the early 2000s, the bursting of the IT bubble was met with very accommodative policies in developed countries, particularly the United States. Consumption increased and savings fell, especially in countries with robust mortgage markets, where rising house prices and the associated wealth effects provided good support. In the third stage, strong growth and the associated oil and commodity price shock widened but also shifted the current account imbalances.

While the collapse in investment in Asian emerging markets during the first phase is well-documented and understood, the significant increase in private savings in a number of emerging markets since the late 1990s (*WEO*, 2005), including those that did not experience crisis, has not been commented upon. Indeed, in models of the first phase, like Caballero, Farhi, and Gourinchas (2006), people in emerging markets would not increase savings when faced with a loss of local investment opportunities and falling worldwide interest rates. One could invoke an enormous increase in the precautionary demand for savings by citizens who have experienced crisis to explain the rise in savings, but it is hard to explain why private savings also increased so much in noncrisis countries and why they continue to be high.

Our paper offers an alternative view. Perhaps it was not just the United States that experienced a surge in productivity (in part because of the information and communication technology revolution). Partly because of the reorganization of global production and partly because the surge was transmitted through global supply chains and trade, so did emerging markets, including China.

It is not surprising that the United States, a flexible economy with a strong financial sector, was well-poised to take advantage of the productivity shock. It increased its current account deficit, in the manner predicted by the standard intertemporal open economy model (Glick and Rogoff, 1995). In the emerging markets that experienced strong productivity growth, the rise in productivity may have generated an initial boom in investment in some, as weak financial systems lent indiscriminately, followed by a bust, after which the financial systems, imbued with caution that comes from crisis, understood their limited ability to intermediate savings into domestic investment.¹⁴ Thus, the postcrisis increase in savings and reduction in investment in a number of emerging markets may have been the more normal response of countries with weak financial systems in response to productivity shocks. In sum, the asymmetric responses to a productivity shock that may have originated in the United States, but that got transmitted to its poorer trading partners, may well have created savings and investment patterns that led to the observed pattern of current account imbalances.

Our paper, thus, suggests why despite both experiencing significant increases in productivity over the last 10 years, the current accounts of the United States and China have moved very differently. Over this time, China has averaged a current account surplus of 2.8 percent of GDP, significant amounts of it invested in the United States, while the United States has averaged a current account deficit of 3.7 percent of GDP. This pattern appears perverse and clearly runs counter to the benchmark model of growth theory. Our results, by contrast, suggest that, while China and the United States may be extreme observations in the groups of developing and industrial countries, respectively, they reflect a more general and historic pattern within their respective groups.

Finally, let us end on a note of caution. Even if imbalances are equilibrium responses to a particular set of circumstances, this does not mean that they can be sustained at this level into the medium term. When a large country runs a trade deficit of 6 percent of GDP for a long time, it will eventually find financing harder to come by. One should not confuse the words “equilibrium” and “stability.”

Discussion

What is clear from our analysis is that nonindustrial countries that have relied on foreign capital have not grown faster than those that have not. Indeed, taken at face value, there is a growth premium associated with these countries not relying on foreign finance—though we do not have strong evidence to suggest this association is causal. Equally clearly, though, the reliance of these countries on domestic savings to finance investment comes at a cost—there is less investment and consumption than there would be if these countries could draw in foreign capital on the same terms as industrial countries.

It does not seem to us that these nonindustrial countries are building foreign assets just to serve as collateral, which can then draw in beneficial forms of foreign financing such as FDI (see, for example, Dooley, Folkerts-Landau, and Garber, 2004).¹⁵ Rather, it seems to us that successful developing countries have limited absorptive capacity for foreign resources, whether it is because their financial markets are underdeveloped or because their economies are prone to overvaluation caused by rapid capital inflows.

As countries develop, absorptive capacity grows. The strong recent growth of emerging Europe, accompanied by growing current account deficits, probably has a lot to do with the strengthening of their financial sectors, in part through the entry of foreign banks. Only time will tell whether there are any effects on the exchange rate and on competitiveness, as well as whether this phenomenon is sustainable. So, all conclusions we draw from this episode have to be tentative.

What does all this mean for policies toward capital account openness? Any discussion of the merits of capital account openness is likely to be very specific to a country.¹⁶ Our results suggest, however, that insofar as the need to avoid overvaluation is important and the domestic financial sector is underdeveloped, greater caution toward certain forms of foreign capital inflows might be warranted. At the same time, financial openness may itself be needed to spur domestic financial development (see, for example, Rajan and Zingales, 2003, and Kose and others, 2006).

This suggests that, even though reformers in developing countries might want to wait to achieve a certain level of financial development before pushing for financial integration, the prospect of financial integration and ensuing competition may be needed to spur domestic financial development. One approach worth considering might be a firm commitment to integrate financial markets at a definite future date, thus, giving time for the domestic financial system to develop without possible adverse effects from capital inflows, even while giving participants the incentive to press for it by suspending the sword of future foreign competition over their heads.¹⁷

In conclusion, a pessimistic read of this paper would suggest that because development itself may be the antidote to any of the deleterious effects of foreign capital, or to the ability of poor countries to absorb more capital, only some forms of foreign capital may play a direct role in the development process. Certainly, the role of foreign capital in expanding a country's resource constraints may be limited. A more optimistic read would qualify this with two important caveats. First, a better understanding of how to increase a country's absorptive capacity would allow developing countries to benefit from

foreign finance, even during the process of development. Second, it may be that some attributes of foreign capital, such as its volatility, contribute to the limited absorptive capacity of the recipients (see, for example, Aizenman and others, 2004). There may be ways for countries that send capital to nonindustrial countries to reduce the volatility of the capital they send out. More research would clearly elevate the level of optimism.

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Appendix

Our baseline sample, which is similar to that of Bosworth and Collins (2003), includes 22 industrial and 61 nonindustrial countries. (We are one short of the Bosworth-Collins sample as we do not have some of the requisite data for Taiwan.)

Industrial countries

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

Nonindustrial countries

Algeria (DZA), Argentina (ARG), Bangladesh (BGD), Bolivia (BOL), Brazil (BRA), Cameroon (CMR), Chile (CHL), China (CHN), Colombia (COL), Costa Rica (CRI), Cyprus (CYP), Ivory Coast (CIV), Dominican Republic (DOM), Ecuador (ECU), Egypt (EGY), El Salvador (SLV), Ethiopia (ETH), Ghana (GHA), Guatemala (GTM), Guyana (GUY), Haiti (HTI), Honduras (HND), India (IND), Indonesia (IDN), Islamic Republic of Iran (IRN), Israel (ISR), Jamaica (JAM), Jordan (JOR), Kenya (KEN), Korea (KOR), Madagascar (MDG), Malawi (MWI), Malaysia (MYS), Mali (MLI), Mauritius (MUS), Mexico (MEX), Morocco (MAR), Mozambique (MOZ), Nicaragua (NIC), Nigeria (NGA), Pakistan (PAK), Panama (PAN), Paraguay (PRY), Peru (PER), Philippines (PHL), Rwanda (RWA), Senegal (SEN), Sierra Leone (SLE), Singapore (SGP), South Africa (ZAF), Sri Lanka (LKA), Tanzania (TZA), Thailand (THA), Trinidad and Tobago (TTO), Tunisia (TUN), Turkey (TUR), Uganda (UGA), Uruguay (URY), Venezuela (VEN), Zambia (ZMB), and Zimbabwe (ZWE).

Endnotes

¹Gourinchas and Jeanne (2006) provide evidence of a negative correlation between capital inflows and investment rates.

²The simple explanation that in poor countries investment is constrained by the availability of domestic savings is not enough, for growth would then be strongly correlated with domestic investment.

³The Appendix lists the countries in our sample. The sample does not include the transition countries of Eastern Europe and the former Soviet Union, as data availability for these countries is limited.

⁴Excluding the oil-exporting countries did not alter the basic patterns in Chart 2. We also constructed these plots using initial (1970) relative income, rather than relative income in each period, in order to take out the effects of income convergence. This also did not make much of a difference to the shapes of the plots.

⁵Indeed, there was a sharp surge in FDI flows to poorer countries between the mid-1980s and the mid-1990s, reflecting a spate of privatizations, including in telecom and other utilities.

⁶We chose 1970 as the starting point mainly for data reasons: Both stock and flow data become available after about 1970. We exclude Singapore, which is an outlier, from this chart. The sum of the stock of foreign assets and liabilities to GDP is the measure of de facto integration recommended by Kose and others (2006). Feldstein and Horioka interpret a strong positive correlation between domestic saving and domestic investment (both measured relative to GDP) as an indicator of limited integration with international financial markets. Nonindustrial countries with a low correlation, which are presumed to be well-integrated with international financial markets according to this measure, should grow faster according to the theory. We estimate country-specific Feldstein-Horioka correlations using nonoverlapping five-year averaged data on savings and investment over the period 1970-2000.

⁷Kose and others (2006) note that studies using macroeconomic data have not been able to find strong evidence of the presumed benefits of financial integration on growth. There is growing evidence that these benefits are contingent on levels of human capital, financial development, and trade openness. Certain types of spillover effects from financial integration have been detected more clearly in microeconomic (firm- and industry-level) data. It also may be that the positive growth effects will be evident only over longer periods. While three decades is presumably a long enough period to detect the “short-run pain, long-run gain” view (see, for example, Krugman, 2002), it is also true that the integration of developing countries into international financial markets really took off only in the mid-1980s.

⁸A current account surplus has to equal the sum of (1) net private and official outflows of financial capital (this includes debt and nongrant aid, but not remittances—the latter should properly be reflected in the current account itself); (2) net errors and omissions (a positive number could, for instance, represent capital flight through unofficial channels); and (3) net accumulation of international reserves by the government (typically, the central bank). Thus, the current account surplus summarizes the net amount of capital flowing out of the country, the excess of domestic savings over domestic investment (or, in the case of a current account deficit, the net amount of capital flowing in, or, equivalently, the excess of domestic investment over domestic savings).

⁹To generate this plot, country-year observations were stacked together over the period 1970–2000 and sorted by relative PPP-adjusted per capita income levels, with relative income measured against the richest country in the sample in that year (the United States or, in some years, Switzerland). The smoothed plot was obtained using the Lowess routine in Stata. There are two reasons why the savings–investment plot for developing countries does not fully match the current account plot. First, the curves were fitted independently for the three variables. Second, because of measurement problems, the current-account-to-GDP ratio does not exactly match the difference between the ratios of savings and investment to GDP for the developing countries, especially in the early years of the sample.

¹⁰Clearly, one explanation must be that certain forms of private finance, like FDI, bring benefits, such as technology transfer, that go beyond financing.

¹¹Jappelli and Pagano (1994) build a model showing how financial market imperfections that limit the ability to borrow against future income could generate a correlation between savings and growth in a fast-growing economy with a low level of financial development.

¹²Bosworth and Collins (1999) find that FDI inflows have a large positive correlation with both investment and saving, implying no net change in the current account. Perhaps one explanation is that savings increases as a result of productivity growth, which also draws in FDI. Aghion, Comin, and Howitt (2006) also report a positive correlation between FDI and lagged domestic savings but have a different explanation than ours.

¹³We use a measure of exchange rate overvaluation because of Johnson, Ostry, and Subramanian (2006). These authors estimate the following cross-section equation for every year since 1970 for the sample of all countries:

$$\log \rho_i = \alpha + \beta \log y_i + \varepsilon_i$$

where ρ is the log of the price level for country i in terms of the United States, and y is the level of per capita PPP GDP. The measure of overvaluation is then:

$$\text{overval}_i = \log \rho_i - (\alpha + \beta \log y_i).$$

Similar measures are used by Frankel (2003) and Rajan and Subramanian (2005).

¹⁴Clearly, investment in China is not low, despite a less-than-effective financial system. A variety of agency problems at the provincial government level, in state-owned enterprises, and in state-owned banks have led to excessive investment in some areas. Nevertheless, Chinese savings are even higher than its high level of investment. More generally, moderately developed financial systems may be more cautious about investing because they understand and operate within their limitations than either underdeveloped financial systems, which neither understand nor operate within their limitations, or developed financial systems that have overcome limitations. Indeed, in addition to naturally being more cautious after experiencing a crisis, much of emerging Asia may have moved from underdeveloped to moderately developed after the crisis, which may explain the investment restraint.

¹⁵Why, for example, would Korea or Taiwan find comfort when they make direct investments in China if it holds enormous amounts of U.S. government securities?

¹⁶For instance, capital account openness is more than just opening up to inward flows; it also means allowing outward flows. Outward flows could relieve incipient appreciation pressures on the exchange rate, but also could be a source of fragility, especially if the financial sector is underdeveloped. The fragility associated with the exit of capital could be attenuated if an economy is more open to trade (Calvo, Izquierdo, and Mejia, 2004, and Frankel and Cavallo, 2004); trade openness could also mitigate the adverse effects of crises.

¹⁷The Chinese approach of trying to spur banking reform by committing to opening up their banking sector to foreign competition in early 2007 as part of their World Trade Organization commitments can be seen in this light. Prasad and Rajan (2005) suggest an alternative strategy for dealing with the adverse effects of inflows through controlled liberalization of outflows (essentially by securitizing inflows), which would allow countries experiencing large capital inflows to develop their domestic financial markets and simultaneously mitigate appreciation pressures associated with the inflows.

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