

What Factors Appear to Drive Private Capital Flows to Developing Countries? And How Does Official Lending Respond?

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Abstract

This paper studies the drivers of private capital flows to developing countries and the apparent response of official lending during 1978-1997. Econometric results reveal that portfolio flows to a country tended to rise in response to an increase in the current account deficit; a rise in FDI flows; higher per capita income and growth performance. Once these variables were accounted for, location and regional factors did not seem to influence private flows. Finally, both private capital flows seemed to respond positively to World Bank lending commitments with a one year lag. Official flows including World Bank lending, appear to have played a stabilizing role in response to the volatility of private capital flows and fluctuations in commodity prices and GDP growth.

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I. Introduction

This paper presents a quantitative analysis of the factors that appear to drive various types of capital flows to developing countries and the apparent lending responses of official flows (including IBRD and IDA) during the period 1978-97. The main conclusions, as will be evident, are:

- Private portfolio flows to a country tended to rise in response to an increase in the current account deficit; a rise in foreign direct investment (FDI) flows; higher per capita income and growth performance. Once these variables were accounted for, location and regional factors did not seem to influence private flows. Finally, both private capital flows seemed to respond positively to World Bank lending commitments with a one year lag.
- Official flows which include lending from bilateral and multilateral sources appear to have played a stabilizing role in response to the volatility of private capital flows and fluctuations in commodity prices and GDP growth.

The plan of the paper is as follows. The next section starts with a theoretical framework of analysis of various factors that drive private capital flows. Section III presents empirical results from a time-series aggregate analysis of factors that appear to have been historically important in determining private FDI and non-FDI flows and official lending responses (including IBRD and IDA commitments). It also contains an out-of-sample forecasting exercise for private capital flows for 1998, for validation checks.

Since results based on aggregate information can often conceal substantial inter-country variations, a country-level analysis is then undertaken in Section IV of the paper. This section presents a more detailed examination of the country-level determinants of private capital flows and official lending responses (represented by World Bank lending).

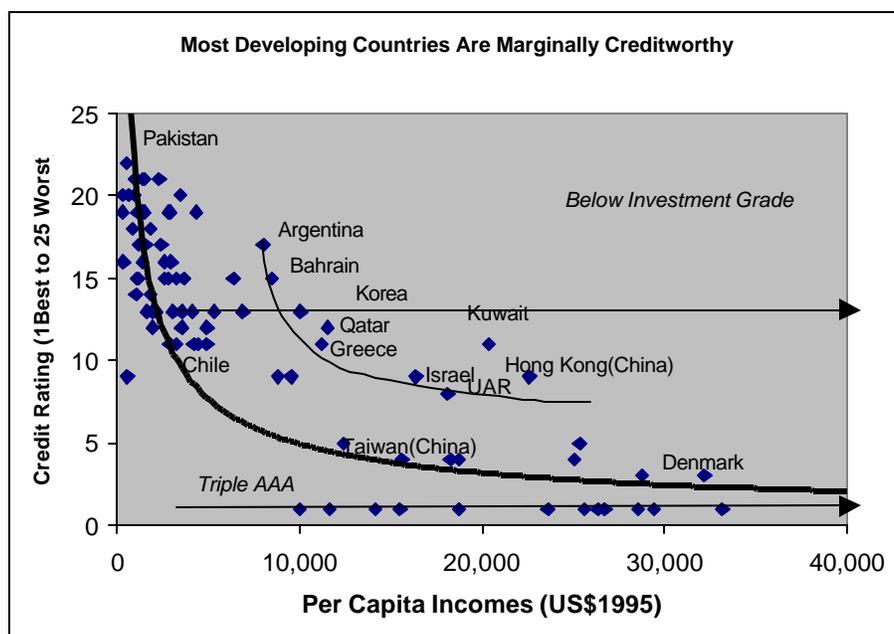
Section V concludes the paper with a summary of results. It shows that the findings from the panel data analyses mostly complement and confirm those from aggregate data analyses.

II. A framework for analyzing the determinants of capital flows to developing countries

The traditional literature on capital flows has focused on explaining the past behavior of capital flows during certain well-known episodes such as the surge in the early nineties or the crash in Mexico in 1995. The finding from this literature is that capital flows to a developing country are a function of the factors that determine the supply of flows (the so-called “push” factors) to that country and the demand for flows by that country (the so-called “pull” factors). Most of these analyses estimate a reduced form equation that has elements of global supply of funds and country specific demand factors (World Bank, 1997a; Calvo, Leiderman and Reinhart, 1993; Chuhan, Claessens and Mamingi, 1998; Montiel and Reinhart, 1997; Claessens, Oks and Polastri, 1998).

In this paper, capital flows to a country at a point of time is assumed to be a function of the factors that determine the supply of flows (the so-called “push” factors) to that country and the

demand for flows by that country (the so-called “pull” factors). But most developing countries are only marginally creditworthy (see Figure below, which shows that more than three-fourths of some 51 rated developing countries fall below minimum investment grade rating, justifying market segmentation; Dadush and Dasgupta, 1999) and are treated as a different asset-class than industrial countries), there can be no assumption that prices (the spread on loans) equilibrate demand and supply. Instead, significant credit-rationing is assumed to apply, not only in the case of private flows, but also in the case of official flows, including IBRD lending.



How does such credit rationing apply? One way to think about the credit-rationing effect is that there may be a given pool of total flows (F) to all developing countries that are determined by global factors, both in global financial markets and in developing countries as a whole, in any time period.¹ This pool F is then allocated to specific country shares by a second set of country-level specific determinants of such flows. In other words, the supply schedule of funds to all developing countries are determined at any point of time and is relatively inelastic, because these assets are not easily substitutable for other assets given their different risk and other characteristics (e.g., a triple A rated corporate or sovereign bond in an OECD country is a very different asset-class than a bond issued by Brazil or Indonesia). But within the general asset class of developing countries, these assets are then substitutable, and therefore determined by country-specific factors.

Obviously, this two-stage process is only a rough proxy of the actual process of flows determination, and indeed, there is some element of price-clearing mechanisms also at work (as spreads to all countries, and to specific countries, tighten or loosen, depending on the aggregate level

¹ Portfolio asset-allocation models would suggest that capital flows to developing countries derive essentially from adjustments to stocks of global financial assets seeking to raise returns while diversifying risks. Because such stocks dwarf the small size of developing economies, even relatively small adjustments can result in a high degree of volatility in such flows. In addition, information problems and failures and moral hazard compound this inherent volatility.

of flows at any point of time)². But it is generally widely noted that global credit-rationing effects are widespread. In microeconomic terms, it is widely known that credit-risk departments of major financial institutions segment developing country assets and allocate specific limits on the holding of such assets. Another more substantial piece of evidence is the finding that the total level of flows F in any given year is a highly significant determinant of the capital flows to individual developing country borrowers (see Section IV later).

III. Determinants of aggregate capital flows to developing countries, 1978-1997

This section is devoted to an empirical analysis of the first stage of the process described in the previous section which involves identifying the factors that appear to determine the common global pool (or the relatively invariant supply schedule) F of capital flows to all developing countries at a point of time. Recognizing that different types of flows are different asset classes, we focus on four principal categories: net foreign direct investment flows (FDI); non-FDI flows (including portfolio debt, bonds and equities); official net flows; and total IBRD commitments. We also examine separately IBRD adjustment lending commitments and investment lending commitments.

We focus on factors relating to global financial markets as well as those specific to developing countries as a whole. We use time-series annual data for the period 1978-97.³ All data are taken from the Global Development Finance database maintained and published by the World Bank.

The Determinants of Global FDI flows to All Developing Countries, 1978-97

FDI flows are construed to be longer-term flows to developing countries in search of global markets and higher rates of longer-term return than in industrial countries. Consequently, we posit that global real factors and developing country real factors are likely to be the more fundamental drivers of total FDI flows. Total FDI flows are normalized or expressed as a share of total developing country GDP. The main global factor driving FDI is assumed to be global market growth, proxied by world trade (as a share of world GDP), as discussed in greater detail in World Bank (1997b). Other global factors include world GDP growth and the real LIBOR rate (i.e., US dollar LIBOR 3-month minus US CPI inflation rate). Developing country variables include growth rate of GDP in lower and middle income developing countries (LMIC), and an index of privatization (privatization flows as a ratio of developing country GDP). Finally, an interaction with non-FDI flows (normalized again as a share of total developing country GDP) is also included, since any

² For example, Dasgupta and Dadush (1999) find that the volatility of spreads to a country is significantly associated with country credit ratings, suggesting that spreads do indeed respond to a higher level of assessed credit risk specific to a country. However, the same study also finds that: (a) there is a marked segmentation between developing and developed country classes of borrowers in terms of credit ratings; and (b) that income levels also are a significant independent determinant of the volatility of spreads.

³ Given a relatively small set of annual time-series data (19 observations), there are well-noted problems of limited degrees of freedom, multi-collinearity, and problems of working with a small set of macroeconomic variables that potentially drift with time, leading to possibly spurious inferences on co-movements. Therefore, this paper also tests for the presence of co-integration (in addition to the standard OLS estimates), and in every case, strong presence of co-integration underlying the hypothesized relationships discussed in the rest of the paper are indeed confirmed.

project financed with FDI (direct equity flows) is also presumed to be associated with some non-FDI flows. The simple OLS regression results for the time-period 1978-97 are reported in Table 1.

The results are quite strong, with predicted flows tracking actual flows very closely. As expected, total FDI flows seem to have a very strong positive relationship with world trade and non-FDI flows, but also with growth in developing countries, and with real international interest rates. The last bears explanation. One plausible explanation is that rising real interest rates may signal falling returns to investments in source industrial countries which may encourage investment in developing countries. The coefficients on world GDP growth and the privatization index turned out to be insignificant.

Other variables were also tested, such as a dummy for balance of payments crises in significant parts of the developing world. This dummy takes the value of 1 between the years 1984-89 (more severe years of debt crisis), and in 1995 (the Mexican tequila crisis) and again in 1997 (the onset of the Asian crisis). In different specifications, the coefficient always carried a positive sign (more FDI flows associated with years of crisis) but was not statistically significant. This attested to the generally held proposition that crises do not appear to adversely affect FDI flows (GDF, 1999). And replacing world GDP growth by OECD growth also turned up a significant positive relationship (reversing the negative sign but insignificant coefficient on world GDP growth), although as explained earlier, there are no strong a priori reasons to buttress this.

The Determinants of Global Non-FDI Flows to Developing Countries, 1978-97

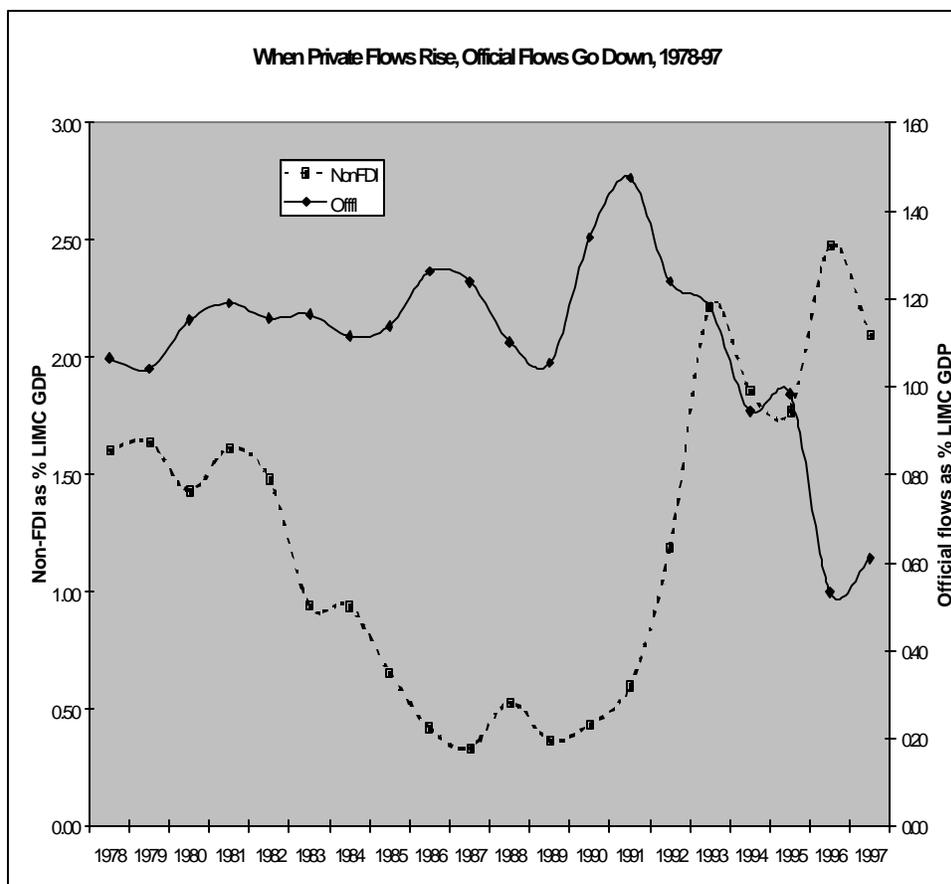
In the case of non-FDI (portfolio) flows, financial and risk determinants are expected to play a much stronger role. Earlier studies (Calvo, Leiderman and Reinhart, 1993) found cyclical world financial variables (interest rates, stock market returns) to be highly correlated with private capital flows to Latin America. The downturn in US interest rates and a rise in global liquidity between 1990-93 was again found to be a significant factor driving private capital flows to developing countries in World Bank (1997a). We use the real interest rate as one of the explanatory variables. We also include a lagged dependent variable to reflect persistence of such flows in the absence of major new information. Other explanatory variable are GDP growth in developing countries, and world GDP growth rate. In another specification, we also include a dummy for financial crisis in developing countries, and some association with FDI flows and world trade.

The regression results are again shown in Table 1, under the two different specifications (the second is our preferred specification). The results again track the turning points, cycles and the high volatility of non-FDI flows quite well. The persistence of non-FDI flows are evident in the size of the coefficient (close to 1) and positive sign and significance of the lagged dependent variable in specification (1). The other major result is the significance and negative sign of the coefficient with respect to the real world interest rate variable. This result strongly supports the previous findings in the literature that changes in global liquidity factors are a major influence on non-FDI flows to developing countries. But this result is weakened in the presence of significant defaults or debt crises in developing countries. In specification (2), we see this strikingly in terms of the negative sign and significance and the size of the coefficient (-0.4) for the dummy variable for the debt crisis, and the weaker significance of the global interest rate variable.

The other variables in specification (2) that are now found to be significant are a positive relationship to FDI flows (again, similar to the argument that there is some positive interaction between the variables because of their links in financing), a positive relationship with respect to growth in developing countries and a weaker negative one with respect to world economic growth (that tend to reflect faster OECD growth and make investing in developing countries less attractive). There is also evidently a significant negative relationship with world trade, which is harder to explain. The likely explanation is again in terms of the dominant role of industrial countries in the growth of world trade.

The Determinants of Official Flows, 1978-97

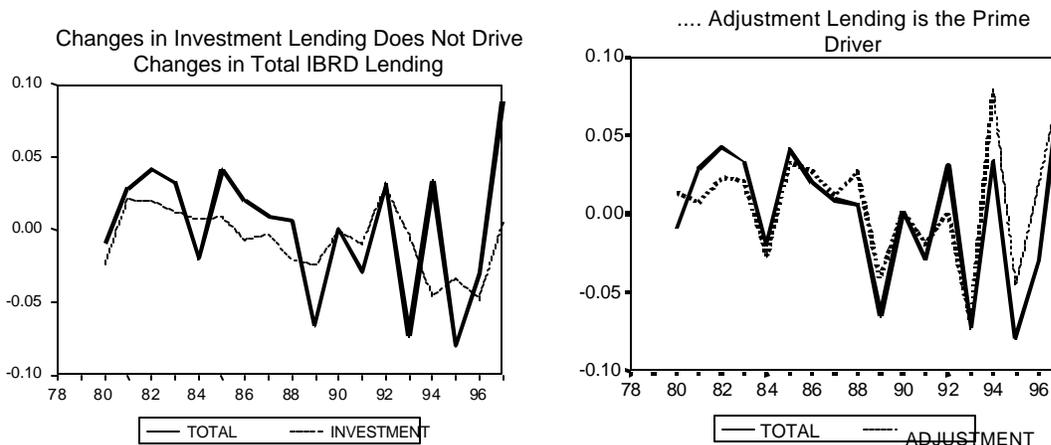
Official flows, which include net flows from all bilateral governmental and multilateral sources other than the IMF, are obviously subject to some explicit “budget-rationing” processes whose determinants are more difficult to capture without introducing a more careful analysis, such as the fiscal stances and situations in OECD countries, the political climate for such “aid” flows, and distinct events such as the shift to a market-economy in a large number of countries in the 1990s. For the purpose of this paper, however, we decided to limit ourselves to our core set of variables to see the relative weights of the various factors included in the other types of flows.



The results are quite interesting, despite the weaknesses noted above. First, there appears to be a significant negative relationship between official flows and private non-FDI flows to developing countries (see chart above). This suggests that official flows play a stabilizing role with respect to volatile private capital flows, although the size of the coefficient (0.21) indicates that this stabilizing role is relatively weak. This also reflects the overwhelming dominance of private flows in total capital flows---during 1996-97, the annual average of private flows was around \$293 billion out of an average total long-term flows of \$324 billion. In other words, during this period, private flows constituted nearly 90% of total flows, leaving only 10% to official flows. The relative importance of official flows was even smaller in middle-income countries that had access to global capital markets. The apparently stabilizing role may reflect the fact that non-FDI flows to developing countries soared in the early 1990s while official financing declined either because it was no longer needed, or as official flows reacted to a general political trend in favor of private financing. Also, a negative relationship between official flows and growth in developing countries is evident, suggestive of a stabilizing role of official flows with respect to economic growth.

The Determinants of IBRD Lending Commitments, 1978-97

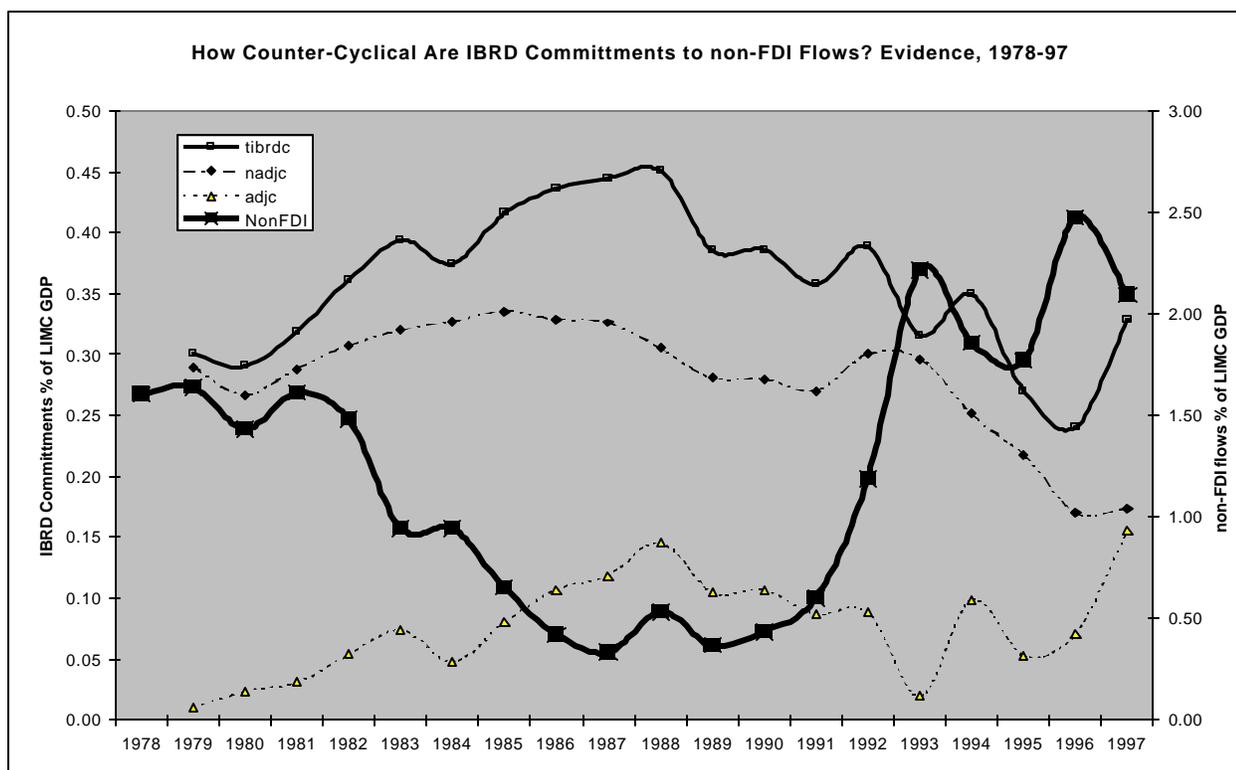
In comparison to all official flows which played a modestly stabilizing role, and that too through a severe decline when private non-FDI flows started to soar, did IBRD lending commitments behave differently? And what are main determinants of such commitments, again with respect to the same core set of common global and developing country factors identified earlier? Details and an intrinsically richer story with respect to country-specific factors are discussed in Section IV of the paper. Here the focus is on the broad aggregates.



Because different types of IBRD commitments have potentially different determinants, we also distinguish in this paper between adjustment lending commitments and investment lending commitments, in addition to the aggregate. It is important to note in this context that changes in total IBRD lending since the late 1970s has predominantly been driven by changes in adjustment lending, not investment lending, as indicated in the figures above. Investment lending has been a relatively stable part of the business with a declining trend (relative to the size of borrowing economies); in contrast, adjustment lending is the much more variable element driving variability in total IBRD lending, and with a rising trend, both especially evident in the 1990s.

Table 1 presents the results on the factors that appear to determine each of these types of flows: total, adjustment and investment (or non-adjustment) lending commitments.⁴ Once again, our common set of identified determinants does a reasonable job in tracking the actual commitments by type and in aggregate. In addition, of course, in trying to identify the “determinants” of such commitment decisions that are essentially non-market driven (i.e., taken by the institution through its various committees and its Board), the process essentially is one of identifying the implicit “revealed preference” of past behavior of the institution. And these could change in future so that its use as a forecasting tool requires caution.

(a) **Total IBRD Commitments, 1978-97:** As shown in Table 1, the regression equation suggests that total IBRD commitments are significantly counter-cyclical to private non-FDI flows. However, the size of the coefficient is relatively small at 0.10, and considerably weaker than even in the case of official net flows. Clearly, the stabilizing role of IBRD lending in response to the volatility of private capital flows---how much should it be---remains somewhat of an open question. The other major significant relationships are a positive relationship of IBRD commitments with



respect to FDI flows. The explanation for this is primarily that FDI tends to increase over time with more open policies in developing countries, and so presumably does IBRD lending, so that there

⁴ The commitments for IBRD lending in any given year shown in this figure and in all subsequent charts represent the IBRD commitments for the following fiscal year---i.e., 1999 calendar year shown in the graph represents IBRD commitments for FY2000. This was the chosen variable in the earlier regressions, because the IBRD fiscal year covers part of the previous year, and because decisions in any given year are presumably a response to events and data in the immediate preceding period.

appears to be a positive relationship between the two as developing countries have liberalized their policy regimes over time (as proxied by the rise in FDI flows). A part of this is also picked up in the positive but weak relationship with respect to developing country growth in aggregate. The apparent negative relationship with respect to world trade is more difficult to explain. The explanation suggested here is that rapid growth in world trade offers an alternative way of financing growth in developing countries, and therefore presents less pressure on IBRD lending resources (or alternatively, less demand for it).

(b) Adjustment Lending and Non-Adjustment Lending Commitments, 1978-97: While both have significant counter-cyclical behavior, adjustment lending commitments are much more counter-cyclical than are non-adjustment lending commitments, as expected and as indicated by the differences in the size and significance of the coefficients with respect to the variable for private non-FDI flows to developing countries (see figure above). The share of adjustment lending in total IBRD lending seems to be: (a) counter-cyclical to non-FDI private capital flows; (b) counter-cyclical to official flows;⁵ and (c) positively related to privatization, which is used here as a proxy for market-based policy reforms in developing countries.

Turning to determinants of non-adjustment commitments, there was a strong significant positive relationship evident with regard to FDI flows (proxy for improvements in policies) and a negative one with respect to world trade (alternative financing of growth), as already discussed above in regard to total IBRD commitments.

Validation with Out-of-Sample Forecasting, Using 1998 as Benchmark Year

As noted earlier, the estimations for aggregate private capital flows above were derived for the historical data for the period 1978-97. This permits a check on the robustness of the model by comparing a forecast for private capital flows in out-of-sample 1998 with actual outcomes (based on certain assumptions about exogenous factors see below).

Exogenous Variables and Assumptions. The main exogenous factors in the model, at least as far as this exercise is concerned, are world trade, world growth, growth in developing countries, real LIBOR rates, and the extent of privatization. In a fully specified model, of course, these factors are not likely to be completely exogenous (to capital flows), and indeed, in a properly specified general equilibrium model, we would treat them as endogenous. But for the limited purposes of this exercise, we treat them as exogenously determined---with their predicted values for 1998 taken from the most recent run of a global economic prospects model (GDF, 1999) maintained at the Bank (Development Prospects Group).

Out-of-Sample Forecasts, Versus Actual Flows of Private Capital in 1998. Because FDI and non-FDI flows interact with each other in our model, it is not possible to directly forecast the private capital flows for 1998 from the model. Instead, FDI flows (the relatively more stable component of private capital flows) are first forecast for 1998 using changes in the main statistically significant exogenous variables---world trade, growth in developing countries, and real LIBOR---that drive FDI

⁵ That is, adjustment lending commitments rise when official flows fall. This result implies some degree of substitution of World Bank lending for other types of official flows. However, this finding is reversed at the country-level data, possibly due to the large weight of several crisis countries.

outcomes (i.e., assuming in this stage that non-FDI flows remain unchanged from 1997 levels). The result is a predicted level of FDI for 1998 that should be 0.27 percentage points of developing country GDP less than in 1997, or 2.19 (compared to 2.46 in 1997). This predicted value of FDI is then fed into the best-fit regression equation (3) for forecasting the 1998 level of non-FDI inflows, along with the values of the other standard exogenous variables already defined (including treating 1998 as a year of financial crisis where the dummy variable takes the value of 1). The result is a predicted level of non-FDI flows in 1998 of 1.4 (instead of 2.1 in 1997) as a percentage of GDP in all developing countries. A direct comparison between the values of private capital flows for the out-of-sample year 1998 forecast using our model, with actual estimated outcomes (source: GDF, 1999), is now possible and is shown below in the table.

Predicted and Actual Values of Private Capital Flows to Developing Countries, 1998

	FDI Flows		Non-FDI Flows		Total Flows	
	As % of GDPdc	US\$ Billion	As % of GDPdc	US\$ Billion	As % of GDPdc	US\$ Billion
<i>Predicted</i> Out-of-Sample Values for 1998	2.19	143.3	1.41	92.1	3.58	235.4
<i>Actual</i> Estimated Outcomes for 1998	2.38	155.0	1.17	72.1	3.55	227.1

As evident, the model under-estimates the actual outcomes for FDI flows (20%) and overestimate that for non-FDI flows. But broadly, it picks up well the sharp fall in total private capital flows and its key components to all developing countries in 1998. *Given the complex nature of the global financial crisis, and the huge fall in private capital flows, it is reassuring to find that our model is able to predict the out-of-sample 1998 values with some reasonable accuracy.* However, some caution is necessary because not all specifications of the model perform equally well, especially in predicting non-FDI flows: for example, the specifications for non-FDI flows using the lagged dependent forms (specifications (1) and (2)) are unable to pick-up the extent of the actual decline in flows in 1998 (because of the lagged-dependent “persistence” features, and because it is unable to take into account effects of a crisis).

Determinants of IDA Commitments, 1978-97

Given that the Bank receives IDA funds from multiple-year commitments from donor governments (in the form of replenishment of IDA resources), there is a strong likelihood of a rationing effect from such given multi-year allocations in the Bank’s decision on how much to commit in annual IDA lending decisions. And because the multi-year commitments of IDA replenishments are essentially political process driven, the factors behind that decision are more difficult to determine.

Nevertheless, to be able to cast some economic light on the annual IDA commitments’ decisions, we performed the following regressions reported in Table 2. The first dependent variable was expressed as IDA total annual commitments normalized by GDP of all low-income countries (excluding China and India, where other rationing effects and special factors apply). The second dependent variable was the share of IDA adjustment lending in total IDA lending commitments.

Independent variables included real prices of primary commodities, real LIBOR, non-FDI flows to all lower income countries, and GDP growth rate in Sub-Saharan Africa. Other standard variables (FDI, world trade, and others) were tried, but were not significant.

Counter-cyclicalities to primary commodity prices and to private capital flows. Since most low-income countries are major exporters of primary commodities and heavily reliant on such revenues, a negative relationship is expected with real commodity price trends as sharp falls in export revenues are expected to lead to rising demand for IDA financing---as a stabilizing factor in external financing. The results strongly support that hypothesis (Table 2). In principle, IDA countries are not significant borrowers from private capital markets and therefore counter-cyclical movements in IDA lending relative to private capital flows should not in principle matter. However, even the poorest IDA countries do indeed engage in private commercial borrowing, and in times of a loss of such private capital flows, some counter-cyclicalities is possible and indeed evident.

Economic growth. It is expected that economic conditions in low-income countries should also drive IDA commitments. Thus, economic growth should in principle have a negative relationship with IDA commitments, with falling economic growth leading to greater transfers of IDA resources (and vice-versa). Since Sub-Saharan Africa (SSA) is an especially intended beneficiary of such aid transfers, growth in SSA (excluding South Africa) is especially expected to have a negative relationship. The results again strongly support this view point.

Economic conditions in donor countries are likely to be a significant determinant of the political decision to provide more IDA resources to the Bank, and therefore, in turn, annual IDA commitments. The variable chosen is real LIBOR rates---which is expected to have a negative relationship (high real world interest rates signal more difficult industrial country resource constraints). The results support the expected relationship.

IDA adjustment lending has generally been a small part of total lending, and the results suggest that much of the variations in such lending seem to be quite closely tied to relative movements in commodity price trends. A weaker influence is the negative relationship with variations in non-FDI private capital flows. No other factor seems to be very significant, and these two factors by themselves seem to explain much of the observed variation over the entire period.

IV. Analysis of determinants of private capital flows and official lending responses (1980-97) using country-level panel data

This section investigates the determinants of private capital flows and official lending (proxied by World Bank lending) responses using panel data analyses. The first part of this section focuses on 37 IBRD borrowing countries which are mostly middle-income countries with substantial access to private capital markets. This part contains separate analyses for only-IBRD and non-IBRD (i.e., IDA and blend) countries. The second part examines a panel of 62 IDA countries which are mostly in the low-income group. The use of panel data technique allows us to test whether some of the findings at the aggregate level (the “push” factors) hold at the country level, and to further enrich those findings by country-level determinants (the “pull” factors).

A Framework for Econometric Analysis

The panel data analysis is based on a similar framework as in the aggregate data analysis reported in Section II. We consider two types of private capital: foreign direct investment (FDI) and portfolio flows (PRIN). Private portfolio (non-FDI) flows are defined as the sum of commercial bank loans, bond financing from private creditors and private equity flows. We postulate a two-stage decision making process for private capital flows: in the first stage, investors in the developed countries decide how much to invest in the developing countries; while in the second stage, given the total amount of capital available to all developing countries, a particular host country receives a certain amount depending on country specific factors. For our analysis, we take the first stage as given and concentrate exclusively on the second stage. Thus, each type of capital flow is assumed to be a function of total capital flows to all developing countries and several country specific factors. These latter ‘pull’ variables typically include country creditworthiness indicators such as the current account balance with one year lag, per capita income and three year moving average of GDP growth rate. A priori, we expect the coefficients of these variables to carry negative, positive and positive signs respectively. Additionally, we assume that each type of capital flow is also influenced by other types of capital flows. It is expected that portfolio flows are positively related to FDI flows and vice versa, but both types of private flows are believed to be counter-cyclical to World Bank lending. Finally, we include region dummies in each equation to see if location per se has any marginal contribution to explaining capital flows.

We also postulate a similar specification for the World Bank lending equation. Thus, World Bank lending is assumed to be a function of country specific factors, and private FDI and portfolio flows. In addition, we also include the volatility of private portfolio flows as an explanatory variable to see if this has any influence on the level of World Bank lending.

(A) Analysis of IBRD and IBRD/IDA Blend Countries

We begin with a panel of 37 countries focusing on the time period 1980-97. This panel includes 28 IBRD countries, 4 IDA countries and 5 blend countries, spread across all the regions covered by the World Bank.⁶ These countries accounted for 95% of private non-FDI flows to developing countries, 82% of FDI flows and 96% of total IBRD commitments in 1997.

For the regressions, all flow variables are expressed as a percentage share of GDP to eliminate the size effect by which a bigger country attracts larger capital flows. As mentioned earlier, the country specific factors are typically the current account balance as a share of GDP, per capita GNP and three year moving average of GDP growth.⁷ The equation for World Bank lending includes an

⁶ The regional distribution of countries in the panel is as follows: Latin America and the Caribbean 8, Europe and Central Asia 9, East Asia and Pacific 7, Middle-East and North Africa 5, South Asia 3, Sub-Saharan Africa 5, Total 37. IBRD 28 are Algeria, Argentina, Brazil, Bulgaria, Chile, Colombia, Croatia, Ecuador, Hungary, Indonesia, Jordan, Kazakhstan, Korea, Malaysia, Mexico, Morocco, Nigeria, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Tunisia, Turkey, Ukraine, Venezuela; Blend 5: China, Egypt, India, Pakistan and Zambia; and IDA 4 : Bangladesh, Cote d’Ivoire, Ghana and Vietnam.

⁷ Although not reported in the following pages, we also tried several other variables that have been suggested in these literature on determinants of capital flows. These variables were not significant judging from the t-statistics. For example, terms-of-trade, real exchange rates and inflation rates did not yield significant coefficient. One obvious problem

additional variable – the standard deviation of private portfolio flows computed over five years on a rolling basis, to represent the volatility of private flows. Private flows are used on a ‘net disbursement’ basis whereas World Bank lending is on a gross commitment basis.

Note that World Bank lending is defined as the sum of IBRD commitment and IDA commitment to each country. Thus, for an IBRD country, IDA lending is zero so that World Bank lending is equal to IBRD commitments. Similarly, for an IDA country it equals IDA commitments and for a blend country, it is the sum of IBRD and IDA commitments. Also, in this exercise, adjustment lending commitments refer to IBRD countries only. Regression results for private non-FDI flows, FDI, and total lending and adjustment lending commitments from the World Bank respectively are presented in Table 3.

As mentioned earlier, private non-FDI flows are defined as the sum of commercial bank lending and flows to the equity and the debt markets of a developing country. The results reported in Table 3 show that **private non-FDI (net) flows** to an individual country:

- depend highly significantly on the global availability for funds for this purpose. This supports our interpretation of the global capital flows as a two stage process. In the first stage, investors in the developed countries decide how much to invest in the developing countries taking into account a host of home country factors and factors that affect global liquidity. In the second stage, they decide how much to allocate to a specific developing country depending on country specific factors. (Refer to Section I for a description of this framework.)
- Are negatively related to the current account balance with a one year lag. A similar result (i.e., inverse relationship) is obtained with respect to changes in international reserves of the previous year. Deteriorating current account balance and falling reserve levels indicate a rise in the demand for financing and increased efforts by the country concerned to attract capital from overseas.⁸
- Are positively related to FDI flows. High FDI (actual) flows are usually accompanied by commercial loans. But more importantly, FDI adds to the liquidity of the system in the short-term and improves the medium-term outlook on a particular sector or the economy as a whole.
- Are positively related to per capita income and the country’s growth performance over three years.
- Are positively related to World Bank lending commitments with a one year lag. Although we do not report it here, we found that this relationship is more robust with respect to Bank’s investment loans (more on this later). This indicates that Bank loans play a complementary role vis-à-vis private portfolio flows with a one year lag, in a way similar to FDI flows. High IBRD commitments enhance a country’s ability to service debt (e.g., the foreign exchange reserves

is due to multicollinearity between these variables and the current account balance. The other problem is related to the quality of data on these variables for a significant number of countries included in our panel.

⁸ If current account balance (or change in reserves) were to be used as an indicator of creditworthiness, one should expect a positive sign for this coefficient on the ground that higher reserves and current account surplus raise a country’s ability to service debt. On the other hand, rising current account surplus does reduce financing needs and, thereby, fund inflows.

would potentially go up with IBRD lending). Also importantly, IBRD commitments are made after a thorough review of the country's policy performance and to that extent signify an improvement in the country outlook for private investors.

- Interestingly, none of the regional dummies is significant. Shows the global nature of private portfolio flows and that these investment decisions are made on the basis of economic fundamentals of a country regardless of its location. The globalization of trade and investment has reduced the dependence of a country on its neighbors and weakened the importance of regional factors.
- Also, inflation and real exchange rate appreciation turned out to be not significant in this equation. The inflation data is not very good for developing countries and that also effects our calculation of real exchange rate appreciation.
- The lagged dependent variable is highly significant and positive.

Results on **private FDI flows** are presented in column 2 of Table 3. Net FDI flows to a country are found to significantly depend on the total (net) FDI flows to all developing countries, again highlighting the usefulness of a two-stage decision model for capital flows. Also, the current account balance or change in international reserves has a significantly negative effect on the following year's FDI flows. Regional dummies were not significant.

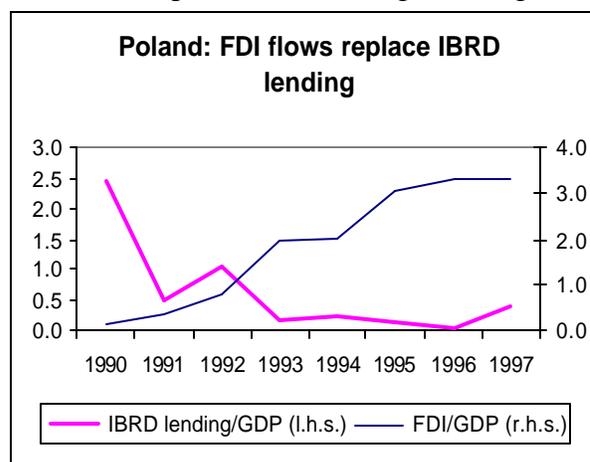
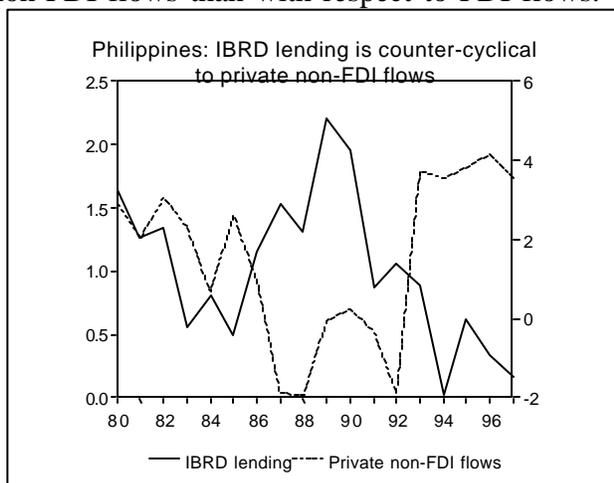
Interestingly, unlike the case of portfolio flows, the complementary relationship between FDI flows and Bank loans seems to be present with a lag of one year, but the regression coefficients are not statistically significant. It is also seen that FDI flows are not affected by GDP growth performance. These different results could be explained by the longer term horizon of FDI compared to portfolio investment.⁹

World Bank lending is defined as the sum of IBRD and IDA commitments which is normalized by GDP for use as the dependent variable in the regressions. Explanatory variables are similar to the equations for private flows as described above, with one exception: the right hand side includes a new variable, the standard deviation of private non-FDI flows (normalized by GDP) computed over the last five years. This is to test the hypothesis that a country's demand for IBRD lending is also affected by the volatility of private capital flows. Table 3 reports the results on total World Bank lending and on IBRD adjustment lending commitments in columns 3 and 4.

It is seen that World Bank lending commitments are negatively related to the current account balance or changes in international reserves, a result similar to the case of private portfolio and FDI flows. In other words, the Bank responds positively to a rise in the financing demand by borrower countries. Unlike private flows, World Bank lending is significantly and negatively related to the per capita GNP of the client country. This is an expected result in the light of the graduation policy that is based on income criteria. Once again, only two out of six regional dummies are statistically significant.

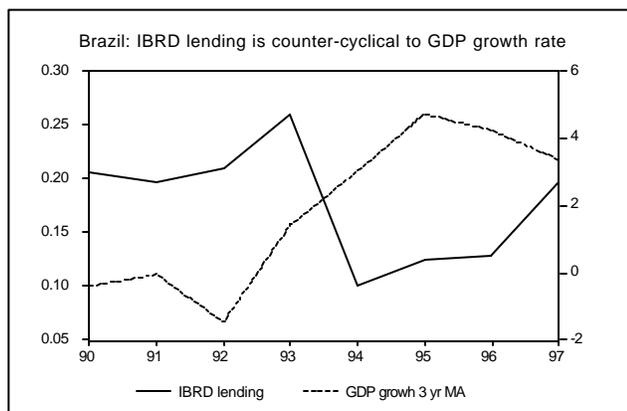
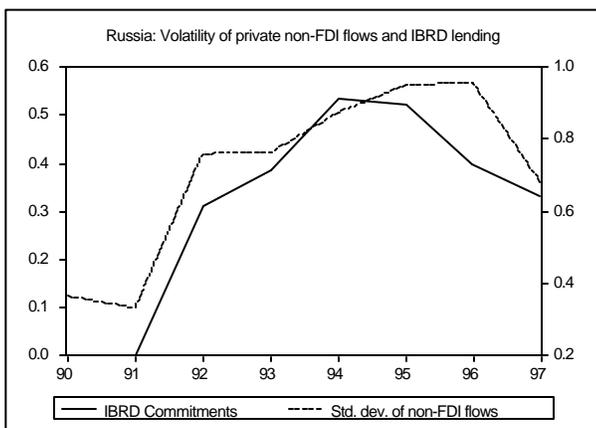
⁹ This suggests that there may be a significant relationship between FDI, and World Bank lending and GDP growth with a longer lag structure.

Countercyclical relation between World Bank lending and private flows: Results confirm the hypothesis that World Bank lending has a countercyclical (i.e., negative) relationship with private flows. Interestingly, however, this relationship is weaker (judging from the t-statistics) with respect to non-FDI flows than with respect to FDI flows. This is to be expected considering the long-term



nature of IBRD lending. Portfolio (non-FDI) flows which inherently carry shorter term maturities bear a stronger counter-cyclical relationship with adjustment lending than to investment lending.¹⁰

Table 3 also shows an interesting result that World Bank lending – particularly adjustment lending – is positively and significantly related to the volatility of private portfolio flows. This is shown in the case of Russia below. This implies that demand for World Bank lending would continue to be strong as long as private flows remain volatile. Not only is adjustment lending positively related to the volatility of private capital flows, but also that it responds negatively to output declines---meaning that World Bank lending is also countercyclical to real conditions, as much as to financial flows.



Is there a difference in the determinants of capital flows between IBRD and non-IBRD countries? Also, are IDA commitments driven by similar factors as IBRD commitments? To answer

¹⁰ Adjustment lending is essentially a shorter term proposition than typical IBRD lending and the results revealed as much. We found that the share of adjustment lending in total commitments bore a stronger relationship with current account balance as a share of GDP rather than changes in reserves, and with GDP growth of the current year rather than the three year moving average. Adjustment lending seems to react more negatively to portfolio flows than to FDI flows which is just the opposite of total IBRD commitments reported in the previous section.

these questions, we divided our panel of 37 countries to two groups: a set of 28 IBRD countries and a panel of 9 non-IBRD (i.e., IDA and blend) countries; and ran similar regressions as in Table 3. The findings summarized in the previous section are not contradicted by these results, although the statistical significance level of explanatory variables varies between IBRD countries and IDA blend countries. Interestingly, the current account deficit or the financing gap shows up as a significant determinant of capital flows in all cases. Another point worth noticing is that ‘blend’ countries seem to mirror the findings of the total sample in the case of World Bank lending, whereas for private flows, it is the strictly IBRD countries that dominate the panel results. For a better understanding of IDA lending responses, we developed a separate panel consisting mainly of IDA countries. We report regressions results from this panel data next.

(B) Analysis of IDA Countries

Using a similar framework as reported in Section II for IBRD lending, we carried out a country-level panel data analysis for selected IDA countries. This exercise complements the findings on IDA aggregate lending reported in Section III. The IDA panel consisted of 62 countries for the period 1974-1997.¹¹

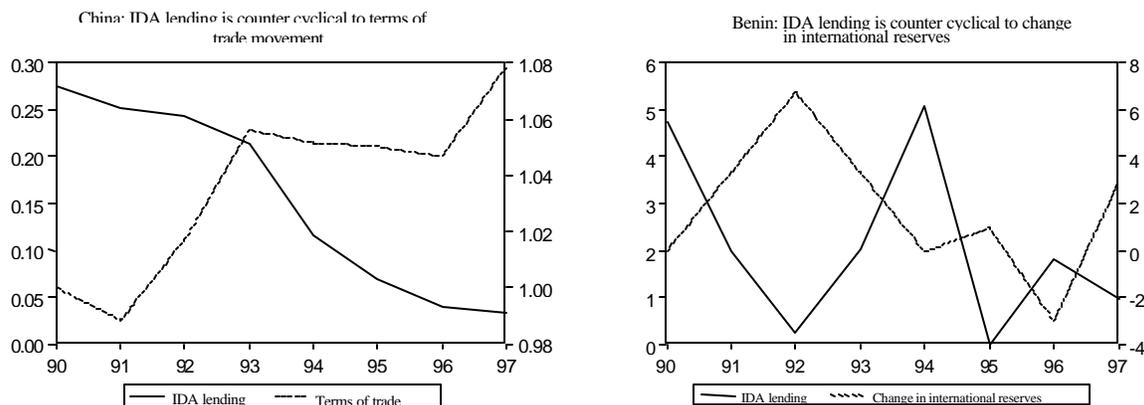
We regressed IDA lending commitments on terms-of-trade, change in international reserves, private non-FDI and FDI flows, lagged dependent variable and regional dummies. We also included five year rolling standard deviation of private non-FDI and FDI flows to see if volatility of private flows affects IDA lending as well, as it did in the case of IBRD lending. Separate regression results for total IDA lending, IDA adjustment lending, investment lending and share of adjustment lending in total lending are presented in Table 4. (All nominal variables were normalized by GDP.)

Given that IDA lending carries highly concessional terms and is made available to a set of countries that satisfy an income criteria (e.g., the IDA cut-off level of per capita income in Fiscal Year 1999 was \$925) and that typically do not have the same extent of market access as in the case of IBRD borrowers, there is an extent of rationing of demand for such lending. Because of this reason, there is less variability and weaker response in IDA lending to real and financial variables than in IBRD lending. This is evident in the econometric results.

Nevertheless, it is seen that total IDA lending is counter-cyclical to terms-of-trade movement, to changes in international reserves (which is a proxy for current account balance) and to private portfolio flows (see charts below). However it is found to be positively related to FDI flows and the volatility of non-FDI flows. Expectedly, regional dummies representing SSA in particular, but also SA and LAC have significant coefficients. Thus, once again, counter-cyclicity of IDA lending to real as well as financial variables is evident in the historical data.

¹¹ We started with 91 countries, but finally restricted our analysis to a smaller set of 62 countries for which terms-of-trade data were available. The IDA panel consists of the following countries: Angola,, Bangladesh, Benin, Bolivia, Burundi, C.A.R, Cameroon, Cape Verde, Chad, China, Comoros, Congo, Dem. Rep., Congo, Rep., Cote d'Ivoire, Djibouti, Egypt, Arab Rep., El Salvador, Equatorial Guinea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Indonesia, Jordan, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Papua New Guinea, Paraguay, Philippines, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, Sri Lanka, Sudan, Swaziland, Tanzania, Thailand, Togo, Tunisia, Uganda, Yemen, Zambia, Zimbabwe.

A similar story of counter-cyclicality is also evident in the case of the adjustment lending component of IDA. Terms of trade movements are by far the most significant determinant of adjustment lending. Volatility of private flows also seem to affect it significantly, although the relationship is positive in the case of non-FDI and negative in the case of FDI flows. There is counter-cyclicality with respect to non-FDI flows and pro-cyclicality with respect to FDI flows.



V. Conclusion

The results obtained from the analyses of country-level panel data mostly complement and confirm the findings from aggregate data analyses. Econometric results reveal that non-FDI flows to a country rise in response to (a) an increase in the current account deficit; (b) a rise in FDI flows; (c) higher per capita income and growth performance. (d) Once these variables are accounted for, location and regional factors do not seem to influence the flow of private portfolio and FDI. The only case of regional significance in private flows is a strong negative coefficient for FDI flows to South Asia. Finally, (e) both non-FDI and FDI flows seem to respond positively to World Bank lending commitments with a one year lag. This result is different from those in Rodrik (1995).

By far, the most important determinant of official lending to any individual developing country seems to be the external current account balance or change in international reserves of the client country. Official lending appears to have played a stabilizing or counter-cyclical role vis-à-vis private capital flows. However, such stabilizing effect is of necessity weak owing to the small size of official flows (around one-tenth of total long-term flows). It is also found that some components of official flows (e.g., IBRD adjustment lending and, to a lesser extent, IBRD investment lending) are positively related to volatility of private portfolio flows over and above the relationship mentioned earlier.

Official flows (especially IDA) seems to have a strong positive regional bias in favor of Sub-Saharan Africa and, to a lesser extent, for South Asia, and Middle-East and North Africa---arguably reflecting poverty reduction objectives. Finally, IBRD lending appears to increase with the pace of reforms and market opening, while IDA lending seems to respond to slowdown in growth (especially in Sub-Saharan Africa) and policy reforms.

It is important to note that official lending may have been affected by decisions that are essentially non-market driven (i.e., taken by the institution through its various committees and its

Board). Here we have attempted to identify the implicit “revealed preference” of past behavior of official flows. These findings may not be indicative of future trends.

REFERENCES

- Calvo, Guillermo, Leonardo Leiderman, and Carmen Reinhart, 1993. “Capital Inflows and the Real Exchange Rate Appreciation in Latin America: The Role of External Factors.” *IMF Staff Papers*, March, 40(1).
- Chuhan, Punam, Stijn Claessens, and Nlandu Mamingi. 1998. “Equity and Bond Flows to Latin America and Asia: The Role of Global and Country Factors.” *Journal of Development Economics* 55:439-63.
- Claessens, Stijn, Daniel Oks, and Rosanna Polastri. 1998. “Capital Flows to Central and Eastern Europe and the Former Soviet Union.” Policy Research Working Paper 1976. World Bank, Washington, DC.
- Dadush Uri, and Dipak Dasgupta. 1999. “The Benefits and Risks of Capital Account Liberalization.” World Bank, Washington, DC. Mimeo.
- Engle, Robert F., and C.W. J. Granger. 1987. Co-integration and Error Correction: Representation, Estimation, and Testing. *Econometrica* 55 (March):251-76.
- Montiel, Peter, and Carmen Reinhart. 1997. “The Dynamics of Capital Movements to Emerging Economies.” Mimeo.
- Rodrik, Dani, 1995. “Why is There Multilateral Lending?” NBER Working Paper 5160. June.
- World Bank. 1997a. *Private Capital Flows to Developing Countries--The Road to Financial Integration*. A Policy Research Report. Washington, DC.
- World Bank. 1997b. *Global Economic Prospects and the Developing Countries*. Washington, DC.
- World Bank. 1999. *Global Development Finance*. Washington, DC.

Table 1: The Determinants of Private Flows, Official Flows, and IBRD Commitments, 1978-97

	Net FDI Flows/GDP	Non-FDI Flows/GDP (1)	Non-FDI Flows/GDP (2)	Net Official Flows/GDP	Total IBRD Commitments /GDP	IBRD Adjustment lending commitments/ Total IBRD commitments	IBRD investment lending commitments /GDP
Constant	-3.36 (-15.8)***	0.82 (2.69)**	10.36 (5.24)***	2.62 (2.05)*	1.15 (2.89)**	0.754 (8.3)***	0.99 (3.71)***
World trade/world GDP	0.09 (13.55)***		-0.28 (-5.05)***	-0.02 (-0.64)	-0.025 (-2.52)**		-0.02 (-2.96)**
Net Non-FDI flows/GDP	0.22 (6.47)***	0.89 (-1) (6.41)***		-0.21 (-2.25)**	-0.105 (-3.78)***	-0.156 (-7.17)***	-0.043 (-2.27)**
Growth rate of world GDP	-0.026 (-1.32)	-0.058 (-0.59)	-0.16 (-1.92)*	-0.06 (-1.73)	0.005 (0.45)		0.002 (0.36)
Growth rate of Developing country GDP	0.06 (2.65)**	-0.05 (-0.48)	0.16 (2.45)**	-0.05 (-1.87)*	0.004 (0.31)		-0.006 (-0.81)
LIBOR (3-month, real)	0.029 (2.88)**	-0.098 (-2.42)**	-0.057 (-1.45)	-0.03 (1.93)*	0.003 (0.43)		-0.004 (-1.14)
Privatization flows/GDP	0.12 (0.82)			0.004 (0.02)	0.097 (1.52)	0.269 (6.25)***	0.009 (0.22)
Net official flows/GDP (lagged)					0.095 (1.19)	-0.382 (-5.9)***	0.045 (0.835)
Net FDI flows/GDP			3.16 (6.29)***	0.10 (0.28)	0.239 (2.24)**		0.156 (2.16)**
Dummy for crises	Not sig.		-0.40 (-2.24)**	Not sig.	Not sig.	Not sig.	Not sig.
Adjusted R-sq	0.98	0.75	0.87	0.82	0.79	0.85	0.86
No. of observations	19	19	19	19	19	19	19

Figures in parentheses indicate t-statistics. *** Significance at 1% level; ** at 5% level; and *at 10% level. All flow variables relating to developing countries as a group are normalized by GDP of lower and middle income countries.

Note: All regression results reported above use standard OLS. However, because the relationships that are sought to be modeled consist of time-series of various macroeconomic variables, a more appropriate method, in order to avoid conclusions about spurious co-movements between such variables not necessarily reflecting long-run relationships, is to check for the presence of co-integration (Engle and Granger, 1987). Accordingly, all series were first tested (augmented Dickey-Fuller tests) for the presence of unit roots, and were all found to be integrated of order 1 (stationary after first differencing). Johansen co-integration tests were then conducted and (a) the absence of co-integration was rejected; and (b) the presence of a long-run equilibrium relationship between the variables was confirmed. The OLS coefficients reported are thus likely to be a super-consistent estimate of the true values of the equilibrating vector.

Johansen Co-integration Test of FDI flows, world trade, non-FDI flows and GDP of developing countries

Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Cointegration
0.979007	163.4781	87.31	96.58	Rejects non-cointegration ***
0.922843	93.93391	62.99	70.05	At most one***
Normalized Cointegrating Coefficients	World trade	Non-FDI flows	GDP of developing countries	Real LIBOR
1.0	0.108411 (0.03850)	-1.095475 (0.18128)	-0.172059 (0.03782)	-0.089830 (0.01764)

Johansen Co-integration Test of non-FDI flows, real LIBOR, world trade, FDI and GDP of developing countries

Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Cointegration
0.979007	163.4781	87.31	96.58	Rejects non-cointegration ***
0.922843	93.93391	62.99	70.05	At most one***
Normalized Cointegrating Coefficients	Real LIBOR	World trade	FDI flows	GDP of developing countries
1.0	0.082001 (0.00816)	-0.098963 (0.01926)	-0.912846 (0.15106)	0.157064 (0.01272)

Johansen Co-integration Test of official flows, non-FDI flows, Privatization index, GDP of developing countries, real LIBOR

Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Cointegration
0.986225	161.5861	87.31	96.58	Rejects non-cointegration ***
0.836380	84.45795	62.99	70.05	At most one***
Normalized Cointegrating Coefficients	Non-FDI flows	Privatization index	GDP of developing countries	Real LIBOR
1.0	0.400646 (0.01830)	-1.499885 (0.12021)	0.076835 (0.00869)	0.006757 (0.00416)

Johansen Co-integration Test of total IBRD lending commitments, non-FDI flows, FDI flows, World trade

Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Cointegration
0.963441	100.1432	62.99	70.05	Rejects non-cointegration ***
0.762578	43.89336	42.44	48.45	At most one**
Normalized Cointegrating Coefficients	Non-FDI flows	FDI flows	World Trade	
1.0	0.241065 (0.03688)	-0.473530 (0.06452)	0.029519 (0.00320)	

Johansen Co-integration Test of share of IBRD adjustment commitments/total IBRD lending commitments, non-FDI flows, official flows, privatization index

Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Cointegration
0.911498	101.1095	62.99	70.05	Rejects non-cointegration ***
0.880889	59.88915	42.44	48.45	At most one***
Normalized Cointegrating Coefficients	non-FDI flows	official flows	privatization index	
1.0	-0.053367 (0.08293)	-1.359123 (0.80846)	0.365556 (0.27265)	

Table 2: Determinants of IDA commitments, 1978-97

	Constant	Real Prices of Primary Commodities	Real LIBOR	Non-FDI flows to all low-income countries	Growth in Sub-Saharan Africa	Adj R ²
IDA commitments/GDP	2.877 ***	-0.00826 ***			-0.1293 **	0.39
IDA commitments/GDP	3.056 ***	-0.0066 ***	-0.06796 **	-0.1981 **	-0.0829 *	0.54
Share of IDA adjustment lending in total IDA lending	0.5188 ***	-0.002643 ***		-0.016346		0.84

*** Significance at 1% level; ** at 5% level; and *at 10% level.

Note: All regression results reported here use standard OLS. However, because the relationships that are sought to be modeled here consist of time-series of macroeconomic variables, a more appropriate method, in order to avoid conclusions about spurious co-movements between such variables not necessarily reflecting long-run relationships, is to check for the presence of co-integration (Engle and Granger, 1987). Accordingly, all series were first tested (augmented Dickey-Fuller tests) for the presence of unit roots, and were all found to be integrated of order 1 (stationary after first differencing). Johansen co-integration tests were then conducted and (a) the absence of co-integration was rejected; and (b) the presence of a long-run equilibrium relationship between the variables was confirmed. The OLS coefficients reported are thus likely to be a super-consistent estimate of the true values of the equilibrating vector.

Johansen Co-integration Test of IDA lending commitments, Commodity prices, Growth in Sub-Saharan Africa, real LIBOR, and Non-FDI flows

Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Cointegration
0.97923	119.5864	68.52	76.07	Rejects non-cointegration **
0.712797	49.83845	47.21	54.46	At most one*
Normalized Cointegrating Coefficients	Commodity prices	Growth in Sub-Saharan Africa	Real LIBOR	Non-FDI flows
1.0	0.004173 (0.00039)	0.093437 (0.00653)	0.063548 (0.00403)	0.057746 (0.01377)

Table 3: Determinants of Private Non-FDI Flows, FDI flows, IBRD total lending commitments and IBRD adjustment lending commitments, 1980-97

	Private non-FDI flows		Private FDI flows		IBRD lending commitments (total)		IBRD adjustment lending commitments	
Constant term	-0.66	-2.2 **	0.24	<i>1.5</i>	0.71	<i>4.3</i> ***	0.22	<i>2.1</i> **
Private net non-FDI flows to <u>all</u> developing countries	0.47	3.8 ***	
FDI flows to <u>all</u> developing countries			0.34	<i>5.1</i> ***	
IBRD plus IDA commitments/GDP (%).	0.14	<i>1.7</i> *	0.04	<i>0.8</i>	
Five year moving standard deviation of net private non-FDI flows					-0.07	<i>-1.7</i> *	0.06	<i>1.8</i> *
Current account balance, lagged	-0.07	-3.6 ***	0.03	<i>2.8</i> ***	-0.03	-2.9 ***	-0.02	-3.3 ***
GDP growth, 3 year MA	0.05	<i>1.9</i> **	0.02	<i>1.2</i>	0.00	<i>0.0</i>	-0.02	<i>-1.8</i> *
GNP per capita	0.00	<i>1.8</i> *	0.00	<i>-1.7</i> *	0.00	<i>-1.7</i> *	0.00	<i>-1.6</i>
Net FDI/GDP (%)	0.15	2.7 ***	..		-0.08	-2.7 ***	-0.04	-2.0 **
Private non-FDI flows/GDP (%)			0.05	<i>2.4</i> **	0.00	<i>-0.2</i>	-0.03	<i>-1.9</i> *
Lagged dependent variable	0.51	<i>14.4</i> ***	0.72	<i>22.1</i> ***	0.31	<i>6.9</i> ***	-0.05	<i>-1.0</i>
LAC	0.03	0.1	0.06	0.4	-0.01	<i>0.0</i>	0.11	<i>1.2</i>
ECA	0.29	0.9	-0.05	-0.3	0.18	<i>1.0</i>	0.21	<i>1.9</i> *
MENA	0	-1.1	0	-1.4	0.35	2.2 **	0.32	3.3 ***
SA	-0.26	-0.8	-0.52	-2.8 ***	0.24	1.3 **	-0.06	-0.5
SSA	-0.54	-1.6	-0.07	-0.4	1	5.8 ***	0.57	3.5 ***
Adj. R-squared	0.44		0.62		0.37		0.15	
No. of Observations	533		533		471		353	
F-statistic	35		73		24		6	
DW statistic	2.0		2.3		2.1		2.0	

Figure in italics next to the coefficient value indicates t-statistics. ***, ** and * indicate significance at 1%, 5% and 10% level. Results are based on an unbalanced panel of 37 countries for the period 1980-1997, using least squares with fixed effects and White's heteroskedasticity consistent standard errors.

Table 4: Determinants of IDA lending commitments

	Total lending	Adjustment lending	Share of adjustment lending in total lending	Investment lending
Constant term				
Terms of trade, lagged	-0.56 <i>-1.6 *</i>	-0.46 <i>-2.0 **</i>	-10.86 <i>-3.0 ***</i>	-0.28 <i>-1.0</i>
Change in international reserves as % of GDP, lagged	-0.01 <i>-2.3 **</i>	0.00 <i>-0.9</i>	-0.05 <i>-0.8</i>	-0.01 <i>-2.5 **</i>
Five year moving standard deviation of net private non-FDI flows, lagged	0.19 <i>2.8 ***</i>	0.19 <i>4.1 ***</i>	0.73 <i>1.0</i>	0.05 <i>0.9</i>
Five year moving standard deviation of net private FDI flows, lagged	-0.30 <i>-3.1 ***</i>	-0.21 <i>-3.3 ***</i>	-0.26 <i>-0.3</i>	-0.13 <i>-1.7 *</i>
Private non-FDI flows/GDP (%)	-0.07 <i>-2.2 **</i>	-0.04 <i>-1.9 *</i>	-0.77 <i>-2.1 **</i>	-0.04 <i>-1.5</i>
FDI/GDP (%)	0.10 <i>2.3 **</i>	0.05 <i>1.5</i>	0.65 <i>1.3</i>	0.06 <i>1.8 *</i>
IDA total commitments/GDP %. This is the lagged dependent variable	0.10 <i>3.1 ***</i>	0.00 <i>-0.1</i>	0.11 <i>3.0 ***</i>	0.01 <i>0.3</i>
Adj. R-squared	0.26	0.06	0.15	0.21
No. of Observations	1002	889	890	1002
F-statistic	69.08	20.85	36.93	55.01
DW statistic	2.13	2.02	2.04	2.07
Figure in italics next to the coefficient value indicates t-statistics. ***, ** and * indicate significance at 1%, 5% and 10% level. Results are based on an unbalanced panel of 62 countries for the period 1974-1997, using least squares with fixed effects and White's heteroskedasticity consistent standard errors.				