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Capital Flows in a Globalized World
The Role of Policies
and Institutions

Laura Alfaro, Sebnem Kalemli-Ozcan, and
Vadym Volosovych

1.1 Introduction

Controversy regarding the costs and benefits of globalization has taken center stage in policy and academic circles. While concerns over the benefits of capital mobility once voiced by John Maynard Keynes during the design of the Bretton Woods System were nearly forgotten in the 1970s and 1980s, the crises of the last decade have revived the debate over the merits of international financial integration.

The most powerful argument in favor of international capital mobility, voiced by, among others, Stanley Fischer, Maurice Obstfeld, Kenneth Rogoff, and Larry Summers, is that it facilitates an efficient global allocation of savings by channelling financial resources to their most productive uses, thereby increasing economic growth and welfare around the world. But some other prominent academics are among the skeptics of international financial integration. Paul Krugman (1998), for example, argues that countries that experience full-blown crises should use capital controls. Dani Rodrik (1998) claims that international financial liberalization creates a higher risk of crises for developing countries. Even Jagdish Bhagwati, a fierce proponent of free trade, wonders if the risks of international finan-

cial integration might outweigh its benefits (Bhagwati 1998). As a result, recent research has focused on how to minimize the instability associated with international capital markets. Without a comprehensive understanding of the determinants of capital flows and their volatility, however, it is difficult to evaluate the different proposals that have been put forth to mitigate the negative effects of international capital mobility.

The determinants of international capital flows and their consequences for economic growth have been one of the most important issues in the international macroeconomics literature.[1] However, there is no consensus. This is mainly due to the fact that different researchers focus on different samples of countries (Organization for Economic Cooperation and Development [OECD] countries versus emerging markets), different time periods (1970s versus 1980s versus 1990s), and different forms of capital flows (foreign direct investment/portfolio equity flows versus debt flows or public flows versus private flows). For example, Calvo, Leiderman, and Reinhart (1996) focus on the role of external (push) and internal (pull) factors as potential determinants of foreign investment using a cross section of developing countries. They find that low interest rates in the United States played an important role in accounting for the renewal of capital flows to these countries in the 1990s. Edwards (1991) shows that government size and openness are important determinants of inward foreign direct investment (FDI) from OECD to developing countries during the period 1971–81. Wei (2000) and Wei and Wu (2002) use data on bilateral FDI from eighteen industrialized source countries to fifty-nine host countries during 1994–96 and find that corruption reduces the volume of inward FDI and affects the composition of flows by increasing the loan-to-FDI ratio during this period.[2] Using data on bilateral portfolio equity flows from a set of fourteen industrialized countries during 1989–96, Portes and Rey (2005) find evidence that imperfections in the international credit markets can affect the amount and direction of capital flows. Among a set of developing countries, Lane (2004) also finds credit market frictions to be a determinant of debt flows during 1970–95.

These papers have not paid particular attention to the overall role institutions play in shaping long-term capital flows among a cross section of developed and developing countries. This is a task we started investigating in Alfaro, Kalemli-Ozcan, and Volosovych (2003; henceforth AKV). AKV find institutional quality to be a causal determinant of capital inflows, where current institutions are instrumented by their historical determinants.[3] In this

1. See Prasad et al. (2003) for an extensive review.
2. Wei and Wu (2002) also investigate the determinants of bilateral bank flows from thirteen industrialized source countries to eighty-three host countries, showing similar results.
3. Institutional quality is measured as a composite political safety index. It is the sum of all the components rated by an independent agency, the PRS Group, in the *International*

paper, we re-establish our results from AKV for a different sample using balance of payments (BOP) statistics from the International Monetary Fund (IMF).[4] We then extend our original analysis in significant ways by asking three main questions: Is there any direct effect of the legal system on foreign investments other than through its effect on institutions? Is there any role for policy over institutions? Does institutional quality influence the volatility of capital flows?

Our evidence shows that the historical legal origin of a country has a direct impact on capital inflows during 1970–2000. We interpret this finding as evidence that legal origins measure different components of institutional quality, such as investor protection. What about policies? There is an important distinction between policies and institutions. Institutions are sets of rules constraining human behavior.[5] Policies are choices made within a political and social structure that is, within a set of institutions. As mentioned, we find institutional quality to have a first-order effect over policies as a determinant of capital flows. Given this, it is important to know if there is any role left for policymaking. In order to investigate this question, we look at the changes in the level of capital inflows and regress them on the policy changes and institutional quality changes from the first half to the second half of the sample period. In those regressions, both changes in institutions and policy variables, such as inflation, capital controls, and financial development, are shown to have a role in explaining the changes in capital inflows. This result has important policy implications in the sense that improving institutions and domestic policies can increase the inward foreign investment to a country over time.

Finally, we examine the determinants of the volatility of capital flows and study whether institutions and policies play a role in reducing the instability in the international financial markets. Theoretical research has linked capital flow volatility to periods of liberalization. One argument is that the unprecedented globalization of the securities market in the 1990s resulted in high volatility of capital flows.[6] Other researchers model how frictions in the international financial markets together with weak fundamentals lead to excessive volatility of capital flows.[7] The empirical work focuses more on financial crises. That literature shows that bad policies, such as fiscal deficits, inflation, and bank fragility, seem to matter for the finan-

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Country Risk Guide (ICRG). The components are government stability, internal conflict, external conflict, no corruption, militarized politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucratic quality. See Acemoglu, Johnson, and Robinson (2001, 2002) for the historical determinants of current institutional quality.

4. AKV calculate inflows using data on foreign-owned stocks estimated by Lane and Milesi-Ferretti (1999, 2001) and Kraay et al. (2000), in addition to using BOP data from IMF.

5. See North (1994, 1995).

6. See Calvo and Mendoza (2000a, 2000b) and Bacchetta and van Wincoop (2000).

7. See Chari and Kehoe (2003).

cial crises, which may be regarded as episodes of extreme volatility.[8] Our evidence suggests that both low institutional quality and bad policies, in particular bad monetary policy, have played a role in the long-run volatility of capital flows during 1970–2000.[9]

The chapter is organized as follows. Section 1.2 presents a preliminary discussion on capital mobility, institutions, and policies. Section 1.3 presents extensive data and overviews the stylized facts related to capital flow mobility and the volatility of these flows during 1970–2000. Section 1.4 presents results on the determinants of capital flows, changes in capital flows over time, and capital flow volatility. Section 1.5 concludes.

1.2   Capital Flows and Institutions

Despite the surge in capital mobility over the last decade, capital flows from rich to poor countries have been at much lower levels than predicted by the standard neoclassical models.[10] This phenomenon is usually referred to as the "Lucas paradox."[11] Lucas (1990) examines international capital movements from the perspective of rich and poor countries. Under the standard assumptions—such as countries producing the same goods with the same constant returns to scale production function, the same factors of production, and the same technology—and where there is free capital mobility, new investment will occur only in the poorer economy, and this will continue to be true until the returns to capital in every location are equalized. Hence, Lucas argues that given the implications of the frictionless

8. See Frankel and Rose (1996), Kaminsky and Reinhart (1999), Corsetti, Pesenti, and Roubini (2001), Kaminsky (2003), and Frankel and Wei (2004). McKinnon and Pill (1996) model how financial liberalization together with distortions can make boom-bust cycles even more pronounced by fueling lending booms that lead to the eventual collapse of the banking system. Aizenman (2004) links financial crises to financial opening. Other researchers have found that stabilization programs cause large capital inflows at the early stages of the exchange rate stabilization reforms, followed by high capital flow reversals when the lack of credibility behind the peg fuels an attack against the domestic currency. See Calvo and Vegh (1999).

9. Eichengreen, Hausmann, and Panizza (2003) examine the relation between "original sin" (the inability of countries to borrow abroad in their own currencies) and capital flow volatility for thirty-three countries. The work by Gavin and Hausmann (1999) and Gavin, Hausmann, and Leiderman (1995) establishes the volatility patterns for Latin American countries up to the early 1990s and relates them to external shocks and internal policies; see also Inter-American Development Bank (1995).

10. Section 1.3 documents this and other facts related to international capital flows.

11. The Lucas paradox, the lack of flows from rich to poor countries, is related to some of the major puzzles in the literature: the high correlation between savings and investment in OECD countries (the Feldstein-Horioka puzzle), the lack of investment in foreign capital markets by home-country residents (the home bias puzzle), and the low correlations of consumption growth across countries (the lack of risk sharing puzzle). All of these puzzles deal with the question of the lack of international capital flows. See Obstfeld and Rogoff (2000) for an overview of the major puzzles in international economies.

neoclassical theory, the fact that more capital does not flow from rich countries to poor countries constitutes a paradox.

Lucas's work has spawned an extensive theoretical literature. Researchers, including Lucas himself, show that with slight modifications of the basic neoclassical theory, such as changing the production structure, adding an internationally immobile factor such as human capital, or deviating from perfect markets assumption, the paradox disappears. The main theoretical explanations for the Lucas paradox can be broadly grouped into two categories.[12] The first group includes differences in fundamentals that affect the production structure of the economy. Researchers have explored the role of omitted factors of production, government policies, institutions, and differences in technology.[13] The second group of explanations emphasizes international capital market imperfections, mainly sovereign risk and asymmetric information. Although capital is potentially productive and has a high return in developing countries, it does not flow there because of market failures.[14]

Empirical research on the Lucas paradox is rather limited. As far as indirect evidence goes, O'Rourke and Williamson (1999) find that before World War I British capital chased European emigrants, when both were seeking cheap land and natural resources. Clemens and Williamson (2004), using data on British investment in thirty-four countries during the nineteenth century, show that two-thirds of the historical British capital exports went to the labor-scarce New World and only about one-quarter to labor-abundant Asia and Africa for similar reasons. Direct evidence is provided by AKV, who investigate the role of the different explanations for the lack of inflows of capital (FDI, portfolio equity, and debt) from rich to poor countries—the "paradox." Using cross-country regressions, and paying particular attention to endogeneity issues, AKV show that during

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12. For a recent overview of the different explanations behind the Lucas paradox, see Reinhart and Rogoff (2004).

13. For the role of different production functions, see King and Rebelo (1993); for the role of government policies, see Razin and Yuen (1994); for the role of institutions, see Tornell and Velasco (1992); for the role of total factor productivity (TFP), see Glick and Rogoff (1995) and Kalemli-Ozcan et al. (2005). Note that it is very difficult to differentiate both theoretically and empirically between the effect of institutions and the effect of TFP on investment opportunities, given that institutional quality is also a determinant of TFP. Prescott (1998) argues that the efficient use of the currently operating technology or resistance to the adoption of new ones depends on the "arrangements" a society employs. Kalemli-Ozcan et al. (2005) study capital flows between U.S. states, where there is a common institutional structure. They show these flows to be consistent with a simple neoclassical model with TFP that varies across states and over time and where capital freely moves across state borders. In this framework, capital flows to states that experience a relative increase in TFP.

14. Gertler and Rogoff (1990) show that asymmetric information problems might cause a reversal in the direction of capital flows relative to the perfect-information case. Gordon and Bovenberg (1996) develop a model with asymmetric information that explains the differences in corporate taxes and, hence, differences in real interest rates.

1970–2000 institutional quality is the most important causal variable explaining the Lucas paradox.

What about pre-1970 capital flows? Obstfeld and Taylor (2004) characterize four different periods in terms of the U-shaped evolution of capital mobility.[15] An upswing in capital mobility occurred from 1880 to 1914 during the gold standard period. Before 1914, capital movements were free and flows reached unprecedented levels. The international financial markets broke up during World War I. In the 1920s, policymakers around the world tried to reconstruct the international financial markets. Britain returned to the gold standard in 1925 and led the way to restoring the international gold standard for a short period. Capital mobility increased between 1925 and 1930. As the world economy collapsed into depression in the 1930s, so did the international capital markets. World War II was followed by a period of limited capital mobility. Capital flows began to increase starting in the 1960s, and further expanded in the 1970s after the demise of the Bretton Woods system. In terms of the Lucas paradox, Obstfeld and Taylor (2004) argue that capital was somewhat biased toward the rich countries in the first global capital market boom in pre-1914, but it is even more so today. In the pre-1914 boom, there was little difference between net flows and gross flows because most of the flows were unidirectional from the rich core to the periphery. Post-1970 gross flows (both inflows and outflows) relative to GDP increased tremendously. But net flows (inflows minus outflows) stayed constant at relatively low levels for the last thirty years. This is consistent with the fact that most flows are between rich countries (called north-north as opposed to north-south). Obstfeld and Taylor (2004) conclude that modern capital flows are mostly "diversification finance" rather than "development finance."

If the Lucas paradox was to a certain extent a feature of the pre-1914 global capital market boom, and even more so in the last thirty years, what is the explanation? We argue that it is differences in institutional quality among the poor and rich countries. Institutions are the rules of the game in a society. They consist of both informal constraints (traditions, customs) and formal rules (regulations, laws, and constitutions). They create the incentive structure of an economy. Institutions are understood to affect economic performance through their effect on investment decisions by protecting the property rights of entrepreneurs against the government and other segments of society and preventing elites from blocking the adoption of new technologies. In general, weak property rights owing to poor quality institutions can lead to lack of productive capacities or uncertainty of returns in an economy.

Lucas (1990) argues that "political risk" cannot explain the lack of flows before 1945 because during that time most poor countries were subject to

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15. See also Eichengreen (2003) and O'Rourke and Williamson (1999).

European legal arrangements imposed through colonialism. He gives India as an example, arguing that investors in India were governed by the same rules and regulations as investors in the United Kingdom. However, the recent work on institutions and growth by Acemoglu, Johnson, and Robinson (2001, 2002) illustrates how conditions in the colonies shaped today's institutions. The British institutions in India do not necessarily have the same quality as the British institutions in the United States and Australia. They argue that it is not the legal origin or the identity of the colonizer that matters for shaping institutions, but whether the European colonialists could safely settle in a particular location. If the European settlement was discouraged by diseases or surplus extraction was beneficial via an urbanized and prosperous population, the Europeans set up worse institutions. This is also consistent with the argument of Reinhart and Rogoff (2004), who emphasize the relationship between sovereign risk and historical defaults and conclude that sovereign risk must be the explanation for the Lucas paradox. Historically bad institutions are strong predictors of sovereign risk and, hence, historical serial default.

In the next section we present an overview of the general patterns of international capital mobility and capital flow volatility over the last thirty years. These data show that, despite the dramatic increase in capital flows over the last two decades, most capital flows to rich countries.

1.3   International Capital Flows: 1970–2000

1.3.1   Data

We use data on annual capital flows from the *International Financial Statistics* (IFS) issued by the IMF. Although there are other data sources, the IFS provides the most comprehensive and comparable data on international capital flows.[16] These data are described in detail in appendix A.

One might expect that in the financial account (formerly called the capital account) of the BOP, changes in liabilities should be shown as positive entries (inflows) and changes in assets should be shown as negative entries (outflows). In practice, changes in both liabilities and assets are reported as net of any disinvestment, and consequently both can have any sign. In the BOP accounts, an increase (decrease) in liabilities to foreigners is entered as positive (negative), while an increase (decrease) in foreign assets held by

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16. The balance of payments (BOP) statistics, also issued by the IMF, present the same data. There are two presentations of the BOP data: Analytical and Standard. IFS and BOP Analytical present the same data and report "exceptional financing" as a separate line. BOP Standard, on the other hand, does not report "exceptional financing" as a separate line and instead includes it in the "other investment" category (refer to IMF 1993). Items reported under "exceptional financing" vary from country to country and are described in the country profiles in the corresponding BOP manual.

locals is entered as negative (positive).[17] Following this convention, net flows of capital are calculated as the sum of the flows of foreign claims on domestic capital (change in liabilities) and the flows of domestic claims on foreign capital (change in assets) in a given year. Gross flows of capital are calculated as the sum of the absolute value of the flows of foreign claims on domestic capital and the absolute value of the flows of domestic claims on foreign capital in a given year. Hence, they are always positive.

The main categories of capital flows are FDI, portfolio equity investment, and debt flows. In what follows, we describe the definition and measurement of these categories in great detail.

Total Equity Flows

For FDI, we use direct investment abroad (IFS line 78bdd) and direct investment in reporting economy (line 78bed). These categories include equity capital, reinvested earnings, other capital, and financial derivatives associated with various intercompany transactions between affiliated enterprises. For portfolio equity investment, we use equity security assets (line 78bkd) and equity security liabilities (line 78bmd), which include shares, stock participation, and similar documents (such as American depository receipts) that usually denote ownership of equity.

Direct investments include greenfield investments and equity participation giving a controlling stake. When a foreign investor purchases a local firm's securities without exercising control over the firm, the investment is regarded as a portfolio investment. The IMF classifies an investment as direct if a foreign investor holds at least 10 percent of a local firm's equity while the remaining equity purchases are classified under portfolio equity investment. In the regression analysis, we do not distinguish between minority and majority shareholders, as this distinction is not important to our analysis. In addition, because of missing or insufficient portfolio data (some countries tend not to receive portfolio flows, due in part to lack of

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17. The balance of payment is a record of a country's transactions with the rest of the world. The financial account within the balance of payments, broadly speaking, keeps track of transactions in financial assets. It reports changes in the asset position (assets and liabilities) of a country vis-à-vis the rest of the world. For example, if a U.S. firm imports goods from Switzerland for $10 million and pays with a check drawn on a U.S. bank, the corresponding transaction in the financial account is recorded as an increase in U.S. liabilities to foreigners (a credit of $10 million). If the payment is drawn against an account the U.S. firm has in a Swiss bank, the corresponding transaction in the financial account is recorded as a reduction in U.S. assets (a credit of $10 million). Note that a country's balance of payment record is kept according to the principles of double-entry bookkeeping. The corresponding balancing transaction would be a debit (–$10 million) in the current account (import of goods). A specific example is as follows: On September 1, 1998, as part of a broader set of policies to restrict capital outflows, the Malaysian government eliminated the offshore trading of the Malaysian ringgit by requiring all ringgit offshore to be repatriated within a month. By the end of 1998 the account "other investment" was –4,604 million U.S. dollars. This amount, among other transactions, reflects the repatriation of the ringgit, which will show as a reduction in Malaysian liabilities.

functioning stock markets), we prefer to use total equity flows in the analysis, which is the sum of flows of FDI and flows of portfolio equity.

Debt Flows

For debt flows, we use debt security assets (IFS line 78bld) and debt security liabilities (line 78bnd) as well as other investment assets (line 78bhd) and other investment liabilities (line 78bid). Debt securities include bonds, debentures, notes, and money market or negotiable debt instruments. Other investments include all financial transactions not covered in direct investment, portfolio investment, financial derivatives, or other assets. Major categories are trade credits, loans, transactions in currency and deposits, and other assets.

Data Issues

Although the IMF provides the most comprehensive data, there are several issues associated with the compilation of the BOP statistics, as discussed in greater detail by Lane and Milesi-Ferretti (2001). A substantial amount of data is missing for many countries, in particular for developing countries. In addition, some countries do not report data for all forms of capital flows. Unfortunately, it is difficult to verify whether the data are in fact missing as opposed to simply being zero. For example, portfolio equity data for most countries were negligible until recently. There are additional misreporting issues related to the fact that several countries tend to report data for liabilities only and not for assets. This is particularly the case for FDI flows. Some of these data, reported in the liability line, seem to correspond to net flows (i.e., liabilities minus assets). For debt data, there are additional issues. Consequent to the debt crisis there are a number of measurement problems related to different methodologies for recording nonpayments, rescheduling, debt forgiveness, and reductions.[18] Finally, the time coverage of the data varies substantially from country to country. Most developed countries begin reporting data in the early 1970s, and a substantial subset of developing countries in the mid-1970s. For other countries, data are not available until the mid-1980s or early 1990s.

Stocks versus Flows and Valuation Effects

The IFS reports BOP transactions as flows of equity and debt. In 1997, the IMF began to report international investment position for each country—that is, the stocks. However, stocks are not just cumulative flows; they also depend on capital gains, losses, and defaults—that is, on valuation adjustments. These stocks reported by the IMF are reported by countries

18. As noted by Lane and Milesi-Ferretti (2001), these issues create large discrepancies among debt data reported by different methodologies. We thank Gian Maria Milesi-Ferretti for pointing this out to us and helping us with the data in general.

themselves. Some calculate them in a pretty sophisticated fashion (with surveys, etc.), while others cumulate flows with valuation adjustments. Kraay et al. (2000; hereafter KLSV) and Lane and Milesi-Ferretti (1999, 2001; hereafter LM) construct consistent estimates of foreign assets and liabilities and their subcomponents for different countries in the 1970s, 1980s, and 1990s, paying particular attention to these valuation effects. LM estimate stocks of equity and FDI based on the IMF flow data adjusted to reflect changes in financial market prices and exchange rates. In order to estimate FDI stocks, the authors accumulate flows and adjust for the effects of exchange rate changes. For equity stocks, they adjust for changes in the end-of-year U.S. dollar value of the domestic stock market. KLSV argue against the valuation of stocks using financial market prices, maintaining that capital listed on the stock market and the corresponding share prices—especially in developing countries—are not representative of the stock of capital of a country or of the value of a firm. Instead, they use the price of investment goods in local currency, which is the investment deflator. They also adjust for exchange rate changes. LM found the correlation between the first difference of foreign claims on capital and current account to be generally high but significantly below unity for several countries, confirming the importance of valuation adjustments.

1.3.2   Some Stylized Facts

We express all flows in 1995 U.S. dollars using the U.S. consumer price index (CPI) taken from the World Bank's *World Development Indicators.* We divide these flows by the corresponding country's population, taken from the same source. We believe that data expressed as real dollars per capita are consistent with the neoclassical theory and provide a better picture of the evolution of the global capital markets over the last three decades. We exclude from the sample countries with populations of less than half a million, because very small countries in the sample tend to distort the pattern of capital flows per capita. We have data on 72 countries for FDI, 68 countries for portfolio equity, and 122 for debt flows.[19]

Total inflows of capital per capita as well as each of the components increased substantially throughout the sample period for most of our countries. Average inflows of capital per capita within our sample grew by 4.8 percent per year during the sample period. There is, however, variability in terms of the composition. Figure 1.1 plots the evolution of the composition of inflows of capital per capita for the countries in our sample.[20] The increasing role of FDI and portfolio flows is evident. Based on the sample of

19. In calculating total equity flows, we treat missing portfolio equity data as zero. We then add zero and FDI for that country. So we also have seventy-two countries for the total equity flows. The four countries with FDI data but no portfolio equity data are Bolivia, Central African Republic, Mauritius, and Papua New Guinea.

20. See appendix tables 1B.1 and 1B.2 for the list of countries.
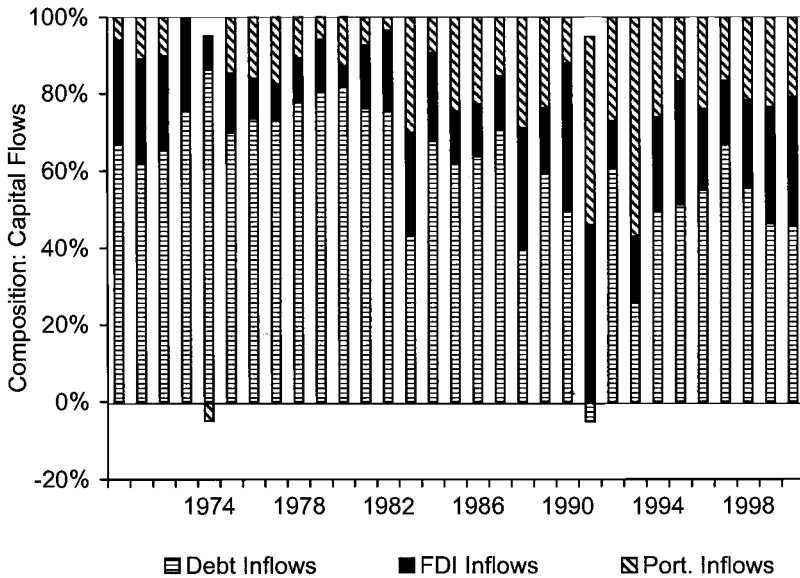
Fig. 1.1   Capital inflows per capita by type of flow, 1970–2000

Notes: Inflows represent inflows of FDI, portfolio equity investment, and debt divided by population based on IMF data in 1995 U.S. dollars. FDI data are available for 72 countries, portfolio data for 68 countries, and debt data for 122 countries. Inflows represent flows of foreign claims on domestic capital (liability). FDI inflows correspond to Direct Investment in Reporting Economy (IFS line 78bed), which includes equity capital, reinvested earnings, other capital and financial derivatives associated with various intercompany transactions between affiliated enterprises. Portfolio equity inflows correspond to Equity Liabilities (line 78bmd), which include shares, stock participations, and similar documents that usually denote ownership of equity. Data on inflows of debt include Debt Securities Liabilities (line 78bnd), which include bonds, notes, and money market, or negotiable debt instruments; and Other Investment Liabilities (line 78bid), which include all financial transactions not covered by direct investment, portfolio investment, financial derivatives, or other assets.

72 countries, average inflows of FDI per capita grew by 6.2 percent over the last thirty years and became the main source of private capital for developing countries during the 1990s. For our sample of 68 countries, average inflows of portfolio equity per capita grew by 9.3 percent. Finally, based on 122 countries, average inflows of debt per capita grew by 3.3 percent. Although their role is quite dominant, debt inflows clearly contracted following the 1980s' debt crisis. Figure 1.2 plots the evolution of the composition of the gross flows per capita. The patterns overall are similar to those in figure 1.1.

Figures 1.3, 1.4, and 1.5 plot the evolution of FDI, portfolio equity, and debt flows per capita, respectively. FDI flows remained relatively stable for most of the sample period, then increased steadily around the mid-1990s. Portfolio equity flows rose as well but fluctuated more. Debt flows also fluctuated, increasing during the 1970s, then crashing following the wake of
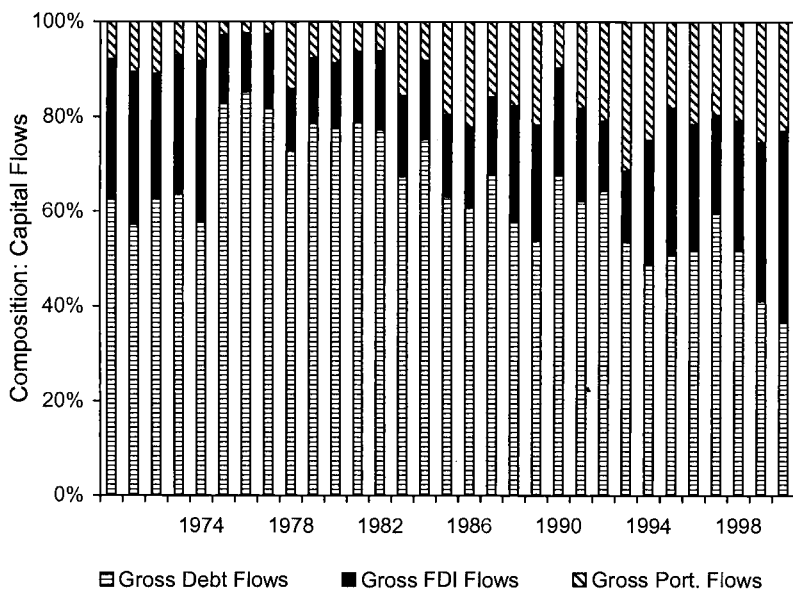
Fig. 1.2   Gross flows per capita by type of flow, 1970–2000

Notes: Gross flows represent gross flows of FDI, portfolio equity investment, and debt divided by population based on IMF data in 1995 U.S. dollars and correspond to the sum of the absolute value of the flows of assets (outflows) and liabilities (inflows). FDI data are available for 72 countries, portfolio data for 68 countries, and debt data for 122 countries. FDI assets and liabilities correspond respectively to Direct Investment Abroad (IFS line 78bdd) and Direct Investment in Reporting Economy (line 78bed) and include equity capital, reinvested earnings, other capital, and financial derivatives associated with various intercompany transactions between affiliated enterprises. Portfolio equity investment assets and liabilities correspond to Equity Securities Assets (line 78bkd) and Equity Securities Liabilities (line 78bmd) and include shares, stock participations, and similar documents that usually denote ownership of equity. Debt assets and liabilities include Debt Security Assets (line 78bld) and Debt Security Liabilities (line 78bnd), which include bonds and money market or negotiable debt instruments; Other Investment Assets (line 78bhd); and Other Investment Liabilities (line 78bid), which include all financial transactions not covered by direct investment, portfolio investment, financial derivatives, or other assets.

the 1980s debt crisis and reviving only in the 1990s. Figures 1.4 and 1.5 show that net portfolio and net debt flows become negative after 1995, a phenomenon driven mainly by industrial countries whose external asset holdings tend to exceed the liability holdings. With a few exceptions (in particular the United States), most of the developed countries have negative financial accounts. This is consistent with the results of Lane and Milesi-Ferretti (2001), which show net foreign asset positions on average to be increasing since 1995 for developed countries.

Panel A of figure 1.6 shows total equity inflows, which is the sum of inflows of FDI and inflows of portfolio equity investment, for twenty OECD and fifty-two developing countries. The difference between the two is a
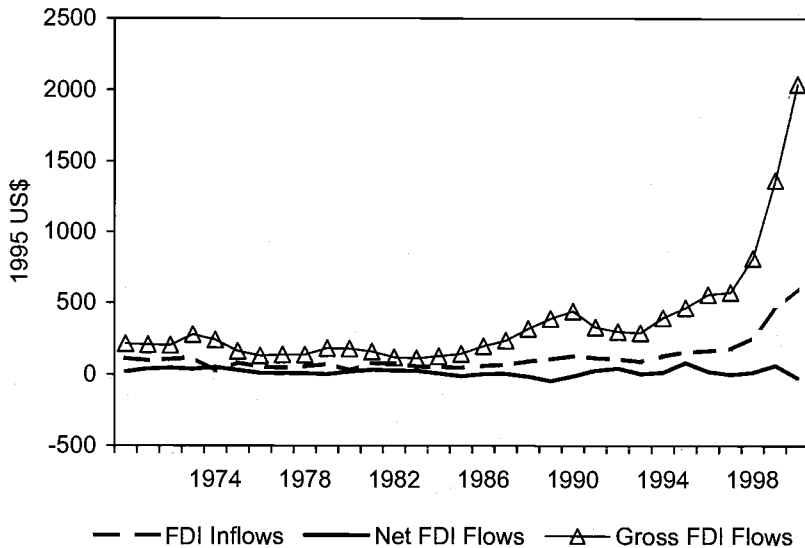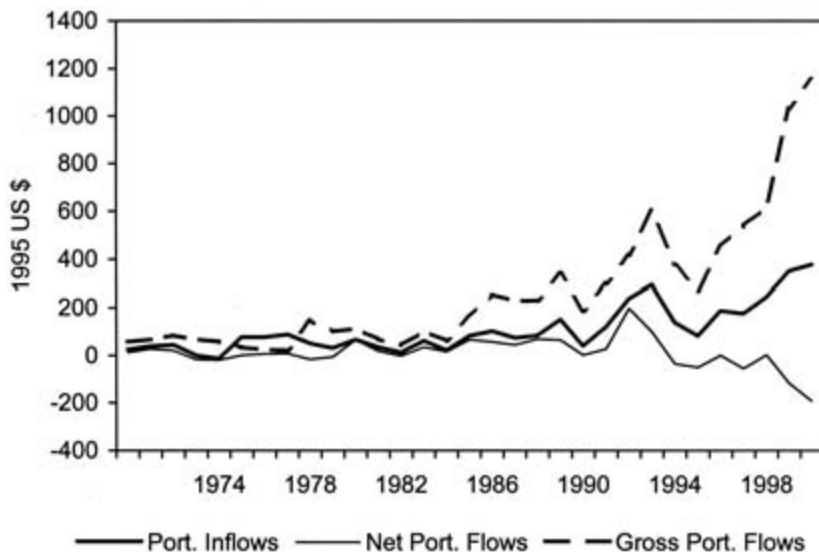
Fig. 1.3   FDI flows per capita, 1970–2000

Notes: Flows represent flows of FDI divided by population based on IMF data in 1995 U.S. dollars. Data are for 72 countries. Inflows represent flows of foreign claims on domestic capital (liability). Net flows are calculated as the difference between corresponding inflows (liabilities) and outflows (assets). Gross flows correspond to the sum of the absolute value of the flows of assets and liabilities. FDI assets and liabilities correspond, respectively, to Direct Investment Abroad (IFS line 78bdd) and Direct Investment in Reporting Economy (line 78bed) and include equity capital, reinvested earnings, other capital, and financial derivatives associated with various intercompany transactions between affiliated enterprises.

stark demonstration of north-north flows, or the Lucas paradox. Panel B of the figure shows the share of total equity inflows to total capital inflows for the OECD and developing countries. Since 1990, almost half of the total inflows were composed of FDI and portfolio equity investment for both rich and poor countries. Total equity flows are clearly an important part of the big picture, especially for poor countries.

Tables 1.1–1.4 present a variety of descriptive statistics on the various forms of capital flows for our sample of countries from 1970 to 2000. Table 1.1 provides descriptive statistics for inflows of capital per capita. Total capital inflows vary from –44.94 to 8320.9, with a mean of 406.29 dollars per capita. During the sample period, debt inflows averaged 284.07 dollars per capita, FDI inflows 169.44 dollars per capita, and total equity inflows 232.70 dollars per capita. Table 1.2 shows the increasing role of FDI and portfolio inflows per capita over debt inflows per capita for all regions (sub-Saharan Africa is the exception, where all types of inflows have a declining trend). These trends notwithstanding, the bulk of capital still flows to high-income countries, which attract 80 percent of all capital inflows.

Fig. 1.4   Portfolio flows per capita, 1970–2000

Notes: Flows represent flows of portfolio equity investment divided by population based on IMF data in 1995 U.S. dollars. Data are for 68 countries. Inflows represent flows of foreign claims on domestic capital (liability). Net flows are calculated as the difference between corresponding inflows (liabilities) and outflows (assets). Gross flows correspond to the sum of the absolute value of the flows of assets and liabilities. Portfolio equity investment assets and liabilities correspond, respectively, to Equity Securities Assets (IFS line 78bkd) and Equity Securities Liabilities (line 78bmd) and include shares, stock participations, and similar documents that usually denote ownership of equity.

Table 1.3 presents summary statistics on the volatility of inflows of capital per capita. The volatility of inflows of capital is calculated as the standard deviation of the corresponding inflows per capita divided by the mean of gross flows over the sample period, which is the average of the absolute value of the inflows and the absolute value of the outflows per capita (hence always positive). Normalization prevents spuriously higher volatility in the recent period due to higher flow volume. Table 1.4 shows the volatility of the different forms of inflows of capital to have been lower during the 1990s. FDI flows are generally less volatile than portfolio flows as they tend to be driven by long-term considerations. Debt flows also exhibit higher volatility relative to FDI. Inflows of portfolio and debt experienced higher volatility during the 1980s consequent to the debt crises and the increasing role of portfolio flows in the aftermath of the crises. As expected, the volatility of each component of inflows of capital is lower for high-income countries than for developing countries. The volatility of inflows has remained relatively constant for South and Southeast Asian countries, with a slight increase during the 1990s driven by increased volatility of inflows of portfolio capital in the periods before and after the Asian crisis of the
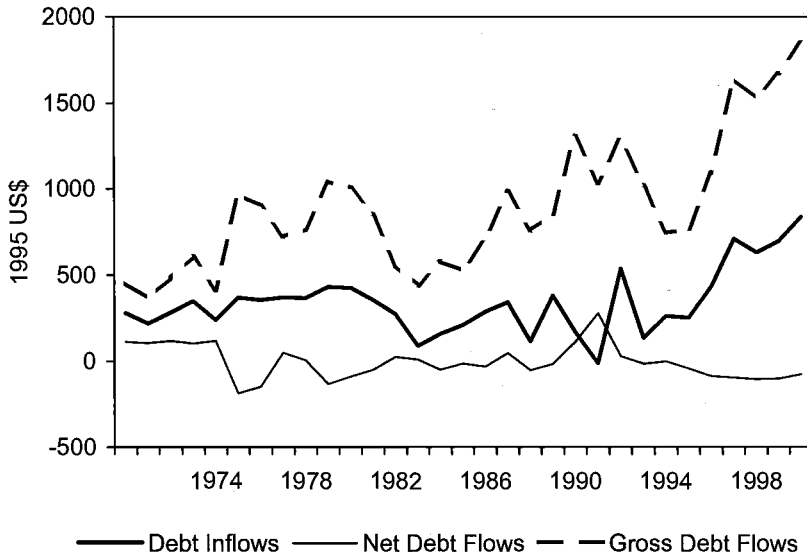
Fig. 1.5   Debt flows per capita, 1970–2000

Notes: Flows represent flows of debt divided by population based on IMF data in 1995 U.S. dollars. Data are for 122 countries. Inflows represent flows of foreign claims on domestic capital (liability). Net flows are calculated as the difference between corresponding inflows (liability) and outflows (asset). Gross flows correspond to the sum of the absolute value of the flows of assets and liabilities. Debt assets and liabilities include, respectively, Debt Securities Assets (IFS line 78bld) and Debt Securities Liabilities (line 78bnd), which cover bonds, notes, and money market or negotiable debt instruments; Other Investment Assets (line 78bhd); and Other Investment Liabilities (line 78bid), which include all financial transactions not covered by direct investment, portfolio investment, financial derivatives, or other assets.

late 1990s. Recently opened-up countries in Eastern Europe experienced a dramatic increase in the volatility of all forms of inflows of capital during the 1990s. For Latin America, on the other hand, the 1980s were turbulent years mostly driven by the debt crisis. The volatility of inflows of capital has declined during the 1990s. A similar pattern is observed for sub-Saharan Africa. The volatility of inflows of capital increased substantially in the 1990s for the Middle Eastern and North African countries.[21]

1.4   Empirical Analysis

1.4.1   Determinants of Capital Flows

For the regression analysis, we exclude countries with substantial missing data. In addition, there are various outliers in terms of capital flows per

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21. Note that a very volatile form of foreign capital is foreign aid, which is driven by a host of factors, as shown by Alesina and Dollar (2000), and is not the focus of this study.

A

Rich Countries ▨ Poor Countries ■

B

Rich Countries ▨ Poor Countries ■
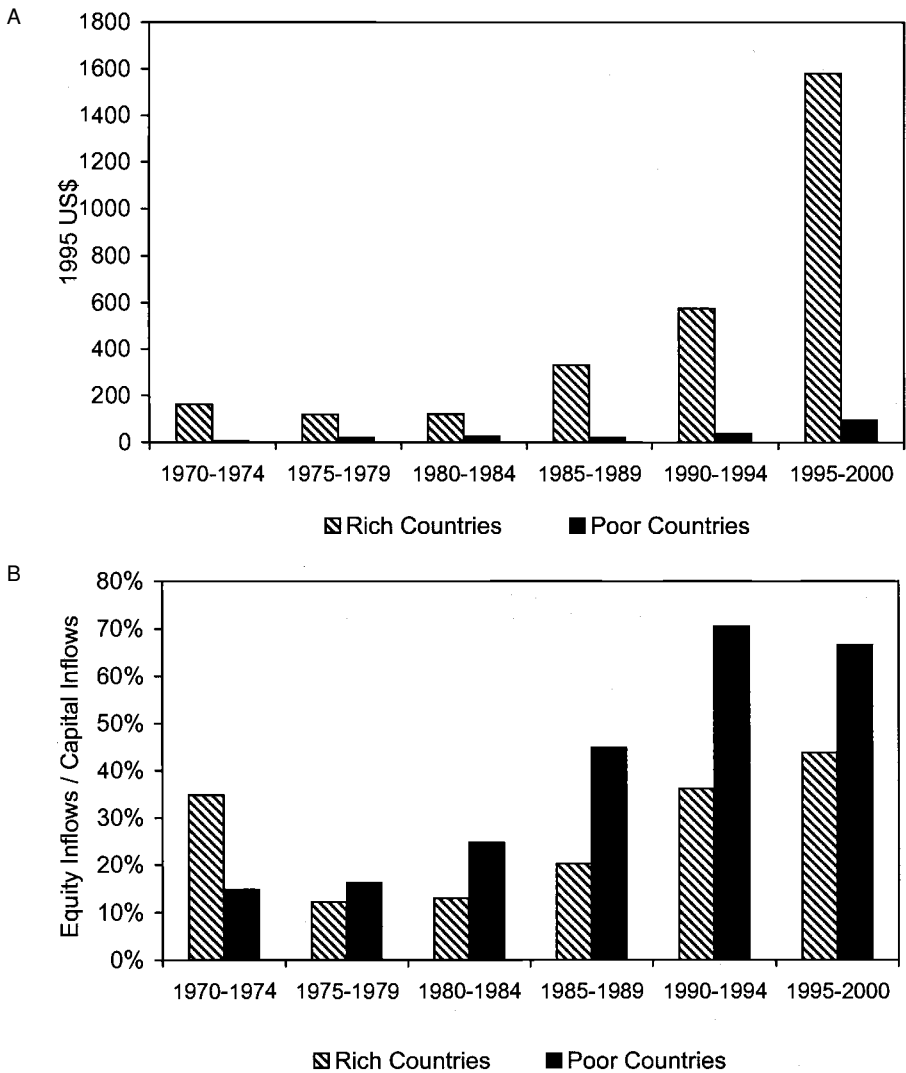
Fig. 1.6   *A*, Total equity inflows to rich and poor countries, 1970–2000; *B*, ratio of total equity inflows to total inflows to rich and poor countries, 1970–2000

Notes: Total equity inflows represent inflows of FDI and portfolio equity investment divided by population based on IMF data in 1995 U.S. dollars. Data are for 72 countries for which total equity data are available and are averaged over five-year periods: FDI inflows correspond to Direct Investment in Reporting Economy (IFS line 78bed), which includes equity capital, reinvested earnings, other capital, and financial derivatives associated with various inter-company transactions between affiliated enterprises. Portfolio equity inflows correspond to Equity Liabilities (line 78bmd), which includes shares, stock participations, and similar documents that usually denote ownership of equity. Rich countries denote high-income OECD countries; poor countries denote the remaining ones.

In panel B, Total inflows are the sum of total equity inflows and debt divided by population based on IMF data in 1995 US$. Data on inflows of debt include Debt Securities Liabilities (IFS line 78bnd), which cover bonds or negotiable debt instruments, and Other Investment Liabilities (line 78bid), which include all financial transactions not covered in direct investment, portfolio investment, financial derivatives, or other assets.

Table 1.1   **Descriptive statistics: Inflows of capital, 1970–2000 (per capita U.S. dollars; sample: 122 countries)**

	Mean	Standard deviation	Minimum	Maximum
FDI inflows	169.44	292.44	–122.51	1,723.78
Portfolio equity inflows	104.82	273.12	–2.17	1,769.21
Debt inflows	284.07	656.00	–83.56	4,827.94
Total equity inflows	232.70	487.09	–122.51	3,492.99
Total equity and debt inflows	406.29	1,012.32	–44.94	8,320.92

Notes: Inflows represent flows of foreign claims on domestic capital (liability) divided by population based on IMF data in 1995 U.S. dollars. FDI inflows correspond to Direct Investment in Reporting Economy (IFS line 78bed), which includes equity capital, reinvested earnings, other capital, and financial derivatives associated with various intercompany transactions between affiliated enterprises. Portfolio equity inflows correspond to Equity Liabilities (line 78bmd), which include shares, stock participations, and similar documents that usually denote ownership of equity. Data on inflows of debt include Debt Securities Liabilities (line 78bnd), which include bonds, notes, and money market or negotiable debt instruments; and Other Investment Liabilities (line 78bid), which include all financial transactions not covered by direct investment, portfolio investment, financial derivatives, or other assets. Inflows of total equity are the sum of FDI and portfolio equity investments. Total equity data are available for 72 countries; debt data are for 122 countries. See appendix tables 1B.1 and 1B.2 for countries in the sample.

capita. This, of course, should be considered in the econometric analysis. Table 1.5 lists the countries used in the regression analysis.[22]

The dependent variable is inflows of capital per capita, which is inflows of total equity (FDI and portfolio equity) investment averaged over the sample period. We prefer to abstract most of our analysis from debt flows since they tend to be shaped by government decisions to a greater extent

22. We keep track of the series of countries that have data throughout the whole sample period, as shown in appendix table 1B.3. The table provides descriptive statistics for a subsample of forty-seven countries for which there are data for both total equity and debt flows throughout the different decades. This subsample exhibits overall patterns similar to our regression sample. The forty-seven countries of this subsample are shown in boldface type in appendix table 1B.1. Unfortunately, we cannot use this sample in the regressions because there are several outliers. In addition, some of our independent variables do not exist for this subsample. Benelux and Singapore are outliers in terms of large inflows. Bahrain, Botswana, Gabon, Burkina Faso, and Niger do not have human capital data. Central African Republic, Fiji, Libya, Mauritius, Swaziland, and Chad are outliers in terms of other independent variables. This leaves us with a sample of thirty-four countries. In order to increase the number of observations we add the countries shown in italics. Although data for these countries start later in the sample period, there are enough data to construct averages over the period. Out of these twenty-three late starters, we cannot use Burundi, Switzerland, China, Kuwait, Latvia, Mauritania, Namibia, Slovenia, Trinidad and Tobago, and Uruguay. Switzerland and Kuwait are outliers in terms of large inflows. China is an outlier in terms of very low levels of GDP per capita. Latvia and Slovenia do not have human capital data. The rest are outliers for the other independent variables. So we add the remaining thirteen to our thirty-four and have our forty-seven-country sample for the regression analysis as shown in table 1.5. Ending up again with a sample of forty-seven is pure coincidence.

Table 1.2   **Inflows of capital by decade and region, 1970–2000 (per capita U.S. dollars; sample: 122 countries)**

	1970–2000	1970–1980	1981–1990	1991–2000
FDI inflows				
United States, Japan, Western Europe	348.93	115.73	170.23	684.52
Latin America and Caribbean	92.67	60.18	44.26	158.93
East Asia Pacific	247.90	115.38	208.70	419.82
South Asia	1.96	0.45	1.73	2.87
Europe and Central Asia	109.70	2.03	3.26	116.83
Sub-Saharan Africa	19.67	32.86	22.88	6.49
Middle East and North Africa	55.31	–114.64	29.13	128.67
Portfolio equity inflows				
United States, Japan, Western Europe	223.24	11.55	92.02	442.02
Latin America and Caribbean	9.06	–0.10	4.99	15.69
East Asia Pacific	33.93	24.72	54.59	53.98
South Asia	1.08	0.06	0.14	1.19
Europe and Central Asia	22.19	n.a.	1.11	22.26
Sub-Saharan Africa	7.91	3.49	–1.15	10.77
Middle East and North Africa	150.73	329.64	113.75	2.62
Debt inflows				
United States, Japan, Western Europe	1,136.02	845.29	1,048.38	1,462.65
Latin America and Caribbean	50.30	331.71	–62.97	39.55
East Asia Pacific	214.92	219.90	233.03	272.45
South Asia	12.05	11.14	15.19	9.59
Europe and Central Asia	124.95	30.83	–1.73	127.13
Sub-Saharan Africa	20.65	44.17	33.10	–5.29
Middle East and North Africa	204.00	382.60	–138.69	435.74
Total equity inflows				
United States, Japan, Western Europe	546.75	123.11	247.70	1,114.20
Latin America and Caribbean	84.05	65.86	38.08	139.61
East Asia Pacific	269.07	125.27	226.90	454.84
South Asia	4.00	1.00	2.80	6.39
Europe and Central Asia	128.01	2.03	3.37	136.07
Sub-Saharan Africa	23.99	33.21	22.61	13.16
Middle East and North Africa	77.86	54.20	32.59	129.51
Total equity and debt inflows				
United States, Japan, Western Europe	1,636.23	943.80	1,277.15	2,501.27
Latin America and Caribbean	82.66	348.16	–41.51	92.47
East Asia Pacific	376.36	324.29	384.29	545.35
South Asia	14.12	11.74	16.31	13.43
Europe and Central Asia	209.95	31.64	–0.60	229.18
Sub-Saharan Africa	30.23	56.37	42.61	0.17
Middle East and North Africa	258.08	417.04	–117.95	528.89

Notes: Inflows of each category correspond to foreign claims on domestic capital (liability) divided by population. Data are from IMF in 1995 U.S. dollars. Inflows of total equity represent the sum of FDI and portfolio equity investment. FDI data are for 72 countries; portfolio data are for 68 countries, and debt data are for 122 countries.

Table 1.3   **Volatility of inflows of capital, 1970–2000 (per capita U.S. dollars; sample: 122 countries)**

	Mean	Standard deviation	Minimum	Maximum
Volatility of FDI inflows	1.03	2.64	0.12	22.35
Volatility of portfolio equity inflows	0.78	0.43	0.16	2.29
Volatility of debt inflows	0.74	0.43	0.14	4.42
Volatility of total equity inflows	1.02	2.58	0.12	22.35
Volatility of total equity and debt inflows	0.75	0.68	0.07	7.26

Notes: Volatility of inflows is the standard deviation of the corresponding inflows per capita divided by the average of the absolute value of the inflows and outflows of capital per capita over time for each country. Data are from IMF in 1995 U.S. dollars. FDI inflows correspond to Direct Investment in Reporting Economy (IFS line 78bed), which includes equity capital, reinvested earnings, other capital, and financial derivatives associated with various inter-company transactions between affiliated enterprises. Portfolio equity inflows correspond to Equity Liabilities (line 78bmd), which includes shares, stock participations, and similar documents that usually denote ownership of equity. Data on inflows of debt include Debt Securities Liabilities (line 78bnd), which cover bonds, notes, and money market or negotiable debt instruments; and Other Investment Liabilities (line 78bid), which include all financial transactions not covered by direct investment, portfolio investment, financial derivatives, or other assets. Inflows of total equity are the sum of FDI and portfolio equity investments. FDI data are for 72 countries, portfolio data are for 68 countries, and debt data are for 122 countries.

than flows of equity.[23] On the other hand, we would like to capture market decisions.[24] Ideally, we would like to use all of the private capital flows and abstract from the public part of debt flows, but these data are not available. The IFS data include both private and public issuers and holders of debt securities. Although the data are further divided by monetary authorities, general government, banks, and other sectors, this information is unfortunately not available for most countries for long periods of time. In addition, it is difficult to divide the available data by private/public creditor and debtor.[25] On the other hand, one might fear that excluding debt inflows totally will reduce measures of capital inflows for countries with limited stock market development and/or for countries that receive low levels of FDI, which in turn might bias our results. We argue that the role of total equity (direct and portfolio) flows for the developing countries is not small at all. For the developing countries, average inflows of FDI per capita grew

23. Until the mid-1970s—following the shutting down of the international markets in the 1930s—debt flows to most developing countries were generally restricted to international organizations/government-to-government loans. During the late 1970s, banks replaced governments of industrial countries as lenders to developing countries. After 1982, following the debt crisis, official creditors once again dominated lending to developing countries.

24. In many countries bank loans have usually been intermediated through financial systems that often do not follow market incentives due to explicit or implicit government involvement. See Henry and Lorentzen (2003) and Obstfeld and Taylor (2004).

25. The World Bank's Global Development Finance database, which focuses on the liability side, divides debt data by the type of creditor (official and private) but not by the type of debtor. These data are available only for developing countries.

Table 1.4   **Volatility of inflows of capital by decade and region, 1970–2000 (per capita U.S. dollars; sample: 122 countries)**

	1970–2000	1970–1980	1981–1990	1991–2000
Volatility of FDI inflows				
United States, Japan, Western Europe	0.58	0.30	0.33	0.39
Latin America and Caribbean	0.82	0.41	0.78	0.55
East Asia Pacific	0.61	0.41	0.48	0.41
South Asia	0.53	n.a.	0.34	0.44
Europe and Central Asia	0.69	0.35	0.63	0.57
Sub-Saharan Africa	2.41	0.63	0.78	0.78
Middle East and North Africa	0.86	0.64	0.83	0.66
Volatility of portfolio equity inflows				
United States, Japan, Western Europe	0.70	0.62	0.83	0.48
Latin America and Caribbean	0.92	0.70	3.85	0.74
East Asia Pacific	0.68	0.42	0.49	0.72
South Asia	0.77	n.a.	n.a.	0.77
Europe and Central Asia	0.75	n.a.	0.33	0.74
Sub-Saharan Africa	1.04	0.93	2.12	0.74
Middle East and North Africa	0.64	0.43	0.56	0.69
Volatility of debt inflows				
United States, Japan, Western Europe	0.57	0.41	0.50	0.43
Latin America and Caribbean	0.86	0.52	0.85	0.63
East Asia Pacific	1.04	0.35	0.64	0.53
South Asia	0.47	0.32	0.32	0.45
Europe and Central Asia	0.68	0.57	0.67	0.60
Sub-Saharan Africa	0.77	0.52	0.72	0.51
Middle East and North Africa	0.72	0.49	0.64	0.67
Volatility of total equity				
United States, Japan, Western Europe	0.62	0.32	0.42	0.38
Latin America and Caribbean	0.79	0.38	0.71	0.44
East Asia Pacific	0.60	0.42	0.48	0.42
South Asia	0.73	n.a.	0.41	0.58
Europe and Central Asia	0.64	0.35	0.58	0.53
Sub-Saharan Africa	2.39	0.62	0.77	0.71
Middle East and North Africa	0.81	0.65	0.79	0.64
Volatility of total equity and debt inflows				
United States, Japan, Western Europe	0.51	0.34	0.44	0.37
Latin America and Caribbean	0.86	0.44	0.98	0.62
East Asia Pacific	1.31	0.26	3.14	0.55
South Asia	0.46	0.31	0.31	0.44
Europe and Central Asia	0.63	0.72	0.66	0.52
Sub-Saharan Africa	0.76	0.45	0.79	0.52
Middle East and North Africa	0.76	0.48	0.62	0.68

Notes: Volatility of inflows is the standard deviation of the inflows per capita divided by the average of the absolute value of the inflows and outflows of capital per capita over time for each country. Data are from IMF in 1995 U.S. dollars. FDI data are for 72 countries; portfolio data are for 68 countries, and debt data are for 122 countries.

Table 1.5 **Sample of countries for the regression analysis, 1970–2000**

Argentina	Cyprus	Israel	Pakistan	Sri Lanka
Australia[a]	Czecy Republic[a]	Italy[a]	Papua New Guinea	Sweden[a]
Austria[a]	Denmark[a]	Japan[a]	Paraguay	Thailand
Bolivia	Egypt	Jordan	The Philippines	Tunisia
Brazil	Estonia	Kenya	Poland[a]	Turkey[a]
Cameroon	Finland[a]	Korea[a]	Portugal[a]	United States[a]
Canada[a]	France[a]	Morocco	Romania	United Kingdom[a]
Chile	Germany[a]	The Netherlands[a]	Senegal	
Colombia	Hungary[a]	New Zealand[a]	South Africa	
Costa Rica	India	Norway[a]	Spain[a]	

Note: Base sample of 47 countries for the regression analysis.
[a]OECD member country.

by 6.2 percent over the last thirty years and became the main source of private capital during the 1990s. Average inflows of portfolio equity per capita grew by 9.3 percent. Average inflows of debt per capita grew only by 3.3 percent. We nevertheless examine the role of debt inflows in our empirical analysis for robustness.

Table 1.6 provides descriptive statistics for our regression sample of forty-seven countries averaged over the sample period 1970–2000. Following AKV, we use the initial level of human capital (years of total schooling in total population) and institutional quality averaged over the sample period as independent variables to capture the fundamentals of the economy. We use the *International Country Risk Guide*'s (ICRG) political safety variables as our measure of institutional quality. This composite index is the sum of the indexes of government stability, internal conflict, external conflict, no corruption, nonmilitarized politics, protection from religious tensions, law and order, protection from ethnic tensions, democratic accountability, and bureaucratic quality.

In the empirical capital flow literature, distance has been used as a proxy for the international capital market failures, mainly asymmetric information.[26] We construct a variable called *distantness,* which is the weighted average of the distances from the capital city of a particular country to the capital cities of the other countries, using the gross domestic product (GDP) shares of the other countries as weights.[27]

We use additional variables on the right-hand side to capture domestic

26. Portes and Rey (2005) use a similar interpretation of distance in the context of bilateral capital flows, as do Wei and Wu (2002) in analyzing the determinants of FDI and bank lending. See also Coval and Moskowitz (1999, 2001).

27. We construct this variable following Kalemli-Ozcan, Sorensen, and Yosha (2003). We use Arcview software to get the latitude and longitude of each capital city and calculate the great arc distance between each pair. The GDP weights capture the positive relationship between trade volume and GDP.

Table 1.6   **Descriptive statistics**

	Sample	Mean	Standard deviation	Minimum	Maximum
Inflows of total equity per capita	47	173.81	199.93	1.68	697.97
Volatility of inflows of total equity per capita	47	1.50	0.57	0.71	3.14
Institutional quality	47	5.56	1.11	3.41	7.27
Human capital	47	4.65	2.64	0.54	9.55
Distantness (000 km)	47	7.64	2.48	5.13	14.06
Inflation volatility	47	0.90	0.71	0.30	4.64
Capital controls	47	1.53	0.26	1.00	1.96
GDP per capita ($000)	47	6.72	6.99	0.21	23.46
Bank credit ($ total credit)	45	83.49	11.95	54.34	98.50
Sovereign risk	36	6.69	5.06	1.00	13.86
Corporate taxes (%)	34	33.76	4.83	18.00	42.00
French legal origin	47	0.46	0.51	0.00	1.00
British legal origin	47	0.31	0.47	0.00	1.00

Notes: Inflows are calculated as net change in investment liabilities in a reporting economy. Total equity inflows are the sum of portfolio and foreign investment inflows. Volatility is calculated as the normalized standard deviation of the inflows. Normalization is performed by average gross flows. Institutional quality is represented by the composite political safety index calculated as the sum of all the rating components from *International Country Risk Guide* (PRS Group 2001), averaged from 1984 to 2000, divided by 10. The index takes values from 0 to 76 for each country, where a higher score means lower risk. Human capital is measured as the average years of total schooling over 25 years old in the total population, in 1970. Distantness is the weighted average of the distances in thousands of kilometers from the capital city of the particular country to the capital cities of the other countries, using the GDP shares of the other countries as weights, averaged from 1970 to 2000. Inflation volatility is the standard deviation of the annual CPI inflation over the 1970–2000 normalized by the average inflation for that period. Capital controls is an index calculated as the mean value of the four dummy variables—exchange arrangements, payments restrictions on current transactions, and capital transactions, repatriation requirements for export proceeds, averaged from 1971 to 2000; it takes a value between 1 and 2. GDP per capita is measured in per capita 1995 U.S. dollars. Bank credit is claims of deposit money banks on nonfinancial domestic sectors as share of claims of central bank and deposit money banks on nonfinancial domestic sectors, in percent, average from 1970 to 2000 (without outliers Bolivia and Hungary). Sovereign risk is an index based on Standard & Poor's long term foreign currency denominated sovereign debt ratings. Index ranges from 1, an obligor rated AAA, to 23, an obligor rated SD (selective default). Data are available for Argentina, Australia, Austria, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Denmark, Egypt, Finland, France, Germany, Great Britain, India, Israel, Italy, Jordan, Japan, Korea, Morocco, the Netherlands, Norway, New Zealand, Pakistan, Philippines, Portugal, Paraguay, South Africa, Spain, Sweden, Thailand, Tunisia, Turkey, and the United States. Corporate taxes represents the corporate income tax rate, single year value varying by country. Data are available for Argentina, Australia, Austria, Brazil, Canada, Chile, Colombia, Costa Rica, Czech Republic, Denmark, Egypt, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Korea, Morocco, the Netherlands, New Zealand, Norway, the Philippines, Poland, Portugal, South Africa, Spain, Sweden, Thailand, Tunisia, and the United States. French and British legal origin are dummy variables taking the value of 1 if a country's legal code can be traced to French civil law or British common law legal tradition.

distortions associated with government policies and also with the financial structure of the economy. These are inflation volatility, capital controls, sovereign risk, corporate tax, and bank credit, all averaged over the sample period. Inflation volatility captures macroeconomic instability. It is measured as the standard deviation divided by the mean of the inflation rate

Table 1.7   **Correlation matrix**

	Human capital	Distantness			
Institutional quality	0.69	–0.41			
Human capital		–0.19			

	Inflation volatility	Capital controls	Bank credit	Sovereign risk ratings	Corporate tax
No. of observations	47	47	45	36	34
Institutional quality	–0.09	–0.64	0.61	–0.85	–0.20
Human capital	0.17	–0.51	0.37	–0.68	–0.18
Distantness	0.24	0.30	–0.43	0.53	0.16

Notes: Correlations are for the logarithm of the variables. Panel A reports the correlation matrix for the main regressions with the 47-country sample. Panel B reports the correlation between the main explanatory variables and the other independent variables. Sample sizes vary for these variables.

over the sample period. Normalization by mean is crucial given the differences in average inflation levels across time for the different countries. Our capital controls measure is the average of four dummy variables constructed using data collected by the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER). These dummy variables are exchange arrangements, payments restrictions on current transactions and on capital transactions, and repatriation requirements for export proceeds. Bank credit is the share of credit provided by deposit money banks, which include commercial banks and other financial institutions entitled to accept deposits from the public.[28]

It is clear that there is extensive cross-sectional variation on these variables. The institutional quality index varies from 3.4 to 7.3 with a mean of 5.5. Human capital varies from 1 to 10 years with a mean of 4.7 years. Table 1.7 presents the correlation matrix. Some of our independent variables are highly correlated, such as institutional quality and human capital, and sovereign risk and institutional quality. Hence, it is essential to employ a multiple-regression framework with many robustness tests.[29]

Table 1.8 shows the results. Institutional quality, human capital, and

28. In AKV we used a wider range of additional right-hand-side variables, such as GDP per capita, inflation, government consumption, government budget, trade openness (share of exports plus imports in GDP), restrictions on foreign investment, incentives on foreign investment, government infrastructure (percent of paved roads), stock market capitalization, reuters (number of times the country's name is mentioned in Reuters), foreign banks (share of foreign banks in total), and accounting (an index of accounting standards of corporate firms). In that work, out of all these variables only sovereign risk, corporate tax, and bank credit were significant depending on the specification. Hence, we check their role here again.

29. We refer the reader to AKV for a sensitivity analysis with a wider range of variables.

Table 1.8   OLS regression of capital inflows per capita

Dependent variable	Inflows of total equity and debt per capita	Inflows of total equity per capita					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Countries	47	47	47	47	45	36	34
Institutional quality	16.18***	5.56***	5.29***	4.83***	5.83***	4.10**	6.30***
	(5.04)	(4.74)	(4.57)	(4.57)	(4.48)	(2.22)	(3.95)
Human capital	1.11*	0.57**	0.57**	0.42*	0.46*	0.70*	0.66**
	(1.79)	(2.00)	(2.40)	(1.85)	(1.81)	(1.88)	(2.00)
Distantness	−5.25**	−1.16**	−1.04*	−1.11**	−1.27**	−1.56	−1.37**
	(−2.87)	(−2.07)	(−1.92)	(−2.03)	(−2.03)	(−1.54)	(−2.06)
Inflation volatility			−0.36				
			(−1.29)				
Capital controls				−1.58			
				(−1.23)			
Bank credit					−0.36		
					(−0.36)		
Sovereign risk						−0.25	
						(−0.46)	
Corporate taxes							−0.75
							(−0.49)
R^2	0.60	0.63	0.64	0.64	0.63	0.66	0.62

Notes: All regressions include a constant and are estimated by OLS with White's correction of heteroskedasticity. *t*-statistics are in parentheses. All right-hand-side variables are in logs. Inflows of total equity include inflows of foreign and portfolio equity investment. Descriptive statistics for inflows of total equity and debt are as follows: mean 488.38, standard deviation 623.21, minimum 1.43, maximum 2552.43. The 45-country sample excludes outliers Bolivia and Hungary in terms of Bank Credit. The 36-country sample includes Argentina, Australia, Austria, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Denmark, Egypt, Finland, France, Germany, Great Britain, India, Israel, Italy, Jordan, Japan, Korea, Morocco, the Netherlands, Norway, New Zealand, Pakistan, the Philippines, Portugal, Paraguay, Spain, Sweden, Thailand, Tunisia, Turkey, the United States, and South Africa. The rest of the countries do not have data on sovereign risk. The 34-country sample includes Argentina, Australia, Austria, Brazil, Canada, Chile, Colombia, Costa Rica, Czech Republic, Denmark, Egypt, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Korea, Morocco, the Netherlands, Norway, New Zealand, the Philippines, Poland, Portugal, Spain, Sweden, Thailand, Tunisia, the United States, and South Africa. The rest of the countries do not have data on corporate taxes.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

distantness are all important determinants of capital inflows.[30] This result holds regardless of including debt inflows on the left-hand side, as shown in columns (1) and (2). Other potential determinants turn out to be insignificant.[31] Sovereign risk is borderline significant when distantness is left out. Obviously, both are capturing information/market frictions. Figure 1.7 shows the partial correlation plot for the institutional quality variable for the regression shown in column (2) of table 1.8. The slope of the fitted line is 5.56, as shown in that column.[32] The strong positive relation between institutional quality and the inflows of capital per capita is evidently not due to the outliers.

What about endogeneity? It is possible that capital inflows affect the institutional quality of a country. More inflows can generate incentives to reform and create an investor-friendly environment by improving property rights. Moreover, because most institutional quality measures are constructed ex post, analysts might have a natural bias toward "assigning" better institutions to countries with higher capital inflows. One way to solve this problem is to find variables not subject to reverse causality that can account for the institutional variation.[33] AKV instrument institutional quality with its historical determinants mainly with settler mortality rates from Acemoglu, Johnson, and Robinson (2001, 2002; hereafter AJR) and show that the effect of institutional quality on capital inflows is causal.[34] AJR argue that the historical mortality rates of European settlers in colonized countries are a good instrument for current institutions of former colonies since if the European settlement there was discouraged by diseases then the Europeans set up worse institutions.

In this paper we investigate whether there is any direct effect of some other historical determinants of institutions, such as legal origins and legal system. La Porta et al. (1998) emphasize the importance of historical legal origins in shaping current financial institutions. They examine the effect of legal origin on the laws governing investor protection, the enforcement of these laws, and the extent of concentration of firm ownership across coun-

30. In AKV, we also explored the role of each of the components of the composite index that is used as a proxy for institutional quality. We find institutional quality indicators that are closer proxies of property rights protection, such as the no-corruption index and protection from expropriation, to be important determinants of capital inflows.

31. We also investigate the effect of the exchange rate regime. The results remain the same.

32. We first regressed inflows of capital per capita on human capital and distantness. We took the residuals and regressed them on the residuals from a regression of institutional quality on human capital and distantness. The Frisch-Waugh theorem says the coefficient from this regression is exactly the same as the one in the multiple regression. The figure plots these two sets of residuals against each other.

33. Another source of endogeneity can come from the possibility that both inflows and institutional quality might be determined by an omitted third factor. We believe the extensive robustness analysis that is undertaken in AKV shows that this is not the case.

34. AKV also use other instruments, such as historical indicators of regime type and political constraints to the executive power from the polity data set and the fraction of the population speaking English.
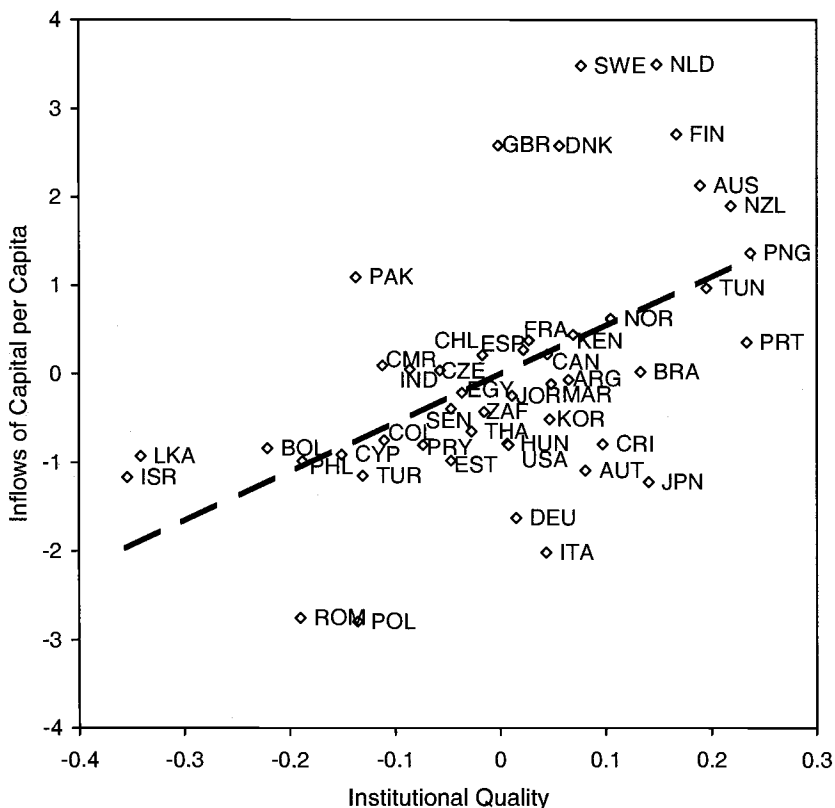
Fig. 1.7 Regression of inflows of capital per capita on institutional quality after controlling for other regressors

Notes: We first regressed the inflows of capital per capita on the regressors other than institutional quality and took the residuals, which we then regressed on the residuals from a regression of institutional quality on the other regressors (including a constant in both regressions). The coefficient on institutional quality is then exactly the same as the coefficient in the multiple regression. We plot the first set of residuals against the second set in the figure. Inflows of capital per capita include direct and portfolio investment.

tries. Most countries' legal rules, either through colonialism, conquest, or outright borrowing, can be traced to one of four distinct European legal systems: English common law, French civil law, German civil law, and Scandinavian civil law. These legal-origin variables have been adopted as exogenous determinants of institutional quality, in particular for financial institutions, in the economic growth literature. On the other hand, AJR claim that legal origin is a weak instrument for institutional quality, in particular for institutions that protect property rights. They claim it is hard to

Table 1.9   **OLS regression of capital inflows per capita: Historical legal origins**

	OLS (1)	OLS (2)	OLS (3)	OLS (4)	IV (5)	OLS (6)
Countries	47	47	47	47	21	21
Institutional quality	5.04***	5.39***			6.91***	4.77***
	(5.01)	(5.69)			(2.90)	(5.84)
Human capital	0.39*	0.45**	1.26***	1.39***	0.01	0.47*
	(1.90)	(2.32)	(5.96)	(5.99)	(1.40)	(1.70)
Distantness	–0.97*	–1.44***	–1.90***	–2.31***	–0.12	–0.28
	(–1.81)	(–2.77)	(–2.64)	(–3.34)	(–0.20)	(–0.34)
French legal origin	–0.56**		–0.57**			
	(–2.01)		(–1.99)			
British legal origin		0.84**		0.63*	0.94*	0.79***
		(2.51)		(1.64)	(2.27)	(2.50)
R^2	0.64	0.66	0.51	0.51	0.80	0.84

Notes: Dependent variable: inflows of total equity per capita. All regressions include a constant and are estimated by OLS with White's correction of heteroskedasticity. *t*-statistics are in parentheses. Inflows of total equity include inflows of foreign and portfolio equity investment. All right-hand-side variables are in logs except the legal origin variables.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

make a case that legal origins do not have any direct effect on the relevant outcome variables such as income levels.[35] Thus we investigate whether legal origins have a direct effect on capital inflows in addition to their partial effect on institutional quality by adding legal origin as an additional right-hand-side variable.

Table 1.9 shows the results. As shown in columns (1)–(4), French legal origin has a negative significant effect and British legal origin has a positive significant effect. It seems these effects are first order in addition to institutions. If institutional quality is left out from the regressions, the British legal origin variable is significant only at the 10 percent level. We do not tabulate the details, but we found in our data that British legal origin is negatively correlated with institutions, and this leads to a downward bias in British legal origin when institutional quality is omitted. Column (5) displays an instrumental variables (IV) regression that instruments institu-

35. AJR stress that successful instruments have to be *theoretically* excludable from the empirical model used by the econometrician and that undertaking overidentification tests is not enough. In addition, overidentification tests have low power in general. AJR show that in their first-stage regression French legal origin is associated with worse institutions. But in their second-stage regression, where French legal origin is included as one of the explanatory variables and institutions are instrumented with settler mortality rates, French legal origin has a positive effect on income. The net effect of this variable on income (directly and indirectly via institutional quality) is positive.

tions with log settler mortality rates from AJR, which is only available for twenty-one ex-colonies in our sample.[36] If there is a direct effect of legal origin on capital inflows we expect it to be significant in this regression. We find this to be the case.[37] Column (5) also reestablishes the causal effect of institutions, which is already shown by AKV. Column (6) reports the corresponding ordinary least squares (OLS) regression for comparison. We only show the IV regression in column (5) with British legal origin since our sample is composed of *only* British and French legal origin countries. Thus, the corresponding IV regression with French legal origin is exactly the same as in column (5) with a reverse sign on the French legal origin variable.[38] We also investigated the direct effect of the variables proposed by La Porta et al. (1997, 1998) to capture investor protection, such as shareholder rights, and found similar results. The partial correlation plots given in figures 1.8 and 1.9 show that the significant effects of French and British legal origins are not due to the outliers but rather are driven by the countries one would expect, such as Turkey for French origin and Australia for British origin.

1.4.2   Determinants of Changes in Capital Flows

Our results thus far suggest that institutional quality has a first-order effect over policies in explaining the pattern of capital flows in the period 1970–2000. Is there any role left for policies? Can a country that improves its institutions or macroeconomic policies expect to receive more inflows? To investigate these questions we run change regressions. We calculate the change in inflows per capita as the difference between average capital inflows per capita over 1970–93 and average capital inflows per capita over 1994–2000. We did the same for the independent variables, and we regress changes on changes. The reason for this division of the sample is the fact that visible improvements, if any, in institutional variables occur in the late 1990s, as shown in figure 1.10.[39]

The results are given in table 1.10. We only consider the twenty-three developing countries out of our forty-seven-country sample, since for the OECD the institutional changes are basically zero and this distorts the picture. The results suggest that a country that improves institutions, decreases capital controls, and increases its growth is going to receive more capital in-

36. The corresponding first-stage regression reports a coefficient of –0.21 on settler mortality rates with a *t*-statistic of –4.09.

37. Note that this regression is an interpretable version of an overidentification test.

38. Institutional quality is estimated to have a higher coefficient in the IV regression since two-stage least squares (2SLS) regression corrects for the measurement error that causes attenuation bias in the OLS regression.

39. At first, we cut the sample in the middle and calculated the change from 1970–85 to 1986–2000. However, given the time-invariant nature of our variables, this way of dividing the sample does not provide us with much variation.
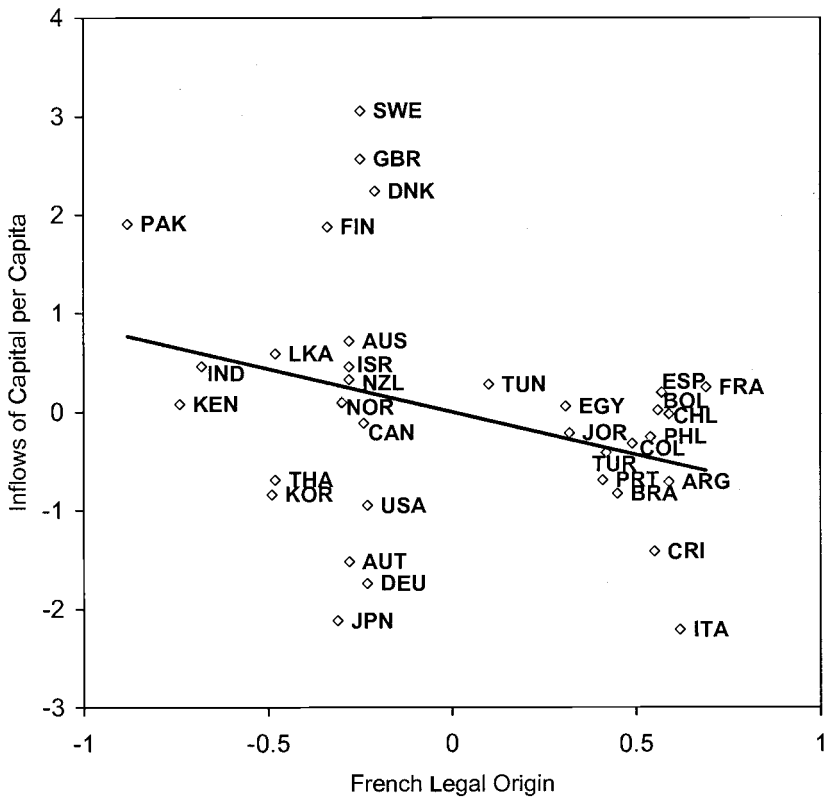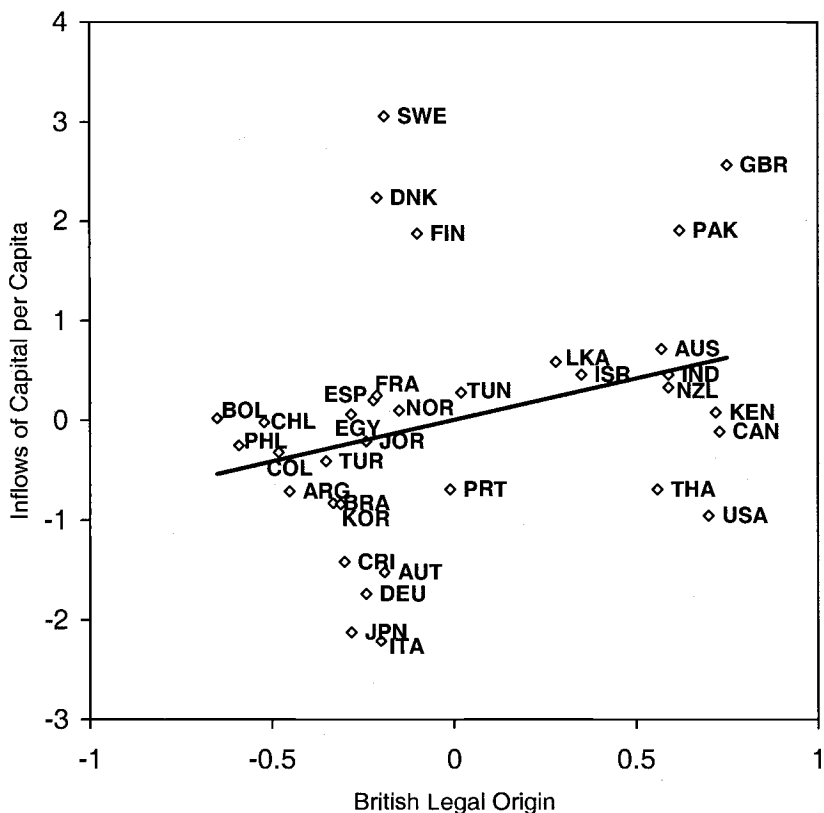
Fig. 1.8 Regression of inflows of capital per capita on French legal origin control-ling for other regressors

Notes: We first regressed the inflows of capital per capita on the regressors other than French legal origin and took the residuals, which we then regressed on the residuals from a regression of French legal origin on the other regressors (including a constant in both regressions). The coefficient on the French legal origin is then exactly the same as the coefficient in the multiple regression. We plot the first set of residuals against the second set in the figure. Inflows of capital per capita include direct and portfolio investment.

flows.[40] The change in institutions is not always very significant, though. This is not surprising given the small sample size and low time variation in this variable. Of course, we have to interpret the results with caution since most of these right-hand-side variables are endogenous, such as the change in GDP per capita. An interesting result is the positive significant distant-

40. Note, however, that the IMF measure for capital controls does not control for the fact that legal restrictions are sometimes circumvented. See Edwards (2001) for criticisms to the use of this index.

Fig. 1.9   Regression of inflows of capital per capita on British legal origin controlling for other regressors

Notes: We first regressed the inflows of capital per capita on the regressors other than British legal origin and took the residuals, which we then regressed on the residuals from a regression of British legal origin on the other regressors (including a constant in both regressions). The coefficient on the British legal origin is then exactly the same as the coefficient in the multiple regression. We plot the first set of residuals against the second set in the figure. Inflows of capital per capita include direct and portfolio investment.

ness. This variable enters in levels since differencing this variable is going to capture only the change in GDP weights. The result suggests that information frictions have become less important for capital inflows in the 1990s since even the "remote and distant countries" receive higher capital inflows in the 1990s, which is exactly what we expect to find. Overall, these results suggest that there is a role for improved policy and institutions.

1.4.3   Determinants of Capital Flow Volatility

A natural intermediate step toward understanding the link between capital flows and financial crises is to look at the determinants of volatility of
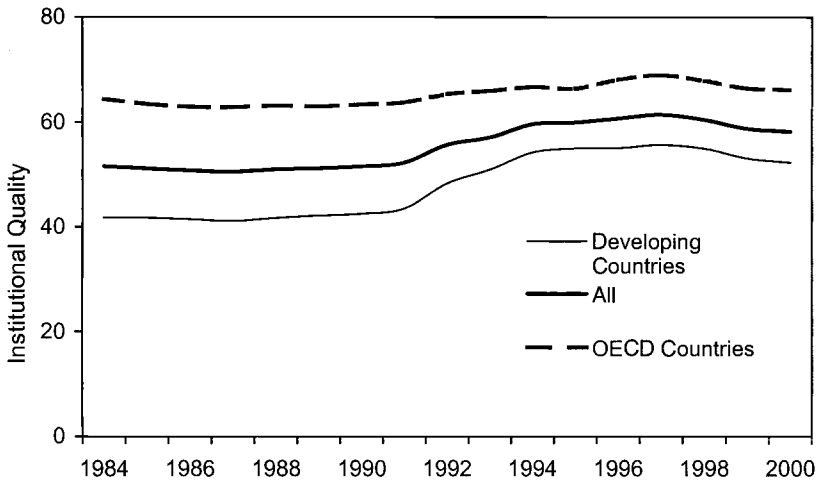
Fig. 1.10   Evolution of institutional quality (average of 47 countries)

Notes: Institutional quality index is a composite political safety index, which is the sum of all the rating components from *International Country Risk Guide* (PRS Group 2001). The components are as follows: Government stability is defined as the government's ability to carry out its declared programs and its ability to stay in office. It ranges from 0 to 12. Internal conflict is defined as the political violence in the country and its actual or potential impact on governance. It ranges from 0 to 12. External conflict is the risk to the incumbent government from foreign action, ranging from nonviolent external pressure to violent external pressure. It ranges from 0 to 12. Noncorruption is an index of the degree of the noncorruption within the political system. It ranges from 0 to 6. Militarized politics is the degree of protection from the military involvement in politics. It ranges from 0 to 6. A religious tension is the degree of the protection from religious tensions in the society. It ranges from 0 to 6. The law component of the law and order index is an assessment of the strength and impartiality of the legal system; the order component is the assessment of the popular observance of the law. It ranges from 0 to 6. Ethnic tensions are the degree of protection from the tensions attributable to racial, nationality, or language divisions in the society. It ranges from 0 to 12. Democratic accountability ranges from 0 to 6, where a higher score represents stable democracies and lower scores represents autocracies. Bureaucratic quality ranges from 0 to 4 and represents institutional strength and quality of the bureaucracy.

capital flows. There have not been many empirical papers that look at the determinants of capital flow volatility. As a preliminary investigation of the patterns in the data, we run cross-country regressions for the period 1970–2000. We measure volatility as the standard deviation of inflows of total equity per capita divided by the mean gross flows over the sample period.

Table 1.11 shows our results. We do find a significant effect of institutional quality on the volatility of the inflows of total equity. However, this effect is sensitive to inclusion of some other independent variables such as sovereign risk and capital controls. We also find the coefficient of inflation volatility to be positive and significant. It appears that countries with lower levels of inflation volatility tend to experience lower levels of uncertainty in terms of the inflows of external capital. Bank credit is positive and signifi-

Table 1.10   **OLS regression of changes in capital inflows: Developing countries**

	(1)	(2)	(3)	(4)
Countries	23	23	23	23
Δ Institutional quality	1.58*	2.27*	1.45	1.25
	(1.70)	(1.61)	(1.33)	(1.52)
Distantness	0.21***	0.21***	0.20***	0.21***
	(3.34)	(3.40)	(3.80)	(3.60)
Δ Capital controls	–0.19***	–0.21***	–0.22***	–0.20***
	(–4.73)	(–4.20)	(–4.41)	(–4.90)
Δ GDP per capita	0.81***	0.91***	0.84***	0.75***
	(3.68)	(3.14)	(4.18)	(3.19)
Δ Inflation volatility		0.17		
		(0.65)		
Δ Human capital			0.22	
			(1.27)	
Δ Bank credit				0.87
				(1.49)
R^2	0.71	0.75	0.75	0.79

Notes: Dependent variable: change in inflows of total equity per capita between the periods of 1994–2000 and 1970–93. All regressions include a constant and are estimated by OLS with White's correction of heteroskedasticity. *t*-statistics are in parentheses. Inflows of total equity include inflows of foreign and portfolio equity investment. The sample of 23 developing countries includes Argentina, Brazil, Chile, Cameroon, Colombia, Costa Rica, Egypt, Hungary, India, Jordan, Kenya, Sri Lanka, Morocco, Pakistan, Paraguay, the Philippines, Poland, Romania, Senegal, Thailand, Tunisia, Turkey, and South Africa (Bolivia, Cyprus, Israel, and South Korea are outliers and dropped). Δ represents the difference between the average value of the corresponding variable between the periods of 1994–2000 and 1970–93.
***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

cant. This can be due to several reasons. First, as noted in the introduction to the chapter, the literature has related high volatility of capital flows and currency crisis to bank fragility. Financial liberalization, when not followed by proper regulation and supervision, can lead to both greater capital flows intermediated through banks and greater bank credit and later to abrupt reversals in capital flows.[41] Moreover, the positive correlation between bank credit and capital flow volatility might be due to cronyism in the banking sector.[42] We also control for stock market capitalization and trade openness, both of which come in as insignificant.[43]

41. Henry and Lorentzen (2003) argue that liberalization of debt flows exposes countries to the risk of crises stemming from sudden changes in investors' sentiments. Equity market liberalizations, on the other hand, have promoted growth in almost every liberalizing country.
42. This finding is consistent with Wei (2000) and Wei and Wu (2002). The authors show that corruption within a country increases the loan-FDI ratio.
43. Other measures of credit market and capital market development in general, such as liquid liabilities and total value traded, are also insignificant.

Table 1.11   **OLS regression of volatility of capital inflows**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Countries	47	47	47	47	36	34	47	47
Institutional quality	−0.42**	−0.50*	−0.47**	−0.33	0.04	−0.47	−0.50*	−0.44**
	(−2.29)	(−1.76)	(−2.55)	(−1.55)	(0.14)	(−1.53)	(−1.76)	(−2.25)
Inflation volatility	0.24**	0.23**	0.25**	0.26**	0.19	0.26**	0.23**	0.24**
	(2.41)	(2.19)	(2.45)	(2.48)	(1.57)	(2.09)	(2.19)	(2.35)
Bank credit	0.37**	0.38**	0.36**	0.43**	0.42	0.62***	0.38**	0.38**
	(2.22)	(2.29)	(2.23)	(2.08)	(1.27)	(2.64)	(2.29)	(2.19)
Human capital		0.03						
		(0.44)						
Distantness			−0.10					
			(−0.87)					
Capital controls				0.21				
				(0.80)				
Sovereign risk					0.10			
					(1.53)			
Corporate taxes						−0.35		
						(−1.31)		
French legal origin							−0.07	
							(−0.91)	
British legal origin								−0.04
								(−0.48)
R^2	0.20	0.21	0.21	0.21	0.14	0.26	0.22	0.21

Notes: Dependent variable: volatility of inflows of total equity per capita. Volatility is calculated as normalized standard deviation of inflows. Normalization is performed by average gross flows. All regressions include a constant and are estimated by OLS with White's correction of heteroskedasticity. *t*-statistics are in parentheses. Inflows of total equity include inflows of foreign and portfolio equity investment. All right-hand-side variables are in logs except the legal origin variables. The 36-country sample includes Argentina, Australia, Austria, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Denmark, Egypt, Finland, France, Germany, Great Britain, India, Israel, Italy, Jordan, Japan, Korea, Morocco, the Netherlands, Norway, New Zealand, Pakistan, the Philippines, Portugal, Paraguay, South Africa, Spain, Sweden, Thailand, Tunisia, Turkey, and the United States. The 34-country sample includes Argentina, Australia, Austria, Brazil, Canada, Chile, Colombia, Costa Rica, Czech Republic, Denmark, Egypt, Finland, France, Germany, Great Britain, India, Israel, Italy, Japan, Hungary, Korea, Morocco, the Netherlands, New Zealand, Norway, the Philippines, Poland, Portugal, South Africa, Spain, Sweden, Thailand, Tunisia, and the United States.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Figures 1.11–1.13 show the partial correlation plots for institutions, inflation volatility, and bank credit with slopes –0.42, 0.24, and 0.37, respectively, as shown in column (1) of table 1.11. Clearly, these significant relations are not due to outliers and driven by volatile countries of Latin America and Asia. The last two columns investigate the role of legal origins, which turn out to be insignificant. This phenomenon might be due to the fact that they work their effect via institutions.

Table 1.12 looks at the issue of measuring volatility. Our results might be
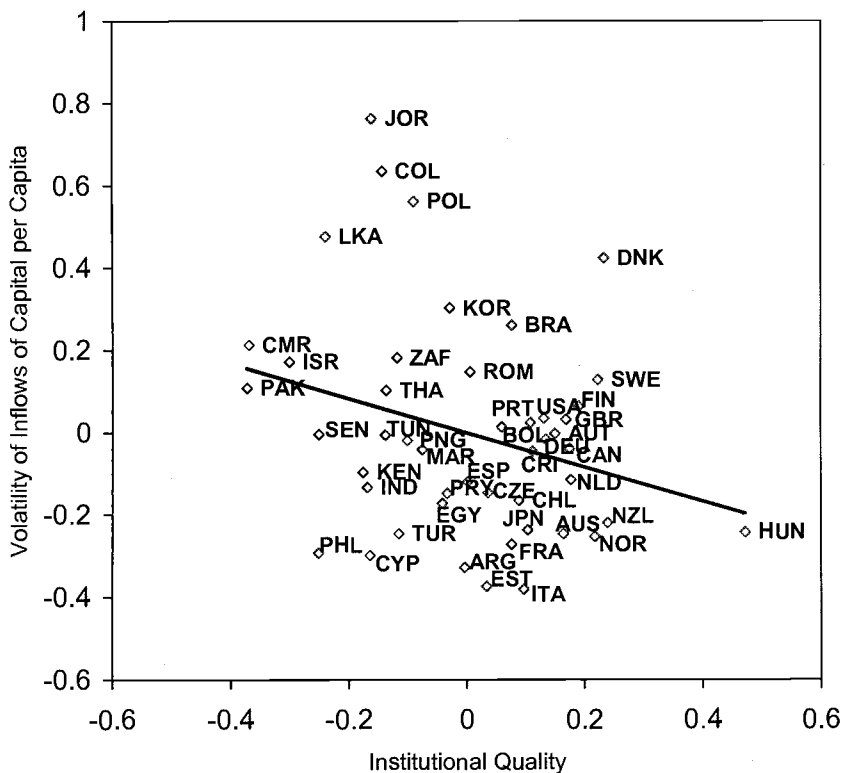
Fig. 1.11   Regression of volatility of inflows of capital per capita on institutions controlling for other regressors

Notes: We first regressed the volatility of inflows of capital per capita on the regressors other than institutional quality and took the residuals, which we then regressed on the residuals from a regression of institutional quality on the other regressors (including a constant in both regressions). The coefficient on the institutional quality is then exactly the same as the coefficient in the multiple regression. We plot the first set of residuals against the second set. Inflows of capital per capita include direct and portfolio investment.

due to the fact that some countries have liberalized their financial accounts over the last thirty years and received huge inflows. As a result, the measured volatility could increase because the volume and upward trend in capital inflows may not be captured by our benchmark normalization. We experiment with different ways to deal with these problems: we use standard deviation of inflows, standard deviation of detrended inflows, and normalized versions of these measures. In columns (1) and (3) volatility is measured as the standard deviation of inflows. In columns (2) and (4), it is normalized standard deviation of inflows. Normalization is performed by the average gross flows. In columns (5) and (7), it is the standard deviation of detrended inflows. Detrending is performed by regressing inflows on a constant and a linear trend and using residuals from that regression as a
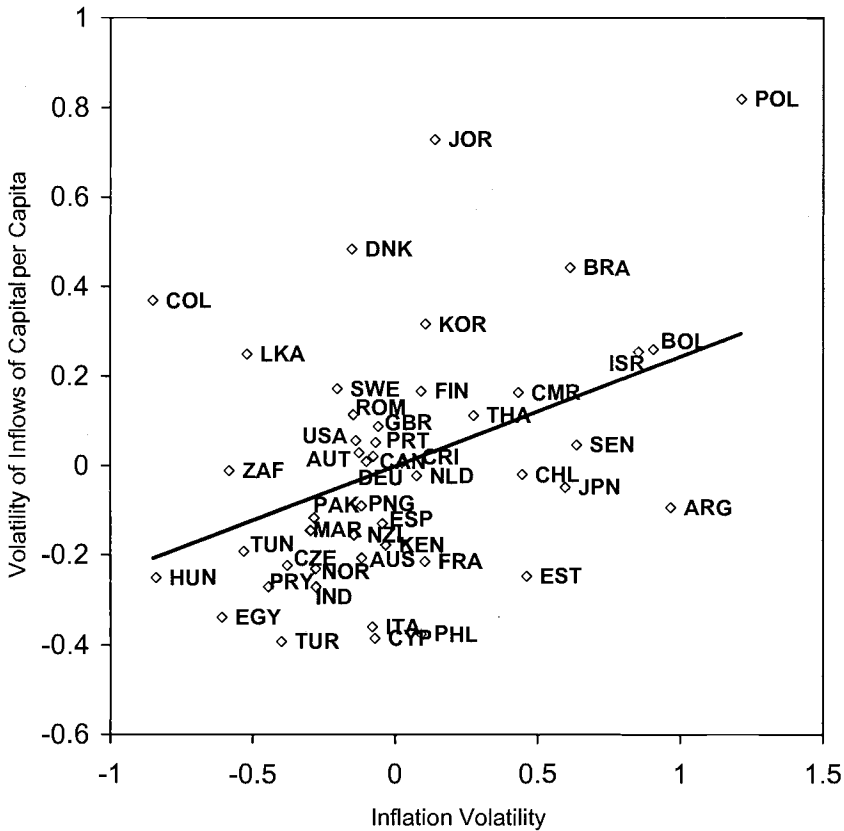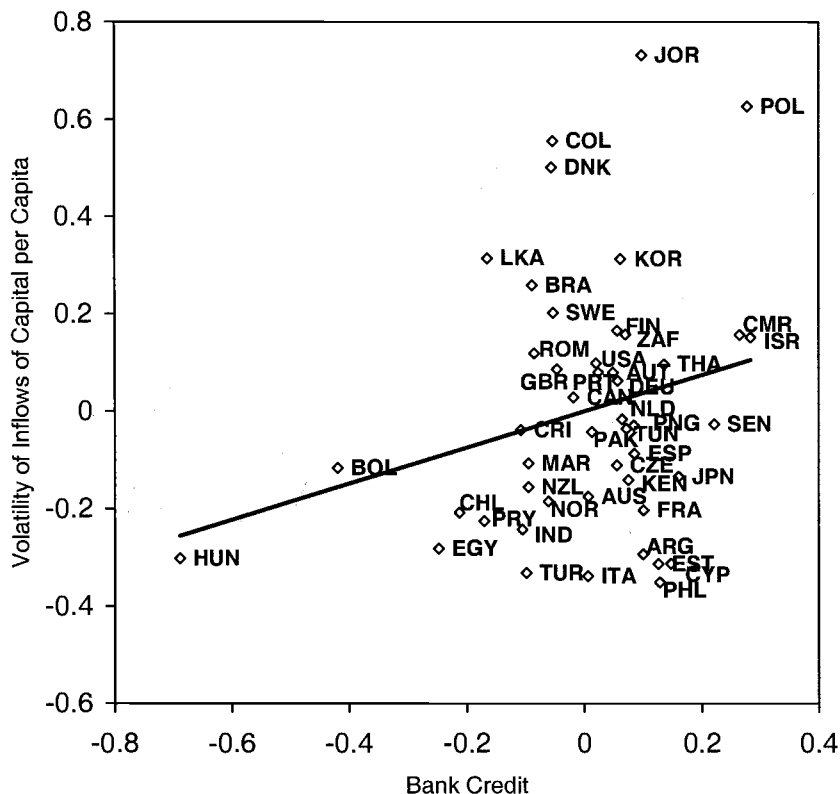
Fig. 1.12   Regression of volatility of inflows of capital per capita on inflation volatility controlling for other regressors

Notes: We first regressed the volatility of inflows of capital per capita on the regressors other than inflation volatility and took the residuals, which we then regressed on the residuals from a regression of inflation volatility on the other regressors (including a constant in both regressions). The coefficient on inflation volatility is then exactly the same as the coefficient in the multiple regression. We plot the first set of residuals against the second set in the figure. Inflows of capital per capita include direct and portfolio investment.

proxy for inflows. In columns (6) and (8) it is normalized standard deviation of detrended inflows. Normalization is performed by the average gross flows.[44] It is clear that detrending does not matter and what matters is normalization. Columns (3), (4), (7), and (8) control for the level of inflows on the right-hand side. The main conclusion is that normalization does a good job of controlling the volume and trend effects of the level of inflows. Figure 1.14 plots the partial correlation plot out of column (6), with slope –0.44. Although this is a tighter fit, there are no important differences rel-

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44. We also investigated the effect of a quadratic trend. The results were similar.

Fig. 1.13   Regression of volatility of inflows of capital per capita on bank credit controlling for other regressors

Notes: We first regressed the volatility of inflows of capital per capita on the regressors other than bank credit and took the residuals, which we then regressed on the residuals from a regression of bank credit on the other regressors (including a constant in both regressions). The coefficient on the bank credit is then exactly the same as the coefficient in the multiple regression. We plot the first set of residuals against the second set in the figure. Inflows of capital per capita include direct and portfolio investment.

ative to figure 1.11. Figure 1.15 plots the partial correlation from column (1), with slope 11.56. Scandinavian countries evidently have high volatility due to volume, and our normalization takes care of this.

Overall, the results suggest that institutional quality and macroeconomic policy play an important role for capital flow volatility. We should note, however, that we are establishing correlations more than causality. For example, inflation volatility is probably endogenous to the volatility of capital inflows and to institutional quality. Higher volatility can also cause an increase in bank credit or capital controls. Finding good instruments for the policy variables is a rather difficult task and not the focus of this study.

Table 1.12   **OLS regression of volatility of capital inflows: Measurement issues**

Volatility	St. Dev. (1)	St. Dev./ Mean (2)	St. Dev. (3)	St. Dev./ Mean (4)	St. Dev. (dt1) (5)	St. Dev. (dt1)/ Mean (6)	St. Dev. (dt1) (7)	St. Dev. (dt1)/ Mean (8)
Countries	47	47	47	47	47	47	47	47
Institutional	11.56***	–0.42**	–3.37***	–0.63***	8.54***	–0.44**	–2.81***	–0.69***
quality	(4.26)	(–2.29)	(–2.77)	(–2.99)	(4.01)	(–2.54)	(–2.68)	(–3.74)
Inflation	–0.22	0.24**	0.46*	0.25**	–0.21	0.13**	0.30	–0.15**
volatility	(–0.33)	(2.41)	(1.77)	(2.51)	(–0.43)	(2.03)	(1.45)	(–2.20)
Bank credit	0.61	0.37**	1.26	0.38**	0.30	0.29**	0.79	0.30**
	(0.30)	(2.22)	(1.45)	(2.30)	(0.21)	(2.15)	(1.32)	(2.18)
Inflows of			19.77***	0.28			15.04***	0.33*
total equity			(11.26)	(1.15)			(9.42)	(1.72)
R^2	0.44	0.20	0.89	0.22	0.40	0.16	0.85	0.19

Notes: Dependent variable: various estimates for volatility of inflows of total equity per capita. Volatility is calculated as follows: for columns (1) and (3), standard deviation of inflows; (2) and (4), normalized standard deviation of inflows; (5) and (7), standard deviation of detrended inflows divided by 100; (6) and (8), normalized standard deviation of detrended inflows divided by 100. All regressions include a constant and are estimated by OLS with White's correction of heteroskedasticity. *t*-statistics are in parentheses. Inflows of total equity include inflows of foreign and portfolio equity investment. All variables are in logs except for inflows of total equity per capita.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

1.5   Conclusions

Over the last thirty years, international capital flows have experienced tremendous growth. The surge in capital flows and, in particular, the crises of the last decade have revived the debate over the merits of international capital mobility. Our objective in this paper has been to overview the main stylized facts behind capital flow mobility over the last thirty years and establish the empirical determinants of capital flows and capital flow volatility. We find institutional quality to be an important determinant of capital inflows. Historical legal origins have a direct effect on capital inflows during the period 1970–2000. Policy plays a significant role in explaining changes in the level of inflows and their volatility.

Appendix A

Data

Foreign direct investment: Direct Investment abroad (IFS line 78bdd) and Direct Investment in Reporting Economy (line 78bed) include equity capital, reinvested earnings, other capital, and financial derivatives associated
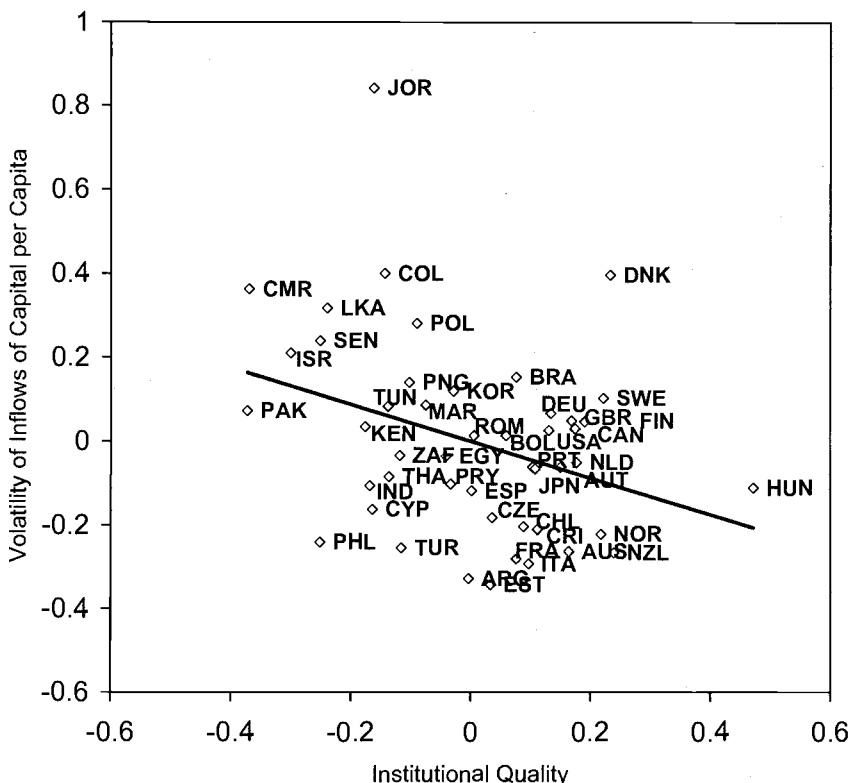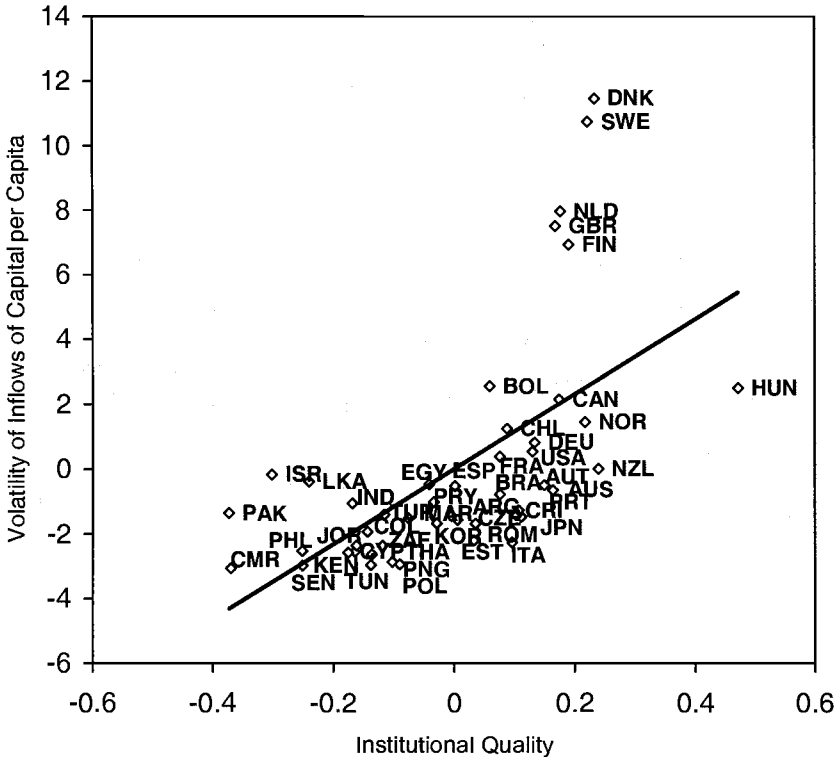
Fig. 1.14   Regression of normalized volatility (deviation from the trend) of inflows of capital per capita on institutions controlling for other regressors

Notes: We first regressed the volatility of net inflows of capital per capita on the regressors other than institutional quality and took the residuals, which we then regressed on the residuals from a regression of institutional quality on the other regressors (including a constant in both regressions). The coefficient on the institutional quality is then exactly the same as the coefficient in the multiple regression. We plot the first set of residuals against the second set in the figure. Inflows of capital per capita include direct and portfolio investment.

with various intercompany transactions between affiliated enterprises. Excluded are inflows of direct investment capital into the reporting economy for exceptional financing such as debt-for-equity swaps. We include only countries with data for both direct investment abroad and direct investment in the reporting economy.

Portfolio equity investment: Equity Securities Assets (IFS line 78bkd) and Equity Securities Liabilities (line 78bmd) include shares, stock participations, and similar documents (such as American depository receipts) that usually denote ownership of equity. These are divided into monetary authorities, general government, banks, and other sectors. We calculate

Fig. 1.15   Regression of volatility (not normalized) of inflows of capital per capita on institutions controlling for other regressors

Notes: We first regressed the volatility of net inflows of capital per capita on the regressors other than institutional quality and took the residuals, which we then regressed on the residuals from a regression of institutional quality on the other regressors (including a constant in both regressions). The coefficient on the institutional quality is then exactly the same as the coefficient in the multiple regression. We plot the first set of residuals against the second set in the figure. Inflows of capital per capita include direct and portfolio investment.

net portfolio equity flows only for countries with data for both equity security assets and debt security liabilities.

Debt flows: Debt Securities Assets (IFS line 78bld) and Debt Securities Liabilities (line 78bnd) cover (a) bonds, debentures, notes, and so on (divided into monetary authorities, general government, banks, and other sectors) and (b) money market or negotiable debt instruments (divided into monetary authorities, general government, banks, and other sectors). Other investment assets (line 78bhd) and other investment liabilities (line 78bid) include all financial transactions not covered in direct investment, portfolio investment, financial derivatives, or other assets. Major cate-

gories are trade credits, loans (divided into monetary authorities, general government, and banks), transactions in currency and deposits (monetary authorities, general government, and banks), and other assets (monetary authorities, general government, and banks). We first calculate total debt assets as the sum of debt securities assets and other investment assets; total debt liabilities correspond to the sum of debt securities liabilities and other investment liabilities. We calculate net total debt flows only for countries that had information for both total debt liabilities and total debt assets.

Total equity flows: Sum of foreign direct investment and portfolio equity flows.

Volatility of inflows: Standard deviation of the corresponding inflows per capita divided by the average of the absolute value of the inflows and outflows of capital per capita.

Independent Variables

Bank credit, 1970–2000: Average value of claims of deposit money banks on nonfinancial domestic sectors as share of claims of central bank and deposit money banks on nonfinancial domestic sectors, in percent.

Capital controls, 1971–97: The mean value of four dummy variables: (a) exchange arrangements, separate exchange rates for some or all capital transactions and/or some or all invisibles; (b) payment restrictions, restrictions on payments for current transactions; (c) payment restrictions, restrictions on payments for capital transactions; and (d) surrender or repatriation requirements for export proceeds. From International Monetary Fund *Annual Report on Exchange Arrangements and Exchange Restrictions* (various issues).

Corporate taxes: Corporate tax rates from PricewaterhouseCoopers (PwC) for 1990–97, from Wei (2000).

Distance: Thousands of kilometers, from Arcview 3.x software.

GDP per capita, 1971–2000: Shown in 1995 U.S. dollars; from World Bank *World Development Indicators* (2002).

Human capital, 1970, 1975, 1980, 1985, 1990, 1995: Average years of secondary, higher, and total schooling in the total population over twenty-five years old. From World Bank (2002).

Legal origin: Origin of a country's formal legal code: English common law, French civil law, German civil law, and Scandinavian civil law. From La Porta et al. (1997, 1998).

Inflation rate: Annual CPI inflation (World Bank 2002).

Inflation volatility: Standard deviation of inflation rate over the sample period divided by the corresponding mean.

Institutional quality: Composite political safety, 1984–98: Sum of all the rating components from *International Country Risk Guide* except for socioeconomic conditions and investment profile. Average yearly rating from 0

to 76, with a higher score meaning lower risk. Data from the Political Risk Services (PRS) Group (2001).

Government stability, 1984–98: The government's ability to carry out its declared program(s), and its ability to stay in office. Average yearly rating from 0 to 12, with a higher score meaning lower risk. Data from PRS Group (2001).

Internal conflict, 1984–98: Political violence in the country and its actual or potential impact on governance. Average yearly rating from 0 to 12, with a higher score meaning lower risk. Data from PRS Group (2001).

External conflict, 1984–98: Assessment both of the risk to the incumbent government from foreign action, ranging from nonviolent external pressure (diplomatic pressures, withholding of aid, trade restrictions, territorial disputes, sanctions, etc.) to violent external pressure (cross-border conflicts to all-out war). Average yearly rating from 0 to 12, with a higher score meaning lower risk. Data from PRS Group (2001).

Noncorruption index, 1984–98: Assessment of corruption within the political system. Average yearly rating from 0 to 6, where a higher score means lower risk. Data from PRS Group (2001).

Nonmilitarized politics, 1984–98: Protection from the military involvement in politics. Average yearly rating from 0 to 6, with a higher score meaning lower risk. Data from PRS Group (2001).

Protection from religious tensions, 1984–98: Protection from the religious tensions in society. Average yearly rating from 0 to 6, with a higher score meaning lower risk. Data from PRS Group (2001).

Law and order, 1984–98: The law subcomponent is an assessment of the strength and impartiality of the legal system; the order subcomponent is an assessment of popular observance of the law. Average yearly rating from 0 to 6, with a higher score meaning lower risk. Data from PRS Group (2001).

Protection from ethnic tensions, 1984–98: Assessment of the degree of tension within a country attributable to racial, nationality, or language divisions. Average yearly rating from 0 to 12, with a higher score meaning lower risk. Data from PRS Group (2001).

Democratic accountability, 1984–98: Average yearly rating from 0 to 6, with a higher score meaning lower risk. In general, the highest number of risk points is assigned to alternating democracies, while the lowest number of risk points is assigned to autarchies. Data from PRS Group (2001).

Quality of bureaucracy, 1984–98: Institutional strength and quality of the bureaucracy is another shock absorber that tends to minimize revisions of policy when governments change. Average yearly rating from 0 to 4, with a higher score meaning lower risk. Data from PRS Group (2001).

Protection from government repudiation of contracts, 1982–95: Average yearly rating from 0 to 10, with a higher score meaning lower risk. Data from IRIS time series of PRS Group (2001).

Protection from expropriation, 1984–98: Average yearly rating from 0 to

10, with a higher score meaning lower risk. Data from IRIS time series of PRS Group (2001).

Sovereign risk: Index based on Standard & Poor's long-term foreign currency denominated sovereign debt ratings, average from 1971 to 1997. Index ranges from 1 (an obligor rated AAA) to 23 (an obligor rated SD [selective default]).

Appendix B

Table 1B.1   **Sample countries: Total equity data**

All countries	1970–1980	1981–1990	1991–2000
Algeria	Algeria	Algeria	Algeria
Argentina	**Argentina**	**Argentina**	**Argentina**
Australia	**Australia**	**Australia**	**Australia**
Austria	**Austria**	**Austria**	**Austria**
Bahrain	**Bahrain**	**Bahrain**	**Bahrain**
Bene-Lux	**Bene-Lux**	**Bene-Lux**	**Bene-Lux**
Bolivia	**Bolivia**	**Bolivia**	**Bolivia**
Botswana	**Botswana**	**Botswana**	**Botswana**
Brazil	**Brazil**	**Brazil**	**Brazil**
Burkina Faso	**Burkina Faso**		**Burkina Faso**
Burundi (starts 1989)			*Burundi*
Cameroon	**Cameroon**	**Cameroon**	**Cameroon**
Canada	**Canada**	**Canada**	**Canada**
Central African Republic	**Central African Republic**	**Central African Republic**	**Central African Republic**
Chad	**Chad**	**Chad**	**Chad**
Chile	**Chile**	**Chile**	**Chile**
China (starts 1982)		*China*	*China*
Colombia	**Colombia**	**Colombia**	**Colombia**
Costa Rica	**Costa Rica**	**Costa Rica**	**Costa Rica**
Cyprus (starts 1985)		*Cyprus*	*Cyprus*
Czech Republic (starts 1993)			*Czech Republic*
Denmark	**Denmark**	**Denmark**	**Denmark**
Egypt, Arab Republic	**Egypt, Arab Republic**	**Egypt, Arab Republic**	**Egypt, Arab Republic**
Estonia (starts 1993)			*Estonia*
Fiji	**Fiji**	**Fiji**	**Fiji**
Finland	**Finland**	**Finland**	**Finland**
France	**France**	**France**	**France**
Gabon	**Gabon**	**Gabon**	**Gabon**
Germany	**Germany**	**Germany**	**Germany**
Hungary (starts 1992)			*Hungary*
India (starts 1993)			*India*
Israel	**Israel**	**Israel**	**Israel**
Italy	**Italy**	**Italy**	**Italy**
Japan	**Japan**	**Japan**	**Japan**
Jordan	**Jordan**	**Jordan**	**Jordan**

Table 1B.1 (continued)

All countries	1970–1980	1981–1990	1991–2000
Kenya	**Kenya**	**Kenya**	**Kenya**
Korea, Republic	**Korea, Republic**	**Korea, Republic**	**Korea, Republic**
Kuwait (starts 1993)			*Kuwait*
Latvia (starts 1992)			*Latvia*
Libya	**Libya**	**Libya**	**Libya**
Mauritania (not available for 1990s)	*Mauritania*	*Mauritania*	
Mauritius	**Mauritius**	**Mauritius**	**Mauritius**
Morocco (starts 1991)			*Morocco*
Namibia (starts 1989)			*Namibia*
Netherlands, The	**Netherlands, The**	**Netherlands, The**	**Netherlands, The**
New Zealand	**New Zealand**	**New Zealand**	**New Zealand**
Niger	**Niger**	**Niger**	**Niger**
Norway	**Norway**	**Norway**	**Norway**
Pakistan (starts 1984)		*Pakistan*	*Pakistan*
Papua New Guinea (not available after 1991)	*Papua New Guinea*	*Papua New Guinea*	
Paraguay	**Paraguay**	**Paraguay**	**Paraguay**
Philippines, The (starts 1993)		*Philippines, The*	
Poland	**Poland**	**Poland**	**Poland**
Portugal	**Portugal**	**Portugal**	**Portugal**
Romania (starts 1991)			*Romania*
Senegal	**Senegal**	**Senegal**	**Senegal**
Singapore	**Singapore**	**Singapore**	**Singapore**
Slovak Republic (starts 1992)		*Slovak Republic*	
Slovenia (starts 1992)			*Slovenia*
South Africa (starts 1985)		*South Africa*	*South Africa*
Spain	**Spain**	**Spain**	**Spain**
Sri Lanka (starts 1985)		*Sri Lanka*	*Sri Lanka*
Swaziland	**Swaziland**	**Swaziland**	**Swaziland**
Sweden	**Sweden**	**Sweden**	**Sweden**
Switzerland (starts 1982)		*Switzerland*	*Switzerland*
Thailand	**Thailand**	**Thailand**	**Thailand**
Trinidad and Tobago (starts 1983)		*Trinidad and Tobago*	*Trinidad and Tobago*
Tunisia	**Tunisia**	**Tunisia**	**Tunisia**
Turkey (starts 1987)		*Turkey*	*Turkey*
United Kingdom	**United Kingdom**	**United Kingdom**	**United Kingdom**
United States	**United States**	**United States**	**United States**
Uruguay (starts 1986)		*Uruguay*	*Uruguay*

Notes: Total equity data are the sum of foreign direct investment (FDI) and portfolio equity investment data. Countries for which either FDI or portfolio equity investment data are available are included in the sample. Countries in italics have data only for certain periods, as indicated in the table. Countries in bold have data for both equity and debt flows throughout the whole sample period. FDI data correspond to Direct Investments Abroad (IFS line 78bdd) and Direct Investments in Reporting Economy (line 78bed) and include equity capital, reinvested earnings, other capital, and financial derivatives associated with various intercompany transactions between affiliated enterprises. Portfolio equity investments correspond to Equity Security Assets (line 78bkd) and Equity Securities Liabilities (line 78bmd) and include shares, stock participations, and similar documents that usually denote ownership of equity. Data taken from IMF (2001).

Table 1B.2   **Sample countries: Debt data**

All countries	1970–1980	1981–1990	1991–2000
Albania (starts 1992)			*Albania*
Algeria (1977–91)	*Algeria*	*Algeria*	
Angola	**Angola**	**Angola**	**Angola**
Argentina	**Argentina**	**Argentina**	**Argentina**
Australia	**Australia**	**Australia**	**Australia**
Austria	**Austria**	**Austria**	**Austria**
Bahrain	**Bahrain**	**Bahrain**	**Bahrain**
Bangladesh	*Bangladesh*	*Bangladesh*	*Bangladesh*
Belarus (starts 1993)			*Belarus*
Bene-Lux	**Bene-Lux**	**Bene-Lux**	**Bene-Lux**
Benin	Benin	Benin	Benin
Bolivia	**Bolivia**	**Bolivia**	**Bolivia**
Botswana	**Botswana**	**Botswana**	**Botswana**
Brazil	**Brazil**	**Brazil**	**Brazil**
Bulgaria (starts 1980)		*Bulgaria*	*Bulgaria*
Burkina Faso		**Burkina Faso**	**Burkina Faso**
Cambodia	Cambodia	Cambodia	Cambodia
Cameroon	**Cameroon**	**Cameroon**	**Cameroon**
Canada	**Canada**	**Canada**	**Canada**
Central African Republic	**Central African Republic**	**Central African Republic**	
Chad	**Chad**	**Chad**	Chad
Chile	**Chile**	**Chile**	Chile
China (starts 1982)		*China*	*China*
Colombia	**Colombia**	**Colombia**	**Colombia**
Comoros (starts 1983)		*Comoros*	*Comoros*
Congo, Republic	**Congo, Republic**	**Congo, Republic**	**Congo, Republic**
Costa Rica	**Costa Rica**	**Costa Rica**	**Costa Rica**
Côte d'Ivoire	Côte d'Ivoire	Côte d'Ivoire	Côte d'Ivoire
Croatia (starts 1993)			*Croatia*
Cyprus	*Cyprus*	*Cyprus*	*Cyprus*
Czech Republic (starts 1993)			*Czech Republic*
Denmark	**Denmark**	**Denmark**	**Denmark**
Dominican Republic	Dominican Republic	Dominican Republic	Dominican Republic
Ecuador	Ecuador	Ecuador	Ecuador
Egypt, Arab Republic	**Egypt, Arab Republic**	**Egypt, Arab Republic**	**Egypt, Arab Republic**
El Salvador	El Salvador	El Salvador	El Salvador
Eritrea (starts 1992)			*Eritrea*
Estonia (starts 1992)			*Estonia*
Ethiopia	Ethiopia	Ethiopia	Ethiopia
Fiji	**Fiji**	**Fiji**	**Fiji**
Finland	**Finland**	**Finland**	**Finland**
France	**France**	**France**	**France**
Gabon	**Gabon**	**Gabon**	**Gabon**
Gambia	Gambia	Gambia	Gambia
Germany	**Germany**	**Germany**	**Germany**
Ghana	Ghana	Ghana	Ghana
Guatemala	Guatemala	Guatemala	Guatemala
Guinea (starts 1987)		*Guinea*	*Guinea*

Table 1B.2   (continued)

All countries	1970–1980	1981–1990	1991–2000
Guyana (starts 1992)			*Guyana*
Haiti	Haiti	Haiti	Haiti
Honduras	Honduras	Honduras	Honduras
Hungary (starts 1982)		*Hungary*	*Hungary*
India	India	India	India
Iran, Islamic Republic	Iran, Islamic Republic	Iran, Islamic Republic	Iran, Islamic Republic
Ireland	Ireland	Ireland	Ireland
Israel	**Israel**	**Israel**	**Israel**
Italy	**Italy**	**Italy**	**Italy**
Jamaica	Jamaica	Jamaica	Jamaica
Japan	**Japan**	**Japan**	**Japan**
Jordan	**Jordan**	**Jordan**	**Jordan**
Kenya	**Kenya**	**Kenya**	**Kenya**
Korea, Republic	**Korea, Republic**	**Korea, Republic**	**Korea, Republic**
Kuwait	Kuwait	Kuwait	Kuwait
Lao PDR (starts 1989)			*Lao PDR*
Latvia	Latvia	Latvia	Latvia
Lesotho	Lesotho	Lesotho	Lesotho
Libya	**Libya**	**Libya**	**Libya**
Lithuania (starts 1993)			*Lithuania*
Madagascar	Madagascar	Madagascar	Madagascar
Malawi	Malawi	Malawi	Malawi
Malaysia	Malaysia	Malaysia	Malaysia
Mali	Mali	Mali	Mali
Mauritania	Mauritania	Mauritania	Mauritania
Mauritius	**Mauritius**	**Mauritius**	**Mauritius**
Mexico	Mexico	Mexico	Mexico
Mongolia (starts 1990)			*Mongolia*
Morocco	Morocco	Morocco	Morocco
Namibia (starts 1990)	*Namibia*	*Namibia*	*Namibia*
Nepal	**Nepal**	**Nepal**	**Nepal**
Netherlands, The	**Netherlands, The**	**Netherlands, The**	**Netherlands, The**
New Zealand	New Zealand	New Zealand	New Zealand
Nicaragua (starts 1991)			*Nicaragua*
Niger	**Niger**	**Niger**	**Niger**
Nigeria	Nigeria	Nigeria	Nigeria
Norway	**Norway**	**Norway**	**Norway**
Oman	Oman	Oman	Oman
Pakistan	Pakistan	Pakistan	Pakistan
Panama	Panama	Panama	Panama
Papua New Guinea	Papua New Guinea	Papua New Guinea	Papua New Guinea
Paraguay	**Paraguay**	**Paraguay**	**Paraguay**
Peru (starts 1985)		*Peru*	*Peru*
Philippines, The	Philippines, The	Philippines, The	Philippines, The
Poland	**Poland**	**Poland**	**Poland**
Portugal	**Portugal**	**Portugal**	**Portugal**
Romania	Romania	Romania	Romania
Rwanda	Rwanda	Rwanda	Rwanda

Table 1B.2   (continued)

All countries	1970–1980	1981–1990	1991–2000
Saudi Arabia	Saudi Arabia	Saudi Arabia	Saudi Arabia
Senegal	**Senegal**	**Senegal**	**Senegal**
Sierra Leone	Sierra Leone	Sierra Leone	Sierra Leone
Singapore	**Singapore**	**Singapore**	**Singapore**
Slovak Republic (starts 1993)			*Slovak Republic*
Slovenia (starts 1992)			*Slovenia*
South Africa	South Africa	South Africa	South Africa
Spain	**Spain**	**Spain**	**Spain**
Sri Lanka	Sri Lanka	Sri Lanka	Sri Lanka
Sudan	Sudan	Sudan	Sudan
Swaziland	**Swaziland**	**Swaziland**	**Swaziland**
Sweden	**Sweden**	**Sweden**	**Sweden**
Switzerland	Switzerland	Switzerland	Switzerland
Syria	Syria	Syria	Syria
Tanzania (starts 1993)			*Tanzania*
Thailand	**Thailand**	**Thailand**	**Thailand**
Togo	Togo	Togo	Togo
Trinidad and Tobago	Trinidad and Tobago	Trinidad and Tobago	Trinidad and Tobago
Tunisia	**Tunisia**	**Tunisia**	**Tunisia**
Turkey	Turkey	Turkey	Turkey
Uganda	Uganda	Uganda	Uganda
United Kingdom	**United Kingdom**	**United Kingdom**	**United Kingdom**
United States	**United States**	**United States**	**United States**
Uruguay	Uruguay	Uruguay	Uruguay
Zambia	Zambia	Zambia	Zambia
Zimbabwe	Zimbabwe	Zimbabwe	Zimbabwe

Notes: Countries in italics have data only for certain periods, as indicated in the table. Countries in bold have data for both equity (FDI and portfolio equity investments) and debt flows throughout the whole sample period. Debt data correspond to Debt Securities Assets (IFS line 78bld) and Debt Securities Liabilities (line 78bnd), which cover bonds, notes, and money market or negotiable debt instruments; other investment assets (line 78bhd); and other investments liabilities (line 78bid), which include all financial transactions not covered in direct investment, portfolio investment, financial derivatives, or other assets. Data taken from IMF (2001).

Table 1B.3   **Descriptive statistics: Inflows of capital and volatility, 1970–2000 (per capita U.S. dollars)**

	Mean	Standard deviation	Minimum	Maximum
Capital inflows				
FDI inflows	166.92	307.64	–122.51	1,723.78
Portfolio equity inflows	129.44	310.90	–2.17	1,769.21
Debt inflows	501.33	821.60	–84.65	4,827.94
Total equity inflows	287.47	562.50	–122.51	3,492.99
Total equity and debt inflows	795.40	1,363.66	–84.65	8,320.92
Volatility of inflows				
Volatility of FDI inflows	0.78	0.32	0.12	1.63
Volatility of portfolio equity inflows	0.80	0.47	0.16	2.29
Volatility of debt inflows	0.70	0.24	0.32	1.40
Volatility of total equity inflows	0.93	0.38	0.34	2.01
Volatility of total equity and debt inflows	0.62	0.24	0.13	1.38

Notes: Inflows represent flows of foreign claims on domestic capital (liability), divided by population based on IMF data in 1995 U.S. dollars. Volatility of inflows is the standard deviation of the corresponding inflows per capita divided by the average of the absolute value of the inflows and outflows of capital per capita. Data are for 47 countries out of the 122-country sample for which both equity and debt flows data are available throughout the whole sample period. FDI inflows correspond to Direct Investments in Reporting Economy (IFS line 78bed), which includes equity capital, reinvested earnings, other capital, and financial derivatives associated with various intercompany transactions between affiliated enterprises. Portfolio equity inflows correspond to Equity Liabilities (line 78bmd), which include shares, stock participations, and similar documents that usually denote ownership of equity. Data on inflows of debt include Debt Securities Liabilities (line 78bnd), which cover bonds and money market or negotiable debt instruments; and Other Investments Liabilities (line 78bid), which include all financial transactions not covered in direct investment, portfolio investment, financial derivatives, or other assets. Inflows of total equity are the sum of FDI and portfolio equity investments.

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Comment   Gerd Häusler

The paper notes in the introduction that there are two important facts about capital flows in the period 1970–2000:

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- Capital does not flow from rich to poor countries (the "Lucas paradox").
- In fact, net capital flows have been negative for emerging market (EM) countries in recent years, as noted in chapter 4 of the September 2004 issue of the *Global Financial Stability Report* of the International Monetary Fund. Rather, EM economies focused on reducing debt and building up reserves as a self-insurance against global factors. This risk appetite was also mirrored in the corporate sector, where corporations focused on repairing their balance sheet.

I would add that the period 1970–2000 was one that could be characterized by mature markets seeking to diversify rather than one of "development" finance (Obstfeld and Taylor 2004). But is the Lucas paradox—the fact that capital did not flow from rich to poor countries—really a paradox? I will return to this question.

On a different point, I would also like to note that the title of the paper is misleading in its generality. Although it is entitled "Capital Flows in a Globalized World," the paper does not cover debt flows, which is a very important asset class and component of capital flows. The authors focus on equity flows and argue about lack of quality in debt data. It is unclear to me if equity data are better. Moreover, as shown in the paper's figures 1.1 and 1.2, debt flows are a big—albeit declining in the late 1990s—part of the capital flows story. I should also point out here that Reinhart and Rogoff (2004) show that the Lucas paradox can be easily explained with credit and political risk—especially for countries that they describe as "serial defaulters."

Let me now turn to the main focus of my discussion. The Lucas paradox is not really a paradox at all. At a very basic level, what drives capital flows is one common criterion that banks and other lenders employ toward all types of borrowers. At times they are so risk averse that they flock toward the best risk.

An important element that is missing from the paper is a discussion of the behavior of the supply side:

- The authors' list of determinants of capital inflows focuses only on (recipient) country characteristics, not on changes in the supply of funds.
- A key change in the financial landscape over the past two decades has been the growth of institutional investors, which are missing from the paper (see fig. 1C.1).
- The activities of institutional investors (and the decline in banking activities) have been changing the supply of capital flows in fundamental ways:
  —For EM countries, there was a sharp shift in the investor base in the second half of the 1990s (as shown in the September 2003 *Global Financial Stability Report,* chap. 4).
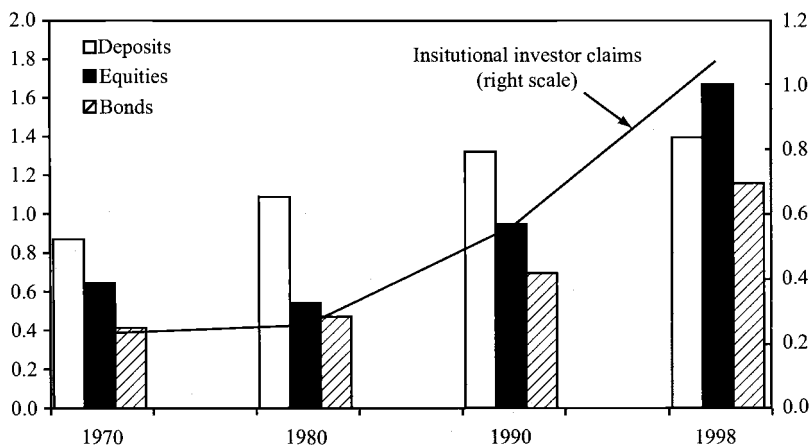
Fig. 1C.1   Group of seven: Financial instruments outstanding and institutional investor assets (percentage of GDP)

—For mature markets, the growing role of institutional investors is behind the "diversification" factors in determining capital flows rather than "development" finance. *Uncorrelated assets* is the catchphrase here (more on this below).

—Diversification goes beyond mature markets: low returns in mature markets and demographic trends will lead to more rich-to-poor capital flows.

• Global financial assets held by private nonbank institutional investors have more than doubled in the past ten years and more than tripled in the past fifteen years, to reach about US\$40 trillion in a handful of the largest mature markets. Capital funds are expected to continue to grow at a rapid pace (demographic trends necessitate pension reforms that are expected to create more and larger asset gatherers). One only needs to look at what is happening in Europe or Japan, or in the discussion on Social Security reform in the United States. Putting aside the policy debate for a moment on defined benefit versus defined contribution systems, in Europe informal systems are developing already as families accumulate additional savings to top off social security.

• Changes in the asset allocation decisions of institutional investors will have an increasingly important impact on capital flows across asset classes and across national borders, as well as asset prices. Sustained differences in growth rates—such as, for example, low rates for Europe and Japan while the United States and emerging Asia are growing at significantly faster rates—will drive asset allocation to the point where returns promise to be higher. Both institutional funds and personal savings will seek to maximize risk-adjusted returns in an increasingly

globalized financial system by diversifying their holdings in uncorrelated assets and returns. I should note here that I use the phrase "institutional investors" loosely. The increase of personal savings will mostly be through institutional investors.

- One corollary to these developments is that a relatively small change in the asset allocation of funds—given their enormous relative size—may affect global financial stability and, more specifically, have a significant impact on the cost of external funding for EM countries.
- As EM countries mature, which includes opening their capital accounts over time, financial market integration will intensify, and these countries' growing financial sectors will increasingly compete for, open to, and receive from the global pool of capital.

As the global financial markets evolve in the context of demographic developments and regulatory changes, there will be some adjustment problems. As I already mentioned, aging societies will behave like rentiers.

Returning to my earlier comment, the need to diversify capital assets—which was a key driver during the period 1970–2000—is an even more significant factor in institutional investors' investing decisions today. As the globe becomes more and more integrated, asset prices become increasingly correlated, and investors, therefore, face a growing challenge in securing uncorrelated assets.

Pension funds, which, by their nature, are cautious in their investment decisions, will be slow to adopt the notion of the global asset allocation process that faces no national or asset class boundaries. It will eventually arrive, however, and the effects will be enormous given the size of pension funds. As this unfolds, we should not underestimate the role that financial consultants will play in influencing the nature and direction of capital flows.

A huge uncertainty in determining the nature, pace, and direction of the global asset allocation process as it goes forward will be estimating the "discount rate" of future developments in the real economy for the purpose of investing large funds.

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