Sovereigns, Upstream Capital Flows, and Global Imbalances

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Abstract

The paper presents new stylized facts on the direction of capital flows. We find (i) international capital flows net of government debt and/or official aid are positively correlated with growth; (ii) sovereign debt flows are negatively correlated with growth only if debt is financed by another sovereign; (iii) public savings are robustly positively correlated with growth as opposed to private savings. Sovereign to sovereign transactions can fully account for upstream capital flows and global imbalances. These empirical facts contradict the conventional wisdom and constitute a challenge for existing theories.

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Two phenomena taking the central stage in debates among academics and policymakers for quite sometime are uphill capital flows and global imbalances. Many have argued that capital is flowing upstream from fast growing developing nations to stagnant countries in the last two decades. At the same time, these emerging countries accumulate a vast amount of reserves.[1] A common explanation for these phenomena is the rel-

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[1] See Caballero, Farhi and Gourinchas (2008), Gourinchas and Jeanne (2009), Prasad, Rajan and Subramanian (2006), Carroll and Jeanne (2009), Aguiar and Amador (2011) and Buera and Shin (2009).

atively higher saving rates in these emerging markets. The recent theoretical literature is mainly concerned with reasons behind the high saving rates and why these savings are being invested in low growth countries. Unfortunately, the empirical literature is extremely thin. Particularly troubling in this literature is the fact that the correlations of growth and capital flows informing many of the recent influential models are based on measuring capital flows with the current account (CA) balance, i.e., the difference between saving and investment, which includes non-private, non-market activities—such as sovereign-to-sovereign transactions in the form of aid and debt flows.

In this paper, we undertake a careful decomposition on the available aggregate data for capital flows into private and official components, paying particular attention to aid, public debt flows, and reserve accumulation.[2] We argue that using the CA balance to test the predictions of the neoclassical model on where capital is flowing and why it is flowing is not informative since the neoclassical framework pertains to private market behavior only, whereas CA based measures of capital flows are not. Indeed, recent work suggests that it is important to examine not only total net flows but also specific components of net flows together with gross flows in the context of sudden stops and global imbalances.[3]

We regress private and public capital flows as well as total flows on productivity growth differences across countries, our measure of "high return."[4] To complement, we also decompose national saving rates into public and private savings and investigate their relationship to productivity growth. Performing this exercise over a long time span

[2]We use terms 'sovereign', 'public', 'government' and 'official' interchangeably.

[3]See Forbes and Warnock (2011), and Lane and Milesi-Ferretti (2007) among others.

[4]Note that comparable calculation of returns on foreign investments is not possible in international data given the non-comparability of tax structures. Even for the U.S. there can be several data issues related to valuation effects, see Curcuru, Dvorak, and Warnock (2008).

(1970–2004) and also for each decade not only forces us to reconsider the conventional wisdom of uphill capital flows as a generalization of the behavior of emerging markets, but also provides an explanation for a handful of countries in Asia that do export capital. We show that upstream flows and global imbalances are manifestations of the same underlying phenomenon: the central role of official flows in determining the international allocation of capital.

Specifically, our findings are as follows: (i) International capital flows net of government debt are positively correlated with growth and hence consistent with the neoclassical predictions. (ii) International capital flows net of aid flows are also positively correlated with productivity growth consistent with the predictions of the neoclassical model. (iii) Government debt flows are negatively correlated with growth only if government debt is financed by another sovereign and not by private lenders. (iv) Public savings are robustly positively correlated with growth as opposed to private savings. Our results show that the puzzling patterns of capital mobility relative to the benchmark neoclassical theory are driven by sovereigns who target current accounts and engage in foreign transactions for different considerations. Our results hold not only for the 1970–2004 period but also during the 1990s and 2000s.

Our exercise sheds light on theory. While there is truth in many of the theoretical mechanisms that have been proposed to explain uphill capital flows and global imbalances, it is important to step back and see how these mechanisms fit together and which plays a larger or a smaller role. Consider the most common theoretical references in understanding the uphill flows and global imbalances. These are models in which domestic financial frictions and/or precautionary motives lead to over-saving in emerging

markets.[5] The main focus of the majority of these papers has been on private capital outflows as the key driver of the positive correlation between growth and CA. However, as we document, there is much more nuance to the direction of capital flows than is commonly appreciated. We find that not only FDI and portfolio equity but also private debt flows to high-return countries. Emerging markets public borrowing from private lenders is positively correlated with their growth, and the negative correlation between growth and foreign assets accumulation is driven by the transactions between sovereigns. Thus any explanation for uphill flows and global imbalances must take into account the fact that CA net of official flows is negatively correlated with growth, i.e., private capital flows downhill. We discuss the relation of our findings to the relevant theories after we present the empirical results.

Two key facts explain our findings. First, the bulk of capital flows into low-productivity developing countries in the last thirty years has taken the form of official debt/aid (concessional flows from bilateral and multilateral institutions).[6] We show that CA deficits of low productivity developing countries have been driven by government debt/aid. Once aid flows are subtracted, there is capital flight out of these countries. Second, capital outflows from high-productivity emerging markets—the more recent phenomenon of upstream capital flows and global imbalances—have been in the form of official reserve accumulation. Private capital does not flow on average uphill from emerging countries, that is, high productivity growth emerging markets on average do not export private capital. Total capital does not flow uphill for an *average* emerging market economy, and

[5] See Durdu, Mendoza, and Terrones (2009); Buera and Shin (2009); and Song, Storesletten, and Zilibotti (2011), among others.

[6] As Rogoff (2011) notes, "Of the roughly $200 trillion in global financial assets today, almost three-quarters are in some kind of debt instrument, including bank loans, corporate bonds, and government securities."

the regional patterns for CA behavior in Asia are driven by few outliers who happen to be big players in reserve accumulation, such as China.

We find that although in the last three decades, the developed world received on net more foreign capital than emerging markets (the Lucas paradox), it is not the case that emerging markets with higher than the world average growth run CA surpluses in general.[7] Eastern European countries, for example, had higher then average growth and ran CA deficits in the last decades. In our sample period, only 5 Asian countries, namely China, Korea, Malaysia, Singapore and Hong Kong, the last two being financial centers, had CA surpluses, which are the same order of magnitude as Luxembourg's CA surplus.[8] Net total capital—private and public—flowed upstream from this handful of emerging Asian countries to capital rich advanced economies. However, none of these countries, exported on average private capital. Current account surpluses for China, Korea, and Malaysia were driven by government behavior; these countries are net borrowers in terms of FDI, portfolio equity and private debt, as predicted by the neoclassical model for countries with higher than the average growth rates. Our results simply show that these types of countries are not representative of a broad class of developing countries and hence their atypical pattern does not generate a stylized fact that involves a negative relationship between total capital flows (CA deficit) and growth.

Our main conclusion is that the neoclassical model, which is about utility maximizing private agents, does a much better job than previously thought in predicting patterns of capital flows once we stay close to the benchmark theory and focus on capital flows net of aid flows and net of sovereign to sovereign debt. Complementing these results, we

[7] As shown in Alfaro, Kalemli-Ozcan, and Volosovych (2008), the main explanation for the Lucas Paradox is the high institutional quality in the developed countries.

[8] For 1990–2005 and 2000–2005, Thailand and Indonesia are also net capital exporters.

show that there is a much stronger and robust positive correlation between public savings and growth compared to private savings, again contrary to what has been previously thought.

These stylized facts have strong policy implications. The findings we show in this paper point to the importance of public savings and governments' behavior of current account targeting as opposed to private saving as the key underlying factor of upstream flows and global imbalances. These results imply that addressing systemic distortions in the global financial system, such as intentional undervaluation of exchange rates, through international policy coordination should complement—and perhaps even be more important than—fixing domestic distortions in fast growing emerging markets.

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 presents descriptive patterns for the relationship between capital flows and productivity growth by focusing on a careful decomposition of capital flows. Section 4 undertakes the regressions analysis. Section 5 reviews the related literature and discusses the implications of our findings for the existing theories. Section 6 concludes.

1 Data

Our objective in this paper is to search for broad patterns and explanations that are common to all countries and dates. Such a task is particulary difficult for developing countries characterized by government interventions, capital controls, sovereign risk, reliance on foreign aid, high volatility, in addition to data quality issues. We rely on a number of sources to construct the broad measures of net capital flows as well as their components as described in Appendix A.

In national accounting, the CA balance is the sum of exports minus imports in goods and services, net factor income, and transfers payments, alternatively represented as the country's domestic (private and government) savings less its (private and government) investment. A country with a CA surplus is a net lender, sending its surplus net savings to the rest of the world, thereby increasing its net holdings of foreign assets or reducing its net liabilities. Conversely, a country with a CA deficit is a net borrower from the rest of the world, attracting surplus savings thereby increasing net liabilities or reducing net assets abroad. By using the components of capital flows recorded in the financial account of the BOP, FDI, equity and debt flows, we can decompose the CA balance into the public and private components as follows:

$$\begin{aligned} CA &= (\Delta FDIA + \Delta EQA + \Delta PrivDA + \Delta OA - \Delta FDIL - \Delta EQL - \Delta PrivDL - \Delta OL + EO) \\ &+ (\Delta RES + \Delta PubDA - \Delta PubDL - IMF - EF) \end{aligned}$$

where Δ FDIA and ΔFDIL denote, respectively, changes in FDI assets and liabilities, ΔEQA and ΔEQL denote changes in portfolio equity assets and liabilities, ΔPrivDA and ΔPrivDL denote changes in private debt (portfolio debt and loans) assets and liabilities, ΔOA and ΔOL denotes changes in other assets and liabilities (these include as financial leases, trade credits, repurchase agreements and others), and EO is errors and omissions. ΔRES denotes changes in reserves, ΔPubDA and ΔPubDL is change in public debt assets and liabilities, IMF is IMF credit, and EF is exceptional financing. With this representation,

$$\begin{aligned} CA &= (Change\ in\ Private\ Assets - Change\ in\ Private\ Liabilitis) + \\ &\quad (Change\ in\ Public\ Assets - Change\ in\ Public\ Liabilities) \end{aligned}$$

In order to investigate the behavior of various types of capital flows we first adjust our measures of net capital flows by subtracting the net receipts of official development assistance ("aid flows"). The aid flows consist of total grants and concessional development loans net of any repayment on the principal, most of which are counted as public debt. Second, to directly check the possible differences between private and public flows we use the net *equity flows*, consisting of foreign direct investment and portfolio equity flows, and the net *debt flows*, comprised of private debt, public debt, and other investment liabilities. All the annual flows are measured in current U.S. dollars, normalized by GDP in current U.S. dollars and averaged out for the sample period. We further decompose the aid and debt flows into their private and public components as detailed out in Appendix A.

For productivity growth, we use average per capita GDP growth, both the actual rate and relative to the U.S. We also use "productivity catch-up" relative to U.S. as in Gourinchas and Jeanne (2009).

We work with three different non-OECD developing country samples as described in Appendix B.[9] Our definition for non-OECD developing countries comprises all the non-OECD countries that have GDP per capita less than 15,000 in 2000 U.S. dollars on average in 1980–2004. We do not include rich non-OECD countries and financial centers such as Singapore and Hong-Kong following Obstfeld (2004) in order to solely focus on *developing* countries. We present our main results for 1980–2004 since many developing countries maintained substantial restrictions to foreign capital up to the 1980s (see Henry, 2007). We start with the largest possible sample given data availability that com-

[9]The time coverage of the data varies substantially from country to country and in particular for developing countries. Most developing countries report data starting in the mid-1970s. For other countries, data are not available until the mid 1980s or the early 1990s, such as Eastern Europe.

prises 122 countries. However given the existence of small islands and oil producers in this sample with atypical paten we show all of our results for the "benchmark" sample of 75 countries. We also use a sample of 63 countries out of these 75 with available capital stock data Penn World Tables.[10]

2 Descriptive Patterns

Official flows can distort the stylized facts regarding capital flows for a small group of emerging countries when few important big players, such as China, behave differently than the average emerging economy. On average, China had a CA surplus of 1.1 percent of GDP and hence a net lender vis-a-vis the rest of the world during 1980–2004. The size of the surplus grew to 1.9 percent of GDP over 1990–2004 period. During the same period China was simultaneously a net borrower in terms of FDI and equity flows (net flows of FDI and equity capital amounted to 2.5 percent of GDP). China, with its huge reserve accumulation, together with financial centers such as Singapore and Hong Kong can easily shape the general picture for Asia when we focus on a small sample of developing countries in a relatively short time span. Figure 1 shows the strong positive correlation between net equity flows and reserve accumulation for such Asian countries but not for other emerging markets: the relationship between equity flows and reserve accumulation is negative for African countries, and there is no relation between these two variables for the rest of the developing countries. For many African countries, capital flows are mostly in the form of development aid, as clearly shown in Figure 2 for

[10]This is the 68 country sample used by Gourinchas and Jeanne (2009) minus Botswana, Gabon, Hong-Kong, Singapore, and Taiwan.

Zambia and Tanzania.[11]

Figures 1 and 2 summarize the key result of our paper, that is international allocation of capital is mainly driven by sovereign-to-sovereign transactions. Even during the recent period of global imbalances, a simple adjustment involving subtracting aid flows from a common broad measure of capital flows (minus the current account) in a large set of developing or a combined sample of developed and developing countries is enough to deliver a positive correlation between capital flows and growth. The allocation of private foreign capital (debt and equity) among and within developed and developing countries is consistent with the predictions of the neoclassical model both historically and during the recent imbalances period.

Over Time Statistics. To dig deeper, we divide countries in groups according to their productivity growth (measured by the average growth rate of the real GDP per capita over 1970–2004). Low-Growth Countries are those countries with growth rates below 25th percent quartile (0.4 percent); High-Growth Countries are economies with growth rates above 75th percent quartile (2.3 percent); the rest of countries are assigned to the Medium-Growth Countries group.

We start with the largest possible sample of all 122 non-OECD developing countries. Table 1 shows the descriptive statistics for each of the three groups, low, medium, and high growth, for the period-average of the CA balance to GDP, change in net foreign asset position (NFA) to GDP (both with the sign reversed to interpret as capital flows), and their main components. Notice that the negative CA is a flow concept available directly from BOP, while the changes NFA are computed from the stock. The latter

[11] Tanzania and Zambia are the largest aid recipients in the region, 12 and 19 percent of GDP respectively. Both countries run a current account deficit during 1980–2004, where their current account liabilities are mainly in the form of aid flows.

include so called "valuation effects" due to changes in stocks and other asset prices (see LM for more details), while the CA balance is reported at "book" value.

Not every country is present in every sub-period, as shown in Appendix Table 7. For the period 1971–2004, the negative of the current account in the low-growth countries averages 4.2% of GDP; it is 4.6% in the medium-growth countries and 5.4% in the high-growth countries, suggesting a positive long-run relationship between productivity and CA deficit. A slightly different picture emerges when we look at the change in NFA. This measure of net capital flows has the largest value for the medium-growth group.

In columns (3) and (4) we report the two key components of the CA, equity flows and total (public and private) debt flows. Both these components come from the BOP statistics and, similarly to the CA, do not include the valuation effects. Equity flows are positively correlated with growth, while we observe the same hump-shaped relationship between growth and total debt flows. As seen in column (5), aid receipts are important for many developing countries. Aid flows do not include valuation effects and are negative correlates of growth. Next, in columns (6) and (7), we show two measures of reserve assets. By BOP convention, the net accumulation (net increase) of such assets is considered net capital outflow, and has a negative sign in the BOP statistics. The broader aggregate the "reserve and related assets" includes transactions in the reserve assets and related items (exceptional financing and use of the IMF credit and loans) from the IMF as percentage of GDP. The item "reserve assets" includes more liquid external assets readily available to and controlled by monetary authorities. Interestingly, all groups of countries show the net accumulation of reserve assets while only high-growth group shows that based on the broad reserves measure. Nevertheless, there is a clear negative relationship between reserve accumulation and growth based on both measures (that is,

a positive relation between growth and capital outflows in form of foreign reserves). In column (8) we report the Net Errors and Omissions (NEO). As seen, there is a positive relationship between NEO and growth, with the high-growth countries experiencing net outflows. In column (9), we report the net public debt flows computed as the period average of the annual changes in stock of public and publicly-guaranteed external debt minus the period average of the annual changes in foreign reserves stock (excluding gold). We use the narrow definition of reserves for internal consistency because only this aggregate is available in the data as a stock concept, and the PPG debt is also computed from the stock data.[12]

In the reminder of the table, we report two main components of the changes in NFA, equity flows and total debt flows. These columns are similar to columns (3) and (4) but now these aggregates are computed as the average of the differenced annual stocks from LM, and hence including the valuation effects. While the values of these components differ from the unvalued counterparts, the pattern with respect to correlations with growth is the same.

To further explore the time-series trends in the net capital flows and their main components, we compute averages over shorter time periods. When we look at the sub-periods, again no clear pattern jumps out. In the 1970s, 1980s, and 1990s, the CA deficit seem to be positively correlated with growth but this pattern is not there when we look at net foreign asset positions (except for 1980s). After 2000, there is no clear pattern. Out of components, aid flows and public debt flows are always negatively correlated with growth and equity flows seem to be always (in every sub-period) positively correlated with growth, while there are no clear patterns for debt flows. In terms of

[12]The correlations between two measures of reserves are always above 0.7.

the negative current account (total capital flows) and equity flows, developing countries seem to be net borrowers regardless of the growth differences in all periods. Again, we observe the consistency in time-series patterns of equity and total debt flows with and without the valuation effects.

To illustrate the decomposition of the CA balance into the major components and thus to verify the internal consistency of our data, we report each component annually for mid-decade years for several random developing countries in Appendix Table 8. The negative of the CA balance (column 1) can be decomposed into the sum of the flows of equity (column 3), total debt (column 4), reserve and related assets (column 6), and NEO (column 8). Column (9) reports the sum of columns (3), (4), (6) and (8) and matches column (1) numbers coming directly from the BOP for most countries.[13]

Country by Country Statistics: Uncovering Net Borrowers and Net Lenders. Next, we present country by country data to identify net borrower and net lender countries and the components of capital that drive this behavior. In Table 2, countries are grouped by large geographic regions according to the World Bank classification, and sorted from lowest to highest rate of growth within each region. We also report cross-sectional averages for each given region to establish possible regional patterns. We do not report the valuated measures of capital flows for brevity; as previous results show the cross-sectional and time patterns of the valuated components closely follow those of the un-valuated counterparts.

In Africa, capital flows are clearly dominated by aid receipts. Once aid flows are subtracted, there is capital flight on average out of this region that has experienced low

[13]Occasionally there is a discrepancy for African countries. It is harder to achieve such precise decomposition of the average numbers in Table 1.

growth rates on average. This is the predicted outcome of the standard theory.

An interesting pattern emerges in Asia: in contrast to the common view, only 3 high-growth countries are net savers: China, Korea, and Malaysia. These countries, however, are all net borrowers in terms of equity and private debt while public savings (negative of the public debt) finds their way in the accumulation of reserves. Comparing these countries to other fast-growing countries, like Cambodia or Vietnam, shows the latter heavily rely on aid and public debt and do not seem to stockpile reserves.

Countries in Europe and Central Asia include mostly emerging market economies. While some (e.g., Tajikistan, Albania, Armenia) rely heavily on aid, for most of these countries aid is a small portion of GDP. More importantly, both private flows and public debt seem to follow the prediction of the neoclassical model exhibiting a positive correlation with growth. The similar behavior of private flows and public debt flows is visible in countries of Latin America. There, the positive correlation between growth and aid-adjusted net capital flows is especially clear. An interesting feature of the African and Latin American countries is a clear difference between the narrow reserve assets aggregate and the broader one, including 'reserve-related items' (exceptional financing and use of the IMF loans). These countries have relied more on the multinational financing for various reasons (lower income countries, debt crisis, etc.). For the rest of the countries the difference is immaterial.

For completeness, the table shows industrial countries. All of the above average growth rich countries are net borrowers except Japan, Finland and Norway.

To summarize, during the 1970–2004 period, Asia, the highest-growth region, appears to receive the least foreign flows compared to Africa, the slowest growth region. However, once we adjust the current account balance by removing aid flows, the pic-

ture reverses. This adjustment reveals the fact that the current account liabilities of low-growth countries mostly consist of aid flows. The slowest-growing region, Africa, receives the least amount of capital flows once we subtract aid flows from total capital flows. Europe and Latin America receive the most flows with their medium-growth performance. Asia receives less than these regions but this pattern seems to be driven by 3 countries which accumulate a lot of reserves. When we look at the private flows, Asia is in the lead, receiving the most flows.

The Appendix Tables 9 and 10 show similar patterns for 1990–2004 and 2000–2004 periods. Although now we have 6 countries in Asia that display current account surpluses, Indonesia and Thailand are added to the previous 3 during 1990–2004 and India added to this list of 5 during 2000–2004, the broad patterns remain the same. These countries are net borrowers in FDI, and the government behavior, in particular reserves minus government debt, is the main driver of the current account surpluses. Among the developed rich nations, during 1990–2004, Norway becomes a net lender, in addition to Ireland. For developed countries, the separation of public and private debt is not available.[14]

3 Regression Analysis

3.1 Does Capital Flow Uphill? The Role of Non-Market Flows

Table 3 presents the bivariate OLS regressions of capital flows on productivity growth. We use two measures of net capital flows: the average over time of the current account

[14]During this period, Norway channeled the surge in oil revenues to a stabilization fund while Ireland experienced high growth, fiscal surpluses and received a record FDI and equity flows of 20 percent of GDP.

balance to GDP and the average over time of the aid-adjusted current account to GDP. We reverse the sign of both measures to interpret them as capital flows. Productivity growth is measured as average per capita GDP growth in columns (1) to (4) and as productivity catch-up relative to the U.S. in columns (5) and (6), for countries with the data necessary for calculation of total factor productivity.

Column (1) shows that there is no relationship between net capital flows and growth as also seen in the partial correlation plot in Appendix Figure 5, panel A. Once we adjust the current account for aid flows the relationship becomes significant positive as seen in column (2), and this positive result is not driven by outliers judging from Appendix Figure 5, panel B.[15] Columns (3) and (4) and Appendix Figure 6 show the same regressions when we normalize negative of current account with population instead of GDP. With population normalization even without the aid adjustment there is a positive correlation between capital flows and growth. However Appendix Figure 6 shows that this might be driven by small islands in Caribbean, since this sample of 122 keeps these small countries as oppose to the benchmark sample of 75.[16]

Columns (5) and (6) of Table 3 use the alternative measure for growth, the productivity catch-up following Gourinchas and Jeanne (2009). The sample size drops to 63 given the fact that productivity catch-up calculation requires the use of capital stock data, which is not available for a wide range of developing countries. The same result is there though; once we adjust capital flows by subtracting aid flows the correlation be-

[15]We experimented by dropping countries that receive aid flows more than 10 percent of their GDPs, following Prasad, Rajan, and Subramanian (2006), and still found a positive relation between capital flows and growth. Our preferred method of aid adjustment is subtracting all of aid flows, as done by Gourinchas and Jeanne (2009), since the bulk of the financing is via aid flows in these high-aid countries even when they receive aid flows that are less then 10 percent of their GDP as shown in the Appendix Table 12.

[16]It is also possible that when GDP is in the denominator of the LHS and change in GDP is on RHS, there will be an artificial negative correlation in the sense that growing countries have smaller capital flows relative to GDP if their GDP is increasing at a faster rate than their capital flows.

tween capital flows and growth turns from negative to positive.[17] As shown in Appendix Figure 7 panels A and B these results are not driven by outliers.

In Appendix Table 11 we report the results of the regressions when we add 22 advanced OECD countries (excluding Luxemburg)[18] to the large developing sample. The results in column (1) and (2) closely resemble those in Table 3. We conclude that adding the advanced economies does not change the results qualitatively, hence we focus on developing countries in the remainder of the paper.

Both these developing country samples of 122 and 63 in Table 3 include small countries. Thus we establish a benchmark sample of 75 countries dropping islands, and countries with population less than 1 million. We also make sure we have over 90 percent of our variables being observed over 1980–2004. Table 4 presents the results for this sample. Columns (1) and (2) present the similar result that once we adjust capital flows by subtracting aid flows the relationship between growth and capital flows turn positive.[19] Appendix Figure 8 shows the latter result graphically. Columns (3) to (8) break down capital flows into its components to understand the underlying reasons behind the negative correlation in column (1). It seems like the negative correlation between overall capital flows and growth is driven by public debt and aid flows (column (8)). Notice that on average the fast-growing developing countries accumulate reserves (column 6),

[17] Gourinchas and Jeanne (2009) perform the same adjustment finding an insignificant effect. Their sample of 68 differs than our 63 where they include rich financial centers such as Singapore and Hong-Kong as developing non-OECD countries. They also have data for Taiwan from Penn World Tables, which we were unable to locate data in WDI (not recognized nature). Finally we eliminate all oil and resource-rich countries in all our samples; two such countries, Botswana and Gabon, are present in their sample.

[18] The countries are Austria, Australia, Belgium, Canada, Denmark, Finland, France, Greece, Germany, Iceland, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the United States.

[19] With population normalization (not shown) we again do not see a "puzzling" negative relationship between the negative of CA and growth.

which, we conjecture, might be consequence of the distress of the late 1990s or a consequence of exchange rate-management policies. When we remove this component from the overall public debt flows—which is also negatively correlated with growth as shown in column (5)—in column (7), the absolute value of the negative coefficient increases. Appendix Figure 9 shows the partial correlation plot corresponding to the regressions in column (3) and (7). The difference between "private" (equity) and "public" (PPG debt – Reserve Accumulation) portions of the flows is drastic.[20]

To summarize, there seems to be no puzzling "uphill" behavior of capital flows—uphill meaning flows from high growth to low growth countries—once current account is adjusted to remove aid flows. Aid flows, which do not respond to market forces, are driven by a host of factors as shown in Alesina and Dollar (2000). Persistently low-income and in particular HIPC countries that are characterized by low productivity receive foreign resources mostly in the form of aid flows and grants.

3.2 Does Capital Flow Uphill? The Role of Sovereign Borrowing

Are aid flows the only reason for the "uphill" nature of capital flows? In fact, the "uphill" literature is motivated by global imbalances, that is capital flows from high savings countries such as China into the U.S. It is true that many Asian countries are high-growth countries and also net lenders when we consider the overall current account. Is this fact consistent with what we have found so far? Also does this fact only pertain to flows between China and other Asian countries on one hand and the U.S. on the other hand, or is this a stylized fact among all developing countries? The general patterns we have observed suggest this to be a peculiar issue effecting only a few Asian countries.

[20]These results are based on valuated data from LM. Un-valuated data produces similar results.

Nevertheless, to investigate this further, we undertake a careful decomposition of debt flows and study the relationship between each component and growth.

Table 4 already shows that PPG debt (public and publicly guaranteed) is negatively correlated with growth. As we laid out in the data section, PPG debt has many components, some of which are also recorded under aid flows. It is important to discover whether aid or public borrowing drives the negative relation between capital flows and growth since the policy implications will drastically differ. For example, as we have mentioned, Aguiar and Amador (2011) propose a model to explain why the high growth/high saving countries tend to be net lenders based on the assumption that the negative relation between capital flows and growth is driven by public debt flows.

To dig deeper into this issue, we decompose non-market flows (aid flows and public debt flows, which also includes forms of aid), into their components. Table 5 shows the decomposition and the associated correlations with growth for debt flows. Debt flows computed as the average over 1980–2004 of the annual changes in the corresponding debt stock normalized by GDP, both in current U.S. dollars. Column (1) shows a negative but insignificant relation between total external debt and growth. Columns (2) and (3) demonstrate that long-term flows seems to be more negatively correlated with growth. Columns (4) and (5) represent the split of the long-term debt flows (in column 2) into private non-guaranteed debt flows and total public and publicly-guaranteed debt flows. The difference is impressive with positive (but weak) correlation for private flows and strong negative one for the PPG part. Going into details of the total PPG debt, columns (6) and (7) show that the correlations of the parts from *official* multilateral and bilateral lenders are both negative significant, and same is true about their sum in column (8). Columns (9) and (10) report the results from regressions with PPG debt provided

by official lenders at concessional terms (i.e., loans with an original grant element of 25 percent or more) and with the average IMF credit flows. Both are negatively correlated with growth, but the effect of IMF credit is not significant.

The remainder of PPG debt—PPG debt flows from private creditors in column (11)—exhibits positive significant correlation with average growth. The private part of PPG debt is clearly dominated by the official part which is responsible for result in column (5). We construct a measure of the total debt flows accruing to *private* lenders as the sum of private non-guaranteed debt flows (the measure in column 4) and PPG debt flows from private creditors (from column 11). As seen in column (12), this measure of private capital flows is strongly positively correlated with growth. This key result clearly shows the striking difference between private and public borrowing and lending patterns. Appendix Table 5 repeats the same analysis using difference in the debt stocks between last and first year as an alternative measure of debt flows instead of averaging annual changes, yielding the same result.

Table 6 shows a similar decomposition for aid flows where all of the components are negatively correlated with growth. This finding is not surprising because the "public" components of debt are strongly positively correlated with the aid components as appendix Table 13 demonstrates.

To summarize, the negative correlation between debt or aid and growth is entirely driven by sovereign-to-sovereign borrowing and lending. Lending by the private sector to governments and borrowing by private sector follows the neoclassical model. Our results clearly show that the flows that can be defined as private or market-driven (private non-guaranteed debt, private but public-guaranteed debt, or total debt from private lenders) behave as predicted by the basic neoclassical theory. But the correlation of

growth with public or official flows is strongly negative, and this pattern might lead to the erroneous conclusion that overall capital flows and growth are negatively correlated, when we measure overall capital flows by current account with reverse sign.

These results might seem contradictory to the Ricardian equivalence predictions. The sufficient conditions of lump-sum taxes, perfect capital markets, infinite horizons, and certainty about future levels of income, public spending and rates of return predict a certain relation between public and private savings: the known present value of taxes is determined by the given path of government spending.[21] Ricardian equivalence simply requires that households have a great deal of information about future budgetary options. However, as Barro (1999) notes, in addition to capital market imperfections (present in developed and in particular in developing markets) and uncertainty of income, the most important reason for the failure of the Ricardian equivalence is the distortionary effect of taxes. Taxes on income, on expenditures (consumption taxes), and production (value-added taxes) affect people's economic choices on how much and when to work, spend and produce. Almost all the developing countries in our sample tend to have inefficient and particularly distortionary tax systems (Schneider and Enste, 2000). Poor countries typically have sizeable informal sector avoiding distortions in the formal sector and disconnecting public decisions related to fiscal savings from private ones many of which are in any case funded by other sovereign governments or multilateral agencies. In addition, when analyzing foreign capital flows, as Barro (1999) mentions, the existence of foreign debt can influence the government's incentives to default on its outstanding

[21] In this case, public borrowing can change the timing of taxes but not the present value, and deficit finance tax cuts are offset by private savings in expectation of future taxes (an extra dollar of debt to cut current taxes by one dollar implies an increase by one dollar in the present value of future taxes).

obligations disconnecting saving decisions between private and public agents.[22]

4 Discussion

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, after the collapse of the Bretton Woods system of fixed exchange rates, banks joined governments as lenders to developing countries. Following the debt crisis, the late 1980s and 1990s witnessed reductions in actual restrictions to foreign capital as well as advances in financial instruments. A new wave of easy access to cheap international credit found the U.S. current account deficit at the core of so-called "global imbalances," with current account surpluses in oil-producing countries, China, and other Asian countries taking the bulk of the "other side" under intense criticism related to exchange rate intervention.

During these last decades, questions of "where" and "why" capital flows have been investigated by many researchers both in empirical and theoretical settings.[23] The case of whether capital flows are positively associated with growth and productivity—both in terms of capital flowing to high growth countries, and foreign capital promoting further growth upon arrival—seems to be elusive. The empirical literature tries to measure the deviations from the benchmark neoclassical growth theory. This theory predicts

[22]Loayza, Schmidt-Hebbel, and Serven (2000) find evidence against Ricardian Equivalence using savings data from 100+ countries.

[23]There is an extensive literature on this topic, see Obstfeld (1986, 1995), Calvo, Leiderman, and Reinhart (1996), Obstfeld and Rogoff (2000), Wei (2000), Obstfeld and Taylor (2004), Edwards (2004), Reinhart and Rogoff (2004), Alfaro, Kalemli-Ozcan, and Volosovych (2008), Henry (2007), Lane and Milesi-Ferretti (2001, 2007), Prasad, Rajan, and Subramanian (2006), and Gourinchas and Jeanne (2009), Forbes and Warnock (2011) among others.

that private capital flows to "high-return" places, where high return can be defined as high marginal product of capital (MPK), high productivity growth, or either of these adjusted for country risk, depending on the assumptions of different models. However, no matter how we define "high return," the literature has documented many puzzles related to international capital mobility, such as Feldstein-Horioka Puzzle and Lucas Paradox since patterns in the data do not seem to fit the predictions of the neoclassical theory. Even among highly integrated G7 countries, foreign capital does not seem to respond to productivity as shown by Glick and Rogoff (1995).

In the late 1990s, in spite of extensive international financial integration, net capital flows remained limited relative to the increase in gross capital flows (Obstfeld and Taylor, 2004). In particular, Gourinchas and Jeanne (2009) revisit the correlation between current account and productivity growth and argue that foreign capital does not flow from relatively high-productivity countries to relatively low-productivity places *within* the developing countries. In what the authors label the "allocation puzzle," low-productivity countries, for example, in Africa seem to attract more foreign capital than the high-productivity countries in Asia, while Latin American countries lie in between. Prasad, Rajan and Subramanian (2006) also document a negative correlation between capital flows and growth in a cross-section of developing countries.[24] In contrast to these findings, papers that have focused on private foreign investment, such as FDI, instead of

[24]Kose, Prasad, Rogoff and Wei (2009) find no systematic relationship between growth and financial openness in a broad sample of countries, where financial openness is measured both as flows and stocks. Chinn and Prasad (2003) also find no relationship between current account deficits and growth in a broad sample of developing and industrial countries during the 1970–1995. For the same period, Calderon, Chong and Loayza (2002) similarly find no relation in a cross-section of 44 developing countries, however, in time-series they find growing countries to be net receivers of capital flows and run current account deficits. Dollar and Kraay (2006) find no puzzling behavior in a broad sample of 90 countries during the 1980–2004 once they dummy out China: capital flows to productive countries and from rich to poor countries too.

current account, find a positive relation regarding the correlation between capital flows and growth.[25]

Our paper can reconcile these conflicting findings in the literature. We show that the recent "puzzles" in the literature such as uphill flows, that is the lack of a positive correlation (or negative correlation) between capital flows and productivity are due to sovereign to sovereign borrowing, either in the form of aid or debt. This finding can also explain why and how uphill flows and global imbalances are linked phenomena since the handful of countries exhibiting high productivity growth and net capital outflows in the form of reserve accumulation are big players in the international financial system.

Facts and Theories. As we have mentioned in the introduction, different streams of theoretical papers have focused on alternative explanations to account for puzzling patterns of capital flows and global imbalances. Let us start with capital inflows into the low productivity developing countries in the form of aid. There is a broad literature that has studied the political economy of aid flows stressing political motivations (Alesina and Dollar, 2000; Arslanalp and Henry, 2005; and Kuziemko and Werker, 2006). An important strand of this research questions the incentives and lack of accountability by donors and recipients. Easterly (2006), for example, argued that donor agencies such as the World Bank and the IMF had favored development projects that were overly expensive and not sustainable.[26] These explanations are consistent with the negative correlation between aid, concessional loans, and growth.

[25]See Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004), Kose, Prasad, Rogoff and Wei (2009) for recent reviews of the growth and FDI literature.

[26]The "Meltzer Report" revealed that the World Bank had a 73 percent project failure rate in Africa by the Bank's own criteria. The Report suggested that donors suffered from large bureaucracies, and undermined the effectiveness of their own programs by failing to coordinate or harmonize with other donors, or through ineffective monitoring and evaluation systems.

Once aid flows are subtracted, we show that there is capital flight out of low productivity developing countries. Many papers have considered political economy explanations, the role of expropriation risk, and financial frictions in particular, to explain capital outflows by private sector. In an early paper, for example, Khan and Ul Haque (1985) note that the relatively larger perceived risk associated with investments in certain countries (in particular developing ones) due to inadequate institutions and lack of legal arrangements for the protection of private property can account for capital flight. In the same spirit, Tornell and Velasco (1992) note the introduction of a technology that has inferior productivity but enjoys private access ("safe" bank accounts in rich countries) may ameliorate the "tragedy of the commons" whereby interest groups have access to a common capital stock, accounting thus for private capital outflows.[27] Alfaro, Kalemli-Ozcan, and Volosovych (2008) provide evidence that institutional quality is the main factor that explains why rich developed countries receive more foreign capital then poor developing ones over the long-term.

Several recent papers explore capital outflows from high productivity countries, i.e., upstream capital flows. As we have shown, this pattern is not typical of the average emerging market but rather characterizes the behavior of few countries. In addition, private capital does not flow on average upstream for high-productivity emerging market country. Recent theory papers have stressed the role of financial frictions and self-finance motives of firms to explain private capital outflows and private investment abroad (see for example Buera and Shin, 2009 and Song, Storesletten and Zilibotti, 2011). In such papers, the private sector is behind the observed patterns of capital mobility reacting to various frictions in the economy (political and/or financial). Although these mod-

[27] See also Tornell and Lane (1998, 1999).

els fit the facts we uncover for poor countries in Africa (with different motivation behind these flows), these models do not fit our second set of findings about high-growth-net lender countries, since in these countries, on average, private capital goes in and public capital goes out, *only* to be invested into other sovereigns. A model that is consistent with these findings is Amador and Aguiar (2011), who combine limited commitment, expropriation risk, and impatient politicians to explain the relation between capital stock and net foreign asset accumulation, explaining capital outflows by the public sector.

Another set of papers focuses on the role of precautionary savings and the risk associated with globalization in driving uphill flows, but there is no consensus on this view given the lack of empirical support. Ghosh and Ostry (1997), Durdu, Mendoza, and Terrones (2009), and Alfaro and Kanczuk (2009) find that it is difficult to explain the build-up in emerging markets reserves as insurance against the risk of sudden stop.

An alternative set of explanations focusing on the governments' neo-mercantilist policies to increase net exports and enhance growth via reserve accumulation seem to better fit the pattern of capital mobility displayed by China and a handful of such high-growth emerging markets. In a series of papers Dooley, Folkerts-Landau, and Garber (2003, 2004) argue that the normal evolution of the international monetary system involves the emergence of a periphery for which the development strategy is the export-led growth supported by undervalued exchange rates, capital controls and official capital outflows in the form of accumulation of reserve asset claims on the center country.[28] Although exchange rate stability via fixed exchange rate regimes was replaced for a system of floating regimes in the 1970s, as Calvo and Reinhart (2002) have noted, there

[28]For the few high-productivity Asian countries who are net lenders, national income accounts identities imply that net exports should be positively correlated with growth (see Rodrik, 2006).

seems to be an epidemic case of "fear of floating." The reluctance by emerging markets to float their currency and allowing the nominal (and real) exchange rate to appreciate relates back to concerns on loss of competitiveness.[29] As Gourinchas and Jeanne (2009) note, if productivity take-off originates in the tradable sector, net exports are positively correlated with productivity growth.[30]

Aizenman and Lee (2008) investigate the policy implications of learning-by-doing externalities, the circumstances that may lead to the export-led growth, and the challenges associated with implementing such policies. As the authors show, a policy prescription of exchange rate undervaluation depends not only on the nature of the externality (labor employment in the traded sector versus knowledge creation as a side product of investment) but also on the state of the economy and its response to sterilization policies.[31] Even in the case of labor externalities, undervaluation by means of hoarding reserves may back fire if the needed sterilization increases the cost of investment in the traded sector.[32] The adverse financing effects of hoarding reserves are more likely to be larger in countries characterized with shallow financial system, low saving rates, and more costly sterilization; conditions that on balance apply to many developing countries in Latin America, for example, which might explain why such policies were not followed in that region.[33]

[29]Such models are advanced by Dooley, Folkerts-Landau, and Garber (2003, 2004), Aizenman and Lee (2006, 2008), and Korinek and Serven (2010). See also Ju and Wei (2010), for two way capital flows for China.

[30]Korinek and Serven (2010) note that real exchange rate undervaluation through the accumulation of foreign reserves may improve welfare in economies with learning-by-investing externalities that arise disproportionately from the tradable sector.

[31]Hoarding international reserves to encourage exports can also reflect competitive hoarding among emerging markets, attempting to preserve their market share in the U.S. and other OECD countries.

[32]Keeping the real exchange rate constant calls for the sterilization of financial inflows. Hoarding international reserves impacts monetary policy and thus may lead to markedly higher interest rate, reducing thereby capital accumulation in the traded sector.

[33]For detailed recent description of capital flows to Latin America, see Fostel and Kaminsky (2008).

We plot the relationship between reserve accumulation and real exchange rate in figure 3. It is clearly visible that there is a negative relation between the two for the countries in Asia and in particular for China.[34] Negative relationship indicates an exchange rate depreciation with increased reserve accumulation. There is no relation between the two for African and Latin American countries and a positive relation for Eastern Europe. These patterns are there for the period 1980–2004 but more striking during 2000–2004 and consistent with Calvo and Reinhart's (2002) findings. The authors argue that the behavior of exchange rates, foreign exchange reserves, and other indicators across the spectrum of exchange rate arrangements from 1970 to 1999 do not comply with what countries say they are doing. Most so-called "floaters" do not float. The authors argue that the widespread "fear of floating" is due to the reluctance by emerging markets to lose competitiveness. Over the past decade, as documented by Reinhart and Reinhart (2008), policymakers in many emerging market economies have opted to limit fluctuations of the value of their domestic currencies relative to the U.S. dollar. Their examination of policy efforts shows that a wide variety of tools are used in the attempt to stem the tide of capital flows.

Facts: Public and Private Savings and Growth What about the savings side of the story? Since current account equals saving minus investment, net capital outflows are associated with higher domestic savings than investment. For the few high-productivity Asian countries who are net lenders in terms of total capital flows, their savings must be correlated with growth more then their investment.[35] Our results imply that this positive

[34]Aizenman and Lee (2006) point out that mercantilist hoarding of reserves is a relatively new phenomenon in East Asia, and that, during the fast growth phases, Japan (prior to 1992) and Korea (prior to 1997) refrained from an aggressive hoarding of reserves. Instead, Japan and Korea frequently encouraged export-led growth by subsidizing selectively the cost of capital in outward oriented activities, at a cost of reducing the quality of banks' balance sheet.

[35]The positive correlation between savings and growth is regarded as puzzling from the perspective

correlation might be due to a positive correlation between public savings and growth.[36]

Calculating private and government savings for a wide sample of developed and developing countries poses several challenges associated with data availability, differences in accounting practices and in particular with government structures across countries. In national income accounting, gross savings are calculated as gross national income less total consumption (private and public), plus net transfers. Private savings can be calculated as a residual, i.e., the difference between gross savings and public savings.

Public savings should include all forms of government: central, regional, local and all public firms. In particular, we would like to include the consolidated central government (budgetary central government, extra budgetary central government and social security agencies) plus state, local and regional governments, plus state-owned enterprises, non-financial and financial public enterprises including the Central Bank.[37] However, countries have different organizations/definitions of public sector. For example, the definition of the central government is equivalent to that of general government minus local and regional governments. Thus, the consolidated central government is equivalent to the general government in those countries without local and regional governments or where the accounts of the local and regional governments are under a particular central government unit. A measure of private saving that includes only central government will include the saving of both local governments and public enterprizes unless the local and regional governments are part of a central government unit, creating measurement

of permanent income hypothesis since countries with higher growth rates should borrow against future income to finance a higher level of consumption, see Carroll and Weil, 1994).

[36]Chamon and Prasad (2010) shows a striking increase in government and corporate savings together with a less strong increase in household savings in China.

[37]Although many Central Banks are independent, in many developing countries this is a recent tendency, and in many cases more de jure than de facto. Including the Central Bank is also consistent with the recent studies that consider reserve asset accumulation as part of net assets of the government; see Aguiar and Amador (2011).

differences. For those countries where public saving refers to the general government, public enterprize saving is automatically included in private saving. For the countries where public saving refers to the central government plus state-owned enterprizes, saving of the state, local and regional governments is automatically included in private saving.

Although one would like to use the same definition across countries, in practice, the exercise is not easy. Furthermore, restricting the definition to the central government (probably the most common of government organizations across countries) implies leaving substantial parts of government activity out of the public savings measure (which later would get counted as private savings).[38] In addition, there are also differences associated with using commitment versus cash accounting for government activities across countries which further creates differences in measures of public and hence private savings. Fiscal years also do not tend to correspond to calendar years. With these caveats in mind, we calculate government savings using data from WB and from BOP as government revenue minus government expenditure plus grants and other revenue (such as interest, dividends, rent, and some other receipts for public uses) plus accumulation of reserves minus capital transfer payments to abroad.[39] Thus, our measure of public saving is inclusive of all net transfers from abroad. Following Loayza, Schmidt-Hebbel, and Serven (2000), this choice is dictated by the unavailability of information on the disaggregation of foreign grants between current and capital, and by the relatively minor magnitude of capital transfers except for a handful of small economies.[40] All the

[38]See Loayza, Schmidt-Hebbel, and Serven (2000) for different reporting practices and sources for public sectors.

[39]The components of government savings are formally defined in Appendix A.

[40]Current transfers (receipts) are recorded in the balance of payments whenever an economy receives goods, services, income, or financial items without a quid pro quo. All transfers not considered to be

items are expressed as percentage of GDP. As a robustness, we also calculated government savings as cash surplus/deficit (% of GDP) plus reserve accumulation plus net transfers.[41]

Private saving is then calculated as a residual as the difference between gross national saving and public sector saving. Gross saving data is taken from the World Bank, WDI.[42]

Panel A of Figure 4 shows the positive correlation between public savings and growth during the 1990–2004 period. The regression coefficient (hence the slope) is 0.66 and significant at 10 percent with a t-stat of 2.1. It is clear that this relation is driven by Asian countries such as Thailand, Indonesia, Malaysia and especially China. If we drop China (dashed line), the slope is still significant at 10 percent with a coefficient of 0.74 and a t-stat 1.8. However when we look at the relationship between private saving and growth in Panel B of Figure 4, although we see the same positive relationship shown with the solid line (coefficient 1.07 and a t-stat of 2.1), this completely goes away when we drop China, shown with the dashed line (coefficient 0.5, t-stat 1.3). These patterns fit with what we have shown so far that the upstream capital flows from a handful of high growth Asian countries are driven by government behavior.

capital are current. Data from WDI, WB which corresponds to BOP, IMF

[41]Cash surplus or deficit is revenue (including grants) minus expense, minus net acquisition of nonfinancial assets. We also used the measures above described with and without reserves and /or net transfers. We obtain similar results not reported.

[42]It was necessary to combine our data with the earlier data constructed by Loayza, Schmidt-Hebbel, and Serven (2000) because the consistent data needed to compute private and public savings in WDI database is available for after 1990 for all the countries.

5 Conclusion

Countries trade imbalances, capital flows, and external debt have always fascinated economists and challenged policymakers. It is important to understand the underlying causes of upstream flows and global imbalances since the policy prescription will differ widely depending on the cause. If imbalances are caused by domestic distortions, such as high private saving and low investment due to the lack of social insurance and/or shallow financial markets, then a low exchange rate might be justified. If, on the other hand, export-led growth strategies and self-insurance motives are leading to excess reserve accumulation, then we should worry about systemic distortions, where emerging markets' central banks intentionally undervalue their exchange rates and can act as destabilizing large investors in the international arena. The former requires strengthening social infrastructure and financial intermediation in emerging markets, the latter necessitates global level intervention thorough international institutions.[43] Our findings point towards the importance of the latter, where sovereign to sovereign financial contributions and transfers dominate the international transactions and can account for the puzzling behavior of the capital flows for developing countries over the last thirty years.

As Rogoff (2011) argues, "Doctors have long known that it is not just how much you eat, but what you eat, that contributes to or diminishes your health. Likewise, economists have long noted that for countries gorging on capital inflows, there is a big difference between debt instruments and equity-like investments, including both stocks and foreign direct investment...Our current unwholesome asset diet is an important component of risk, one that has received far too little attention in the policy debate..." We also argue

[43] Blanchard and Milesi-Ferretti (2009).

that composition of capital flows is important especially if we want to find out where and why capital flows.

We provide empirical evidence that is not trading in debt instruments per se what has shaped the puzzling patterns of international capital, but sovereign related transactions being in the form of debt, reserve accumulation, and aid (debt-concessional loans and grants). Private debt and private equity (FDI, portfolio equity) flow according to the predictions of the neoclassical model. Sovereign transactions dominate the current account based measures of total capital flows. This of course has been a recurrent theme in the literature when capital flows were measured based on the current account balance such as Feldstein-Horioka Puzzle that implies limited capital mobility based on high saving-investment correlations and Lucas Paradox that indicates poor countries receive much less capital than they should given their high return on investment. The recent global imbalances period is no exception where it seems capital flows from emerging economies (CA surplus) to developed countries (CA deficit)—"the growing China financing the slumping U.S," where these flows are driven by sovereign transactions.

Our key results are such that once we subtract aid flows and/or focus on FDI, private equity and private debt capital flows are positively correlated with productivity growth and hence allocated to the predictions of the neoclassical model. These findings emphasize that the failure to consider official flows as the main driver of uphill flows and global imbalances is an important shortcoming of the recent literature.

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Table 1: Net Capital Flows and Growth in Developing Countries

Sample: All Non-OECD Developing Countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Measure of flows	Net capital flows (-CA/GDP)	Net capital flows (-NFA/GDP)^{VAL}	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Aid receipts (Aid/GDP)	Reserve & related assets (ResR./GDP)	Reserve assets (Res./GDP)	Net E&O (NEO/GDP)	Net public debt flows ([PPG-Res.]/GDP)	Net private capital flows (Equity/GDP)^{VAL}	Net private & public debt flows (Debt/GDP)^{VAL}
					31 Low-Growth Countries						
1971–2004	4.2	0.2	1.7	-0.4	6.3	3.2	-0.4	-1.4	2.5	1.8	1.8
1971–1979	0.7	2.5	0.5	3.4	2.6	-0.2	-1.8	-2.5	3.2	0.8	4.8
1980–1989	4.9	1.8	0.3	0.6	6.2	4.6	0.2	-1.9	4.8	0.4	3.9
1990–1999	4.6	1.7	2.0	-1.7	8.8	3.3	0.1	-0.6	1.4	2.0	1.3
2000–2004	4.9	-5.1	2.8	-1.3	8.7	3.5	-1.2	-0.9	1.2	3.2	-1.6
1990–2004	5.4	-1.0	2.6	-1.8	8.8	4.1	-0.2	-1.2	1.4	2.5	0.2
1980–2004	4.4	-0.2	1.7	-0.8	7.7	3.6	-0.3	-1.3	4.2	1.9	1.3
					60 Medium-Growth Countries						
1971–2004	4.6	0.9	1.9	1.2	6.0	0.9	-1.3	-0.1	2.2	2.3	2.6
1971–1979	5.0	0.6	1.0	4.9	4.3	-0.6	-1.4	-0.2	3.3	1.6	4.0
1980–1989	5.0	3.4	0.8	1.2	6.1	2.7	-0.4	0.2	4.9	0.4	4.3
1990–1999	4.5	0.8	2.1	0.6	7.7	1.0	-1.5	-0.1	0.7	2.1	1.7
2000–2004	3.8	-2.4	3.3	-1.2	6.0	-0.1	-1.7	0.2	0.5	3.8	0.1
1990–2004	4.2	-0.3	2.5	0.1	7.1	0.6	-1.6	-0.0	0.6	2.8	1.2
1980–2004	4.5	0.9	2.0	0.7	6.7	1.1	-1.2	-0.0	4.2	2.3	2.2
					31 High-Growth Countries						
1971–2004	5.4	0.5	3.5	0.5	4.0	-0.7	-1.7	1.0	2.4	2.8	2.4
1971–1979	5.0	-0.0	3.0	3.3	3.8	-1.7	-2.7	0.4	1.4	1.7	3.5
1980–1989	5.5	3.5	2.6	2.0	4.3	0.4	-1.0	0.1	3.8	1.0	3.9
1990–1999	5.6	0.9	4.0	-0.3	4.4	-0.7	-1.9	1.3	0.4	3.4	1.9
2000–2004	5.4	-2.6	4.5	-2.6	2.9	-1.2	-1.5	3.1	0.8	3.4	-0.2
1990–2004	5.5	-0.6	4.1	-1.1	3.9	-0.9	-1.8	1.9	0.5	3.3	1.1
1980–2004	5.5	0.6	3.6	0.2	4.1	-0.5	-1.5	1.1	5.4	2.9	2.1

Notes: All flows expressed as percent of GDP. The countries are divided into groups according to the average growth rate of the real GDP per capita over 1970–2004 in 2000 U.S. dollars. Low-Growth Countries are the ones with growth rates below 25th percent quartile (0.4 percent); High-Growth Countries are economies with growth rates above 75th percent quartile (2.3 percent); the rest of countries are assigned to the Medium-Growth Countries group. "Net capital flows (-CA/GDP)" represents the period average of the current account balance with the sign reversed as percentage of GDP. "Net capital flows (-NFA/GDP)^{VAL}" represents the period average of the annual changes in Net Foreign Assets (Net External Position) with the sign reversed as percentage of GDP. These flows include valuation effects. "Net private capital flows (Equity/GDP)" represents the period average of the net flows of foreign liabilities minus net flows of foreign assets as percentage of GDP. "Net private & public debt flows (Debt/GDP)" are calculated similarly using the flows of the portfolio debt and other investment assets and liabilities. "Aid receipts (Aid/GDP)" represents the period average of the annual changes in net overseas assistance as percentage of GDP. "Reserve & related assets (ResR./GDP)" represents the period average of the annual foreign reserve asset and related item flows (exceptional financing and use of the IMF credit and loans) as percentage of GDP. "Reserve assets (Res./GDP)" represents the period average of the annual foreign reserve asset flows as percentage of GDP. By the BOP convention net accumulation of foreign reserves has a negative sign. "NEO/GDP)" represents the period average of the annual net errors and omissions as percentage of GDP. "Net public debt flows ([PPG-Res.]/GDP)" represents the period average of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP minus the period average of the annual changes in foreign reserves stock (excluding gold) as percentage of GDP. "Net private capital flows (Equity/GDP)^{VAL}" represents the period average of the net flows of foreign liabilities minus net flows of foreign assets. Net flows of foreign liabilities (assets) are the annual changes in the stocks of FDI and portfolio equity investment liabilities (assets) as percentage of GDP. These flows include valuation effects. "Net private & public debt flows (Debt/GDP)^{VAL}" are calculated similarly using the stocks of the portfolio debt and other investment assets and liabilities.

Table 2: Net Capital Flows and Growth, by Country, 1980–2004

Out of All Non-OECD Developing Countries Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	GDP per capita growth	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Aid receipts (Aid/GDP)	Reserve assets (Res./GDP)	Reserve & related assets (ResR./GDP)	Net E&O (NEO/GDP)	Net public debt flows ([PPG-Res.]/GDP)
Africa										
Liberia	-4.1	1.2	1.2	3.2	-5.5	0.0	0.3	19.0	-11.9	.
Cote d'Ivoire	-2.4	5.5	0.7	1.2	-2.4	4.8	-0.5	6.9	-0.6	2.5
Niger	-1.9	7.4	-7.2	0.2	1.5	14.6	-0.0	1.8	0.3	2.9
Madagascar	-1.6	7.4	-3.6	0.3	-0.8	11.0	-0.7	6.5	0.3	3.3
Zambia	-1.1	13.1	-5.4	3.5	1.7	18.5	-0.2	9.1	-2.7	5.7
Burundi	-0.9	5.1	-14.7	0.1	2.4	19.8	-1.1	7.2	-1.5	.
Sierra Leone	-0.8	7.0	-11.0	-0.6	-0.3	18.0	-0.8	5.0	2.3	.
Togo	-0.8	7.3	-2.7	1.8	1.7	10.0	-1.2	3.6	-0.1	0.3
Comoros	-0.2	7.5	-14.4	0.5	9.6	21.9	-1.4	-0.0	-2.6	.
Malawi	-0.2	8.4	-12.7	0.2	4.5	21.1	0.1	1.0	0.6	7.0
Nigeria	-0.1	-2.0	-2.5	2.8	-11.3	0.5	-1.2	5.9	0.9	3.4
Kenya	0.0	3.1	-4.0	0.4	2.4	7.1	-0.9	-0.1	2.4	1.9
Angola	0.0	4.3	0.8	9.3	-9.9	3.4	-0.6	7.2	-2.4	0.7
Cameroon	0.0	4.1	0.1	1.1	-0.0	4.1	-0.2	3.1	-0.4	3.2
Namibia	0.1	-4.4	-7.4	-0.0	-7.4	3.0	-0.9	2.1	1.1	.
South Africa	0.1	-0.1	-0.2	0.5	-0.3	0.2	-0.4	-0.4	0.2	0.2
Ethiopia	0.1	1.8	-7.1	0.0	0.7	8.9	0.3	2.7	-1.6	1.8
Mali	0.2	9.4	-8.3	1.3	3.3	17.8	-1.3	1.0	-0.1	3.9
Gambia, The	0.2	3.0	-19.7	1.2	1.7	22.7	-2.3	1.3	-2.2	.
Algeria	0.3	-0.1	-0.5	0.0	-0.1	0.4	-0.0	0.2	-0.2	-2.4
Senegal	0.3	8.3	-2.8	0.7	1.8	11.1	-0.7	3.1	-0.0	2.3
Benin	0.6	7.3	-3.5	1.3	-1.7	10.7	-1.1	5.2	0.3	2.6
Congo, Rep.	0.7	11.1	5.4	3.0	-9.5	5.7	-0.2	16.8	0.6	7.8
Ghana	0.7	4.0	-4.9	1.3	3.9	8.9	-0.8	-0.3	-0.7	2.6
Rwanda	0.7	4.8	-15.4	0.6	1.6	20.2	-0.9	0.5	0.4	3.0
Mauritania	0.8	10.8	-12.3	0.8	6.6	23.1	0.0	4.5	-1.1	.
Iran, Islamic Rep.	0.8	-1.1	-1.1	0.0	-1.1	0.1	0.3	0.3	-0.3	4.4
Jordan	0.9	2.0	-9.0	1.7	4.1	11.0	-5.9	-3.7	-0.5	2.6
Syrian Arab Republic	1.0	-1.2	-4.6	0.5	0.1	3.4	-1.9	-1.9	-0.1	.
Guinea	1.0	5.7	-2.0	0.8	-0.3	7.7	0.3	3.9	0.8	3.2
Burkina Faso	1.0	3.3	-10.6	0.2	2.4	13.9	-0.7	0.9	0.1	1.6
Tanzania	1.5	9.3	-2.6	2.2	-0.8	11.9	-2.0	3.8	-0.8	0.2
Seychelles	1.5	10.6	4.2	4.8	2.3	6.4	-0.2	3.6	-0.6	.
Morocco	1.6	2.2	-0.5	0.8	1.2	2.7	-1.5	-0.0	0.2	1.1
Swaziland	1.7	3.0	-1.1	3.7	-3.9	4.1	-1.0	-0.9	4.2	0.2
Yemen, Rep.	1.8	1.3	-1.6	0.7	-6.0	2.9	-3.8	2.1	-0.6	-3.2
Sudan	1.9	4.4	-0.5	1.4	0.8	4.9	-0.5	1.2	1.0	2.5
Uganda	1.9	4.7	-7.0	1.3	1.1	11.7	-0.9	2.4	-0.6	2.4
Mozambique	2.1	15.2	-12.9	2.3	2.3	28.1	0.1	14.1	-5.0	2.6
Lesotho	2.1	5.7	-11.1	3.0	-1.0	16.8	-4.6	-4.4	1.3	.
Eritrea	2.2	1.5	-11.7	.	4.5	13.2	-1.3	-1.3	-7.0	.
Tunisia	2.4	4.3	2.4	2.4	2.3	1.9	-1.1	-1.0	0.6	2.7
Chad	2.5	2.0	-10.9	0.7	1.4	12.9	-0.1	0.6	-0.7	2.0
Egypt, Arab Rep.	2.8	1.0	-3.6	1.7	-2.7	4.6	-1.6	1.7	0.3	1.5
Cape Verde	3.2	6.7	-12.7	2.6	4.6	19.4	-0.5	-1.0	-1.2	.
Mauritius	4.2	1.7	-0.3	0.7	0.5	2.0	-2.7	-2.0	2.5	-0.6
Avg	0.6	4.7	-5.4	1.5	0.1	10.1	-1.0	2.8	-0.5	2.2
Asia										
Kiribati	-1.4	7.3	7.3	0.2	-17.0	0.0	15.3	18.9	-13.5	.
Vanuatu	-0.2	9.3	-12.3	8.5	-3.8	21.6	-1.4	1.4	-3.6	.
Solomon Islands	0.1	7.9	-12.9	2.5	1.5	20.7	0.4	2.7	2.6	.
Papua New Guinea	0.1	3.4	-5.9	3.4	-2.1	9.3	-0.2	1.4	1.1	1.6
Mongolia	0.3	6.0	-4.2	3.6	0.4	10.1	-1.8	3.2	-1.4	.
Fiji	0.5	2.8	0.0	2.0	0.7	2.8	-0.9	-1.3	0.3	-0.4
Philippines	0.6	2.9	1.4	1.2	2.8	1.5	-0.8	-0.6	-0.5	2.4
Samoa	0.7	3.2	-19.4	0.0	2.7	22.6	-2.7	-2.4	1.9	.
Israel	1.7	2.4	-0.1	0.8	1.0	2.6	-1.2	0.0	-0.5	.
Nepal	1.9	4.7	-4.4	0.1	3.4	9.1	-1.3	-0.1	1.3	2.5
Bangladesh	2.0	1.3	-3.5	0.1	1.3	4.7	-0.3	-0.3	-0.1	2.0
Tonga	2.1	1.5	-18.8	0.5	3.2	20.4	-2.5	-2.5	-0.2	.
Pakistan	2.5	2.3	-0.1	0.8	0.9	2.4	-0.7	0.2	0.2	1.4
Sri Lanka	2.9	5.4	-0.6	1.0	4.0	5.9	-0.7	-0.0	0.2	3.6
Lao PDR	3.1	12.2	0.8	1.0	0.2	11.4	-0.4	10.2	-1.7	6.9
Malaysia	3.7	-0.3	-0.6	4.0	0.1	0.4	-3.8	-3.8	-0.3	-1.1
Indonesia	3.7	0.9	-0.1	0.2	1.3	1.0	-0.7	-0.3	-0.4	1.6
India	3.8	1.1	0.5	0.7	1.3	0.6	-0.9	-0.8	0.0	-0.1
Thailand	4.6	1.5	0.9	2.6	0.6	0.7	-1.7	-1.3	-0.0	-0.6
Cambodia	4.7	4.6	-1.6	3.9	0.1	6.2	-1.6	-1.2	-0.3	8.9
Vietnam	4.8	1.8	-0.8	5.9	0.2	2.6	-1.8	-1.9	-1.8	13.8
Korea, Rep.	5.6	-0.6	-0.6	0.7	0.9	0.0	-1.7	-1.7	-0.3	.
China	8.5	-1.1	-1.5	2.5	-0.3	0.3	-2.5	-2.5	-0.8	-1.2
Avg	2.5	3.5	-3.3	2.0	0.1	6.8	-0.6	0.8	-0.8	2.7
Avg w/o China	2.2	3.7	-3.4	2.0	0.2	7.1	-0.5	0.9	-0.8	3.0
Europe & C.Asia										
Tajikistan	-3.6	1.4	-3.4	6.1	-1.3	4.8	-1.6	-0.7	-2.7	3.8
Ukraine	-1.9	-2.2	-2.8	1.8	-3.3	0.5	-1.6	0.2	-0.9	-0.1
Russian Federation	-0.8	-6.8	-7.0	0.4	-4.1	0.2	-2.4	-0.5	-2.3	-1.8
Macedonia, FYR	-0.8	5.8	3.7	4.2	2.4	2.1	-1.5	-0.9	0.5	-0.0
Kyrgyz Republic	-0.7	10.6	4.2	2.3	7.3	6.4	-2.5	0.3	0.8	6.1
Lithuania	0.7	6.9	6.2	3.0	4.5	0.6	-1.9	-1.8	1.1	-0.1
Romania	0.8	3.2	2.7	2.0	1.5	0.6	-1.4	-1.0	0.6	-0.4
Croatia	1.0	5.0	4.8	3.5	6.3	0.2	-3.2	-2.8	-2.5	.
Czech Republic	1.2	4.1	3.9	5.9	2.0	0.2	-3.6	-3.9	0.2	.
Kazakhstan	1.2	2.3	2.0	7.9	1.4	0.3	-2.4	-2.5	-3.0	-1.0
Slovak Republic	1.5	4.5	4.1	4.2	3.8	0.4	-4.3	-4.5	0.6	.
Belarus	1.7	3.5	3.1	1.7	1.6	0.4	-0.3	0.2	0.0	-0.5
Hungary	1.7	4.4	4.1	3.6	1.8	0.3	-1.3	-1.3	0.1	.
Bulgaria	1.8	2.1	1.0	2.5	-0.3	1.1	-1.8	-0.6	0.2	-3.2
Albania	1.8	4.5	-3.4	1.9	-1.1	7.9	-2.6	-0.5	2.7	0.6
Latvia	2.0	4.0	3.4	4.0	3.7	0.6	-1.9	-1.9	-2.1	0.1
Turkey	2.0	1.4	1.1	0.5	0.7	0.4	-0.8	-0.0	0.2	1.3
Estonia	2.1	6.7	6.0	5.7	2.8	0.7	-1.9	-1.9	-0.2	.
Slovenia	2.3	-0.5	-0.6	1.2	1.7	0.1	-2.8	-2.8	-0.3	.
Armenia	2.8	12.1	6.5	5.2	6.8	5.6	-2.3	-0.9	0.6	1.7
Malta	3.3	2.6	1.6	4.4	-0.8	1.0	-2.1	-2.1	0.4	.
Poland	3.6	2.3	1.6	2.0	-2.6	0.7	-1.1	2.3	0.1	-0.8
Cyprus	3.6	4.5	3.7	2.9	3.1	0.8	-1.9	-2.0	0.2	.
Avg	1.2	3.6	2.0	3.3	1.6	1.6	-2.1	-1.3	-0.2	0.4

Notes: Continued on the next page.

Table 2 (cont'd): Net Capital Flows and Growth, by Country, 1980–2004

Out of All Non-OECD Developing Countries Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	GDP per capita growth	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Aid receipts (Aid/GDP)	Reserve assets (Res./GDP)	Reserve & related assets (ResR./GDP)	Net E&O (NEO/GDP)	Net public debt flows ([PPG-Res.]/GDP)
Latin America										
Haiti	-2.3	2.9	-5.9	0.3	1.8	8.8	-0.0	0.9	0.5	1.6
Venezuela, RB	-1.1	-3.8	-3.8	1.3	-3.6	0.1	-0.5	-0.4	-1.3	0.4
Bolivia	-0.2	5.7	-2.1	3.8	-0.8	7.8	-0.6	4.6	-1.9	2.6
Suriname	-0.1	1.8	-5.1	-6.3	2.3	6.9	0.5	0.5	5.3	.
El Salvador	-0.0	3.1	-2.0	1.0	1.4	5.0	-0.8	1.2	-0.9	1.8
Honduras	-0.0	7.3	-0.7	2.2	1.5	7.9	-1.2	3.5	0.3	3.5
Paraguay	-0.0	3.0	1.6	0.9	1.2	1.3	-0.2	0.5	0.2	1.3
Peru	0.1	4.8	3.6	1.9	-0.9	1.1	-0.8	3.8	0.3	1.5
Guatemala	0.2	4.3	2.7	1.1	1.9	1.6	-0.5	0.8	0.3	0.5
Argentina	0.3	1.7	1.7	1.4	-2.0	0.1	0.1	2.7	-0.4	2.8
Ecuador	0.5	3.8	2.7	1.3	-4.4	1.1	-0.2	6.5	-0.1	2.5
Bahamas, The	0.6	5.9	5.8	1.4	3.3	0.1	-0.4	-0.4	1.8	.
Jamaica	0.6	5.7	2.5	2.4	4.3	3.2	-1.3	-0.7	0.1	3.2
Brazil	0.7	1.8	1.8	1.7	-1.0	0.0	-0.4	1.2	-0.1	0.6
Uruguay	0.8	1.3	1.0	0.8	0.7	0.2	-0.6	0.3	-0.5	2.0
Guyana	0.9	18.2	2.7	0.5	-2.5	15.5	-2.1	11.4	-0.6	.
Mexico	1.0	2.3	2.3	2.4	0.6	0.1	-0.7	-0.2	-0.6	0.8
Colombia	1.1	2.1	1.8	1.7	1.1	0.3	-0.6	-0.6	-0.1	1.0
Costa Rica	1.2	6.2	4.3	2.5	-3.4	1.9	-1.1	5.2	1.9	1.6
Panama	1.2	2.3	1.5	5.3	-3.3	0.8	-0.9	2.8	-0.5	2.2
Trinidad and Tobago	1.3	0.2	0.0	5.1	-5.0	0.2	-0.3	0.4	-0.5	.
Grenada	1.8	15.6	8.3	7.7	3.5	7.3	-1.5	-1.1	0.2	.
Dominican Republic	2.2	3.0	1.9	2.4	-0.2	1.1	-0.2	1.1	-0.3	2.1
St. Lucia	2.9	12.1	7.7	10.2	-3.3	4.4	-1.2	-1.0	5.6	.
Belize	3.1	6.8	1.5	3.1	4.2	5.3	-1.0	-1.0	0.1	.
St. Vincent and the Grenadines	3.1	13.2	6.3	3.1	-5.0	6.9	-1.3	-1.2	7.6	.
Dominica	3.2	15.0	3.0	7.1	-5.8	12.0	-0.7	-0.3	8.1	.
Chile	3.5	4.0	3.9	2.2	-0.2	0.1	-1.2	2.1	-0.1	0.1
Antigua and Barbuda	3.7	12.9	11.1	9.5	-7.0	1.8	-0.9	-0.3	8.1	.
St. Kitts and Nevis	4.4	18.4	13.7	14.0	-3.7	4.7	-1.1	-1.1	8.5	.
Avg	1.2	6.1	2.5	3.1	-0.8	3.6	-0.7	1.4	1.4	1.7
(Memorandum) Industrialized OECD Countries Sample										
Switzerland	1.0	-6.6	.	-2.9	-5.3	.	-0.5	-0.5	2.3	.
Greece	1.3	4.4	.	1.0	3.6	.	-0.4	-0.4	-0.2	.
New Zealand	1.5	5.4	.	2.2	2.3	.	-0.5	2.7	0.7	.
Denmark	1.5	0.0	.	-0.6	1.5	.	-0.7	-0.7	-0.2	.
Netherlands	1.6	-3.7	.	-3.6	1.2	.	-0.1	-0.1	-0.7	.
Canada	1.7	1.3	.	-0.9	1.9	.	-0.2	-0.1	-0.2	.
France	1.7	-0.4	.	-1.0	0.6	.	-0.1	-0.1	-0.0	.
Germany	1.7	-0.7	.	-1.0	0.0	.	-0.0	-0.0	0.3	.
Italy	1.7	0.3	.	-0.8	1.6	.	-0.0	-0.0	-0.5	.
Sweden	1.8	-0.7	.	-2.0	1.3	.	-0.3	0.8	-0.8	.
Iceland	1.8	3.4	.	-2.3	6.8	.	-0.4	-0.5	-0.5	.
Belgium	1.9	-2.5	.	0.5	-2.6	.	0.3	0.3	-0.6	.
Austria	1.9	1.0	.	-0.4	1.4	.	-0.2	-0.2	-0.2	.
United States	1.9	2.3	.	-0.1	2.2	.	-0.0	-0.0	0.2	.
Japan	2.0	-2.3	.	-0.4	-1.1	.	-0.7	-0.7	-0.0	.
United Kingdom	2.1	1.2	.	-1.3	2.1	.	-0.1	-0.1	0.3	.
Australia	2.1	4.4	.	1.0	3.4	.	-0.3	-0.3	-0.1	.
Finland	2.2	-0.9	.	-1.0	0.7	.	-0.4	-0.4	-0.6	.
Spain	2.3	1.9	.	0.3	1.6	.	-0.1	-0.2	-0.4	.
Portugal	2.4	4.5	.	1.4	2.6	.	-0.7	-0.7	0.6	.
Norway	2.5	-4.6	.	-1.6	-0.1	.	-1.0	-1.0	-1.6	.
Ireland	4.5	1.6	.	12.0	-10.7	.	-0.5	-0.5	0.1	.
Avg	2.0	0.4	.	-0.1	0.7	.	-0.3	-0.1	-0.1	.

Notes: "*Avg*" represents unweighted averages over all countries in a given region. "GDP per capita growth" represents the average over 1980–2004 of the rate of change of GDP per capita in 2000 U.S. dollars. "Net capital flows (-CA/GDP)" represents the average over 1980–2004 of the current account balance with the sign reversed as percentage of GDP. "Aid-adjusted net capital flows ([-CA-Aid]/GDP)" represents the average over 1980–2004 of the current account balance with the sign reversed as percentage of GDP minus the average over 1980–2004 of the annual changes in net overseas assistance as percentage of GDP. "Aid receipts (Aid/GDP)" represents the average over 1980–2004 of the annual changes in net overseas assistance as percentage of GDP. "Net private capital flows (Equity/GDP)" represents the average over 1980–2004 of the net flows of foreign liabilities minus net flows of foreign assets as percentage of GDP. "Net private & public debt flows (Debt/GDP)" are calculated similarly using the flows of the portfolio debt and other investment assets and liabilities. "Reserve & related assets (ResR./GDP)" represents the average over 1980–2004 of the annual foreign reserve asset and related item (exceptional financing and use of the IMF credit and loans) flows as percentage of GDP. "Reserve assets (Res./GDP)" represents the average over 1980–2004 of the annual foreign reserve asset flows as percentage of GDP. By the BOP convention net accumulation of foreign reserves has a negative sign. "NEO/GDP" represents the annual BOP net errors and omissions as percentage of GDP. "Net public debt flows ([PPG-Res.]/GDP)" represents the average over 1980–2004 of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP minus the period average of the annual changes in foreign reserves (excluding gold) as percentage of GDP. "Net public debt flows ([PPG-Res.]/GDP)" represents the average over 1980–2004 of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP minus the period average of the annual changes in foreign reserves stock (excluding gold) as percentage of GDP.

Table 3: Net Capital Flows and Growth, 1980–2004

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	All Developing Countries				Developing Countries with Capital Stock Data	
Dependent Variable	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)	Net capital flows (-CA/Pop)	Aid-adjusted net capital flows ([-CA-Aid]/Pop)	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)
Average per capita GDP growth	.106 (.253)	.776*** (.274)	22.966** (11.075)	19.719** (9.147)		
Productivity catch-up relative to the U.S.					–2.876** (1.288)	3.371** (1.496)
Obs.	122	122	122	122	63	63

Notes: Robust standard errors are in parentheses. *** , **, * denote significance at 1%, 5%, 10%. "Net capital flows (-CA/GDP)" represents the average over 1980–2004 of the current account balance with the sign reversed as percentage of GDP. "Net capital flows (-CA/Pop)" is computed similarly using total population normalization. "Aid-adjusted net capital flows ([-CA-Aid]/GDP)" represents the average over 1980–2004 of the current account balance with the sign reversed as percentage of GDP minus the average over 1980–2004 of the annual changes in net overseas assistance as percentage of GDP. "Aid-adjusted net capital flows ([-CA-Aid]/Pop)" is computed similarly using total population normalization. Average per capita GDP growth represents the annual rate of change of GDP per capita in 2000 U.S. dollars during 1980–2004. Productivity catch-up relative to the U.S. is calculated following Gourinchas and Jeanne (2009). Countries included are listed in Appendix B.

Table 4: Net Capital Flows and Main Components, 1980–2004
Country Sample: Benchmark Developing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Net public debt flows (PPG/GDP)	Changes in reserves (Res./GDP)	Net public debt flows ([PPG-Res.]/GDP)	Aid receipts (Aid/GDP)
Average per capita GDP Growth	–.364^{+}	.423*	.162**	–.088	–.212***	.161***	–.374***	–.787***
	(.241)	(.227)	(.074)	(.110)	(.087)	(.045)	(.100)	(.289)
Obs.	75	75	75	75	75	75	75	75

Notes: Robust standard errors are in parentheses. *** , **, * denote significance at 1%, 5%, 10%. "Net capital flows (-CA/GDP)" represents the average over 1980–2004 of the current account balance with the sign reversed as percentage of GDP. "Aid-adjusted net capital flows ([-CA-Aid]/GDP)" represents the average over 1980–2004 of the current account balance with the sign reversed as percentage of GDP minus the average over 1980–2004 of the annual changes in net overseas assistance as percentage of GDP. "Net private capital flows (Equity/GDP)" represents the average over 1980–2004 of the net flows of foreign liabilities minus net flows of foreign assets. Net flows of foreign liabilities (assets) are the annual changes in the stocks of FDI and portfolio equity investment liabilities (assets) as percentage of GDP. "Net private & public debt flows (Debt/GDP)" are calculated similarly using the stocks of the portfolio debt and other investment assets and liabilities. "Net public debt flows (PPG/GDP)" represents the average over 1980–2004 of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP. "Changes in reserves (Res./GDP)" represents the average over 1980–2004 of the annual changes in foreign reserves (excluding gold) as percentage of GDP. "Net public debt flows ([PPG-Res.]/GDP)" represents the average over 1980–2004 of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP minus the average over 1980–2004 of the annual changes in foreign reserves (excluding gold) as percentage of GDP. "Aid receipts (Aid/GDP)" represents the average over 1980–2004 of the annual changes in net overseas assistance database as percentage of GDP. Average per capita GDP Growth is calculated as the average over 1980–2004 of the annual change of GDP per capita in 2000 U.S. dollars. Countries included are listed in Appendix B.

Table 5: Net Debt Flows (Annual Changes of Debt Stocks) and Growth: Decomposition

Country Sample: Benchmark Developing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent Variable/GDP	Net total ext. debt flows	Net L-term ext. debt flows	Net S-term ext. debt flows	Net private NG ext.debt flows	Net total PPG ext. debt flows	Net multilat. PPG ext. debt flows	Net bilat. PPG ext. debt flows	Net official PPG ext. debt flows	Net concessional PPG ext. debt flows	Use of the IMF credit	Net private PPG ext. debt flows	Net flows of total ext. debt from private
Average per capita GDP growth	–.109	–.153*	.056	.059^{+}	–.212***	–.195***	–.084*	–.279***	–.223**	–.011	.066*	.125**
	(.117)	(.091)	(.046)	(.039)	(.087)	(.072)	(.044)	(.095)	(.090)	(.014)	(.034)	(.057)
Obs.	75	75	75	75	75	75	75	75	75	75	75	75

Notes: Robust standard errors are in parentheses. ***, **, *, and $^{+}$ denote significance at 1%, 5%, 10%, 15%. In this table, all dependent variables are the debt flows computed as the average over 1980–2004 of the annual changes in the corresponding debt stock in current U.S. dollars, normalized by nominal GDP in U.S. dollars. "Net total ext. debt flows" represents average annual total external debt flows. "Net L-term (S-term) ext. debt flows" is average annual long-term (short-term) external debt flows. "Net private NG ext. debt flows" is average annual private non-guaranteed debt flows. "Net total PPG ext. debt flows" is average annual total public and publicly-guaranteed debt flows. "Net multilat. (bilat.) PPG ext. debt flows" is average annual multilateral (bilateral) PPG debt flows. "Net official PPG ext. debt flows" is average annual PPG debt flows from official creditors. "Net concessional PPG ext. debt flows" is average annual total (bilateral and multilateral) concessional PPG debt flows. "Use of the IMF credit" is average annual IMF credit flows. "Net private PPG ext. debt flows" is average annual PPG debt flows from private creditors. "Net flows of total ext. debt from private" is average annual total debt flows from private creditors. Average per capita GDP Growth is calculated as the average over 1980–2004 of the annual change of GDP per capita in 2000 U.S. dollars. Countries included are listed in Appendix B.

Table 6: Aid Flows and Growth: Decomposition

Country Sample: Benchmark Developing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable/GDP	Total grants	Net ODA loans	Net ODA	Total grants from multilat.	Net ODA loans from multilat.	Net ODA from multilat.	Net ODA loans from IMF	Net ODA from IMF
Average per capita GDP growth	–.615*** (.230)	–.184** (.076)	–.787*** (.289)	–.123** (.057)	–.177** (.067)	–.300** (.118)	–.016^{+} (.011)	–.021 (.015)
Obs.	75	75	75	75	75	75	75	75

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%. In this table, all dependent variables are the aid flows computed as the average over 1980–2004 of the annual aid flows in current U.S. dollars, normalized by nominal GDP in U.S. dollars. As the aid flow measures, "Total grants" represent Net ODA flows minus Net ODA Loans flows. "Net ODA loans" are loans with maturities of over one year and meeting the criteria set under Official Development Assistance and Official Aid. "Net ODA" represents all ODA flows, defined as those flows to developing countries and multilateral institutions provided by official agencies, including state and local governments, or by their executive agencies. "from multilat." represents the corresponding type of flows from multilateral agencies; "IMF" are those from the IMF. Average per capita GDP Growth is calculated as the average over 1980–2004 of the annual change of GDP per capita in 2000 U.S. dollars. Countries included are listed in Appendix B.

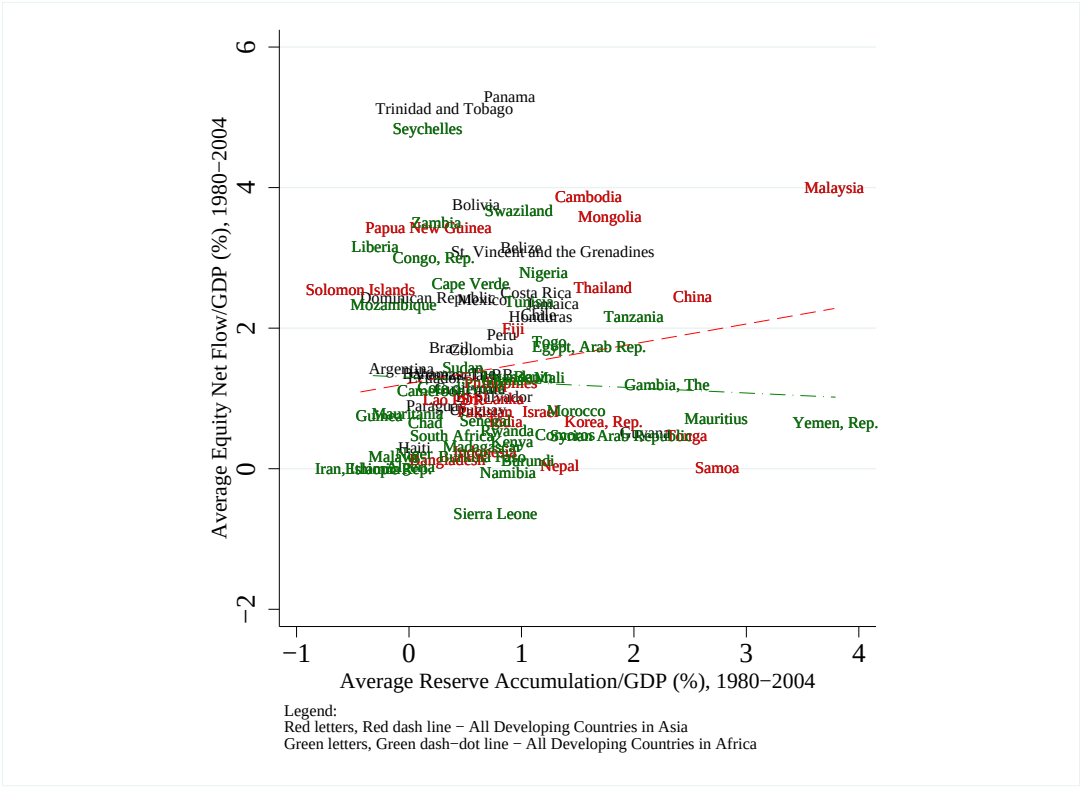
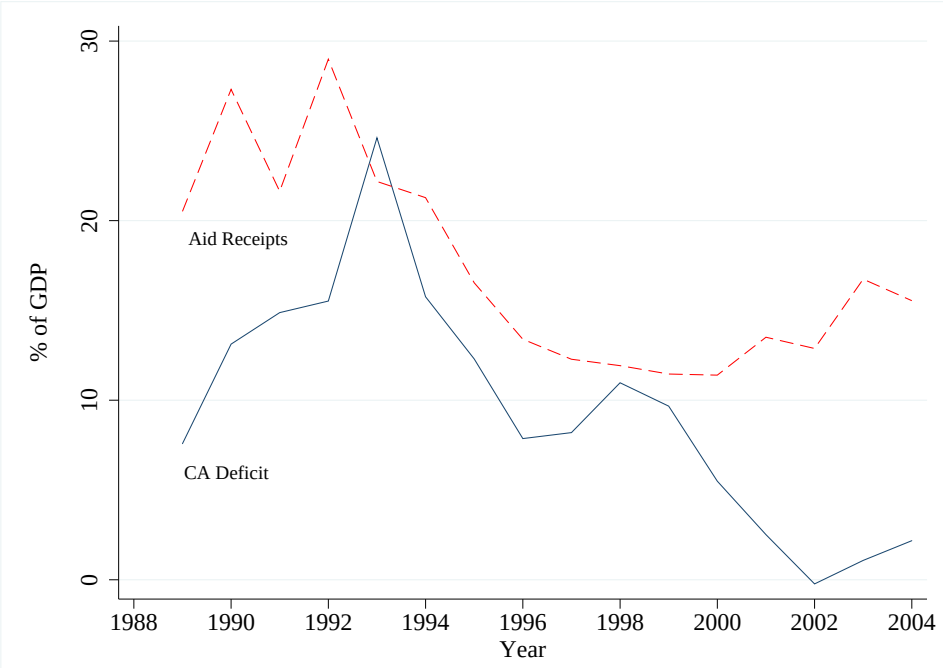


Figure 1: Equity Flows and Reserve Accumulation in Developing Countries, 1980–2004

Notes: The flows are computed as the average over 1980–2004 of the annual flows in current U.S. dollars, normalized by nominal GDP in U.S. dollars. "Equity Net Flows" represents the annual net flows of foreign liabilities minus net flows of foreign assets. "Reserve Accumulation" is the changes in stock of foreign reserves (excluding gold) as percentage of GDP.

Panel A: Tanzania



Panel B: Zambia

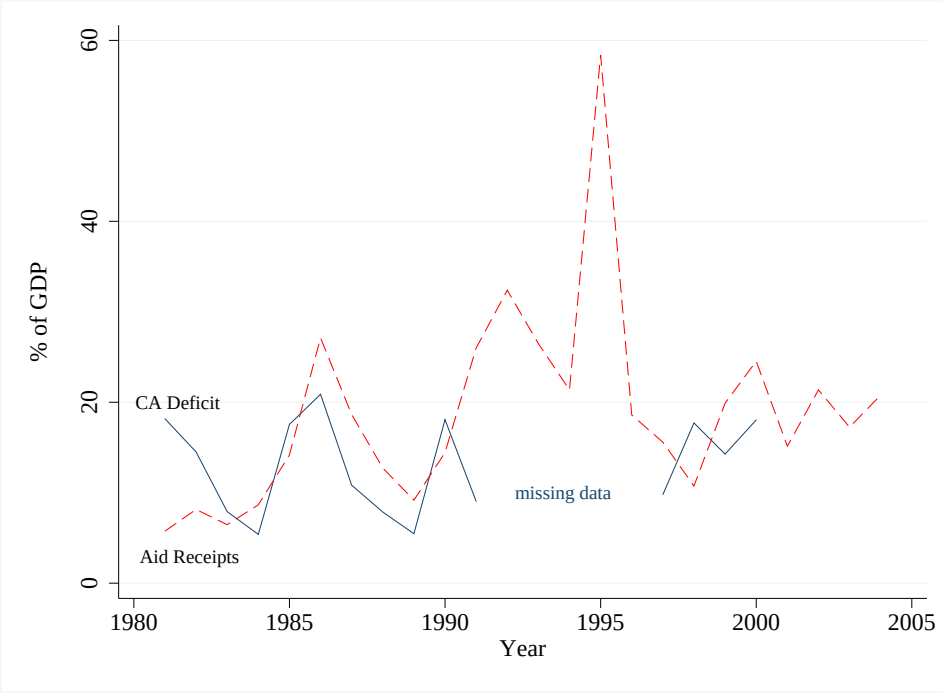
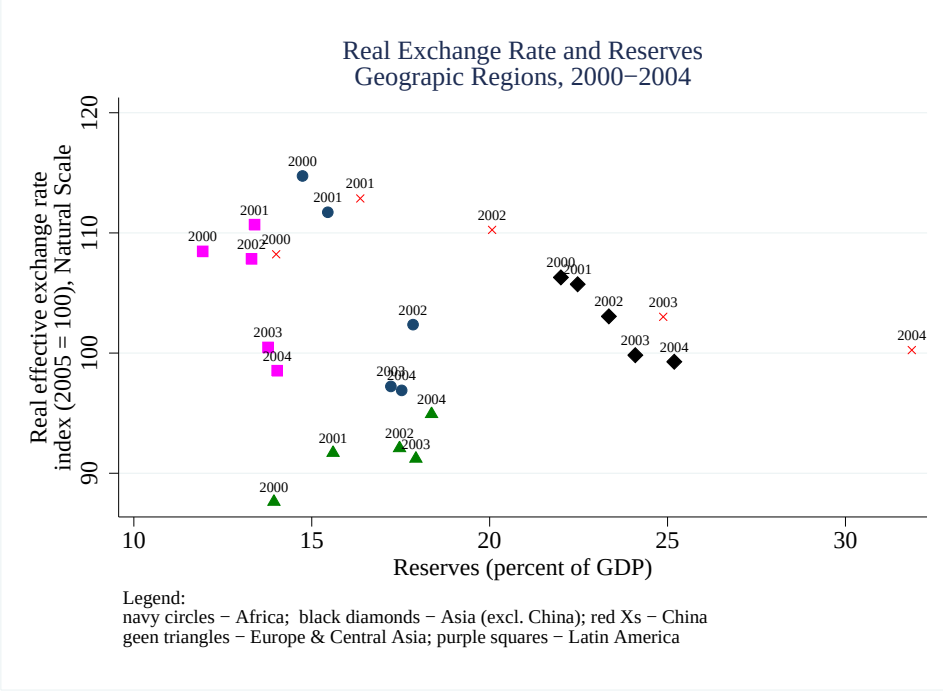


Figure 2: Current Account Balance (Net capital flows) and Aid Receipts

Notes: The graph represents annual series of the corresponding type of capital flow. "CA Deficit" (solid line) represents the annual current account balance with the sign reversed as percentage of GDP. "Aid Receipts" (dashed line) represents the annual changes in net overseas assistance as percentage of GDP.



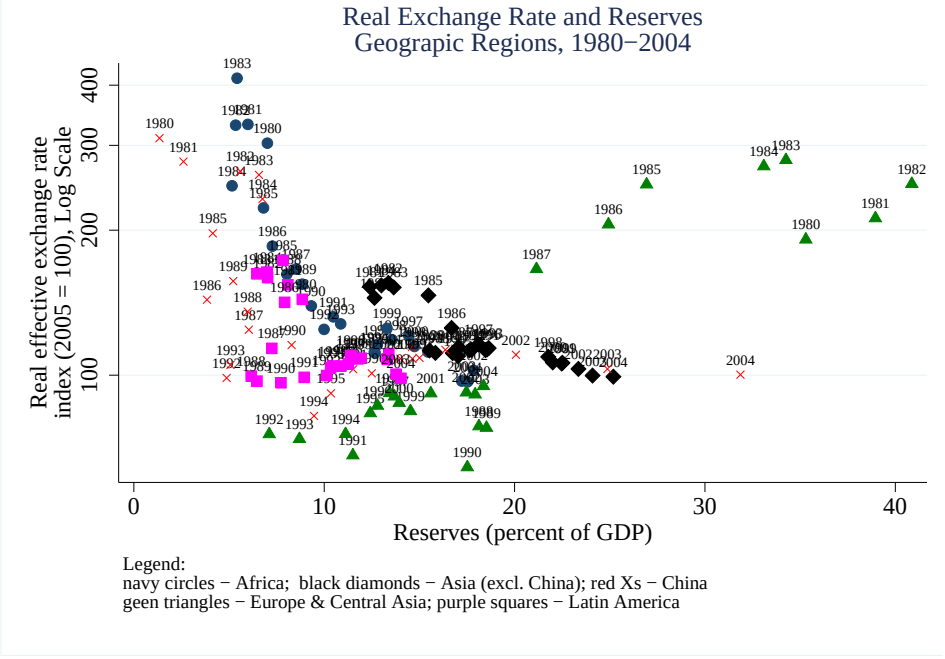
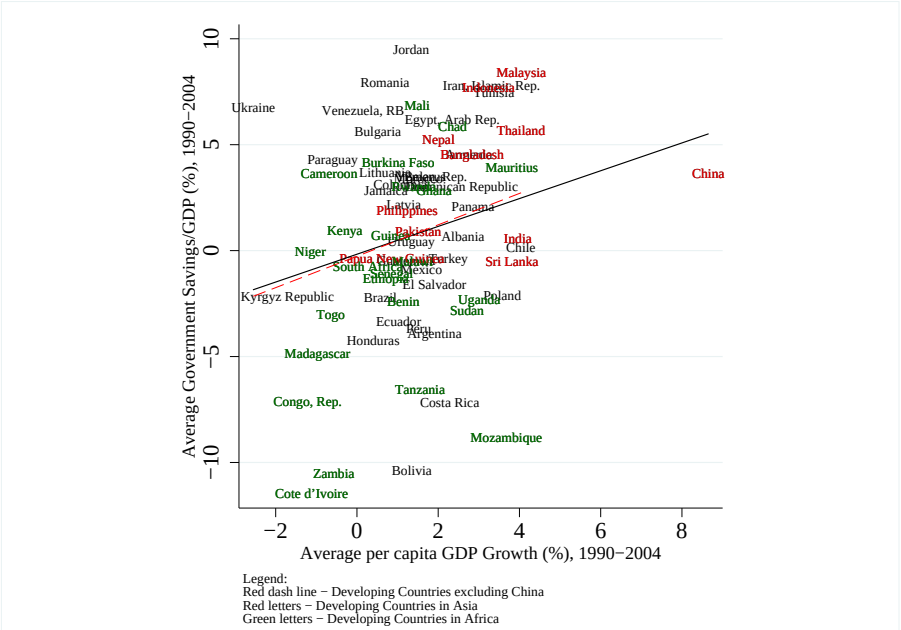


Figure 3: Real Exchange Rate and Reserves in Developing Countries

Notes: The graphs represent cross-sectional averages of annual Real Effective Exchange Rate Index versus Foreign Exchange reserves, excluding gold, by geographical regions. China is reported separately from the rest of Asia.

Panel A: Public Saving and Growth



Panel B: Private Saving and Growth

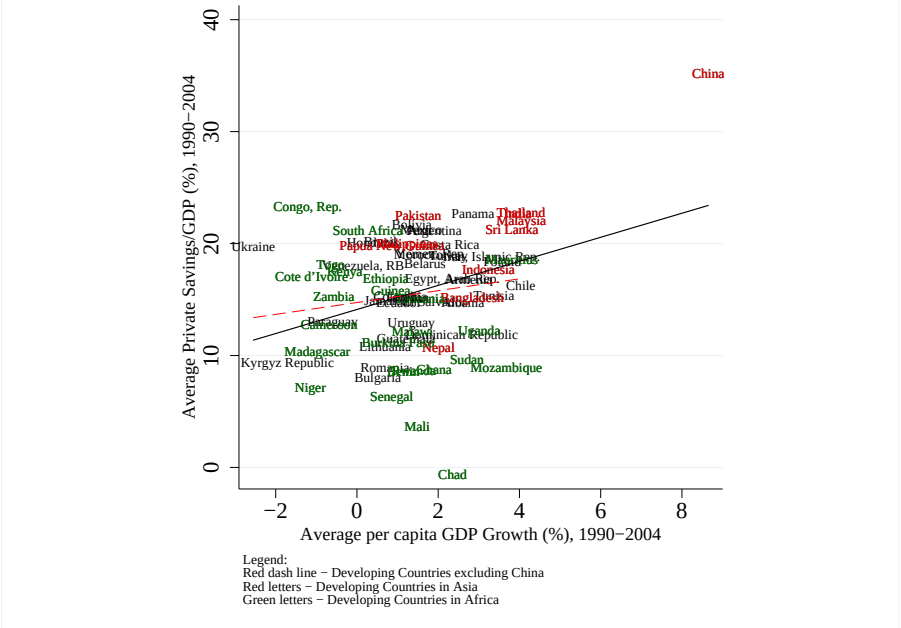


Figure 4: Public and Private Saving and Growth in Developing Countries: 1990–2004

Notes: The graphs represent cross-sectional plots for public (Panel A) and private (Panel B) savings versus GDP per capita growth during 1990–2004.

The following appendices are not for publication but for review purposes only.

Appendix A (Not for Publication): Measures of Capital Flows and Components of Government Savings.

Our primary sources of the data on annual capital flows are the *International Financial Statistics* database (IFS) issued by the International Monetary Fund (IMF), the *Global Development Finance* database (GDF) by the World Bank (WB), and the *Development Assistance Committee* online database (DAC) from the OECD's Development Co-operation Directorate. We also use Lane and Milesi-Ferretti (2007) (LM) data.

IFS reports BOP transactions as flows of equity and debt. In 1997, the IMF started reporting stock data, i.e., international investment position for each country. This stock data are cumulative of flows. However, the stocks of foreign assets and liabilities depend on past flows, capital gains and losses, and defaults, i.e., valuation effects. LM construct estimates of foreign assets and liabilities and their subcomponents for different countries, paying particular attention to valuation effects.[44] Notice that the IMF data include both private and public issuers and holders of debt securities. Although the IMF presents some data divided by monetary authorities, general government, banks and other sectors, this information is unfortunately not available for most countries for long periods of time. The World Bank's GDF database, which we use, provides detailed data on official and private borrowers, *only* for developing countries (public and publicly guaranteed external debt from the World Bank).

[44]LM found that 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.

Measures of the total net capital flows

For our benchmark estimates, we use simple average of the annual observations for the negative of the current account balance from the IFS normalized by the annual nominal GDP, both in U.S. dollars.

For our robustness exercises we use:

1. The sum of the current account balances from the IFS plus the initial net asset position from LM. Following Gourinchas and Jeanne (2009) both terms are PPP-adjusted and normalized by the PPP-adjusted initial real GDP using the price of investment goods for the PPP-adjustment.

2. The change in the net external position between first and last year of the sample period normalized by real GDP in the first year, all in current U.S. dollars from LM following Gourinchas and Jeanne (2009).

3. The change in the net external position between first and last year of the sample period normalized by the respective GDPs in those years, all in current U.S. dollars from LM as in LM and also as in Aguiar and Amador (2011).

Aid-adjusted Net Capital Flows and Components of Aid Flows.

We adjust our measures of net capital flows by subtracting aid flows. The aid flows data are the net receipts of official development assistance (ODA) from the OECD's DAC database.[45] These aid flows consist of total grants and concessional development loans net of any repayment on the principal. These loans are composed of development

[45]Official development assistance data we use is compiled by DAC and available at www.oecd.org/dac/stats/idsonline and through World Bank's WDI online database.

loans from World Bank and also other aid flows and loans, most of which are counted as public debt.

Components of Aid Flows

The details and components of these data are as follows:

1. *Net ODA flows*: Flows to developing countries and multilateral institutions provided by official agencies, including state and local governments or by their executive agencies, which meet the following criteria: i) it is undertaken by the official sector; ii) the transaction is administered with the promotion of the economic development and welfare of developing countries as its main objective; and iii) it is concessional in character and conveys a grant element of at least 25 percent. The grant element of a loan is defined as the difference between the face value of the loan and the present value of the repayments on the principal and interest over the life of the loan. This difference (i.e., the grant element) is then expressed as a percentage of the loan's face value.

2. *Net ODA loans*: Loans with maturities of over one year extended by governments and official agencies for which payment is required in convertible currencies or in kind. Rescheduled loans (loans given maturity extensions and originally made by a government or official agency) and loans originally made by a government or an official agency to refinance indebtedness due to the private or official sector are included if reported as ODA, otherwise they are recorded as other official flows. The net data are reported after deduction of amortization receipts in other than local currencies, including repayments in kind.

3. *Total Grants*: Net ODA flows minus net ODA loans; they are either official (i.e. public body) or private in origin, they include transfers made in cash or in kind in respect of which no legal debt is incurred by the recipients. Included also are grants for reparations and indemnification payments made at the government level and technical assistance. However, reparations and indemnification payments to private individuals, insurance, and similar payments to residents of developing countries are excluded. Domestic and overseas administrative costs of aid programs are, in principle, also excluded. Grants are recorded on a net basis.

4. *Net ODA flows from multilateral*: Same as net ODA flows but coming from all multilateral institutions.

5. *Net ODA loans from multilateral*: Same as net ODA loans but coming from all multilateral institutions.

6. *Total Grants Multilateral*: Net ODA flows multilateral minus net ODA loans multilateral.

7. *Net ODA flows from IMF*: Same as net ODA flows but coming from only the IMF.

8. *Net ODA loans from IMF*: Same as net ODA loans but coming from only the IMF.

Equity Flows.

Equity flows include foreign direct investment and portfolio equity flows. When a foreign investor purchases a local firm's securities without exercising control over the firm, that investment is regarded as a portfolio investment; direct investments include

greenfield investments and equity participation giving a controlling stake.[46] Because of missing portfolio data (some countries do not tend to receive portfolio flows, in part due to the lack of functioning stock markets), we prefer to use total equity flows, which is the sum of flows of FDI and flows of portfolio equity in the analysis. We compute net equity inflows using the annual changes in stock of direct and portfolio equity liabilities minus the annual changes in stock of direct and portfolio equity assets in current U.S. dollars from LM. We normalize these flows by GDP in current U.S. dollars and average out for the sample period.

Debt Flows.

For the net *debt flows* we use annual changes in stock of debt and other investment liabilities minus the annual changes in stock of debt and other investment assets in current U.S. dollars from LM. As before, we normalize by GDP in current U.S. dollars and average out for the sample period.

To dig deeper into the issue of public versus private debt flows, we use all the available components of debt flows coming from the World Bank's *Global Development Finance* database. In a nutshell, total external debt can be divided into long-term and short-term external debt, and long-term debt can be divided into private non-guaranteed external debt and public and publicly guaranteed external debt (PPG). The latter can further be divided, by the type of the creditor, into PPG debt from multilateral institutions, PPG debt from bilateral creditors, PPG debt from official creditors, PPG debt from private creditors, Concessional PPG debt, and use of the IMF credit. In particular, *Total external debt* is the debt owed to nonresidents repayable in foreign currency, goods, or

[46]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.

services, and consists of public and publicly guaranteed, and private non-guaranteed long-term debt, use of IMF credit, and short-term debt.

Components of Debt Flows

Total external debt: Debt owed to nonresidents repayable in foreign currency, goods, or services, and consists of public and publicly guaranteed, and private non-guaranteed long-term debt, use of IMF credit, and short-term debt.

1. *Short-term external debt*: All debt having an original maturity of one year or less and interest in arrears on long-term debt. The source does not permit the distinction between public and private non-guaranteed short-term debt.

2. *Long-term external debt*: Long-term external debt is defined as debt that has an original or extended maturity of more than one year and that is owed to nonresidents by residents of an economy and repayable in foreign currency, goods, or services. Long-term debt has two components: Private non-guaranteed external debt and public and publicly guaranteed long-term debt, aggregated as one item. Public debt is an external obligation of a public debtor, including the national government, a political subdivision (or an agency of either), and autonomous public bodies. Publicly guaranteed debt is an external obligation of a private debtor that is guaranteed for repayment by a public entity.

    (a) *Private non-guaranteed external debt*: Long-term external obligations of private debtors that are not guaranteed for repayment by a public entity. This component constitutes all private sector borrowing that is not guaranteed by the public sector.

(b) *Public and publicly guaranteed debt, PPG*: Long-term external obligations of public debtors, including the national government, political subdivisions (or an agency of either), and autonomous public bodies, and external obligations of private debtors that are guaranteed for repayment by a public entity. This component constitutes all public borrowing and also all other borrowing guaranteed by public sector.

- *PPG from private creditors:* Includes bonds that are either publicly issued or privately placed; commercial bank loans from private banks and other private financial institutions; and other private credits from manufacturers, exporters, and other suppliers of goods, and bank credits covered by a guarantee of an export credit agency. Bonds are usually underwritten and sold by a group of banks of the market country and are denominated in that country's currency. Loans from commercial banks and other private lenders comprise bank and trade-related lending.
- *PPG from official creditors:* PPG debt from the multilateral and bilateral lenders.
  - *PPG from multilateral institutions:* Include loans from the World Bank, the regional development banks, and other multilateral and intergovernmental agencies. Excluded are loans administered by such agencies on behalf of a bilateral donor.
  - *PPG bilateral:* Bilateral loans are loans from governments and their agencies including export credit agencies.
- *Concessional PPG debt*: Includes concesional PPG debt from bilateral

and multilateral lenders. It represents the long-term external debt outstanding and disbursed that conveys information about the borrower's receipt of aid from official lenders at concessional terms as defined by the DAC, that is, loans with an original grant element of 25 percent or more. Loans from major regional development banks: African Development Bank, Asian Development Bank, and the Inter-American Development Bank, and from the World Bank are classified as concessional, according to each institution's classification and not according to the DAC definition.

- *Use of the IMF credit:* Denotes members' drawings on the IMF other than those drawn against the country's reserve tranche position. Use of IMF credit includes purchases and drawings under Stand-By, Extended, Structural Adjustment, Enhanced Structural Adjustment, and Systemic Transformation Facility Arrangements, together with Trust Fund loans. Notice that the use of the IMF credit is counted separately from the PPG debt from multilateral institutions.

(c) *Total external debt from private creditors*: Private non-guaranteed external debt plus PPG debt from private creditors. Notice, that this aggregate uses only a part of the *Public and publicly guaranteed debt, PPG*.

The Components of Government Savings.

Revenue, excluding grants: Revenue is cash receipts from taxes, social contributions, and other revenues such as fines, fees, rent, and income from property or sales; from WB. *Expenditure*: Expenditure is cash payments for operating activities of the gov-

ernment in providing goods and services. It includes compensation of employees, interest and subsidies, grants, social benefits, and other expenses such as rent and dividends; from WB. *Grants and other revenue*: Grants and other revenue include grants from other foreign governments, international organizations, and other government units, interest, dividends, rent, requited, non-repayable receipts for public purposes, and voluntary, unrequited, non-repayable receipts other than grants; from WB. *Reserve accumulation*: the BOP series Reserves and Related Items, which includes the sum of transactions in reserve assets, exceptional financing, and use of the IMF credit and loans

Appendix B (Not for Publication): Samples

Our non-OECD developing country samples are as follows (Appendix Table 7 presents exact coverage):

a) *All non-OECD developing countries:* 122 countries where data on their current account balances and GDP per capita is available during 80 percent of the time over 1980–2004. We eliminate financial centers, oil and precious minerals-rich developing countries (e.g., Azerbaijan, Botswana, Turkmenistan, Equatorial Guinea, Lybia, Kuwait) and various outliers in the data in terms of quantities of capital flows and current account balances (e.g., Zimbabwe with a current account deficit of 200 percent of GDP on average during the period).[47]

b) *Benchmark sample of non-OECD developing countries:* 75 countries where the data on current account balances, the main underlying components of capital flows (equity,

[47]The outliers include very small countries such as Sao Tome and Principe, Moldova, Macao, and countries with abnormal political or economic situations (wars, political and economic crises, hyperinflation, etc.) including Bosnia and Herzegovina, Burundi, Georgia, Zimbabwe, Djibouti, Guinea-Bissau, and Lebanon.

total debt, aid) and GDP per capita is available during 90 percent of the time over 1980–2004. In this sample, we also omit 'islands', countries with the average population less than 1 million.

c) *Non-OECD developing countries with capital stock data:* A subset of the sample (a) where we have data on capital stocks from Penn World Tables, 63 non-OECD *developing* countries.[48]

All Non-OECD Developing Countries (122): Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Bahamas, Bangladesh, Belarus, Belize, Benin, Bolivia, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Chad, Chile, China, Colombia, Comoros, Congo Rep., Costa Rica, Cote d'Ivoire, Croatia, Cyprus, Czech Rep., Dominica, Dominican Rep., Ecuador, Egypt, El Salvador, Eritrea, Estonia, Ethiopia, Fiji, Gambia, Ghana, Grenada, Guatemala, Guinea, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Iran, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Korea Rep., Kyrgyz Rep., Lao PDR, Latvia, Lesotho, Liberia, Lithuania, Macedonia FYR, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Mongolia, Morocco, Mozambique, Namibia, Nepal, Niger, Nigeria, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Romania, Russian Federation, Rwanda, Samoa, Senegal, Seychelles, Sierra Leone, Slovak Rep., Slovenia, Solomon Islands, South Africa, Sri Lanka, St.Kitts and Nevis, St.Lucia, St.Vincent and the Grenadines, Sudan, Suriname, Swaziland, Syria, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Vanuatu, Venezuela, Vietnam, Yemen, Zambia.

[48]This is the 68 country sample used by Gourinchas and Jeanne (2009) minus Botswana, Gabon, Hong-Kong, Singapore, and Taiwan.

Benchmark Sample of Non-OECD Developing Countries (75): Albania, Algeria, Argentina, Armenia, Bangladesh, Belarus, Benin, Bolivia, Brazil, Bulgaria, Burkina Faso, Cameroon, Chad, Chile, China, Colombia, Congo Rep., Costa Rica, Cote d'Ivoire, Dominican Rep., Ecuador, Egypt, El Salvador, Ethiopia, Ghana, Guatemala, Guinea, Haiti, Honduras, India, Indonesia, Iran, Jamaica, Jordan, Kenya, Kyrgyz Rep., Latvia, Lithuania, Macedonia FYR, Madagascar, Malawi, Malaysia, Mali, Mauritius, Mexico, Morocco, Mozambique, Nepal, Niger, Nigeria, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Romania, Russian Federation, Rwanda, Senegal, South Africa, Sri Lanka, Sudan, Tanzania, Thailand, Togo, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Venezuela, Yemen, Zambia.

Non-OECD Developing Countries with Capital Stock Data (63): Angola, Argentina, Bangladesh, Benin, Bolivia, Brazil, Cameroon, Chile, China, Colombia, Congo Rep., Costa Rica, Cote d'Ivoire, Cyprus, Dominican Rep., Ecuador, Egypt, El Salvador, Ethiopia, Fiji, Ghana, Guatemala, Haiti, Honduras, India, Indonesia, Iran, Israel, Jamaica, Jordan, Kenya, Korea Rep., Madagascar, Malawi, Malaysia, Mali, Mauritius, Mexico, Morocco, Mozambique, Nepal, Niger, Nigeria, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Rwanda, Senegal, South Africa, Sri Lanka, Syria, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, Uruguay, Venezuela.

Notes on aid data and samples:

The OECD database covers the data for countries meet the DAC definition and thus are in "the DAC list of aid recipients." The part II of the DAC list of recipients includes more advanced countries of Central and Eastern Europe, the countries of the former Soviet Union, and certain advanced developing countries and territories. Of-

ficial aid to these countries has been provided under terms and conditions similar to ODA, but the part II of the DAC list was abolished in 2005 and the collection of data on official aid and other resource flows to Part II countries ended with 2004 data. For this reason, the data for Part II countries were missing when we accessed the OECD database. The World Bank's WDI dataset did retain those countries' data in the series DT.ODA.ALLD.PC.ZS. Conversely, some countries present in the OECD dataset were missing in WDI; mostly they are small island nations, but also countries like Mongolia. We combined the data from both sources to improve the coverage in our time period 1980–2004.

Appendix C (Not for Publication): Where and why does capital flow?

In Alfaro, Kalemli-Ozcan, Volosovych (2008), we show that private foreign capital flows from poor to rich countries (the Lucas Paradox) in a large sample of developed and developing countries during the last three decades. This negative correlation between capital flows and the initial level of GDP per capita is robust for 1970–2000 but it goes away once we account for the effect of institutional quality. Institutions, representing long-run productivity, are the most important determinant of capital flows and they can explain the Lucas Paradox.

Our results in this paper are fully consistent with our previous results. We show that capital is flowing to productive places, measured as average growth, during the last three decades once we account for the fact that low-growth countries receive a lot of

capital in the form of aid and public debt from other sovereigns or multinational bodies (sovereign-to-sovereign lending). Does this mean then there is also no Lucas puzzle within the developing countries? This would be the case if relatively poor countries are the growing ones within the developing country sample. In a sample of 90 developing and industrial countries between 1980–2004, Dollar and Kraay (2006) find, after they control the outlier nature of China, that there is a negative relation between capital flows and initial GDP per capita (no Lucas puzzle) and there is a positive relation between capital flows and growth. Appendix Table 14 takes a look at this issue in our sample of developing countries.

Column (1) of Appendix Table 14 shows that there is no Lucas puzzle in our broad developing country sample—capital is flowing to poor countries. This negative correlation between flows and level of GDP per capita is also shown in Gourinchas and Jeanne (2009), who argue that these poor countries are not the ones that are catching up in terms of growth and they should not be getting flows. As shown in columns (3) and (4) of Appendix Table 14, the flows that these poor countries are getting are in the form of aid and official debt, which are not driven by productivity considerations. In fact once we account for aid and debt flows in columns (5) and (6) the coefficient on initial GDP per capita turns positive and significant in the latter case. Column (7) confirms this finding in a multiple regression with average growth rate added. Both the initial level of GDP per capita and its growth are strongly positive significant. As a result there is still a Lucas paradox in the sense that private capital is going to rich and more productive (high-growth) countries, and that poor countries have been receiving capital in form of aid and public debt. The reason why rich countries are getting more private foreign capital in the long-run is the quality of their institutions as we have argued in Alfaro,

Kalemli-Ozcan, Volosovych (2008). Panel B demonstrates similar results in a benchmark developing sample. In particular, the negative but insignificant relation between growth and capital flows shown in column (2), turns out to be positive but insignificant in column (7) once we condition on aid and PPG debt flows. Level of the initial GDP per capita turns positive significant. Overall, these results again show the importance of aid and debt flows for low growth countries and for poor countries, both of which can lead to misleading conclusions about the stylized facts involving the patterns of capital mobility.

Appendix D (Not for Publication): Robustness and Comparison to the Literature

In this section we replicate the findings from the literature and reconcile our results with those findings. We use the exact sample as in Gourinchas and Jeanne (GJ) (2009), which includes our sample of developing countries where capital stocks are available (63 countries) plus Botswana, Gabon, Singapore, Hong-Kong. We also focus on the period 1980–2000 to compare the results exactly to their findings.

Appendix Table 1R use the average over 1980–2000 of the current account balance with the sign reversed from the IMF as percentage of GDP. Aid adjustment is done as before. For growth, we use i) Average TFP growth, ii) Productivity catch-up relative to the U.S., and iii) Average per capita GDP growth relative to the U.S. i) and ii) are calculated following Gourinchas and Jeanne (2009); iii) is calculated as the geometric average of the rate of change of GDP per capita in 2000 U.S. dollars, relative to that of

the U.S.

Column (1) in Appendix Table 1R shows negative significant correlation between net capital flows and growth, regardless of the growth measure used. Figure 1R present the corresponding partial correlation plots from upper and lower rows of column (1). When we drop two financial centers as in column (2) the result weakens, and when we adjust for aid receipts as in column (3) and (4), the coefficient of growth becomes positive, and often significant depending on the growth measure used. Figure 2R from the last row in column (4) shows the positive relationship is not driven by outliers.

In Appendix Table 2R, we compute the capital flows following GJ (2009) by adding the initial net external debt from LM to the sum of the current account balances from the IMF-IFS and normalize by the initial GDP (column 1). In the remainder of this table net capital flows are computed as the change in the net external position from LM, normalized by the initial GDP. All variables are deflated.[49] We also analyze the aid-adjusted net flows and the components of net capital flows, where these components are defined as before. Appendix Table 2R and Figures 3R and 4R, show similar results. The negative significant relationship between net capital flows in columns (1) and (2) vanishes once we a few remove financial centers as in columns (5)-(7) and/or adjust for aid as in columns (3), (6), (9). Equity flows are positively and significantly correlated with growth (Appendix Table 2R, column (4), (7), (10); Figure 4R). Debt flows are positively correlated with growth, albeit the relation is not significant given the fact that these are a mixture of private and public debt (Appendix Table 2R, column (12)).

[49]For capital flows measures we followed the methodology of GJ (2009) and used the price of investment goods to deflate the data; this "PPP-adjustment" is performed according to the formula $Priceof Investment \times CGDP/RGDP$ (the data from Penn World Tables). For other variables we use the GDP deflator.

Aid flows, on the other hand, are negatively and significantly correlated with growth (Appendix Table 2R, column (11)).

Table 7: (Appendix Table) Net Capital Flows and Growth: Country Coverage

Sample: All Non-OECD Developing Countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Measure of flows	Net capital flows (-CA/GDP)	Net capital flows (-NFA/GDP)^{VAL}	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Aid receipts (Aid/GDP)	Reserve assets (Res./GDP)	Reserve & related assets (ResR./GDP)	Net E&O (NEO/GDP)	Net public debt flows ([PPG-Res.]/GDP)	Net private capital flows (Equity/GDP)^{VAL}	Net private & public debt flows (Debt/GDP)^{VAL}
					31 Low-Growth Countries						
1971–2004	31	23	31	31	31	31	31	31	28	23	23
1971–1979	19	15	19	19	31	19	19	19	16	15	15
1980–1989	24	17	24	24	31	24	24	24	20	17	17
1990–1999	29	23	29	29	31	29	29	29	26	23	23
2000–2004	29	23	29	29	31	29	29	29	27	23	23
1990–2004	31	23	31	31	31	31	31	31	28	23	23
1980–2004	31	23	31	31	31	31	31	31	28	23	23
					60 Medium-Growth Countries						
1971–2004	60	51	59	60	60	60	60	60	52	51	51
1971–1979	44	37	44	44	60	44	44	44	39	36	37
1980–1989	51	40	50	51	60	51	51	51	46	40	40
1990–1999	60	51	58	60	60	60	60	60	52	51	51
2000–2004	57	51	52	56	60	57	57	57	49	51	51
1990–2004	60	51	58	60	60	60	60	60	52	51	51
1980–2004	60	51	59	60	60	60	60	60	52	51	51
					31 High-Growth Countries						
1971–2004	31	22	31	31	31	31	31	31	25	22	22
1971–1979	17	12	17	17	31	17	17	17	10	11	12
1980–1989	26	17	26	26	31	26	26	26	21	16	17
1990–1999	31	22	31	31	31	31	31	31	25	22	22
2000–2004	31	22	30	31	31	31	31	31	25	22	22
1990–2004	31	22	31	31	31	31	31	31	25	22	22
1980–2004	31	22	31	31	31	31	31	31	25	22	22

Notes: This table presents the country coverage of the average capital flows by sub-periods reported in Table 1.

Table 8: (Appendix Table) Net Capital Flows and Components in Selected Developing Countries

Selected countries from the All Non-OECD Developing Countries Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Measure of flows — Year	Net capital flows (-CA/GDP)	Net capital flows (-NFA/GDP)^{VAL}	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Aid receipts (Aid/GDP)	Reserve & related assets (ResR/GDP)	Reserve assets (Res./GDP)	Net E&O (NEO/GDP)	Check (3)+(4)+ (6)+(8)	Net public debt flows ([PPG-Res.]/GDP)	Net private capital flows (Equity/GDP)^{VAL}	Net private & public debt flows (Debt/GDP)^{VAL}
						ASIA						
						China						
1985	3.7	5.0	0.3	2.6	0.3	0.8	0.8	0.0	3.7	2.0	0.3	1.9
1995	-0.2	2.0	4.6	0.7	0.5	-3.1	-3.1	-2.4	-0.2	-1.4	5.6	2.3
2000	-1.7	-3.9	3.7	-3.5	0.1	-0.9	-0.9	-1.0	-1.7	-1.3	2.9	-5.1
2004	-3.6	-5.2	3.3	2.4	0.1	-9.8	-9.8	0.5	-3.6	-9.6	3.0	2.3
						Malaysia						
1975	5.0	8.6	3.5	3.1	1.0	-0.7	-0.7	-1.0	5.0	4.1	0.2	7.3
1985	1.9	6.3	2.2	3.9	0.7	-3.6	-3.1	-0.5	1.9	1.1	1.2	3.7
1995	9.7	-2.2	4.7	3.9	0.1	2.0	2.0	-0.9	9.7	3.5	3.7	1.5
2000	-9.4	-12.5	2.0	-6.2	0.0	1.1	1.1	-3.6	-6.7	1.4	-3.0	-4.4
2004	-12.7	-16.4	6.0	-1.9	0.2	-18.6	-18.6	1.6	-13.0	-18.5	6.4	-2.1
						AFRICA						
						Madagascar						
1975	2.4	2.8	0.2	1.1	3.6	1.5	0.9	-0.4	2.4	2.1	0.2	2.7
1985	6.4	6.1	0.0	0.2	6.5	5.8	1.0	0.4	6.4	13.7	0.0	3.8
1995	8.7	1.4	0.3	-6.6	9.5	10.4	-0.1	3.1	7.3	5.3	0.3	9.3
2000	7.3	-3.5	.	-2.9	8.3	4.1	-0.8	1.0	.	-2.6	2.2	0.2
2004	12.4	22.0	.	4.5	28.6	3.3	-8.8	-0.8	.	-34.7	1.0	5.4
						Tanzania						
1995	12.3	-13.1	2.3	-1.0	16.5	6.8	0.8	0.6	8.7	2.3	2.3	1.9
2000	4.7	-12.5	5.1	0.3	11.4	0.0	-2.2	-5.4	0.1	-8.6	5.1	-11.4
2004	4.3	-4.7	3.9	-0.5	15.5	-2.5	-2.7	-0.8	0.2	1.9	2.2	1.1
						EUROPE & CENTRAL ASIA						
						Poland						
1985	1.4	.	0.0	-2.1	0.0	3.3	0.3	0.2	1.4	.	0.0	7.3
1995	-0.6	-10.3	2.8	3.8	2.7	-7.1	-6.1	-0.4	-0.8	-5.0	3.0	2.3
2000	6.0	2.9	5.7	0.1	0.8	-0.4	-0.4	0.4	5.9	-1.8	5.0	-1.4
2004	4.0	7.2	5.3	-2.2	0.6	-0.3	-0.3	0.7	3.4	0.3	13.0	1.5
						Ukraine						
1995	2.4	8.2	0.5	-1.6	0.7	3.4	-1.0	0.1	2.4	2.7	1.5	6.1
2000	-4.7	-1.5	2.4	-5.1	1.7	-1.8	-1.3	-0.2	-4.7	-5.9	3.2	-4.2
2004	-10.6	-13.3	2.5	-9.5	0.6	-3.9	-3.4	0.2	-10.7	-0.8	3.1	-5.2
						Turkey						
1975	3.5	0.1	0.2	0.5	0.1	3.6	0.8	-0.8	3.5	0.9	0.3	-0.0
1985	1.5	4.4	.	1.4	0.3	1.2	0.5	-1.2	.	5.0	0.2	6.7
1995	1.4	-7.3	0.5	2.2	0.2	-2.8	-3.0	1.4	1.4	-1.8	0.7	4.3
2000	5.0	0.9	0.3	4.0	0.1	2.0	-0.2	-1.3	5.0	2.6	-3.4	7.4
2004	4.8	-1.4	1.1	4.7	0.1	-1.4	-0.3	0.3	4.8	1.1	3.3	5.8
						LATIN AMERICA						
						Colombia						
1975	1.3	0.1	0.3	0.6	0.6	-0.4	-0.4	0.9	1.3	1.3	0.3	1.5
1985	5.2	7.8	2.9	3.5	0.2	-0.4	-0.4	-0.8	5.2	4.8	1.3	4.8
1995	4.9	4.0	0.9	4.0	0.2	0.0	0.0	-0.1	4.9	-0.4	1.3	4.9
2000	-0.9	-6.3	2.5	-2.3	0.2	-1.0	-1.0	0.0	-0.8	-0.3	-3.4	-2.6
2004	0.9	-3.1	3.1	0.3	0.5	-2.5	-2.5	0.3	1.1	-1.5	5.8	0.5
						Costa Rica						
1975	.	8.2	.	.	1.5	.	.	.	.	.	5.5	9.6
1985	7.4	0.5	1.7	-9.0	5.8	11.1	-1.8	3.6	7.4	7.1	0.8	7.8
1995	3.1	-2.6	2.8	1.6	0.3	-1.8	-1.5	0.5	3.1	-2.3	3.1	-0.8
2000	4.4	2.5	2.5	-2.7	0.1	2.1	1.0	2.5	4.4	3.0	2.6	-0.7
2004	4.3	-1.0	3.9	-1.4	0.1	1.3	-0.4	0.3	4.2	-2.0	2.8	-0.7

Notes: All flows expressed as percent of GDP. "Net capital flows (-CA/GDP)" represents the period average of the current account balance with the sign reversed as percentage of GDP. "Net capital flows (-NFA/GDP)^{VAL}" represents the period average of the annual changes in Net Foreign Assets (Net External Position) with the sign reversed as percentage of GDP. These flows include valuation effects. "Net private capital flows (Equity/GDP)" represents the period average of the net flows of foreign liabilities minus net flows of foreign assets as percentage of GDP. "Net private & public debt flows (Debt/GDP)" are calculated similarly using the flows of the portfolio debt and other investment assets and liabilities. "Aid receipts (Aid/GDP)" represents the period average of the annual changes in net overseas assistance as percentage of GDP. "Reserve & related assets (ResR./GDP)" represents the period average of the annual foreign reserve asset and related item flows (exceptional financing and use of the IMF credit and loans) as percentage of GDP. "Reserve assets (Res./GDP)" represents the period average of the annual foreign reserve asset flows as percentage of GDP. By the BOP convention net accumulation of foreign reserves has a negative sign. "NEO/GDP)" represents the period average of the annual net errors and omissions as percentage of GDP. "Net public debt flows ([PPG-Res.]/GDP)" represents the period average of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP minus the period average of the annual changes in foreign reserves stock (excluding gold) as percentage of GDP. "Net private capital flows (Equity/GDP)^{VAL}" represents the period average of the net flows of foreign liabilities minus net flows of foreign assets. Net flows of foreign liabilities (assets) are the annual changes in the stocks of FDI and portfolio equity investment liabilities (assets) as percentage of GDP. These flows include valuation effects. "Net private & public debt flows (Debt/GDP)^{VAL}" are calculated similarly using the stocks of the portfolio debt and other investment assets and liabilities.

Table 9: (Appendix Table) Net Capital Flows and Growth, by Country, 1990–2004

Out of All Non-OECD Developing Countries Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	GDP per capita growth	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Aid receipts (Aid/GDP)	Reserve assets (Res./GDP)	Reserve & related assets (ResR./GDP)	Net E&O (NEO/GDP)	Net public debt flows ([PPG-Res.]/GDP)
Africa										
Liberia	-2.7	.	.	15.2	-4.7	0.0	-1.1	33.7	-9.4	.
Burundi	-2.2	5.3	-17.9	0.1	0.6	23.3	-0.8	10.1	-1.6	.
Congo, Rep.	-1.2	9.8	3.3	4.1	-16.1	6.5	-0.4	22.1	-0.6	4.3
Niger	-1.1	7.1	-8.6	0.2	0.4	15.6	-0.0	1.4	0.7	2.3
Cote d'Ivoire	-1.1	2.8	-3.7	1.6	-5.3	6.4	-0.9	6.3	-0.5	-0.0
Madagascar	-1.0	7.5	-5.2	0.7	-2.1	12.7	-0.4	6.9	0.4	0.8
Cameroon	-0.7	2.6	-2.5	1.0	-2.6	5.1	-0.3	4.9	-0.4	3.7
Togo	-0.6	8.7	0.3	2.3	3.1	8.4	-0.1	2.9	-0.2	3.0
Zambia	-0.6	14.5	-8.4	5.3	-3.1	22.9	-1.0	11.5	-2.8	2.4
Sierra Leone	-0.5	9.9	-14.2	1.4	2.0	24.2	-1.3	2.4	3.9	.
Comoros	-0.4	3.6	-11.1	0.1	4.2	14.7	-1.5	2.1	-2.8	.
Kenya	-0.3	1.7	-5.0	0.5	1.8	6.7	-1.6	-0.7	3.7	0.4
Gambia, The	0.1	-0.3	-17.4	2.1	3.2	17.1	-3.2	-2.2	-4.2	.
Angola	0.2	5.5	0.3	11.5	-12.8	5.1	-0.7	7.5	-0.8	0.7
South Africa	0.3	0.3	0.0	1.0	-0.1	0.3	-0.5	-0.5	-0.2	0.0
Swaziland	0.5	0.6	-2.1	3.6	-6.1	2.7	-1.0	-0.9	3.9	-0.3
Algeria	0.7	-3.7	-4.2	-0.0	-2.0	0.5	-1.6	-1.1	-0.6	-5.0
Ethiopia	0.7	1.7	-9.7	0.0	-0.5	11.5	0.6	4.4	-2.3	-2.6
Guinea	0.8	5.6	-3.9	0.8	0.3	9.4	0.6	3.4	0.9	2.0
Senegal	0.9	6.1	-4.7	1.1	-1.3	10.8	-1.2	2.9	-0.0	-0.4
Burkina Faso	1.0	5.3	-10.1	0.3	2.8	15.4	-0.4	2.2	0.0	1.9
Benin	1.1	6.8	-5.1	1.9	-4.1	11.9	-1.9	5.7	0.4	0.0
Nigeria	1.2	-4.3	-5.0	4.3	-13.2	0.7	-2.2	4.0	1.4	-1.3
Jordan	1.3	2.1	-6.6	2.2	3.6	8.7	-8.0	-4.4	-0.1	-3.2
Malawi	1.4	8.0	-16.5	0.0	6.5	24.4	0.8	0.8	-1.9	7.8
Rwanda	1.4	4.9	-21.6	0.2	0.7	26.6	-1.7	0.5	0.7	3.0
Namibia	1.4	-4.4	-9.0	-0.0	-7.4	4.6	-0.9	2.1	1.1	.
Mali	1.5	8.6	-7.7	2.1	1.3	16.3	-1.9	0.8	0.0	0.5
Mauritania	1.5	1.9	-20.0	0.5	-2.6	21.9	-0.5	4.2	-0.2	.
Morocco	1.5	0.1	-2.0	1.1	-0.9	2.0	-2.5	-0.3	0.1	-3.8
Tanzania	1.6	9.6	-7.5	2.5	-1.0	17.1	-2.2	3.3	-0.8	-0.3
Seychelles	1.7	8.7	5.2	5.3	-1.5	3.4	-0.4	5.8	-1.9	.
Yemen, Rep.	1.8	1.3	-3.5	0.7	-6.0	4.8	-3.8	2.1	-0.6	-3.2
Ghana	1.9	4.9	-5.8	1.8	4.6	10.7	-1.0	-0.7	-0.8	2.7
Syrian Arab Republic	2.1	-2.8	-4.8	0.8	-0.5	2.0	-3.4	-3.4	0.0	.
Eritrea	2.2	1.5	-20.5	.	4.5	22.0	-1.3	-1.3	-7.0	.
Egypt, Arab Rep.	2.4	-1.3	-5.7	1.2	-5.4	4.3	-2.3	2.8	0.1	-3.4
Chad	2.4	4.4	-8.8	0.3	3.6	13.1	0.5	1.5	-1.0	3.6
Lesotho	2.7	11.4	0.2	5.0	-0.8	11.2	-6.0	-5.8	2.5	.
Sudan	2.7	6.0	2.5	3.2	1.9	3.5	-0.6	0.2	1.9	0.9
Cape Verde	2.7	8.2	-14.9	3.4	5.0	23.1	-0.4	-0.9	-1.3	.
Uganda	3.0	6.5	-8.7	2.2	2.1	15.1	-1.4	1.6	-0.3	2.1
Iran, Islamic Rep.	3.3	-3.0	-3.2	0.0	-1.7	0.1	-0.4	-0.4	-1.0	.
Tunisia	3.4	3.9	2.5	2.4	2.3	1.4	-1.3	-1.4	0.5	2.4
Mozambique	3.7	17.0	-19.9	3.9	2.5	36.9	0.2	15.9	-7.8	-0.6
Mauritius	3.8	0.6	-0.4	0.8	0.5	1.0	-2.4	-2.6	1.9	-1.3
Avg	1.0	4.3	-6.9	2.2	-1.0	11.0	-1.3	3.3	-0.6	0.6
Asia										
Solomon Islands	-1.6	2.7	-16.2	3.0	-1.0	18.9	0.5	1.4	3.3	.
Vanuatu	0.2	9.5	-8.2	10.8	-3.2	17.7	-0.7	2.5	-3.4	.
Papua New Guinea	0.9	-2.6	-10.4	3.0	-7.2	7.9	-0.6	2.1	0.6	-0.1
Mongolia	0.9	6.0	-11.0	3.6	0.4	16.9	-1.8	3.2	-1.4	.
Kiribati	1.1	11.1	11.1	0.4	-26.7	0.0	27.2	27.2	-16.6	.
Philippines	1.2	2.5	1.1	1.7	3.0	1.4	-1.3	-1.3	-0.9	0.3
Pakistan	1.5	1.9	0.0	1.1	0.2	1.9	-1.0	0.1	0.4	1.1
Fiji	1.5	4.0	1.5	2.3	0.3	2.5	-1.1	-1.6	0.5	-1.3
Samoa	1.6	7.6	-15.2	0.0	3.7	22.7	-0.7	-0.4	2.4	.
Israel	1.6	2.0	0.7	1.3	-0.3	1.3	-1.2	0.0	0.1	.
Tonga	1.8	1.6	-15.5	1.2	2.1	17.1	-3.0	-3.0	0.3	.
Nepal	2.0	5.0	-3.8	0.1	3.2	8.8	-2.4	-0.4	1.9	1.4
Bangladesh	2.8	0.4	-3.2	0.2	0.4	3.6	-0.5	-0.6	-0.0	1.1
Indonesia	3.2	-0.4	-1.3	0.2	-0.1	0.9	-1.1	-0.5	-0.1	0.3
Lao PDR	3.7	12.0	-4.0	1.3	0.8	16.0	-0.6	9.3	-2.7	3.4
Sri Lanka	3.8	3.8	-0.4	1.2	2.4	4.2	-1.7	-0.6	0.6	1.8
India	4.0	0.8	0.3	1.2	1.2	0.5	-1.6	-1.6	0.1	-1.4
Thailand	4.0	-0.0	-0.5	3.4	-1.4	0.4	-1.8	-1.2	-0.3	-1.9
Malaysia	4.0	-2.3	-2.5	4.6	-1.4	0.2	-5.3	-5.3	0.1	-3.4
Cambodia	4.7	4.6	-5.4	3.9	0.1	10.0	-1.6	-1.2	-0.3	1.4
Korea, Rep.	5.1	-1.0	-1.0	1.2	0.4	-0.0	-2.3	-2.3	-0.2	.
Vietnam	5.6	1.8	-2.2	5.9	0.2	4.1	-1.8	-1.9	-1.8	-0.9
China	8.6	-1.9	-2.3	3.5	-0.8	0.3	-3.5	-3.5	-1.1	-2.3
Avg	2.7	3.0	-3.8	2.4	-1.0	6.8	-0.3	0.9	-0.8	-0.0
Avg w/o China	2.5	3.2	-3.9	2.3	-1.0	7.1	-0.2	1.1	-0.8	0.1
Europe & C.Asia										
Tajikistan	-4.3	1.4	-6.6	6.1	-1.3	8.0	-1.6	-0.7	-2.7	3.8
Ukraine	-2.6	-2.2	-3.1	1.8	-3.3	0.9	-1.6	0.2	-0.9	-0.1
Kyrgyz Republic	-1.7	10.6	-0.0	2.3	7.3	10.6	-2.5	0.3	0.8	6.1
Russian Federation	-0.8	-6.8	-7.2	0.4	-4.1	0.4	-2.4	-0.5	-2.3	-1.8
Macedonia, FYR	-0.8	5.8	2.3	4.2	2.4	3.5	-1.5	-0.9	0.5	-0.0
Bulgaria	0.5	3.3	1.4	4.3	-0.5	1.8	-3.0	-0.9	0.0	-5.5
Romania	0.7	5.3	4.4	2.4	2.9	0.9	-1.5	-0.8	0.7	0.6
Lithuania	0.7	6.9	5.8	3.0	4.5	1.1	-1.9	-1.8	1.1	-0.1
Croatia	1.0	5.0	4.7	3.5	6.3	0.3	-3.2	-2.8	-2.5	.
Latvia	1.2	4.0	3.0	4.0	3.7	1.0	-1.9	-1.9	-2.1	0.1
Czech Republic	1.2	4.1	3.7	5.9	2.0	0.4	-3.6	-3.9	0.2	.
Kazakhstan	1.2	2.3	1.7	7.9	1.4	0.6	-2.4	-2.5	-3.0	-1.0
Slovak Republic	1.3	4.5	3.9	4.2	3.8	0.6	-4.3	-4.5	0.6	.
Belarus	1.7	3.5	2.9	1.7	1.6	0.6	-0.3	0.2	0.0	-0.5
Hungary	1.7	5.6	5.1	5.5	1.5	0.5	-1.9	-1.9	0.2	.
Estonia	2.1	6.7	5.6	5.7	2.8	1.1	-1.9	-1.9	-0.2	.
Turkey	2.3	1.3	1.1	0.6	0.7	0.2	-1.0	-0.2	0.1	0.4
Slovenia	2.3	-0.5	-0.7	1.2	1.7	0.2	-2.8	-2.8	-0.3	.
Albania	2.6	5.9	-7.3	2.7	-3.1	13.2	-2.4	0.6	3.6	0.6
Cyprus	2.7	3.3	2.8	3.1	1.0	0.4	-1.2	-1.2	0.2	.
Armenia	2.8	12.1	2.8	5.2	6.8	9.3	-2.3	-0.9	0.6	1.7
Malta	2.8	5.4	4.7	6.0	-0.9	0.6	-1.4	-1.4	0.8	.
Poland	3.6	2.7	1.5	2.7	-1.3	1.2	-1.4	0.7	0.1	-1.1
Avg	1.0	3.9	1.4	3.7	1.6	2.5	-2.1	-1.3	-0.2	0.2

Notes: Continued on the next page.

Table 9 (cont'd): (Appendix Table) Net Capital Flows and Growth, by Country, 1990–2004

Out of All Non-OECD Developing Countries Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	GDP per capita growth	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Aid receipts (Aid/GDP)	Reserve assets (Res./GDP)	Reserve & related assets (ResR./GDP)	Net E&O (NEO/GDP)	Net public debt flows ([PPG-Res.]/GDP)
Latin America										
Haiti	-2.5	1.5	-8.0	0.2	0.6	9.5	-0.4	0.8	0.9	0.8
Paraguay	-0.6	0.8	-0.4	1.4	-0.0	1.2	-0.8	-0.3	-0.5	-0.8
Bahamas, The	-0.2	7.2	7.2	2.2	4.3	0.0	-0.5	-0.5	1.6	.
Venezuela, RB	0.2	-5.3	-5.3	2.2	-4.4	0.1	-1.6	-1.5	-1.8	-1.3
Honduras	0.4	6.8	-2.1	3.1	0.0	8.9	-2.4	2.7	1.1	1.1
Brazil	0.6	1.7	1.7	2.5	-0.8	0.0	-0.6	0.1	-0.1	-0.5
Jamaica	0.7	4.7	3.2	3.8	3.5	1.5	-1.8	-2.5	0.0	-0.7
Ecuador	1.0	2.5	1.4	1.9	-3.4	1.1	-0.5	3.9	-0.6	0.0
Colombia	1.1	1.5	1.2	2.1	0.4	0.3	-1.0	-1.0	0.0	-0.2
Suriname	1.1	4.0	-4.4	-5.3	2.4	8.4	-1.8	-1.8	8.7	.
Guatemala	1.2	4.6	3.1	0.9	3.9	1.5	-1.2	-1.0	0.4	-0.7
Dominica	1.2	17.2	8.7	9.1	-11.9	8.5	-1.2	-1.2	13.3	.
Uruguay	1.3	0.9	0.6	1.1	-1.1	0.3	-0.6	0.5	0.4	1.4
Bolivia	1.4	4.5	-4.9	5.4	1.0	9.4	-0.8	0.5	-2.4	0.6
Peru	1.5	4.4	3.4	2.5	0.9	1.0	-1.5	0.2	1.0	0.2
Mexico	1.6	3.2	3.1	3.2	1.0	0.1	-0.9	-0.9	-0.2	-0.4
Antigua and Barbuda	1.7	6.5	5.4	8.5	-17.6	1.1	-1.0	-1.0	13.8	.
Grenada	1.8	19.2	15.3	10.5	2.0	3.9	-2.2	-2.1	1.4	.
El Salvador	1.9	2.6	-0.6	1.5	1.5	3.2	-1.1	-0.5	-0.3	0.6
Argentina	1.9	0.8	0.8	1.9	-2.3	0.1	-0.5	1.7	-0.5	0.9
St. Vincent and the Grenadines	1.9	17.3	11.8	3.9	-10.1	5.5	-1.3	-1.3	12.1	.
St. Lucia	2.1	11.9	8.0	9.3	-5.6	3.9	-1.1	-1.1	9.2	.
Costa Rica	2.3	4.2	3.6	3.1	-1.3	0.6	-0.7	1.3	1.1	-1.1
Dominican Republic	2.6	2.0	1.5	3.4	-1.2	0.5	-0.4	1.0	-1.1	1.0
Panama	2.9	3.9	3.2	6.1	-2.9	0.7	-1.5	1.1	0.4	1.3
St. Kitts and Nevis	3.1	21.7	18.8	15.8	-8.0	3.0	-1.5	-1.4	15.3	.
Guyana	3.2	14.4	-6.5	.	0.8	20.8	-2.9	1.5	-2.1	.
Belize	3.2	9.9	6.3	3.5	5.6	3.5	-0.1	-0.2	0.5	.
Trinidad and Tobago	3.8	-1.9	-2.0	7.4	-7.7	0.2	-2.2	-1.9	-0.3	.
Chile	4.0	2.0	1.9	2.3	1.8	0.2	-1.5	-1.8	-0.3	-2.0
Avg	1.5	5.8	2.5	3.9	-1.6	3.3	-1.2	-0.2	2.4	0.0
(Memorandum) Industrialized OECD Countries Sample										
Switzerland	0.5	-8.6	.	-5.3	-3.7	.	-0.4	-0.4	1.0	.
Japan	1.3	-2.5	.	-0.1	-1.3	.	-1.0	-1.0	-0.0	.
Italy	1.3	-0.2	.	-1.3	1.7	.	0.1	0.1	-0.7	.
France	1.6	-1.0	.	-1.6	0.5	.	-0.1	-0.1	0.0	.
Finland	1.6	-2.8	.	-1.2	-0.9	.	-0.3	-0.3	-1.0	.
Sweden	1.6	-1.9	.	-2.1	1.4	.	-0.3	-0.3	-1.0	.
Iceland	1.6	3.4	.	-4.1	8.3	.	-0.4	-0.4	-0.4	.
Canada	1.6	0.6	.	-1.4	1.3	.	-0.1	-0.1	0.0	.
Denmark	1.6	-1.8	.	-0.9	0.1	.	-1.0	-1.0	-0.0	.
Germany	1.7	0.0	.	-1.3	1.0	.	0.0	0.0	0.4	.
Belgium	1.7	-4.2	.	0.5	-2.6	.	0.3	0.3	-0.6	.
Netherlands	1.8	-4.3	.	-4.9	2.2	.	0.0	0.0	-1.0	.
New Zealand	1.8	4.4	.	2.5	0.5	.	-0.2	-0.1	0.3	.
United States	1.8	2.6	.	-0.4	3.0	.	0.0	0.0	0.0	.
Austria	1.9	1.2	.	-0.6	1.8	.	0.0	0.0	-0.5	.
Portugal	1.9	5.0	.	1.5	3.0	.	-0.4	-0.4	0.0	.
United Kingdom	2.0	1.7	.	-1.1	2.5	.	0.0	0.0	0.1	.
Greece	2.1	4.5	.	0.8	3.8	.	-0.5	-0.6	-0.2	.
Spain	2.2	2.5	.	-0.5	2.2	.	0.3	0.3	-0.2	.
Australia	2.3	4.3	.	1.1	3.2	.	-0.2	-0.2	-0.1	.
Norway	2.5	-7.3	.	-2.5	-1.3	.	-1.0	-1.0	-2.3	.
Ireland	5.7	-0.9	.	19.5	-21.6	.	-0.3	-0.3	0.4	.
Avg	1.9	-0.2	.	-0.2	0.2	.	-0.3	-0.2	-0.3	.

Notes: "*Avg*" represents unweighted averages over all countries in a given region. "GDP per capita growth" represents the average over 1990–2004 of the rate of change of GDP per capita in 2000 U.S. dollars. "Net capital flows (-CA/GDP)" represents the average over 1990–2004 of the current account balance with the sign reversed as percentage of GDP. "Aid-adjusted net capital flows ([-CA-Aid]/GDP)" represents the average over 1990–2004 of the current account balance with the sign reversed as percentage of GDP minus the average over 1990–2004 of the annual changes in net overseas assistance as percentage of GDP. "Aid receipts (Aid/GDP)" represents the average over 1990–2004 of the annual changes in net overseas assistance as percentage of GDP. "Net private capital flows (Equity/GDP)" represents the average over 1990–2004 of the net flows of foreign liabilities minus net flows of foreign assets as percentage of GDP. "Net private & public debt flows (Debt/GDP)" are calculated similarly using the flows of the portfolio debt and other investment assets and liabilities. "Reserve & related assets (ResR./GDP)" represents the average over 1990–2004 of the annual foreign reserve asset and related item (exceptional financing and use of the IMF credit and loans) flows as percentage of GDP. "Reserve assets (Res./GDP)" represents the average over 1990–2004 of the annual foreign reserve asset flows as percentage of GDP. By the BOP convention net accumulation of foreign reserves has a negative sign. "NEO/GDP" represents the annual BOP net errors and omissions as percentage of GDP. "Net public debt flows ([PPG-Res.]/GDP)" represents the average over 1990–2004 of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP minus the period average of the annual changes in foreign reserves (excluding gold) as percentage of GDP. "Net public debt flows ([PPG-Res.]/GDP)" represents the average over 1990–2004 of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP minus the period average of the annual changes in foreign reserves stock (excluding gold) as percentage of GDP.

Table 10: (Appendix Table) Net Capital Flows and Growth, by Country, 2000–2004

Out of All Non-OECD Developing Countries Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	GDP per capita growth	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Aid receipts (Aid/GDP)	Reserve assets (Res./GDP)	Reserve & related assets (ResR./GDP)	Net E&O (NEO/GDP)	Net public debt flows ([PPG-Res.]/GDP)
Africa										
Eritrea	-3.7	16.5	-18.9	.	5.6	35.4	9.7	10.2	-3.6	.
Cote d'Ivoire	-2.7	-1.6	-5.0	1.9	-6.4	3.5	-1.0	4.0	-1.3	-0.5
Seychelles	-1.7	12.1	10.3	5.7	1.8	1.8	-0.2	4.2	-0.3	.
Liberia	-1.7	.	.	15.2	-4.7	0.0	-1.1	33.7	-9.4	.
Togo	-1.1	10.5	6.9	3.9	7.3	3.6	-1.5	-2.2	0.1	0.8
Burundi	-0.8	9.7	-21.2	0.3	-4.3	30.9	-1.4	25.5	-2.9	.
Niger	-0.6	6.5	-8.3	0.6	1.3	14.9	-0.4	0.1	0.6	0.9
Madagascar	-0.2	6.5	-6.2	1.2	-1.7	12.7	-1.9	6.2	0.2	-5.6
Comoros	-0.0	.	.	.	.	9.9	.	.	.	.
Malawi	0.2	6.0	-14.7	.	.	20.8	-2.1	-2.0	-2.1	9.2
Kenya	0.3	1.4	-2.2	0.3	0.7	3.6	-1.0	-0.5	-0.2	-0.1
Swaziland	0.3	-1.1	-2.7	3.1	-11.7	1.6	0.0	0.0	7.1	1.2
Guinea	0.6	4.9	-2.2	0.7	-0.7	7.1	1.6	3.2	0.9	1.3
Syrian Arab Republic	0.9	-4.7	-5.2	0.9	-2.0	0.6	-3.8	-3.8	-0.2	.
Gambia, The	1.0	.	.	.	-5.0	14.6	-5.1	0.8	0.3	.
Congo, Rep.	1.0	-9.6	-11.7	5.3	-25.7	2.0	0.2	13.5	-3.1	8.0
Benin	1.2	7.5	-2.2	1.5	-1.5	9.7	-0.8	4.7	1.0	0.3
Burkina Faso	1.2	14.3	1.1	0.5	3.7	13.2	0.3	4.6	0.0	0.3
Senegal	1.8	6.5	-2.6	0.9	-1.8	9.1	-1.3	3.2	0.2	-2.2
Rwanda	1.9	7.3	-13.1	0.3	-0.3	20.4	-2.1	2.9	1.3	3.1
Egypt, Arab Rep.	1.9	-1.8	-3.2	0.9	-4.5	1.4	0.1	1.1	0.7	0.3
Uganda	2.0	7.0	-7.0	3.3	2.2	14.0	-1.1	1.5	-1.6	3.5
Cameroon	2.1	.	.	2.1	-0.6	5.3	-1.1	1.6	-0.2	-1.4
Mauritania	2.1	.	.	.	.	21.6	.	.	.	.
Ethiopia	2.3	3.0	-12.0	0.0	0.2	15.0	2.6	8.2	-5.4	0.6
Morocco	2.4	-2.5	-3.7	1.7	-4.0	1.2	-3.9	-0.1	-0.1	-7.3
Yemen, Rep.	2.4	-5.9	-9.4	0.6	-1.9	3.4	-7.2	-6.6	0.8	-9.0
South Africa	2.4	0.9	0.5	1.9	-1.7	0.4	-0.6	-0.6	1.1	0.3
Ghana	2.4	2.8	-9.9	1.9	3.6	12.7	-2.6	-0.4	-2.3	-0.4
Lesotho	2.6	13.3	5.9	10.6	-2.6	7.4	-0.3	0.1	1.3	.
Zambia	2.6	18.0	-1.8	5.8	-0.1	19.8	-2.2	10.2	-5.4	4.7
Cape Verde	2.7	10.6	-5.4	5.0	5.4	16.0	0.5	0.6	-1.7	.
Namibia	2.7	-6.4	-9.7	-6.6	-6.7	3.3	-0.1	7.8	0.2	.
Mali	2.7	8.3	-5.2	4.0	1.8	13.5	-1.7	-1.0	0.1	-2.2
Nigeria	2.7	-11.7	-12.2	.	-17.3	0.5	-3.7	-1.5	4.8	1.7
Algeria	2.8	.	.	.	.	0.4	.	.	.	-14.0
Jordan	2.8	-3.5	-10.5	3.4	-1.9	6.9	-5.4	-5.8	0.3	-4.6
Mauritius	2.9	-2.1	-2.5	0.8	0.0	0.3	-3.1	-3.1	0.1	-4.9
Tunisia	3.6	3.4	2.0	2.8	1.6	1.3	-1.1	-1.2	-0.1	3.7
Sudan	3.9	5.0	2.4	5.6	-0.0	2.7	-1.5	-1.3	1.3	2.6
Iran, Islamic Rep.	4.1	-12.3	-12.5	0.0	-10.1	0.1	-1.1	-1.1	-1.2	.
Angola	4.1	2.1	-1.8	16.2	-14.4	3.9	-0.9	1.0	-0.8	-3.1
Tanzania	4.4	2.2	-11.8	4.1	-2.4	14.0	-3.0	-1.5	-4.0	-3.3
Mozambique	5.5	17.3	-11.1	6.1	-8.0	28.4	-2.1	11.2	1.2	-10.4
Chad	8.7	.	.	.	.	9.7	.	.	.	2.6
Sierra Leone	8.8	13.3	-22.8	2.2	4.2	36.0	-1.3	5.3	-0.0	.
Avg	1.9	3.9	-6.1	3.0	-2.5	9.9	-1.2	3.2	-0.5	-0.7
Asia										
Solomon Islands	-5.5	.	.	0.3	-1.0	25.8	3.3	5.0	11.4	.
Kiribati	-2.0	.	.	.	.	0.0	.	.	.	.
Papua New Guinea	-1.9	-9.9	-16.7	0.9	-7.5	6.8	-1.4	0.6	2.6	-2.7
Vanuatu	-1.9	12.4	-1.2	6.0	4.2	13.6	-0.5	5.1	-4.4	.
Israel	0.4	0.3	-0.1	1.8	-3.7	0.4	-0.2	0.6	1.2	.
Fiji	1.3	.	.	3.0	1.2	1.9	-0.8	-1.0	0.3	-0.3
Nepal	1.4	1.8	-4.8	0.0	-4.7	6.6	-2.1	2.5	3.5	-0.6
Pakistan	1.7	-2.3	-4.1	0.7	-2.7	1.9	-2.4	-1.5	0.8	-1.6
Tonga	2.3	5.2	-8.5	2.1	4.5	13.7	-4.6	-4.6	1.2	.
Philippines	2.6	0.7	-0.0	1.4	-0.5	0.7	0.4	0.3	-0.5	0.2
Malaysia	3.1	-10.1	-10.2	2.4	-4.4	0.1	-6.5	-6.5	-1.0	-4.1
Indonesia	3.2	-3.4	-4.1	-1.1	-1.3	0.7	-1.1	-1.1	-0.2	-1.1
Mongolia	3.3	11.8	-7.9	6.8	0.1	19.7	-0.3	6.0	-0.9	.
Bangladesh	3.4	0.1	-2.3	0.4	-0.2	2.4	-0.6	-0.7	-0.0	0.6
Sri Lanka	3.5	2.7	0.3	1.1	-1.4	2.4	-0.9	2.5	0.1	1.0
Lao PDR	3.6	2.6	-11.4	1.0	4.6	14.0	0.2	-0.0	-3.1	-5.4
Samoa	3.8	4.8	-8.1	0.5	-1.3	12.9	-2.2	-2.2	-0.7	.
Thailand	4.1	-5.7	-5.7	3.9	-6.3	0.1	-1.3	-1.8	-0.0	-4.2
India	4.3	-0.5	-0.7	1.4	1.0	0.2	-2.9	-2.9	0.0	-4.0
Cambodia	4.7	3.6	-6.8	2.9	1.3	10.4	-1.8	-1.5	-0.2	1.4
Korea, Rep.	4.8	-2.2	-2.2	1.8	-0.1	-0.0	-3.7	-3.9	0.2	.
Vietnam	5.9	0.6	-3.8	4.0	0.2	4.4	-1.9	-1.9	-1.5	-5.6
China	8.5	-2.4	-2.5	3.3	-0.5	0.1	-5.6	-5.6	0.4	-5.6
Avg	2.4	0.5	-5.1	2.0	-0.8	6.0	-1.7	-0.6	0.4	-2.1
Avg w/o China	2.1	0.7	-5.2	2.0	-0.9	6.3	-1.5	-0.3	0.4	-1.9
Europe & C.Asia										
Malta	0.1	5.7	5.4	5.0	-1.1	0.2	-1.4	-1.4	1.5	.
Macedonia, FYR	1.3	5.9	-0.5	6.1	1.8	6.4	-1.5	-1.7	0.3	-0.7
Cyprus	2.1	4.3	3.9	4.0	2.2	0.4	-2.2	-2.2	-0.1	.
Turkey	2.9	2.4	2.3	0.9	-0.2	0.1	-0.7	1.6	-0.2	0.8
Slovenia	3.3	0.7	0.4	1.5	3.0	0.3	-3.2	-3.2	-0.0	.
Czech Republic	3.3	5.7	5.3	7.1	1.3	0.4	-2.8	-2.8	0.2	.
Poland	3.4	3.5	2.9	3.4	0.4	0.6	-0.3	-0.3	0.2	-0.7
Kyrgyz Republic	4.0	5.5	-6.9	1.5	3.4	12.3	-3.3	-1.4	1.0	3.8
Slovak Republic	4.1	4.1	3.5	8.7	2.7	0.6	-7.0	-7.1	0.4	.
Croatia	4.6	5.5	5.1	4.9	7.1	0.4	-3.7	-3.8	-3.2	.
Hungary	4.7	7.8	7.4	3.9	4.0	0.4	-0.3	-0.3	-0.4	.
Albania	5.4	6.1	-0.3	3.9	0.4	6.5	-2.7	-2.6	2.0	0.2
Romania	6.0	5.3	4.1	3.9	4.8	1.2	-4.0	-4.0	0.3	-1.6
Bulgaria	6.1	4.9	2.6	8.2	4.1	2.3	-4.3	-6.7	-0.7	-6.4
Russian Federation	7.2	-11.1	-11.5	0.2	-3.1	0.4	-5.2	-5.4	-2.3	-6.8
Belarus	7.3	3.0	2.7	1.3	2.0	0.3	-0.5	-0.7	0.2	-0.5
Lithuania	7.5	6.1	4.9	3.1	3.7	1.2	-1.8	-2.1	1.0	-1.9
Estonia	7.6	9.4	8.4	5.9	4.5	1.0	-1.3	-1.4	-0.2	.
Latvia	8.4	8.0	6.9	3.1	6.2	1.1	-1.4	-1.5	-0.4	-0.6
Tajikistan	8.5	1.4	-11.5	6.1	-1.3	12.9	-1.6	-0.7	-2.7	0.3
Ukraine	9.4	-6.5	-7.6	2.4	-4.9	1.1	-3.1	-3.1	-0.8	-3.6
Kazakhstan	10.3	1.7	0.9	9.1	-0.3	0.8	-3.8	-4.3	-2.3	-4.0
Armenia	11.2	8.3	-1.6	4.9	2.0	9.9	-1.6	-1.6	0.2	0.4
Avg	5.6	3.8	1.2	4.3	1.9	2.6	-2.5	-2.5	-0.3	-1.4

Notes: Continued on the next page.

Table 10 (cont'd): (Appendix Table) Net Capital Flows and Growth, by Country, 2000–2004

Out of All Non-OECD Developing Countries Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	GDP per capita growth	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)	Net private capital flows (Equity/GDP)	Net private & public debt flows (Debt/GDP)	Aid receipts (Aid/GDP)	Reserve assets (Res./GDP)	Reserve & related assets (ResR./GDP)	Net E&O (NEO/GDP)	Net public debt flows ([PPG-Res.]/GDP)
Latin America										
Haiti	-2.1	1.7	-4.0	0.3	-0.3	5.7	0.5	2.7	1.9	2.1
Dominica	-1.2	17.8	9.8	8.6	-24.8	8.0	-1.1	-0.4	28.3	.
Paraguay	-1.1	0.4	-0.5	0.7	0.6	0.9	-0.5	-0.1	-1.3	0.4
Uruguay	-1.0	0.6	0.5	2.2	-4.1	0.1	0.1	3.7	-1.1	3.4
St. Lucia	-0.7	12.9	11.2	10.0	-15.2	1.7	-2.1	-2.1	17.0	.
Argentina	-0.6	-2.5	-2.5	1.5	-10.0	0.1	0.6	6.6	-0.7	3.2
Bahamas, The	-0.2	10.4	10.4	4.2	4.4	0.0	-0.3	-0.3	3.5	.
Venezuela, RB	-0.1	-9.2	-9.3	1.4	-7.2	0.1	-1.3	-1.5	-2.3	-1.7
Grenada	0.0	24.7	21.6	14.5	-0.4	3.1	-3.7	-3.3	-3.5	.
El Salvador	0.2	3.2	1.8	2.0	1.3	1.5	0.1	0.1	-1.3	3.5
Guatemala	0.2	5.0	3.9	1.0	4.5	1.2	-2.0	-1.6	0.7	-1.3
Guyana	0.3	8.9	-5.8	.	2.8	14.8	-0.4	-2.1	-3.1	.
Bolivia	0.7	1.7	-7.2	5.8	-1.1	8.8	0.2	1.0	-4.1	1.1
Jamaica	0.8	8.3	7.9	5.9	5.9	0.4	-3.2	-3.4	-0.1	3.0
Brazil	1.2	1.5	1.5	3.6	-2.1	0.0	-0.5	-0.0	-0.0	-0.4
Costa Rica	1.2	4.5	4.4	3.2	-0.7	0.1	-0.5	1.2	0.7	-0.0
St. Kitts and Nevis	1.3	28.6	26.2	22.3	-22.5	2.4	-1.5	-1.5	19.6	.
Colombia	1.3	0.9	0.4	2.2	-0.4	0.5	-1.0	-1.0	0.1	0.1
Honduras	1.4	4.7	-2.0	5.6	0.1	6.7	-1.9	0.3	-0.1	1.0
Mexico	1.4	2.1	2.1	3.1	0.3	0.0	-1.0	-1.3	-0.1	-0.2
Panama	1.6	4.0	3.8	4.8	-0.7	0.2	-0.1	-0.2	-0.0	2.6
Dominican Republic	1.7	-0.0	-0.4	4.9	-1.3	0.4	-0.1	0.6	-4.2	2.8
Peru	1.8	1.7	0.9	1.4	1.2	0.8	-1.2	-1.4	0.8	0.7
Antigua and Barbuda	2.0	11.0	9.9	12.1	-22.5	1.1	-1.3	-1.3	20.0	.
St. Vincent and the Grenadines	2.2	10.8	8.8	.	-19.8	2.0	-2.2	-2.2	19.5	.
Chile	2.8	0.7	0.6	0.0	1.0	0.1	0.2	0.2	-0.7	0.6
Ecuador	3.2	1.0	0.3	2.2	-7.9	0.7	-0.5	7.3	-0.5	-2.5
Suriname	3.4	9.7	7.5	-6.1	5.4	2.2	-3.3	-3.3	14.7	.
Belize	3.9	19.7	18.0	4.4	13.9	1.7	0.2	0.0	-0.5	.
Trinidad and Tobago	7.2	-5.3	-5.3	7.3	-8.7	-0.0	-3.9	-3.9	-1.7	.
Avg	1.1	6.0	3.8	4.6	-3.6	2.2	-1.1	-0.2	3.4	1.0
(Memorandum) Industrialized OECD Countries Sample										
Portugal	0.4	8.7	.	1.9	5.3	.	0.7	0.7	0.1	.
Netherlands	0.6	-4.5	.	-5.9	3.4	.	0.1	0.1	-0.5	.
Switzerland	0.7	-12.3	.	-7.4	-4.7	.	-0.2	-0.2	0.7	.
Japan	1.1	-2.9	.	-0.1	-0.4	.	-2.2	-2.2	-0.1	.
Germany	1.1	-1.2	.	0.8	-2.7	.	0.2	0.2	0.4	.
Austria	1.2	0.8	.	-1.8	1.7	.	0.7	0.7	-1.3	.
Denmark	1.2	-2.5	.	-1.7	-1.5	.	-0.7	-0.7	1.0	.
Italy	1.4	0.7	.	-2.2	2.9	.	-0.1	-0.1	0.1	.
Norway	1.4	-14.1	.	-4.8	-4.5	.	-1.3	-1.3	-2.6	.
France	1.5	-0.9	.	-3.6	2.3	.	0.1	0.1	-0.0	.
Belgium	1.6	-4.4	.	0.5	-2.6	.	0.3	0.3	-0.6	.
United States	1.7	4.6	.	-0.1	4.7	.	-0.0	-0.0	-0.1	.
Australia	1.9	4.4	.	-0.4	4.9	.	-0.3	-0.3	-0.1	.
Iceland	2.1	5.8	.	-10.1	16.4	.	-0.8	-0.8	0.2	.
Spain	2.1	4.0	.	-2.1	4.7	.	0.5	0.5	0.1	.
Canada	2.1	-2.0	.	-1.9	-0.3	.	-0.0	-0.0	-0.3	.
Sweden	2.2	-5.3	.	-3.7	-0.1	.	-0.0	-0.0	-1.4	.
United Kingdom	2.3	2.0	.	-2.0	4.4	.	0.0	0.0	-0.5	.
New Zealand	2.5	4.6	.	1.6	2.3	.	-0.6	-0.6	0.1	.
Finland	2.6	-6.4	.	-4.0	-2.7	.	-0.1	-0.1	-1.4	.
Greece	3.9	7.6	.	1.1	4.0	.	1.1	1.1	-0.1	.
Ireland	4.5	0.6	.	43.9	-42.8	.	0.4	0.4	-2.0	.
Avg	1.8	-0.6	.	-0.1	-0.2	.	-0.1	-0.1	-0.4	.

Notes: "*Avg*" represents unweighted averages over all countries in a given region. "GDP per capita growth" represents the average over 2000–2004 of the rate of change of GDP per capita in 2000 U.S. dollars. "Net capital flows (-CA/GDP)" represents the average over 2000–2004 of the current account balance with the sign reversed as percentage of GDP. "Aid-adjusted net capital flows ([-CA-Aid]/GDP)" represents the average over 2000–2004 of the current account balance with the sign reversed as percentage of GDP minus the average over 2000–2004 of the annual changes in net overseas assistance as percentage of GDP. "Aid receipts (Aid/GDP)" represents the average over 2000–2004 of the annual changes in net overseas assistance as percentage of GDP. "Net private capital flows (Equity/GDP)" represents the average over 2000–2004 of the net flows of foreign liabilities minus net flows of foreign assets as percentage of GDP. "Net private & public debt flows (Debt/GDP)" are calculated similarly using the flows of the portfolio debt and other investment assets and liabilities. "Reserve & related assets (ResR./GDP)" represents the average over 2000–2004 of the annual foreign reserve asset and related item (exceptional financing and use of the IMF credit and loans) flows as percentage of GDP. "Reserve assets (Res./GDP)" represents the average over 2000–2004 of the annual foreign reserve asset flows as percentage of GDP. By the BOP convention net accumulation of foreign reserves has a negative sign. "NEO/GDP" represents the annual BOP net errors and omissions as percentage of GDP. "Net public debt flows ([PPG-Res.]/GDP)" represents the average over 2000–2004 of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP minus the period average of the annual changes in foreign reserves (excluding gold) as percentage of GDP. "Net public debt flows ([PPG-Res.]/GDP)" represents the average over 2000–2004 of the annual changes in stock of public and publicly-guaranteed external debt as percentage of GDP minus the period average of the annual changes in foreign reserves stock (excluding gold) as percentage of GDP.

Table 11: (Appendix Table) Net Capital Flows and Growth in the Whole World, 1980–2004

	(1)	(2)
Sample	All Developing and Advanced OECD Countries	
Dependent Variable	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)
Average per capita GDP growth	–.024 (.232)	.822*** (.267)
Obs.	144	144

Notes: Robust standard errors are in parentheses. *** , **, * denote significance at 1%, 5%, 10%. "Net capital flows (-CA/GDP)" represents the average over 1980–2004 of the current account balance with the sign reversed as percentage of GDP. "Aid-adjusted net capital flows ([-CA-Aid]/GDP)" represents the average over 1980–2004 of the current account balance with the sign reversed as percentage of GDP minus the average over 1980–2004 of the annual changes in net overseas assistance as percentage of GDP. Average per capita GDP growth represents the average over 1980–2004 of the rate of change of GDP per capita in 2000 U.S. dollars.

Table 12: (Appendix Table) Capital Flows and Growth in Countries with High Level of Aid, 1980–2004 Out of All Non-OECD Developing Countries Sample

		(1)	(2)	(3)	(4)	(5)	(6)
			Flows Measure (%)				
Country	Geographic region	GDP per capita growth (%)	Aid receipts to output (Aid/GDP)	Aid receipts to net capital flows (Aid/-CA)	Private capital inflows to output (Equity/GDP)	Total private & public capital inflows to output ([Eqty+Debt]/GDP)	Changes in reserves to output (Res./GDP)
Haiti	Lat.America	-2.3	8.8	369.1	0.3	2.2	0.0
Niger	Africa	-1.9	14.6	295.0	0.4	3.4	0.2
Madagascar	Africa	-1.6	11.0	154.1	0.5	5.3	0.5
Zambia	Africa	-1.1	18.5	122.9	3.1	6.4	0.3
Burundi	Africa	-0.9	19.8	1424.0	.	.	.
Sierra Leone	Africa	-0.8	18.0	288.5	.	.	.
Togo	Africa	-0.8	10.0	119.1	1.8	3.7	1.1
Kyrgyz Rep.	Europe[a]	-0.7	6.4	170.9	3.2	13.1	2.5
Comoros	Africa	-0.2	21.9	271.5	.	.	.
Bolivia	Lat.America	-0.2	7.8	140.4	3.5	7.2	0.5
Vanuatu	Asia	-0.2	21.6	210.2	.	.	.
Malawi	Africa	-0.2	21.1	739.9	0.7	7.5	0.1
Suriname	Lat.America	-0.1	6.9	-10.9	.	.	.
El Salvador	Lat.America	-0.0	5.0	287.0	1.7	5.1	0.8
Honduras	Lat.America	-0.0	7.9	119.9	1.8	6.9	1.0
Kenya	Africa	0.0	7.1	156.3	0.3	2.6	0.3
Solomon Islands	Asia	0.1	20.7	-323.2	.	.	.
Papua New Guinea	Asia	0.1	9.3	130.4	2.4	5.3	0.2
Ethiopia	Africa	0.1	8.9	-38.6	1.2	3.1	0.6
Mali	Africa	0.2	17.8	196.4	1.4	6.8	1.1
Gambia	Africa	0.2	22.7	-320.6	.	.	.
Mongolia	Asia	0.3	10.1	33.6	.	.	.
Senegal	Africa	0.3	11.1	152.5	0.9	4.6	1.0
Benin	Africa	0.6	10.7	250.1	1.4	5.3	1.2
Congo, Rep.	Africa	0.7	5.7	51.4	4.3	12.6	0.1
Ghana	Africa	0.7	8.9	294.2	1.9	6.4	0.7
Samoa	Asia	0.7	22.6	-360.4	.	.	.
Rwanda	Africa	0.7	20.2	489.6	0.5	4.2	0.4
Mauritania	Africa	0.8	23.1	232.1	.	.	.
Jordan	Africa	0.9	11.0	595.1	1.5	7.3	2.1
Guyana	Lat.America	0.9	15.5	141.1	.	.	.
Guinea	Africa	1.0	7.7	221.8	0.8	4.4	0.1
Burkina Faso	Africa	1.0	13.9	597.0	0.3	2.7	0.8
Tanzania	Africa	1.5	11.9	-36.2	1.9	4.5	1.6
Seychelles	Africa	1.5	6.4	103.5	.	.	.
Albania	Europe[a]	1.8	7.9	109.9	3.2	4.2	2.6
Grenada	Lat.America	1.8	7.3	-170.8	.	.	.
Uganda	Africa	1.9	11.7	-379.0	1.1	5.2	0.9
Nepal	Asia	1.9	9.1	201.9	0.1	3.7	1.0
Tonga	Asia	2.1	20.4	1641.8	.	.	.
Mozambique	Africa	2.1	28.1	175.6	2.4	8.0	1.5
Lesotho	Africa	2.1	16.8	-125.7	.	.	.
Eritrea	Africa	2.2	13.2	-175.1	.	.	.
Chad	Africa	2.5	12.9	19.8	5.8	8.6	0.6
Armenia	Europe[a]	2.8	5.6	115.7	5.3	11.0	2.3
Sri Lanka	Asia	2.9	5.9	-1945.2	1.0	5.9	0.5
Belize	Lat.America	3.1	5.3	66.1	.	.	.
St.Vincent&Gren.	Lat.America	3.1	6.9	114.1	.	.	.
Lao PDR	Asia	3.1	11.4	292.0	2.1	11.8	0.8
Dominica	Lat.America	3.2	12.0	117.9	.	.	.
Cape Verde	Africa	3.2	19.4	1252.6	.	.	.
Cambodia	Asia	4.7	6.2	253.4	4.7	8.3	1.8

Notes: Countries that are listed in this table have aid/GDP ratios higher than 5 percent (31 countries in All Developing Sample). "GDP per capita growth (%)" represents the average over 1980–2004 of the rate of change of GDP per capita in 2000 U.S. dollars (in percent). "Aid receipts to output (Aid/GDP)" represents the average over 1980–2004 of the annual changes in net overseas assistance as percentage of GDP. "Aid receipts to net capital flows (Aid/-CA)" is annual net overseas assistance normalized by the negative of the current account balance (both in nominal U.S. dollars) and then averaged over 1980–2004. "Private capital inflows to output (Equity/GDP)" is the average over 1980–2004 of the equity capital inflows (changes in liability stocks) as percentage of GDP. "Total private & public capital inflows to output ([Eqty+Debt]/GDP)" is computed similarly using total (equity plus debt and other types) capital inflows (changes in liability stocks). "Changes in reserves to output (Res./GDP)" represents the average over 1980–2004 of the annual changes in foreign reserves (excluding gold) as percentage of GDP. [a] including Central Asia.

caption(Appendix Table): Net Debt Flows (Long-Run Change of Debt Stocks) and Growth: Decomposition
Country Sample: Benchmark Developing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent Variable/GDP	Net total ext. debt flows	Net L-term ext. debt flows	Net S-term ext. debt flows	Net private NG ext.debt flows	Net total PPG ext. debt flows	Net multilat. PPG ext. debt flows	Net bilat. PPG ext. debt flows	Net official PPG ext. debt flows	Net concessional PPG debt flows	Use of the IMF credit	Net private PPG ext. debt flows	Net flows of total ext. debt from private
Average per capita GDP growth relative to the U.S.	–3.52* (1.86)	–3.58** (1.62)	.422 (.290)	1.39** (.612)	–4.97*** (1.57)	–3.47*** (.967)	–2.51** (1.06)	–5.98*** (1.65)	–4.24*** (1.31)	–.361* (.214)	1.01** (.459)	2.40*** (.803)
Observations	75	75	75	75	75	75	75	75	75	75	75	75

Notes: Robust standard errors are in parentheses. ***, **, and * denote significance at 1%, 5%, 10%. In this table, all dependent variables are the debt flows computed as the debt stock relative to GDP in 2000 minus debt relative to GDP in 1980, or first available year; the ratios are computed from the debt and GDP in current U.S. dollars. “Net total ext. debt flows” represents total external debt flows. “Net L-term (S-term) ext. debt flows” is long-term (short-term) external debt flows. “Net private NG ext. debt flows” is private non-guaranteed debt flows. “Net total PPG ext. debt flows” is total public and publicly-guaranteed debt flows. “Net multilat. (bilat.) PPG ext. debt flows” is multilateral (bilateral) PPG debt flows. “Net official PPG ext. debt flows” is PPG debt flows from official creditors. “Net concessional PPG ext. debt flows” is total (bilateral and multilateral) concessional PPG debt flows. “Use of the IMF credit” is the IMF credit flows. “Net private PPG ext. debt flows” is PPG debt flows from private creditors. “Net flows of total ext. debt from private” is average annual total debt flows from private creditors. Average per capita GDP growth relative to the U.S. is calculated from the rate of change of real per capita GDP in 2000 U.S. dollars, geometric average over 1980–2000.

Table 13: (Appendix Table) Correlations of Net Debt Flows and Aid Flows

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Measures of aid flows							
	Total grants	ODA loans	Net ODA	Net ODA loans from multilat.	Net ODA grants from multilat.	Net ODA from multilat.	Net ODA loans IMF	Net ODA from IMF
Measures of net debt flows								
	Sample: All Non-OECD Developing Countries							
Net total ext. debt flows	0.3301	0.5617	0.3999	0.3749	0.5020	0.4555	0.4599	0.4216
Net L-term ext. debt flows	0.4510	0.7037	0.5263	0.4897	0.6356	0.5848	0.5239	0.4847
Net S-term ext. debt flows	-0.1878	-0.2211	-0.1922	-0.1702	-0.2336	-0.2096	-0.1735	-0.1683
Net private NG ext. debt flows	-0.1982	-0.2368	-0.2060	-0.2289	-0.2366	-0.2428	-0.0030	-0.0071
Net total PPG ext. debt flows	0.4972	0.7559	0.5733	0.5437	0.6890	0.6409	0.5150	0.4776
Net multilat. PPG ext. debt flows	0.7131	0.9115	0.7840	0.7595	0.9206	0.8741	0.6064	0.5567
Net bilat. PPG ext. debt flows	0.1481	0.3836	0.2057	0.1388	0.2743	0.2133	0.4023	0.3872
Net official PPG ext. debt flows	0.6039	0.8570	0.6827	0.6349	0.8161	0.7541	0.6347	0.5905
Net concessional PPG ext. debt flows	0.6503	0.8865	0.7278	0.6837	0.8669	0.8061	0.6415	0.5874
Use of the IMF credit	0.0977	0.3337	0.1552	0.1401	0.3717	0.2632	0.6741	0.6147
Net private PPG ext. debt flows	-0.4082	-0.4537	-0.4336	-0.3768	-0.5087	-0.4599	-0.4476	-0.4202
Net flows total ext. debt from private	-0.4307	-0.4877	-0.4550	-0.4226	-0.5311	-0.4959	-0.3555	-0.3361
Changes in reserves	-0.1901	-0.1745	-0.1806	-0.1684	-0.1689	-0.1769	-0.0156	-0.0405
	Country Sample: Benchmark Developing							
Net total ext. debt flows	0.2853	0.4137	0.3290	0.2563	0.3467	0.3158	0.4143	0.3780
Net L-term ext. debt flows	0.4493	0.6147	0.5000	0.4054	0.5194	0.4842	0.5156	0.4740
Net S-term ext. debt flows	-0.2064	-0.2380	-0.2065	-0.1965	-0.2295	-0.2229	-0.1265	-0.1197
Net private NG ext. debt flows	-0.0865	-0.1679	-0.0962	-0.1233	-0.1716	-0.1545	0.0241	0.0266
Net total PPG ext. debt flows	0.4903	0.6896	0.5457	0.4596	0.5940	0.5517	0.5159	0.4726
Net multilat. PPG ext. debt flows	0.7499	0.9177	0.8078	0.7594	0.9388	0.8889	0.6696	0.6050
Net bilat. PPG ext. debt flows	0.1668	0.2773	0.1935	0.0765	0.1078	0.0965	0.2121	0.2008
Net official PPG ext. debt flows	0.6660	0.8539	0.7247	0.6253	0.7800	0.7356	0.6282	0.5725
Net concessional PPG ext. debt flows	0.7276	0.9276	0.7925	0.7113	0.8893	0.8379	0.6799	0.6109
Use of the IMF credit	0.2586	0.3838	0.2964	0.2649	0.4114	0.3545	0.6237	0.5621
Net private PPG ext. debt flows	-0.4967	-0.5047	-0.5143	-0.4680	-0.5389	-0.5268	-0.3527	-0.3163
Net flows total ext. debt from private	-0.4179	-0.4731	-0.4368	-0.4191	-0.5005	-0.4813	-0.2451	-0.2167
Changes in reserves	-0.1043	-0.0844	-0.0905	-0.1022	-0.1001	-0.1057	0.0463	0.0096

Notes: This table reports the correlations of aid and debt flows components for the developing countries with available data. The *aid flows* are computed as the average over 1980–2004 of the annual aid flows in current U.S. dollars, normalized by nominal GDP in U.S. dollars. As the aid flow measures, "Total Grants" represent Net ODA flows minus Net ODA Loans flows. "Net ODA Loans" are loans with maturities of over one year and meeting the criteria set under Official Development Assistance and Official Aid. "Net ODA" represents all ODA flows, defined as those flows to developing countries and multilateral institutions provided by official agencies, including state and local governments, or by their executive agencies. "from Multilat." represents the corresponding type of flows from multilateral agencies; "IMF" are those from the IMF. The *net debt flows* are computed as the average over 1980–2004 of the annual changes in the corresponding debt stock in current U.S. dollars, normalized by nominal GDP in U.S. dollars. "Net total ext. debt flows" represents average annual total external debt flows. "Net L-term (S-term) ext. debt flows" is average annual long-term (short-term) external debt flows. "Net private NG ext. debt flows" is average annual private non-guaranteed debt flows. "Net total PPG ext. debt flows" is average annual total public and publicly-guaranteed debt flows. "Net multilat. (bilat.) PPG ext. debt flows" is average annual multilateral (bilateral) PPG debt flows. "Net official PPG ext. debt flows" is average annual PPG debt flows from official creditors. "Net concessional PPG ext. debt flows" is average annual total (bilateral and multilateral) concessional PPG debt flows. "Use of the IMF credit" is average annual IMF credit flows. "Net private PPG ext. debt flows" is average annual PPG debt flows from private creditors. "Net flows of total ext. debt from private" is average annual total debt flows from private creditors. "Changes in reserves" is annual changes in foreign reserves (excluding gold), normalized by nominal GDP in U.S. dollars.

Table 14: (Appendix Table) Explaining Net Capital Flows, 1980–2004

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Panel A: All Developing Sample						
Log Initial GDP per capita	–.569* (.322)				–.004 (.348)	.735* (.407)	1.722*** (.498)
Average per capita GDP Growth		.106 (.253)					.546** (.239)
Average Aid Flows/GDP			.222*** (.070)		.222*** (.082)		.273*** (.082)
Average Official PPG Debt Flows/GDP				1.010*** (.217)		1.193*** (.241)	1.335*** (.248)
Observations	122	122	122	99	122	99	99
	Panel B: Benchmark Developing Sample						
Log Initial GDP per capita	–1.193*** (.399)				.586^{+} (.395)	.256 (.335)	1.092** (.458)
Average per capita GDP growth		–.364^{+} (.241)					.275 (.205)
Average aid flows/GDP			.401*** (.056)		.470*** (.070)		.303*** (.098)
Average official PPG debt flows/GDP				1.460*** (.208)		1.548*** (.234)	1.163*** (.284)
Observations	75	75	75	75	75	75	75

Notes: Robust standard errors are in parentheses. ***, **, *, and † denote significance at 1%, 5%, 10%, 15%. In this table, the dependent variable is -CA/GDP represents the negative of the current account balance normalized by GDP (both in nominal U.S. dollars) and then averaged over 1980–2004. Average per capita GDP growth is calculated as the rate of change of real per capita GDP in 2000 U.S. dollars. Average aid flows/GDP is the average over 1980–2004 of the annual aid receipts (net overseas assistance) normalized by GDP. Average Official PPG Debt Flows/GDP is the average annual public and publicly-guaranteed debt flows from official creditors. Log Initial GDP per capita is the logarithm of the real per capita GDP in 2000 U.S. dollars in the first available year in a given period.

Table 1R: (Appendix Table) Net Capital Flows (Current Account) and Growth: Replication Exercise

	(1)	(2)	(3)	(4)
Dependent variable	Net capital flows (-CA/GDP)	Net capital flows (-CA/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)	Aid-adjusted net capital flows ([-CA-Aid]/GDP)
Sample	Non-OECD	Drop HKG,SGP	Non-OECD	Drop SGP, HKG
Average TFP Growth	–.424**	–.280	.213	.297
	(.215)	(.202)	(.284)	(.296)
Productivity Catch-up Relative to the U.S.	–.035**	–.025*	.027	.035**
	(.015)	(.014)	(.016)	(.017)
Average per capita GDP Growth Relative to the U.S.	–.013***	–.010***	.008	.010**
	(.004)	(.003)	(.005)	(.005)
Observations	67	65	67	65

Notes: Robust standard errors are in parentheses. *** , **, and * denote significance at 1%, 5%, and 10%. "Net capital flows (-CA/GDP)" represents the average over 1980–2000 of the current account balance with the sign reversed from the IMF as percentage of GDP. "Aid-adjusted net capital flows ([-CA-Aid]/GDP)" represents the average over 1980–2000 of the current account balance with the sign reversed from the IMF as percentage of GDP minus the average over 1980–2000 of the annual changes in net overseas assistance from the OECD-DAC database as percentage of GDP. Average TFP Growth and Productivity Catch-up Relative to the U.S. are calculated following Gourinchas and Jeanne (2009). Average per capita GDP Growth relative to the U.S. is calculated as the geometric mean of the rate of change of GDP per capita in 2000 U.S. dollars, relative to that of the U.S.

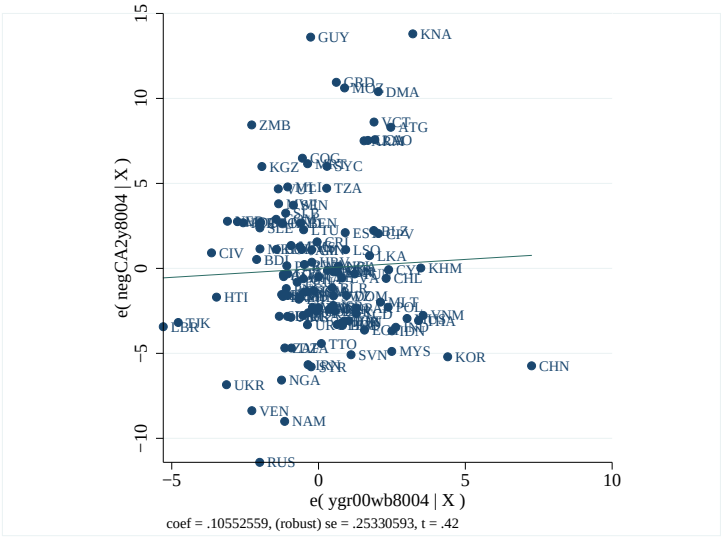
Table 2R: (Appendix Table) Net Capital Flows (Normalization by the Initial Output) and Growth: Replication Exercise

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent variable	Net capital flows ($[NED_0 + \sum CA]/GDP_0$)	Net capital flows ($\Delta NEP/GDP_0$)	Aid-adjusted net capital flows ($[\Delta NEP\text{-}Aid]/GDP_0$)	Net private capital flows (Equity $/GDP_0$)	Net capital flows ($\Delta NEP/GDP_0$)	Aid-adjusted net capital flows ($[\Delta NEP\text{-}Aid]/GDP_0$)	Net private capital flows (Equity $/GDP_0$)	Net capital flows ($\Delta NEP/GDP_0$)	Aid-adjusted net capital flows ($[\Delta NEP\text{-}Aid]/GDP_0$)	Net private capital flows (Equity $/GDP_0$)	Aid receipts (Aid/GDP_0)	Net private & public debt flows ($Debt/GDP_0$)
Sample	Non-OECD				Drop HKG, SGP			Drop HKG, SGP, Botswana				
Productivity Catch-up Relative to the U.S.	–.527* (.267)	–.708* (.401)	–.250 (.421)	.295** (.133)	-0.206 (0.239)	0.213 (.308)	.231** (.098)	–.017 (.169)	.458** (.208)	.243** (.103)	–.475*** (.137)	.069 (0.144)
Average p.cap. GDP Growth Relative to the U.S.	–.187** (.093)	–.226* (.135)	–.068 (.148)	.129*** (.042)	-0.063 (0.095)	0.082 (.126)	.114*** (.031)	.020 (.070)	.192** (.089)	.123*** (.033)	–.172*** (.055)	.049 (.061)
Observations	67	67	67	67	65	65	65	64	64	64	64	64

Notes: Robust standard errors are in parentheses. *** , **, and * denote significance at 1%, 5%, and 10%. "Net capital flows ($NED_0 + \sum CA/GDP_0$)" is computed following Gourinchas and Jeanne (2009) as the initial net external debt from LM plus the sum of the current account balances from the IFS (IMF), PPP-adjusted using the formula P.Investment*CGDP/RGDP (PWT) and normalized by the initial GDP. "Net capital flows ($\Delta NEP/GDP_0$) is computed as the change in the net external position from LM, PPP-adjusted using the formula P.Investment*CGDP/RGDP (PWT) and normalized by the initial GDP. "Net private capital flows (Equity/GDP)" represents the average over 1980–2000 of the net flows of foreign liabilities minus net flows of foreign assets. Net flows of foreign liabilities (assets) are the annual changes in the stocks of FDI and portfolio equity investment liabilities (assets) from LM normalized by the initial GDP. "Aid receipts (Aid/GDP)" represents the average over 1980–2000 of the annual changes in net overseas assistance from the OECD-DAC database normalized by the initial GDP. "Net private & public debt flows (Debt/GDP)" are calculated similarly using the stocks of the portfolio debt and other investment assets and liabilities from LM normalized by the initial GDP. Productivity Catch-up Relative to the U.S. are calculated following Gourinchas and Jeanne (2009). Average per capita GDP Growth relative to the U.S. is calculated as the geometric mean of the rate of change of GDP per capita in 2000 U.S. dollars, relative to that of the U.S.

Sample: All Non-OECD Developing Countries

Panel A: Dependent variable is Net capital flows (-CA/GDP)



Panel B: Dependent variable is Aid-adjusted net capital flows ([-CA-Aid]/GDP)

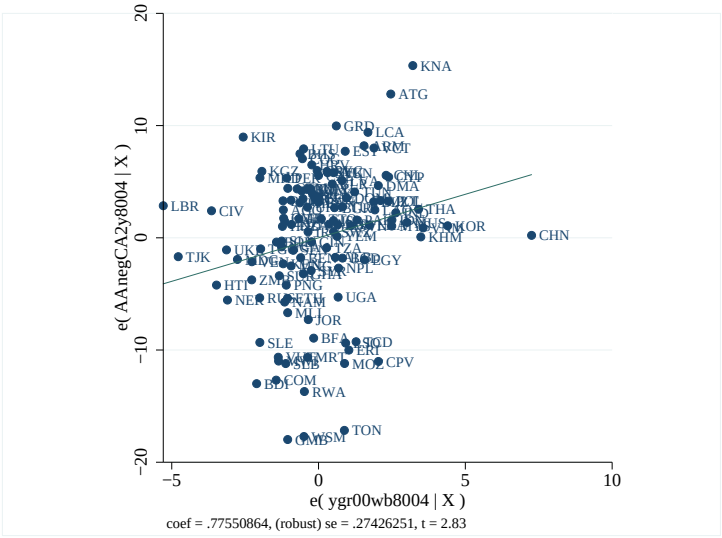
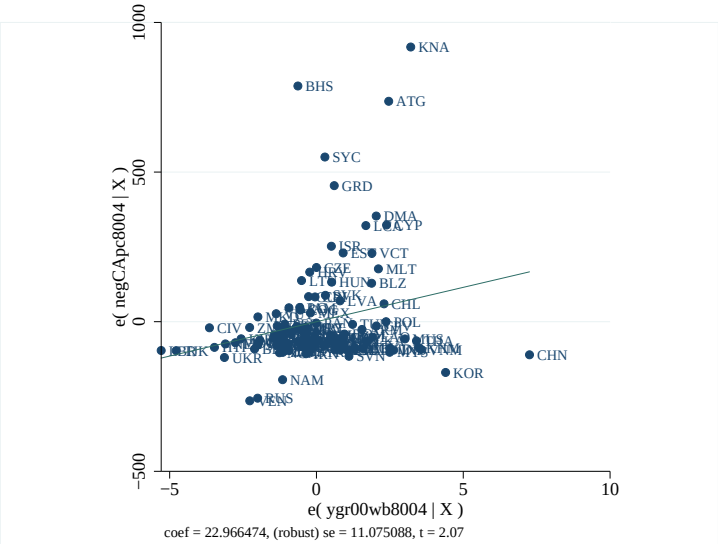


Figure 5: (Appendix Figure) Net Capital Flows and Growth in Developing Countries: GDP normalization, 1980–2004

Notes: The graphs represent partial correlations of the regressions from the column (1) and (2) in Table 3.

Sample: All Developing Countries

Panel A: Dependent variable is Net capital flows (-CA/Pop)



Panel B: Dependent variable is Aid-adjusted net capital flows ([-CA-Aid]/Pop)

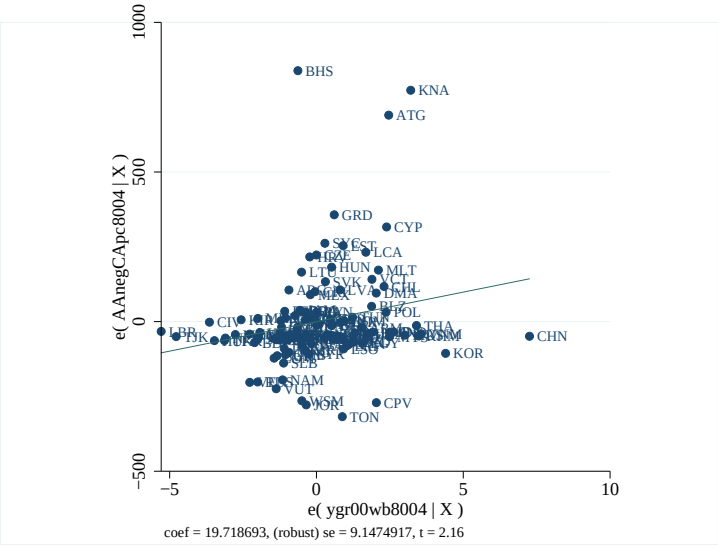
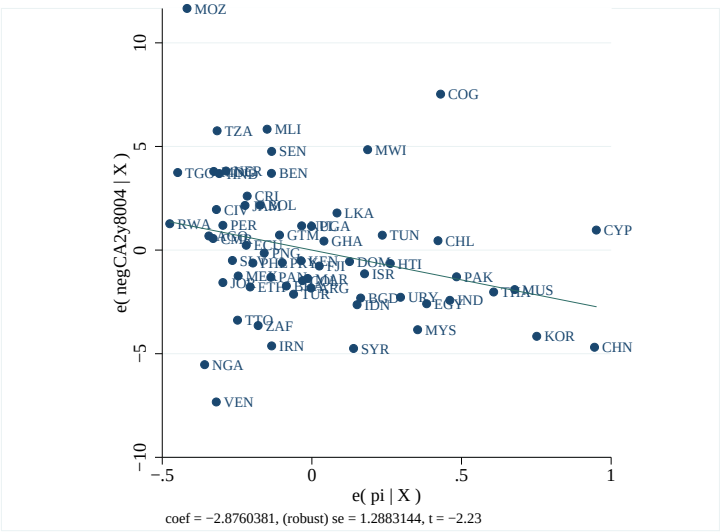


Figure 6: (Appendix Figure) Net Capital Flows and Growth in Developing Countries: Population normalization, 1980–2004

Notes: The graphs represent partial correlations of the regressions from the column (3) and (4) in Table 3.

Sample: Developing Countries with Capital Stock Data

Panel A: Dependent variable is Net capital flows (-CA/GDP)



Panel B: Dependent variable is Aid-adjusted net capital flows ([-CA-Aid]/GDP)

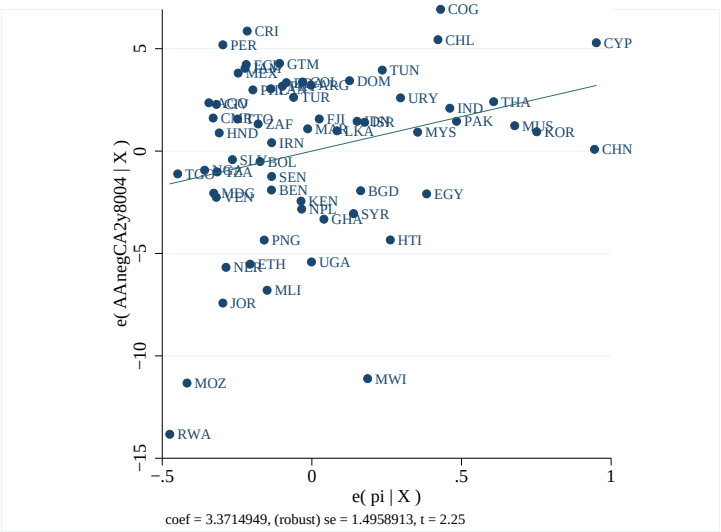


Figure 7: (Appendix Figure) Net Capital Flows and Growth in Sample with Capital Stock Data: GDP normalization, 1980–2004

Notes: The graphs represent partial correlations of the regressions from the column (5) and (6) in Table 3.

Sample: Benchmark Developing Countries

Dependent variable is -CA/GDP (Aid Adjusted)

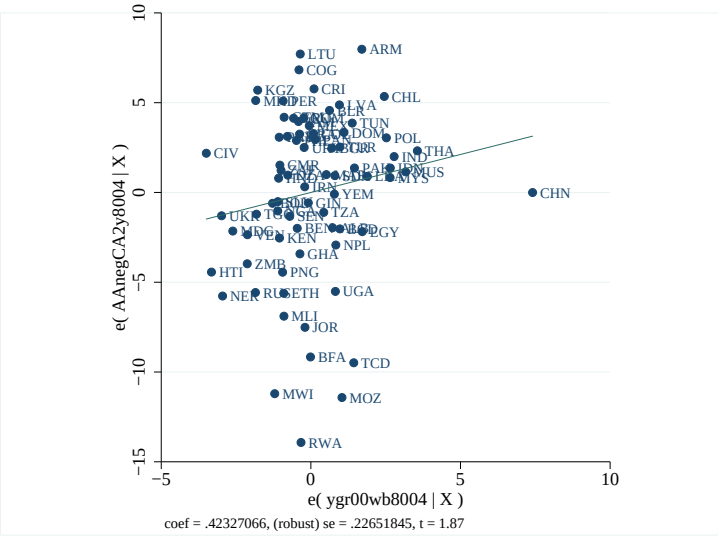
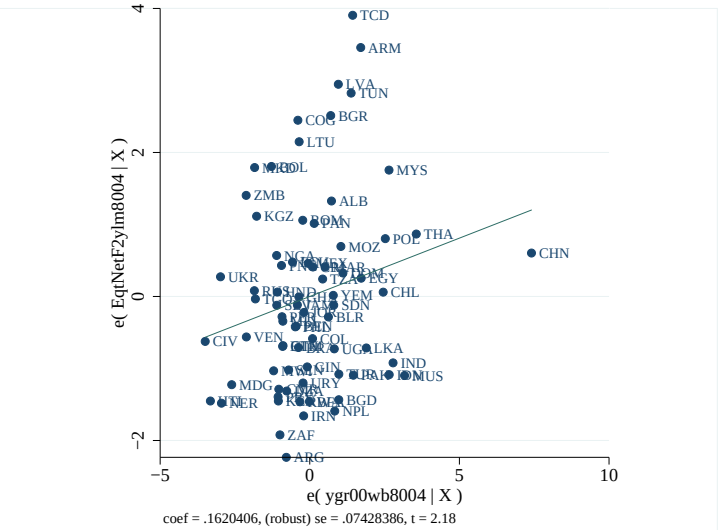


Figure 8: (Appendix Figure) Aid Adjusted Net Capital Flows and Growth in Benchmark Sample, 1980–2004

Notes: The graph represents a partial correlation of a regression from the column (2) in Table 4.

Sample: Benchmark Developing Countries

Panel B: Dependent variable is Net private capital flows (Equity/GDP)



Panel B: Dependent variable Net public debt flows ([PPG-Res.]/GDP)

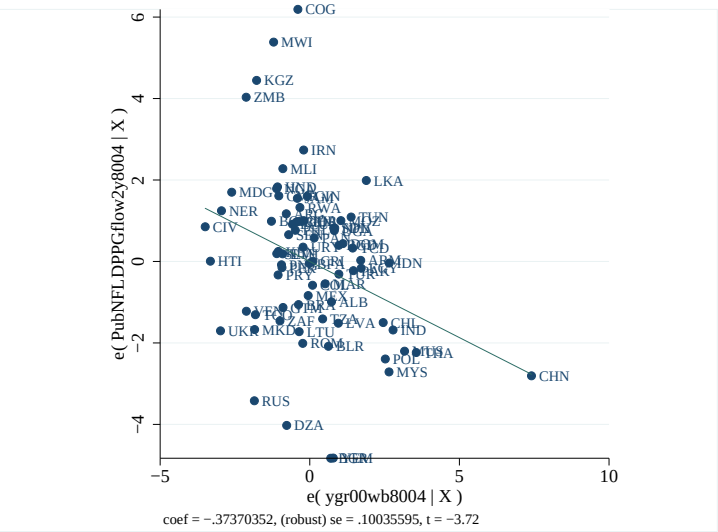
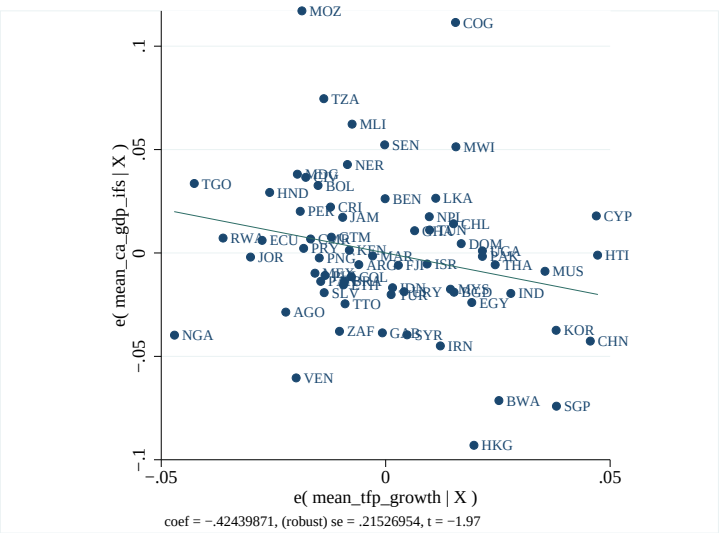


Figure 9: (Appendix Figure) Net Private Capital Flows, Net Public Debt Flows and Growth,1980–2004

*Notes:*The graphs represent a partial correlation of the regressions from the column (3) and (7) in Table 4.

Panel A: Net capital flows (-CA/GDP) vs. Average TFP Growth



Panel B: Net capital flows (-CA/GDP) vs.
Average per capita GDP Growth Relative to the U.S.

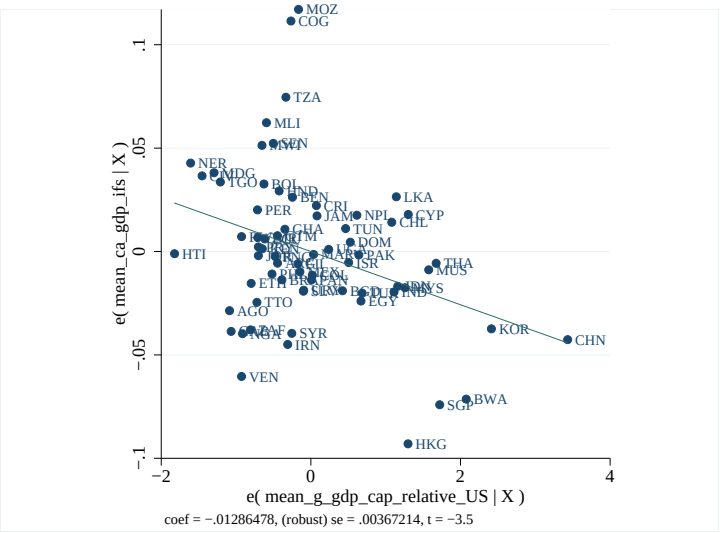


Figure 1R: (Appendix Figure) Net Capital Flows (Current Account) and Growth: Replication Exercise

Notes: The figure reports partial correlation plots from the replication Table 1R, col (1) upper and lower panels.

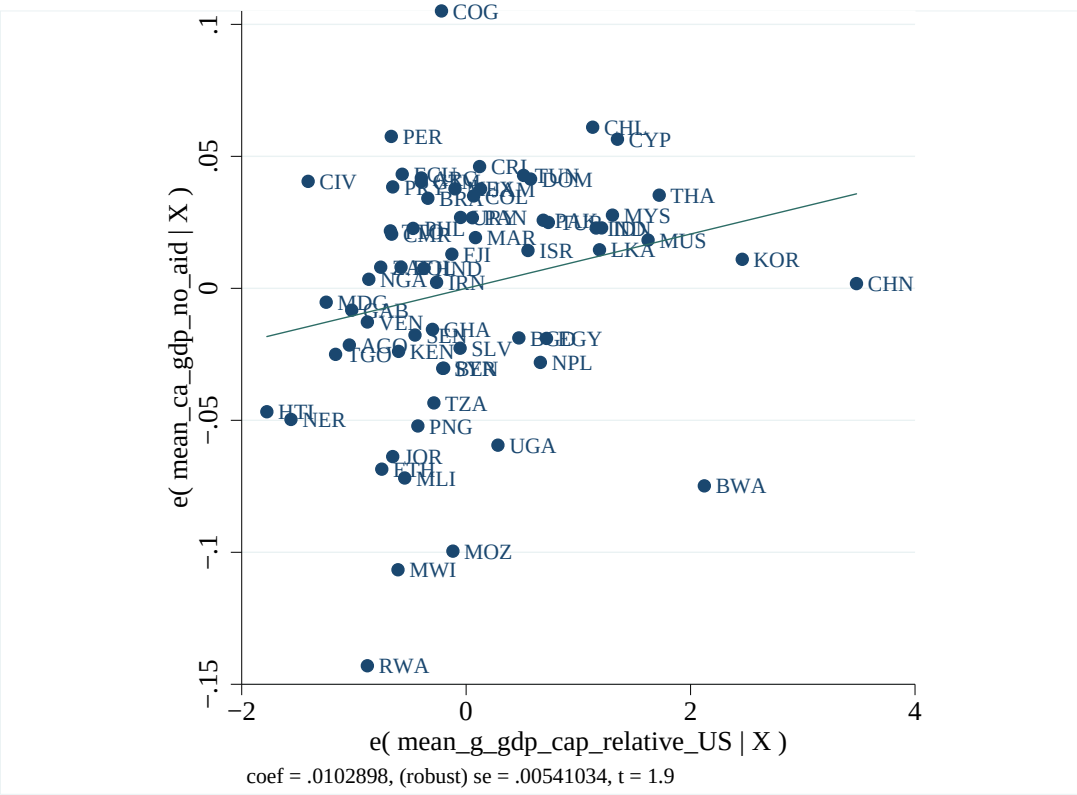
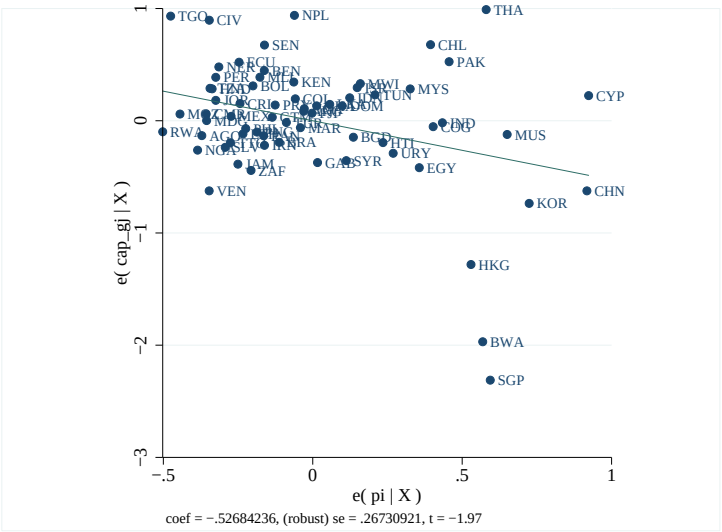


Figure 2R: (Appendix Figure) Net Capital Flows (Current Account), Aid Adjusted and Growth: Replication Exercise

Notes: The figure reports partial correlation plots from the replication Table 1R, col (4) lower panel.

Panel A: Net Capital Flows ($[NED_0 + \sum CA]/GDP_0$) vs.
Productivity Catch-up Relative to the U.S.



Panel B: Net Capital Flows ($\Delta NEP/GDP_0$) vs.
Average per capita GDP Growth Relative to the U.S.

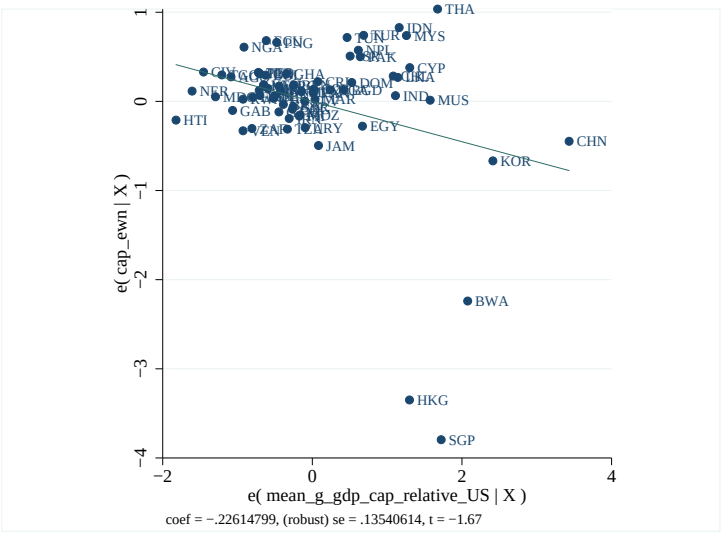


Figure 3R: (Appendix Figure) Net Capital Flows (Normalization by the Initial Output) and Growth: Replication Exercise

Notes: The figure in Panel A reports partial correlation plot from the replication Table 2R, col (1) upper panel. The figure in Panel B reports partial correlation plot from the replication Table 2R, col (2) lower panel.

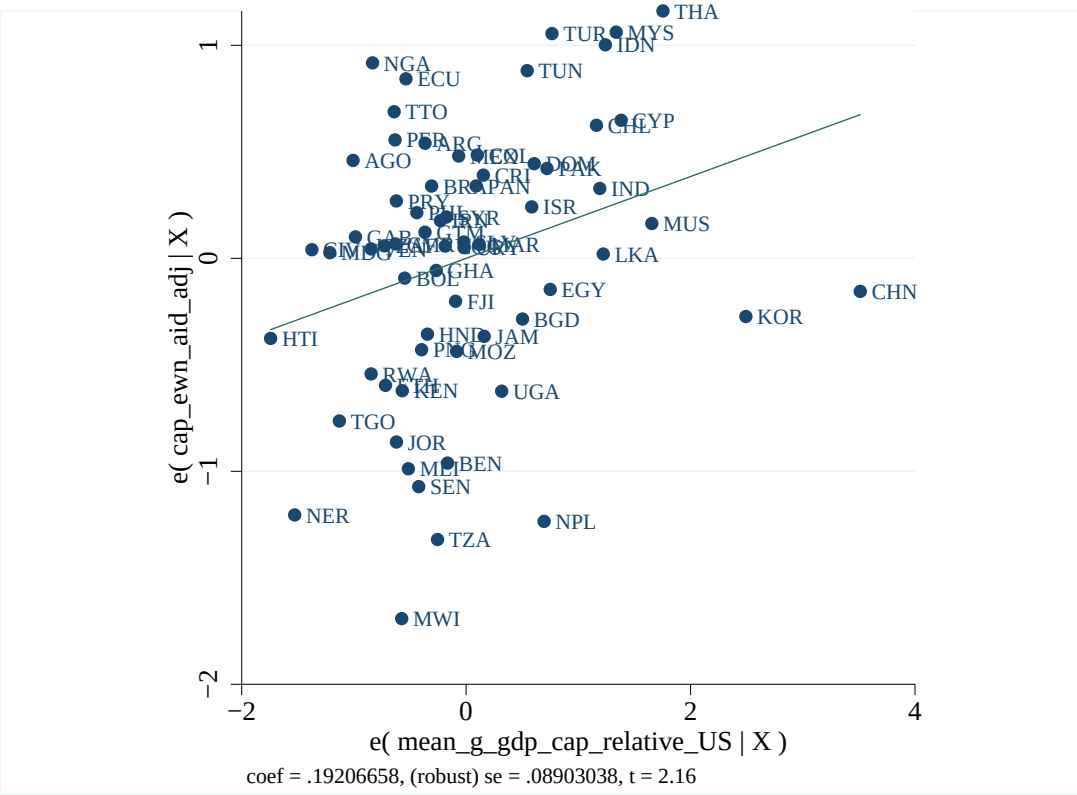


Figure 4R: (Appendix Figure) Net Capital Flows (Normalization by the Initial Output), Aid Adjusted and Growth: Replication Exercise

Notes: The figure reports partial correlation plot from the replication Table 2R, col (9) lower panel.