

# **INTERNATIONAL FINANCIAL LIBERALISATION AND ECONOMIC GROWTH**

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## **Abstract**

This paper investigates the link between international financial integration and economic growth. In particular, we ask the following questions. What are the theoretical links between financial integration and growth? Is there any empirical evidence that an increase in financial integration is associated with higher economic growth at a cross-country level? Do different types of capital flows have different implications for growth?

Existing empirical evidence suggests that the link between financial openness and economic growth is weak at best. While there is some evidence that financial liberalisation positively affects growth, this relationship is not robust. There is also some evidence that the positive impact of foreign investment on growth is conditional upon the existence of relatively developed domestic institutions and sound macroeconomic policy. This result is also not very robust and is sensitive to the measures employed to capture institutional development and the policy environment.

To complement the existing research, we examine this issue with a particular emphasis on the composition of capital flows. Consistent with conventional wisdom, we find that both foreign direct investment and portfolio inflows enhance economic growth. By contrast, the effect of bank inflows is found to be mostly negative.

JEL Classification Numbers: F21, F36, F43

Keywords: capital flows, financial liberalisation, growth

## Table of Contents

1.	Introduction	1
2.	Capital Flows to Developing Countries: Trends During the Past Three Decades	3
3.	How Does Financial Liberalisation Affect Economic Growth? A Review of the Theoretical Literature	6
4.	The Link between Capital Account Liberalisation and Economic Growth: A Brief Review of the Empirical Literature	9
	4.1 Measuring Financial Integration	9
	4.2 Recent Empirical Work and Key Findings	10
5.	Capital Flows and Growth: Some New Results	12
	5.1 Data and Methodology	12
	5.2 Main Results and Discussion	14
6.	Concluding Remarks	18
	Appendix A: Data	19
	References	22

# INTERNATIONAL FINANCIAL LIBERALISATION AND ECONOMIC GROWTH

## 1. Introduction

*So now we have all the benefits of free flows of international capital. These benefits are mammoth: the ability to borrow abroad kept the Reagan deficits from crushing US growth like an egg, and the ability to borrow from abroad has enabled successful emerging market economies to double or triple the speed at which their productivity and living standards converge to the industrial core. But the free flow of financial capital is also giving us one major international financial crisis every two years.<sup>1</sup>*

*These assertions assume that free capital mobility is enormously beneficial while simultaneously failing to evaluate its crisis-prone downside. But even a cursory glance at history suggests that these gains may be negligible.<sup>2</sup>*

Experience suggests that international financial liberalisation can be a mixed blessing. International borrowing helps individual countries smooth consumption and finance productive investment. Foreign investment, particularly foreign direct investment, can facilitate the transfer of technological and managerial know-how. Portfolio investment and foreign bank lending can also contribute to the deepening of the domestic financial market. Some proponents have argued that, by increasing the rewards for good policies and the penalties for bad policies, capital flows can promote more disciplined macroeconomic policies (Grilli and Milesi-Ferretti 1995).

At the same time, financial liberalisation entails several risks. Capital inflows can lead to an appreciation of the domestic currency and adversely affect the trade balance. Large and sudden inflows can fuel rapid consumption growth, rising or sustained high inflation, and unsustainable current account deficits. Financial liberalisation in countries with underdeveloped financial systems can make them

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<sup>1</sup> DeLong (1998).

<sup>2</sup> Bhagwati (1998).

more crisis-prone. For instance, a rapid expansion in bank lending, fuelled by capital inflows, can result in a deterioration of bank balance sheets, which in turn can increase these countries' vulnerability to financial crises (Calvo, Leiderman and Reinhart 1993).

While the debate on the merits of capital account liberalisation is not new, it has intensified in the aftermath of the emerging market crises of the 1990s. The Mexican crisis, and the Asian crisis in particular, showed that even countries with high growth rates and sound macroeconomic policies could be severely affected by a rapid reversal of capital flows. These events have prompted proposals that range from 'throwing sand in the wheels' of capital movements to the complete prohibition of international financial transactions. Sceptics of measures aimed at limiting capital mobility, on the other hand, argue that these would result in lost investment and economic growth.

The key to this debate is whether the potential benefits of financial integration are sufficient to offset the evident risks. While there is a large body of work that looks at the risks associated with financial liberalisation and capital flows,<sup>3</sup> there has been, until recently, only a few studies that evaluate the benefits of open capital markets. The aim of this paper is to shed some light on this debate by examining both the theoretical links and the empirical evidence on effects of financial liberalisation on long-run economic growth. We also present some new results on the effects of capital flows, with a particular emphasis on the composition of capital flows.

Existing empirical evidence suggests that the link between financial openness and economic growth is weak. While there is some evidence that liberalisation positively affects growth, this relationship is not robust. There is some evidence that the positive impact of foreign investment on growth is conditional upon the existence of relatively developed domestic institutions and sound macroeconomic policy. This result is also not very robust and is sensitive to the measures employed to capture institutional development and policy variables. The new results from this study show that both foreign direct investment and portfolio flows have a significant positive effect on economic growth. The positive effects of portfolio

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<sup>3</sup> Some examples include Calvo *et al* (1993), Chinn and Dooley (1995), and Corsetti, Pesenti and Roubini (1998).

flows are above and beyond their effects on investment, indicating that they also entail externalities that are growth enhancing. The effect of bank flows, on the other hand, is found to be negative. This suggests that the measures of capital account liberalisation used by previous studies may not adequately measure the true extent of a country's financial integration. It also suggests that aggregate measures of capital flows and openness could conceal the different channels through which different types of capital flow might affect growth.

The remainder of this paper is organised as follows. Section 2 looks at some recent trends in capital flows to developing countries during the past few decades. Section 3 briefly reviews the theoretical literature on the macroeconomic effects of capital flows. In Sections 4 and 5 we present the relevant empirical evidence. Section 6 concludes.

## **2. Capital Flows to Developing Countries: Trends During the Past Three Decades**

The developing country experience with capital flows has been characterised by cycles of booms and busts. After more than two decades of limited capital flows, capital flows to developing countries surged in the 1970s. With the onset of the debt crisis in 1982, capital inflows to developing countries declined dramatically and remained small during most of the 1980s. This trend was reversed in the late 1980s, and capital flows to Asia and Latin America increased substantially in the first half of the 1990s. The setback from the 1994 Mexican crisis was relatively short-lived, with capital flows to emerging markets, including Mexico, resuming soon after the crisis. Capital flows, especially to Asia, slowed down considerably in the wake of the Asian crisis in 1997. Capital flows to developing countries remained subdued in the second half of the 1990s, reflecting the effects of the Asian crisis as well as the Russian and Brazilian crises of 1998 and 1999.

Capital flows to developing countries in the 1970s were associated with the recycling of oil revenues – the so-called petrodollars – by oil producing countries. As the petrodollars were intermediated through international commercial banks, capital flows to developing countries were primarily in the form of syndicated bank loans. Capital inflows to developing countries during 1978–1981 averaged US\$68 billion, and were comprised mainly of bank loans (Table 1).

**Table 1: Capital Inflows to Developing Countries by Types and Use  
1978–1995<sup>(a)</sup>**

	1978–1995	1978–1981	1982–1989	1990–1995
<b>By type of inflow</b> (billions of US\$)				
Total	71	68	24	135
FDI	26	9	13	54
Portfolio investment	19	2	2	52
Loans	26	57	9	29
<b>By use of inflow</b> (Per cent of total inflows)				
Current account financing	53	67	88	40
Capital outflows	34	17	65	32
Reserves and related items	2	6	–75	19
Reserve assets	34	13	46	38
IMF credits <sup>(b)</sup>	–2	–3	–5	–1
Exceptional financing <sup>(c)</sup>	–30	–5	–116	–18
Errors and omissions <sup>(d)</sup>	11	11	21	9

Notes: (a) These figures cover 58 developing countries and are averages for the period. Percentages may not sum to 100 because of rounding.

(b) Use of Fund credit loans and loans. A negative value indicates net borrowing.

(c) Transactions undertaken by a country's authorities to finance balance of payments shortfalls.

(d) The statistical discrepancy between outflows and inflows as reported by the countries.

Source: Bosworth and Collins (1999)

This trend came to an abrupt halt in 1982 when Mexico declared a moratorium on its debt-service payments in August of that year. This, combined with the debt service difficulties of other Latin American countries including Argentina and Brazil, led to a rapid decline in capital flows to the region. The decline in total capital flows to developing countries was fully accounted for by the decline in capital flows to Latin America, which as a whole experienced a net outflow during 1983–1989. In contrast, capital flows to Asia and developing countries in other regions increased modestly during this period.

A combination of domestic and external factors contributed to the resurgence of capital flows to developing countries in the late 1980s. The main domestic factors were the initiation of the Brady plan for debt restructuring in 1989, and the successful implementation of other structural reform programs in many Latin American countries. The decline in US interest rates and the growth of institutional investors worldwide in the early 1990s were the primary external

factors. In addition to the surge in magnitude, there were also important changes in composition of capital flows. While bank flows were dominant during the 1970s, capital flows in this episode consisted mainly of foreign direct investment and portfolio flows. Capital flows to Asia were primarily in the form of FDI, whereas portfolio flows were more important in Latin America, accounting for over 60 per cent of total inflows. Further, much of the foreign borrowing during the 1970s was done by the public sector, while capital flows in the early 1990s were primarily directed at the private sector.

This new wave of capital flows was perceived as a positive global development. It provided increased diversification opportunities to investors in developed countries. Capital inflows also held the potential of augmenting domestic investment, and hence economic growth in emerging economies that had until then experienced years of tight external financing constraints. For Latin America, in particular, the renewed access to international capital markets seemed to signal an end to the ‘lost decade’ of the 1980s. At the same time, given the experience of the early 1980s, many voiced concerns about the potential risks of capital flows, especially short-term capital flows. Of particular concern was that, as in the previous episode, capital flows could reverse abruptly and lead to balance-of-payments crises. The Mexican peso crisis of 1994 validated some of these concerns.

Mexico’s adoption of a strong adjustment program, aided by the large-scale international financial support, helped restore financial stability in the country relatively quickly.<sup>4</sup> Indeed, Mexico returned to international capital markets more rapidly than most observers had anticipated. Other countries affected by the crisis included Argentina and Brazil, and to a lesser extent, Thailand and Hong Kong. The contagion from the Mexican crisis was short-lived and capital flows to developing countries reached a record level of US\$212 billion in 1996.

In contrast, the impact of the Asian crisis that followed Thailand’s devaluation of the baht in 1997 was more widespread and longer lasting. While FDI and portfolio flows to the five Asian countries most affected by the crisis recovered fairly quickly, these countries continued to experience net outflows as international

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<sup>4</sup> The IMF arrangement with Mexico was the largest ever approved for a member country, both in absolute amount and in relation to the country’s quota in the Fund.



banks reduced their exposure to the region. The Asian crisis, combined with the Russian and the Brazilian crises in 1998 and 1999, led to a significant decline in capital flows to most developing countries. Overall, net private inflows to emerging markets in 1999 were equivalent to approximately 1.1 per cent of aggregate emerging market GDP, down from 3 per cent in 1995.

### **3. How Does Financial Liberalisation Affect Economic Growth? A Review of the Theoretical Literature**

Theory suggests different channels through which increased capital mobility can enhance economic growth. Capital flows can enhance economic growth by augmenting the domestic investment rate. In open-economy versions of neoclassical growth models, capital flows from capital-rich to capital-poor countries where the marginal product of capital is higher. This results in an increase in the rate of capital accumulation and growth in the latter. This channel emphasises the role of net capital flows. In these models, for capital flows to have a positive influence on growth, they must augment domestically financed investment, rather than crowd it out.

Barro, Mankiw and Sala-i-Martin (1995) present an open-economy version of a simple neoclassical growth model. In this model domestic residents own the physical capital stock but may obtain part or all of the financing for this stock by issuing bonds to foreigners. By relaxing the constraint that domestic savings finance domestic investment, the availability of foreign savings increases the rate of physical capital accumulation. This in turn increases the country's speed of convergence to its steady state level of output.<sup>5</sup>

Gains from capital account liberalisation could also come from better utilisation of available domestic savings rather than from net inflows of foreign savings. This channel highlights the role of gross capital flows. These benefits are typically associated with foreign direct investment, but could also arise with other types of capital flows. For example, foreign investment could increase competition in the host economy, thereby making domestic firms more efficient. It could also lead to

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<sup>5</sup> The results would be the same if foreigners were allowed to own part of the physical capital through foreign direct investment or equity investment rather than bonds.

transfers of technology and/or skills. Wang (1990) develops a model in which technology is assumed to be transferred via international capital movements from the developed North to the developing South. The rate of technological change is an increasing function of the amount of foreign capital operating in the South and of the extent to which technology in the advanced country exceeds that in the less developed country. It is shown that when the South shifts from autarky to free capital mobility, its steady state growth rate of per capita income also increases.<sup>6</sup>

Another channel through which financial liberalisation could positively influence economic growth is through the benefits of portfolio diversification. Increased opportunity to diversify risk can enhance growth by inducing a shift toward investment in projects with higher expected returns. In turn, higher rates of return can deliver faster economic growth by encouraging higher savings and investment. Obstfeld (1994) presents a simple model of global portfolio diversification that links growth and financial openness. The set up is a stylised rendition of the idea, developed by Romer (1990) and by Grossman and Helpman (1991), that ongoing growth depends on investments that supply specialised and hence inherently risky production inputs. Because risky technologies in the model have higher expected returns than safe ones, international asset trade, which allows each country to hold a globally diversified portfolio of risky investments, encourages all countries to shift from low-return safe investments toward high-return risky investments. Provided risky returns are imperfectly correlated across countries, and provided some risk-free assets are initially held, a small rise in diversification opportunities always raises expected growth as well as national welfare. The key here is that financial liberalisation can enhance growth even in the absence of net capital inflow.

The theoretical case for free capital mobility is based on the assumption that capital markets are efficient, and does not take into consideration the presence of distortions such as information asymmetry, moral hazard and herding on the part of foreign investors. Experience of both developed and developing countries suggests that when these distortions are present, capital flows can be destabilising. Indeed, a number of studies have identified these distortions as the key factor behind the boom and bust cycles of capital flows in emerging markets. Guttentag and Herring (1985), for example, argue that international commercial banks lent to

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<sup>6</sup> For a more recent contribution see Borensztein, De Gregorio and Lee (1998).

Latin America in the late 1970s and early 1980s with insufficient attention to borrower credibility due to incomplete information and official support in the event of adverse outcomes. Likewise, Dooley (1994) claims that the resurgence of capital flows to emerging markets in the early 1990s did not necessarily reflect renewed confidence in the investment climates in these countries, but rather, were motivated by moral hazard associated with fixed exchange rate regimes and lender of last resort facilities.

The destabilising effect of capital flows in the presence of these distortions has been further highlighted by the Asian crisis. This has motivated a growing body of work that highlights the role of moral hazard and explicit or implicit government guarantees in increasing countries' vulnerability to financial crises.<sup>7</sup> In a typical framework, firms borrow from non-residents in foreign currency and lend domestically in local currency. Their investment decisions incorporate the expectation that relatively stable exchange rates will be maintained and, as governments are unable to credibly commit not to do so, that the government will bail them out in the event of a run. As lenders share this expectation, they have little incentive to monitor the quality of bank lending. This results in a level of investment that is higher than the optimal level obtained in the absence of credible implicit or explicit guarantees. However, foreign creditors stop lending when the government's contingent liabilities exceed foreign reserves. The resulting devaluation in turn causes widespread bankruptcies of institutions with unhedged foreign currency exposures. Capital flows in this framework would not enhance growth, and can in fact impede growth by making countries more vulnerable to financial crises.

In this section we examined the different channels through which capital flows can promote economic growth. We also discussed some of the risks associated with financial openness. Whether the growth-enhancing attributes of capital flows outweigh the potential risks is an empirical question, which we address in the next section.

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<sup>7</sup> See for example, McKinnon and Pill (1998).

## **4. The Link between Capital Account Liberalisation and Economic Growth: A Brief Review of the Empirical Literature**

Instead of providing a comprehensive review of the empirical literature, in this section we address some measurement issues and present the main findings of some recent studies.

### **4.1 Measuring Financial Integration**

Measuring the extent of a country's international financial integration is not straightforward. The most commonly used measure is derived from information in the International Monetary Fund's *Annual Report on Exchange Arrangements and Exchange Restrictions*. It is a dummy variable that takes a value of 1 if a country has capital account restrictions in a given year and 0 otherwise. This measure has the advantage of wide coverage, as it is available for all IMF member countries on an annual basis starting from 1966. However, it is an imperfect proxy for financial openness as it does not distinguish between different types of capital controls. Moreover, this binary variable indicating the presence (or absence) of capital controls does not capture the intensity of capital controls.

The measure of financial openness developed by Quinn (1997) addresses some of these shortcomings. In addition to using restrictions on both residents and non-residents, this measure also distinguishes between different types of restrictions. By assigning numerical scores to various types of restrictions on governing capital account transactions, Quinn is able to provide some information about the intensity of capital controls for each country. While this measure is an improvement over the previous one, it is limited to 65 countries (21 developed and 44 emerging economies) for three years (1959, 1973 and 1988).

Both these measures based on capital account restrictions assume that the restrictions are fully effective, and therefore represent the countries' true degree of financial openness. However, studies have found that capital controls, especially in developing countries, have been of limited effectiveness. In particular, there is some evidence to suggest that restrictions on capital account transactions become less binding over time as investors find ways of circumventing them (see, for

example, Dooley (1996)). To the extent that this is plausible, these measures would underestimate the degree of a country's financial openness.

Using capital flow data is one way of getting around this problem. One could interpret capital flow figures as measuring countries' effective financial openness. This is analogous to using trade volumes as a measure of trade openness. Another advantage of using capital flow figures is that they enable us to distinguish between different types of capital flows such as foreign direct investment, portfolio flows, bank loans etc. This level of disaggregation in turn allows us to more closely identify the different channels through which capital flows might affect economic growth. While there have been some improvements recently, capital flows data for some developing countries are incomplete and of poor quality. Given that all three measures come with caveats, it is important that we view them as complements to one another rather than substitutes.

## **4.2 Recent Empirical Work and Key Findings**

A common approach to estimating the link between capital mobility and growth involves simple growth accounting regressions in the spirit of Mankiw, Romer and Weil (1992). Most studies include a set of control variables, and one or more of the financial openness variables described above. The data are typically averaged over five, ten or twenty years so that the data set is converted into either a cross-sectional data set or a panel data set.

Following the theoretical literature discussed at the end of Section 3, a number of recent studies also attempt to capture the extent to which distortions in the domestic economy influence the way financial liberalisation affects growth. As these distortions – information asymmetry and moral hazard – are difficult to quantify, these studies typically use different measures of institutional development and policy environment, with the idea being that these distortions are less in countries with strong institutions and sound policy environment. Commonly used variables include different measures of financial market development and the quality of other domestic institutions such as legal institutions, accounting standards etc. The inflation rate and the fiscal account are typically used to proxy the domestic policy environment.

In a widely cited study, Rodrik (1998) concludes that capital account convertibility is essentially uncorrelated with long-run economic performance. Using data for a sample of 100 developed and developing countries, and controlling for other determinants of growth, Rodrik regresses growth in per capita GDP on capital account openness. Openness for each country is defined as the number of years during the sample period when the country's capital account was free from any restrictions (as measured by the binary indicator). Rodrik finds no association between capital account liberalisation and growth. He also tests the hypothesis that capital account convertibility might have had beneficial effects in countries with strong institutions. Rodrik finds no evidence for this in the data – interacting capital account liberalisation with indices of the quality of public institutions yields insignificant and often wrongly signed coefficients.

These results are broadly consistent with those of Kraay (1998), who undertakes a more comprehensive examination of the effect of capital account liberalisation on investment, growth and inflation. The study includes data from 117 countries over the period 1985–1997, and uses all three measures of financial openness described in Section 4.1, and different measures of financial market development and policy environment.<sup>8</sup> The link between capital account liberalisation and growth is found to be weak, and only those regressions that use capital flow data yield positive and statistically significant results. The evidence for the hypothesis that capital account liberalisation is successful in countries with a strong financial sector and a good policy environment is also found to be weak.

The results from Klien and Olivei (1999) are somewhat kinder to the hypothesis that financial liberalisation is good for growth. They find that countries that had relatively open capital markets during 1976–1995 (defined as the number of years when the capital account was free of any restrictions) experienced relatively higher rates of economic growth. This result however is largely driven by the developed countries in the sample. Using the Quinn (1997) measure of financial openness,

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<sup>8</sup> Kraay (1998) uses four different measures of financial sector strength: M2/GDP, domestic credit to the private sector as share of GDP, number of banking crises per year, and an index of the restrictiveness of bank regulations. To capture the broader policy environment, Kraay constructs an index as the weighted average of fiscal deficits and inflation following Burnside and Dollar (1997). The indices of the extent of corruption and quality of bureaucracy developed by the International Country Risk Guide (ICRG) are used to measure institutional development. The black market premium is used to measure the extent of domestic distortion.

Edwards (2001) comes to a similar conclusion. While liberalisation is found to boost economic growth, the effect is limited to the relatively developed countries in the sample. The interaction term between liberalisation and per capita GDP enters positively, indicating that the effect of a more open capital account increases with the country's initial level of development. Furthermore, the coefficient on the openness index is negative, suggesting that an open capital account may in fact have a negative effect at low levels of development.

The studies reviewed here suggest that the link between financial liberalisation and growth is weak at best. While these studies vary considerably in their country coverage, sample period, and estimation techniques, with the exception of Kraay (1998), they all use information on capital account restrictions to measure financial liberalisation. These studies therefore tell us about the implications of policy and changes in policy toward the capital account, not of the implications of capital flows themselves. For reasons already discussed, these measures of financial openness may not necessarily reflect the true extent of a country's financial integration. These measures also do not tell us whether different types of capital flows affect growth differently. While some work has been done on the effects of foreign direct investment on growth, very little is known about the effects of bank and portfolio flows that have become increasingly important sources of external financing for many developing countries. In the next section, we examine the implications of the composition of capital flows for economic growth.

## **5. Capital Flows and Growth: Some New Results**

### **5.1 Data and Methodology**

Our empirical analysis employs annual data for a set of 40 countries, consisting of 20 developed and 20 emerging and developing countries in Asia, Latin America and Africa.<sup>9</sup> The sample period spans 1976–1995. The choice of countries and the sample period are dictated by data availability. The estimations use a panel regression framework, in which data for each country are averaged over five non-overlapping years. Averaging the data for a number of years helps abstract

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<sup>9</sup> Details are provided in Appendix A.

from short-term business cycle effects and capture the longer-run effects of capital mobility on growth.

The base specification of our model is as follows:

$$growth_{it} = \alpha_i + \beta_1 state_{io} + \beta_2 control_{it} + \beta_3 capflow_{it} + \varepsilon_{it} \quad (1)$$

The dependent variable *growth* is the annual growth rate in real GDP per capita for country *i* averaged over each 5-year interval *t*. The first set of explanatory variables includes our state variables – the stock of human capital (proxied by the average years of secondary education in the adult population) and the level of real per capita GDP – both measured at the beginning of each 5-year interval. In the neoclassical framework, the coefficient on the initial per capita GDP captures the rate of convergence (i.e., the rate at which poor countries catch up with rich countries) and is expected to be negative.<sup>10</sup>

The second set of explanatory variables includes a number of control variables that have been found to be important determinants of growth by previous studies. The coefficient on the openness to trade variable (proxied by ratio of the sum of total exports and imports to GDP) is expected to be positive. Government consumption is expected to have a negative effect on growth. Similarly the black-market exchange rate premium, which we use to proxy financial market distortions, is also expected to negatively affect growth.

The third set of variables includes the different capital flow measures we use. The broadest measure we use is total capital inflows. We also consider the three main components of capital inflows – foreign direct investment, portfolio inflows and bank inflows. The different measures are entered sequentially into the regressions.

An important consideration in these regressions is the possible endogeneity of financial liberalisation and capital flows. As noted by Kraay (1998) there are two main sources of endogeneity. The first is that capital flows themselves may be influenced by economic performance. If a country relaxes controls in ‘good’ times

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<sup>10</sup> This property derives from the assumption of diminishing returns to capital – economies that have less capital per worker (relative to their long-run ratio) tend to have higher rates of return and higher growth rates.



and imposes them in ‘bad’ times, we would find a spuriously large positive effect of liberalisation on growth. Another source of endogeneity is that the extent of capital mobility may be correlated with other fundamental determinants of growth and investment. For example, Grilli and Milesi-Ferretti (1995) observe that countries with small public sectors and relatively independent central banks are less likely to impose capital controls. If having a small public sector and an independent central bank were good for growth, then the benefits of capital account liberalisation would be overstated. In principle, this problem can be addressed by using instrumental variables that are correlated with financial openness, but uncorrelated with the disturbance term. Finding good instruments, however, is difficult.

In selecting the instruments for our estimations we draw on the literature on the determinants of capital flows. Following the work of Calvo *et al* (1993) a number of studies have sought to explain the movements in capital flows by looking at the relative importance of the external (‘push’) factors and internal (‘pull’) factors. Their findings suggest that US interest rates have played a dominant role in driving capital flows to developing countries. We also use total flows to developing countries to reflect broader supply-side factors. Other instruments include lagged capital flows, lagged GDP growth, and change in the terms of trade.

## **5.2 Main Results and Discussion**

Table 2 presents the main results from our regressions. Regression 2.1 is the base regression without the capital flow variables. The results are consistent with theory and previous empirical findings. The coefficient on initial GDP per capita is negative and statistically significant suggesting strong convergence. Education has a positive effect on growth, but the coefficient is not statistically significant. Openness to foreign trade has a positive and significant effect on growth. The coefficients on black market premium and government spending are both negative and significant.

Regressions 2.2–2.5 augment the base regression with the different measures of capital flows. Total flows have a positive effect on growth, with the coefficient significant at the 10 per cent level. Regressions 2.3–2.5 look at FDI, portfolio, and bank flows individually. Foreign direct investment and portfolio flows have a

statistically significant positive effect on growth. Bank flows have a negative but statistically insignificant effect.

**Table 2: Effect of Capital Flows on Economic Growth in Developed and Developing Countries**

Dependent variable: growth rate of real per capita GDP

	2.1	2.2	2.3	2.4	2.5
		Total flows	FDI	Portfolio	Bank loans
Initial GDP	-0.056*** (0.014)	-0.057*** (0.013)	-0.046*** (0.010)	-0.063*** (0.011)	-0.063*** (0.019)
Human capital	0.027 (0.021)	0.038* (0.022)	0.014 (0.013)	0.036** (0.018)	0.077** (0.034)
Government spending	-0.259*** (0.075)	-0.223*** (0.069)***	-0.146** (0.070)	-0.280*** (0.072)	-0.265*** (0.015)
International trade	0.041*** (0.015)	0.033*** (0.015)	0.035*** (0.014)	0.047*** (0.014)	0.037** (0.017)
Black market premium	-0.034*** (0.011)	-0.031** (0.016)	-0.026*** (0.010)	-0.037*** (0.010)	-0.006 (0.017)
Capital flows		0.086* (0.050)	0.406** (0.176)	0.239*** (0.067)	-0.271 (0.319)
Adjusted R <sup>2</sup>	0.53	0.63	0.59	0.59	0.56
No of observations	155	126	146	145	131

Notes: Two-stage least squares panel regressions for 1976–1995 using 5-year averages. Numbers in parenthesis are White heteroscedasticity robust standard errors. Instruments include US interest rate, total capital flows to all countries in sample, current and lagged terms of trade, lagged capital flows and lagged GDP. Significance at 10%, 5% and 1% denoted by \*, \*\* and \*\*\* respectively.

Given our focus on the effect of capital flows on developing countries, we next consider the results for the developing countries in our sample (Table 3). The results for the base regression do not differ markedly from those of the full sample. Capital flows, however, are found to have a negative effect on growth, though the coefficient is not statistically significant. As in the full sample case, foreign direct investment and portfolio flows both have a statistically significant positive effect on growth. Bank flows are found to have a statistically significant negative effect on growth. These results are also economically significant. For example, an increase in FDI of 1 percentage point would result in a 0.40 percentage point higher real per capita growth rate per year. A 1 percentage point increase in portfolio flows is associated with a 0.35 percentage point increase, whereas a

1 percentage point increase in bank inflows results in a 0.33 percentage point decline in the real per capita GDP growth rate.

**Table 3: Effect of Capital Flows on Economic Growth in Developing Countries**

Dependent variable: growth rate of real per capita GDP

	<b>3.1</b>	<b>3.2</b>	<b>3.3</b>	<b>3.4</b>	<b>3.5</b>
		Total flows	FDI	Portfolio	Bank loans
Initial GDP	-0.044*** (0.016)	-0.031** (0.017)	-0.036*** (0.014)	-0.052*** (0.013)	-0.039** (0.026)
Human capital	0.021 (0.025)	0.026 (0.025)	0.020* (0.017)	0.029 (0.021)	0.063** (0.033)
Government spending	-0.268** (0.136)	-0.095** (0.109)	-0.187* (0.124)	-0.276 (0.130)	-0.122 (0.123)
International trade	0.041** (0.017)	0.035** (0.018)	0.034** (0.019)	0.047** (0.021)	0.025 (0.018)
Black market premium	-0.033*** (0.015)	-0.031** (0.018)	-0.031*** (0.011)	-0.036*** (0.011)	-0.030** (0.014)
Capital flows		-0.045 (0.104)	0.412* (0.254)	0.348** (0.194)	-0.329* (0.176)
Adjusted R <sup>2</sup>	0.55	0.66	0.63	0.61	0.60
No of observations	75	58	67	67	58

Notes: As for Table 2.

Note that we do not include the investment rate in these regressions, even though investment is an important determinant of economic growth. This has implications for the interpretation of the effect of capital flows on growth. The coefficient on the capital flow variables without investment captures the effect of capital flows on growth through all possible channels, including through investment. The coefficient on capital flow variables with investment on the other hand, captures the effect of capital flows on growth above and beyond its effect on total investment. When investment is included in the regression, the effect of FDI on growth is positive but no longer statistically significant at conventional levels. While the coefficient on portfolio flows becomes marginally smaller, it is statistically significant at the 5 per cent level. This suggests that portfolio flows affect economic growth above and beyond their effect on domestic investment.

The coefficient on bank flows remains negative and statistically significant at the 5 per cent level.

In order to check the robustness of these results, we introduce a variety of changes to our specification. These include replacing the black market premium with the measure of the size of the banking sector (bank assets/GDP), adding a measure of institutional strength (proxied by an index of law and contract enforcement), using a currency crisis dummy, and dummies for the 1980s to represent the period of the debt crisis and the 'lost decade' for the Latin American countries. Our findings for FDI and portfolio flows remain fairly robust to these changes. While the coefficients on bank flows remain negative, they are not always statistically significant.

Our findings are consistent with the conventional wisdom on the composition of capital flows. Foreign direct investment has historically played a larger role in developing countries than have other forms of capital flows. Though some countries have experienced periods of large bank inflows, they haven't been sustained over time. For the countries in our sample, FDI constituted the largest component of capital flows followed by portfolio flows and bank flows. During 1976–1998 average annual foreign direct investment represented 1.4 per cent of GDP, and portfolio flows and bank flows were approximately 1.1 and 0.5 per cent of GDP. Similarly, simple measures of volatility indicate that FDI was the most stable form of capital flows, while bank flows were the most volatile. For instance, the coefficient of variation of annual FDI, portfolio and banks flows to our sample countries during 1976–1998 was 1.2, 2.8 and 4.8 per cent respectively. Given that bank flows have been small and volatile, it is likely that they have not made a meaningful contribution to investment. Our results also suggest that portfolio flows affect growth above and beyond their effect on investment. While the identification of the exact channels is beyond the scope of this paper, the most likely channel (besides investment) through which foreign investment in the domestic equity and debt markets could contribute to growth is through the development and deepening of these markets.

The hypothesis that the quality of domestic financial and regulatory institutions determines the effect of liberalisation on growth is not firmly supported by the data. Our attempts to test this hypothesis by using alternative measures of institutional strength generally produce results that are either statistically

insignificant or contradict the hypothesis. The measures we considered included the ratio of liquid liabilities to GDP, the index of law and contract enforcement, and the index of the quality of countries' accounting and reporting standards. Our guess is that this is a consequence of the incomplete and imprecise nature of these measures, and not because institutions do not play a role in this process.

## **6. Concluding Remarks**

The effect of international financial integration on economic growth has been the subject of ongoing debate in both academic and policy circles. Sceptics point to the financial and currency crises that have followed financial liberalisation in many countries. Proponents, on the other hand, argue that financial openness enhances investment and economic growth.

Theory suggests different channels through which financial integration can positively affect investment and growth. Despite the theoretical case for capital account liberalisation, attempts at establishing a robust empirical link between financial openness and growth have so far not been very successful. However, one should be cautious in interpreting the lack of a strong statistical link as evidence against liberalisation. As noted earlier, it may be that the measures of capital account liberalisation employed in most studies, including this one, do not adequately capture complex phenomena like financial liberalisation. Attempts at identifying the conditions under which liberalisation might be beneficial have also been hampered by the lack of satisfactory measures of financial market development and institutional strength. To complement the existing research, we examine this issue by using the available data on capital flows instead of the measures of capital account liberalisation. Consistent with conventional wisdom, we find that foreign direct investment and portfolio inflows enhance growth. By contrast, bank inflows appear to have a negative effect on growth, although this result is less robust to changes in equation specification than the results for FDI and portfolio inflows. Future work should attempt to more closely identify the different channels through which capital flows affect growth.

## **Appendix A: Data**

### **Country List**

Argentina, Australia, Austria, Brazil, Canada, Chile, Colombia, Denmark, Finland, France, Germany, Greece, India, Indonesia, Ireland, Israel, Italy, Japan, Kenya, Korea, Malaysia, Mexico, Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Portugal, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, United Kingdom, United States, Uruguay, Venezuela, Zimbabwe.

### **Variable List and Data Sources**

#### *Growth*

First difference of the log of real per capita GDP.

Source: IMF

#### *Education*

Average years of secondary education of the population over 15 years of age.

Source: Barro and Lee (1996)

#### *Investment*

Gross fixed capital formation as a share of GDP.

Source: World Bank

#### *Government consumption*

Government consumption expenditure as a share of GDP.

Source: IMF

#### *Trade openness*

Sum of exports and imports of goods and services as a share of GDP.

Source: IMF

#### *Black market exchange rate premium*

Per cent premium over the official exchange rate.

Source: World Bank

*Gross capital inflows*

Sum of foreign direct investment, portfolio inflows and other investment liability as a share of GDP.

Source: IMF

*Foreign direct investment*

Foreign direct investment in the recipient country as a share of GDP.

Source: IMF

*Portfolio inflows*

Non-resident acquisition of domestic equity and debt securities as a share of GDP.

Source: IMF

*Bank inflows*

Non-resident acquisition of domestic bank assets as a share of GDP.

Source: IMF

*Banking sector size*

Total assets of the banking sector as a share of GDP.

Source: IMF

*Index of law and contract enforcement*

Constructed by International Country Risk Guide.

Source: Beck, Levine and Loayza (2000)

*Index of accounting standards*

Constructed by International Country Risk Guide.

Source: Beck *et al* (2000)

*Crisis dummy*

1 if nominal exchange rate depreciation is more than 20 per cent per year.

Source: IMF

*US interest rate*

US treasury bill rate.

Source: IMF

*Terms of trade*

Ratio of export price index to import price index.

Source: World Bank



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