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THE CAUSES OF THE RECENT SURGE IN PRIVATE CAPITAL FLOWS TO ASIA AND LATIN AMERICA

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Abstract: The paper examines the causes of the recent surge in private capital flows to Asia and Latin America in a 'Push-Pull' framework using a panel data approach to estimation. This paper adds to the literature by distinguishing between the causes of Foreign Direct Investment and Portfolio Investment and also covers a greater time period than most other studies. The results suggest that Foreign Direct Investment is predominately caused by 'Pull' factors while 'Push' factors and exchange rate risk explain portfolio flows.

Introduction

In recent years, many developing countries have begun to receive substantial inflows of foreign capital. There has been a sharp expansion in gross and net capital flows and a substantial increase in the participation of foreign investors and foreign financial institutions in the financial markets of developing countries (World Bank 1997). This expansion has been much greater than that of international trade flows (Goldstein et al. 1991). Another main characteristic of the recent surge in capital flows to developing countries is that private capital flows, as opposed to official flows, have become a crucial source of financing large current account imbalances (Figure 1 & Appendix Table 3).

In the period 1990-97, net private capital inflows have been larger than those preceding the 1982 debt crisis, both in absolute terms and as a proportion of exports and national product (Appendix Table 1). The surge of private capital inflows was particularly pronounced in Asia and Latin America, regions that experienced the earliest and largest inflows of foreign capital. Moreover, the surge 'phenomenon' was concentrated on a handful of emerging markets (Appendix Table 2).

The asset composition of the inflow episode of the 1990s was also quite different from the pre-debt crisis era. In the pre-debt crisis period, 'other investment', particularly bank lending was the dominant

component. In the 1990s, net private capital flows have been accounted for by all three major types of international capital flows, portfolio flows, bank lending, and Foreign Direct Investment (FDI). This pattern holds in Asia and Latin America, the largest receipts of private capital inflows (Appendix Table 3). However, portfolio flows and 'other' flows account for a larger proportion in the Asian crisis countries, while portfolio flows and a growing amount of FDI explain net private capital flows into non-crisis Asian countries and Latin America (Appendix Table 3). To sum, as Bacha (1993) points out, this surge in portfolio investment combined with large amounts of FDI has meant that in the 1990s, the majority of all aggregate external financing of developing economies came from private sources.

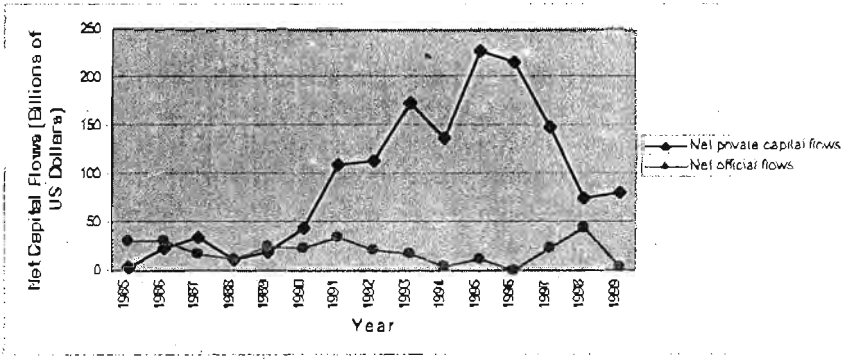

Figure 1: Net Capital Flows to Emerging Market Economies
Source: World Economic Outlook Database

These trends raise a number of important research issues concerning the sustainability of capital flows to emerging markets because the dominance of private capital flows bring with it the sudden threat of reversal e.g. Brazil 1999, Mexico 1994-95, and Asia 1997-98. When private capital flows of this kind have found their way into the banking system, pushed up domestic expenditures, and increased the current account deficit, their reversal can affect the domestic economy through a decrease in asset prices, a jump in interest rates, liquidity problems in the banking system, and/or a devaluation of the domestic currency. Consequently, sharp declines in securities prices and increases

in interest rates together with liquidity effects can, through their effects on the banking system, have important systemic consequences. Furthermore, if the Central Bank does not react quickly enough and the stock of international reserves is low, the reversal may cause a balance of payments crisis.

The issue of sustainability has been approached in the literature by focusing on the identification of the causes of capital inflows, and then examining the expected time path of the factors driving the inflow episode and the corresponding implications for capital inflows. Identification of the causes of capital inflows is not only important for forecasting the likely evolution of capital inflows, but also for choosing instruments of policy response. It has become conventional to divide the causes of the recent surge of capital inflows into 'Pull' and 'Push' factors. 'Pull' factors are those that attract capital inflows as a result of improvement in the risk-return characteristics of assets issued by developing countries, while 'Push' factors are those that reduce the attractiveness of assets in industrial countries. If capital inflows are caused by 'Push' factors, the level and persistence of the flows is out of the control of the capital-importing countries and could be reversed in the near future. If 'Pull' factors dominate, more direct measures to encourage or sustain the flows may be feasible. Therefore, this article pursues such a 'Push-Pull' framework when identifying the determinants of net private capital flows to emerging markets in the post debt crisis period (1989-98). Moreover, as the surge in private capital inflows was predominantly in Asia and Latin America, the empirical parts of this paper focus on these two regions.

The Fundamental Determinants of Capital Flows

The fundamental determinants of international capital flows are factors such as the global investment opportunity set, the co-variances between the expected returns on investment projects, the preferences of investors as between present and future consumption, and the degree of risk aversion of investors (Taylor 1991 and Taylor et al. 1997). But the issue as to which of these factors is relatively more important is difficult to determine theoretically. It therefore, remains largely an empirical

matter. However, difficulties in capturing these influences, as well as the fact that capital flows (the mechanism through which the arbitrage equilibrium condition is attained) may be disrupted by regulation and capital market imperfections, have focused empirical work on more measurable proximate determinants in a 'Push-Pull' framework.

There are a number of developments in capital-importing countries that have improved private risk-return characteristics of developing countries, especially in Asia and Latin America. First, creditworthiness improved as a result of external debt restructuring in a number of countries. For example, heavily indebted countries such as Argentina, Mexico, and the Philippines benefited from the officially supported 'Brady-type' initiatives. A second major channel pulling investors to emerging markets was productivity gains arising from structural reform and successful stabilization programmes. For example, in the mid-1980s, Indonesia, Malaysia and Thailand introduced structural adjustment programmes that reduced their large fiscal deficits while avoiding real exchange rate overvaluation.[1] Latin America, Chile and Mexico adopted disinflation programmes in the late 1980s, while Argentina and Brazil followed suit in the early 1990s. Moreover, all these economies engaged in market-oriented reforms such as trade and capital market liberalisation thereby further enhancing their productive capabilities.

However, global factors may also have played an important role in influencing capital flows to emerging markets. U.S. short term rates fell dramatically, by about a half between 1988 and 1993.[2] Declining returns in the U.S. markets may not only have made it more attractive for U.S. investors to seek higher returns abroad, but may have also induced holders of flight capital to repatriate their funds. The slowdown in the U.S. economy over 1989-1992 may have further contributed to the outflow of capital from the United States. Regulatory and other changes in industrial countries (such as the introduction of Rule 144A[3] in the U.S.) may also have facilitated greater access to international markets, especially for portfolio flows. The important research question is to what extent are capital inflows a function of 'Pull' and 'Push' factors in emerging markets?

A Survey of Empirical Work

There has been a considerable research effort to identify empirically the relative importance of 'Pull' and 'Push' factors in driving the recent surge in private capital inflows. However, there is no agreement as to the relative importance that various factors may have played at different times. Calvo, Leiderman, and Reinhart (1993) suggest that, while pull factors were definitely important in attracting inflows, such factors cannot explain why inflows occurred in countries that had not undertaken reforms or why inflows did not materialize even when reforms started earlier. Therefore, they emphasize the role of external factors. Chuhan, Claessens, and Mamingi (1993) estimated separate panel regressions, using monthly bond and equity flows from the U.S. to nine Latin American and Asian Countries from 1988 to 1992, as functions of country specific variables (country credit rating, price of debt on the secondary market, price earnings ratio in the domestic stock market, and the black market premium) as well as external variables (U.S. interest rates and U.S. industrial activity). They found that domestic and external variables have been about equally important in Latin America, but domestic variables had sums of standardized coefficients that were three to four times larger than those of external variables in Asia for both bond and equity flows.

Fernandez-Ariaz (1996) addressed some of the limitations of previous work. It is argued that the attribution of variation in country-specific financial variables to domestic shocks in Chuhan et al (1993) is improper, as country creditworthiness as proxied by the price of secondary market debt, is itself heavily dependent on external factors. For example, creditworthiness (c) depends on the expected present value of resources (which is measured in terms of GDP, level of foreign exchange reserves etc.) available for external payments relative to the country's liabilities (foreign debt). One way to conceptualise this present value measure is to express c in the form:

$$c = Y/(R - g)$$

Where Y is some current measure of available resources, assumed to grow at the rate g, and the discount rate R (relevant to claimholders) should be based on world financial returns available at comparable maturities. Therefore, the country creditworthiness parameter, c, depends not only on domestic factors (such as Y and g) but also on foreign returns, R.

Fernandez-Ariaz (1996) shows that changes in U.S. interest rates proved to be the dominant force explaining 60 percent of the surge in portfolio flows into emerging markets, while 25 per cent was due to country creditworthiness and 12 per cent due to the domestic investment climate. Moreover, when account is taken of the role of international interest rates in determining the secondary market price of debt used as the creditworthiness indicator, thereby decomposing the latter into domestic and external components, 86 per cent of inflows are attributed to external factors.

Taylor et al. (1997) use the same data set as Chuhan et al. (1993) to estimate whether bond and equity flows were induced by push or pull factors, differentiating between short and long term determinants. The country-specific factors they use are the domestic credit rating and the black market exchange rate premium. The external factors, as in most other studies, are U.S. interest rates and the level of U.S. industrial production. The results of two complementary cointegration techniques to analyse the long-run determinants of portfolio flows show that both equity and bond flows are about equally sensitive to domestic and external variables. Short-run dynamics of portfolio flows are estimated by seemingly unrelated error correction models, which reveal that short-run equity flows are equally sensitive to domestic and external factors. However, external factors are much more important in explaining the short-run dynamics of bond flows in developing countries.

Hernandez and Rudolf (1995) provide the most systematic evidence supporting the 'Pull' view. They investigate the extent to which standard creditworthiness indicators could explain long-term capital flows for a sample of 22 developing countries during 1986-93. Their research differs from others by the fact that they divide the sample into

groups of high and low inflow recipient countries, use a more careful specification of domestic factors, and include a broad category of long term flows not just portfolio flows. The role of external factors in their panel regressions turn out to be quite insignificant.

The evidence presented so far considered only the early years of the recent inflow episode i.e. 1988-93. World Bank (1997), however, suggests that the factors driving inflows may have changed over time, especially domestic factors may have played a more prominent role after 1994. Adopting Calvo et al.s' methodology, they find that the co-movement among portfolio flows became much weaker over 1993-95, and that the correlation with U.S. interest rates changed signs and became much weaker.

The empirical exercise to follow, adds to this literature by examining a longer time period (1989-1998) than most other studies. In addition, it also distinguishes between the determinants of portfolio flows and FDI, while previous studies have generally focused purely on portfolio flows or aggregate net private capital flows.

Proximate Determinants of Portfolio Flows

In the case of portfolio investment, the literature mentioned above allows us to identify many factors, which may have played an important role in motivating portfolio capital flows to Asia and Latin America in the 1990s. Chuhan, Classens and Mamingi (1993) use country credit rating, the price earnings ratio, the returns on the domestic stock market and black market exchange rate premium as proximate 'Pull' factors. Taylor and Sarno (1997) use country credit rating and the black market premium to measure the effect of domestic factors. Dooley, Fernandez-Ariaz, and Kletzer (1994) have taken the exchange rate, the secondary market price of debt and a dummy for the Brady Plan. Generally, all studies use U.S. interest rates and U.S. industrial activity as proximate determinants for 'Push' factors.

'Pull' factors

We include domestic credit ratings, which reflect domestic opportunity and risk of investing in a particular country, as a 'Pull' factor. The rationale for this is given by Haque et al. (1997).[4] Exchange rate risk is proxied by total foreign exchange reserves. The rates of return, i.e. short-term interest rates on domestic treasury bonds and return on stock markets of domestic countries are also included as they reflect the return from investing in developing countries. One should note that in equilibrium we expect them to be higher than the return in industrial countries due to the greater risk premium attached to the assets of developing countries. Portfolio flows are expected to be extremely sensitive to a country's openness, particularly to rules concerning the repatriation of capital and income (Williamson 1993). The right to repatriate dividends and capital may be the most important factor in attracting capital flows (Goldstein, Mathieson and Lane 1991). A country's openness is proxied by the black market premium. This is because parallel exchange rates exist in most developing countries because of restrictions on capital account transactions in the official foreign exchange market. To measure the impact of macroeconomic stability and domestic distortions we include the fiscal deficit.

'Push' factors

The U.S. interest rate (medium term), returns in the US stock market and industrial activity are the most important push factors. This is because it is believed that the combination of low interest rates and recession led to low rates of return on industrial country assets (particularly in the U.S.), and thus created an incipient capital outflow as investors in these countries sought higher-yielding assets for their portfolios. Therefore, we include these 'Push' factors in the empirical model.

Proximate Determinants of Foreign Direct Investment (FDI)

Even though FDI and portfolio investments flow into countries to reap higher rates of return, the literature mentioned above does not provide

sufficient proximate determinants for FDI, as the nature of FDI flows is quite different. This point is brought out in the statement by Graham and Krugman (1995), which conclude that 'most analysts agree that explanations for foreign direct investment based on organizational theory of the firm have more power than other genomes of theory'. The most widely accepted theory of FDI is the 'eclectic' theory or the OLI (ownership, locational, and internalisation) theory of direct investment drawing on firm specific attributes, locational advantages and internalisation advantages. The OLI analysis suggested by Dunning (1992) has provided an immensely useful tool for relating within a single coherent theoretical framework, the multitude of alternative theories of FDI proposed by various researchers. The eclectic theory says that the stock or changes in stock of investment are determined by three sets of factors.

The extent to which its own enterprises possess, or can gain access to assets or rights which foreign enterprises do not possess or to which they cannot gain access - at least on such favourable terms. Such assets are called ownership specific advantages (O), insofar as they are assumed exclusive to the enterprise which owns them, and, at least some of them are likely to be transferable across national boundaries.

* Whether the enterprise possessing the assets perceive it to be in their best interest to internalise their use or sell this right to enterprises located in other countries. Such internalising advantages (I) reflect the perceived efficiency of multinational hierarchies compared with market mechanisms as asset administrators and allocators.

* The third factor determining international production is the extent to which enterprises find it profitable to locate any part of their production facilities outside their home countries. This will depend on the attractions of location specific endowments (L), i.e. those, which are not transferable or mobile across national boundaries, and offered by the home, as compared with the foreign country.

Ownership specific advantages are a necessary pre-requisite for foreign involvement. The presence of internalisation advantages

suggests that enterprises will exploit these advantages by way of exports or Foreign Direct Investment rather than by contractual resource exchange. The FDI route rather than exports is chosen where locational advantages favour a foreign rather than domestic production base. 'This paradigm thus establishes host country determinants of FDI through locational advantages (L)' (World Investment Report 1998).

'Pull' factors

First, the domestic policy framework should ensure economic, political and social stability. A measure of economic risk is used to account for such factors. The role of national FDI policies is also very important. These consist of rules and regulations governing the entry and operations of foreign investors, the standards of treatment accorded to them and the functioning of the market within which they operate. There are supplementary policies such as trade policy, privatisation policy, and policies determined by international agreements as well, that affect FDI. The ratio of export and imports to GNP and the black market premium are thus included in order to capture trade openness and degree of capital account restrictions. However, policies conducive to FDI, especially the liberalization of policies (a key factor in globalisation), are a necessary but not sufficient condition for FDI.

The other determinants that come out of national policies are:

* Macroeconomic policies – monetary and fiscal policies – the budget deficit is used as a proxy of monetary and fiscal stance. The exchange rate may influence FDI decisions by affecting the prices of host country assets, the value of transferred profits, and the competitiveness of foreign affiliate exports, thus the nominal exchange rate is also included as an additional 'Pull' factor.

* Macro-organisational policies. These affect the pattern of resource allocation as well as the structure and organization of economic activities. No variable is included to capture such factors due to measurement problems.

The second set of determinants is economic determinants. The principal economic motives of MNCs for investing in foreign countries can be divided into resource seeking, market seeking and efficiency seeking motives. Traditionally the most important determinant of FDI has been natural resources. Gross export revenues from primary commodities (including oil) are used to capture such effects. Another important resource is the availability of low cost labour, especially for labour-intensive products. The average wage rate of the country concerned is thus included as well. An endowment of skilled workers may also be needed to attract the more skill intensive investments, therefore the proportion of the population that has secondary education is included as an additional explanatory variable. We include GDP export revenue, and the GDP growth rate as measures of the market-seeking motive. The higher the GDP per capita, the greater will be the nation's economic wealth, and better the prospects that direct investment, which will be profitable. Therefore, per capita GNP is included as well. Efficiency-seeking factors may also be captured by these market size and growth factors together with measures of domestic distortions like the black market exchange rate premium.

The third set of determinants is called business facilitation measures: pro-active facilitation measures that go beyond policy liberalization. They include promotional efforts, the provision of incentive to foreign investors, the reduction of 'hassle costs' of doing business in a host country and the provision of amenities that contribute to the quality of life of the expatriate personnel. These factors are not measurable but the economic risk measure may capture some of these effects.

'Push' Factors

The 'Push' factors are again U.S. interest rates and U.S. industrial activity.

Data

We use quarterly data for portfolio flows, defined as net purchases of domestic equities and bonds for a group of five Latin American

countries– Argentina, Brazil, Chile, Colombia, and Mexico – and seven Asian countries – India, South Korea, Sri Lanka, Malaysia, Philippines, Thailand, and Indonesia. The sample of countries were chosen from a wider group of Asian and Latin American economies that faced a surge of capital inflows in the 1990s[5] on the basis of data quality and availability. The sample period is from 1989 to 1998. The data has been collected from various sources such as the World Development Indicators, Global Development Finance, International Financial Statistics, World Currency Year book, Institutional Investor and ILO. The FDI regressions are based on annual observations for the same time period and countries as portfolio flows.

Methodology

A panel data approach is used to model net private capital flows, both FDI and portfolio flows. This is because the panel data estimation method is among the most efficient techniques to analyse the impact of a common set of global factors across a diverse group of countries. This structure acknowledges that each country can have its own characteristics (country specific effects), which can be correlated or uncorrelated with some or all of the explanatory variables. Moreover, not only does it minimize the omitted variable bias problem but it also minimizes the problem of multicollinearity.

The model we estimate is of the following type:

$$Y_{it} = \alpha + X_{it}\beta + u_{it} \qquad (1)$$

The one way error component model assumes that the error structure is defined as[6]:

$$u_{it} = \mu_i + \nu_{it} \qquad \nu_{it} \sim N(0,\sigma_\nu^2)$$

Where i = 1,2,....,N is a country index, t = 1,2,....,T is a time index. Y_{it} is the dependent variable, α is the common constant. X_{it} is a set of explanatory variables. β is a vector of slope parameters. u_{it} is the disturbance term which comprises of both the idiosyncratic effects ν_{it}

Host country determinants	Type of FDI classified by motives of TNCs	Principal economic determinants in host countries
I Policy framework for FDI * economic, political and social stability * rules regarding entry and operations * standards of treatment of foreign affiliates * policies on functioning and structure of markets (especially competition and M&A policies) * international agreements of FDI privatisation policy * trade policy (tariffs and NTBs) and coherence of FDI and trade policies * tax policy	A. Market seeking	* market size and per capita income * market growth * access to regional and global markets * country specific consumer preferences * structure of markets
II Economic determinants	B. Resource/ asset seeking	* raw materials * low cost unskilled labour * skilled labour * technological, innovatory and other created assets (e.g. brand names), including as embodied in individuals, firms and clusters * physical infrastructure (ports, roads,power, telecommunication)
III Business facilitation * investment promotion (including image building and investment generating activities and investment facilitation services) investment incentives * hassle costs (related to corruption administrative efficiency, etc.) * social amenities (bilingual schools, quality of life, etc.) * after investment services	C. Efficiency seeking	* cost of resources and assets listed under B, adjusted for productivity for labour resources * other input costs, e.g. transport and communication costs to, from and within host economy and costs of other intermediate products * membership of a regional intergration agreement conducive to the establishment of regional corporate networks

Source: World Investment Report 1998
TNCs- Transnational Corporations
M&A- Mergers and Acquisitions
NTBs- Non-Tariff Barriers

Figure 2: Host Country Determinants of FDI

and unobservable individual specific effects μ_i which can be either fixed or random effects that differ between the countries but are constant across time. Model (1) states that the slope parameters of the explanatory variables are the same across all the countries and the differences among the countries are captured by the country specific effects μ_i. The model can be rewritten as follows:

$$Y_{it} = \alpha + W_{it}\,\delta + Z_i\,\gamma + u_{it} \qquad (2)$$
$$u_{it} = \mu_i + \mu_{it}$$

Where W is a vector of country specific factors (e.g. credit rating, stock market return, and black market premium) and Z_i is a set of common factors, which capture global factors (e.g. US interest rates and US industrial production).

The panel can be modelled as fixed effects or random effects depending on the nature of the individual effects μ_i. If the individual effects are deterministic then the appropriate technique is the fixed effect model. In the Random effects model the individual effects are treated as stochastic random variables. Therefore, to decide on the appropriate technique we must determine the nature of the individual effect. This is done by the Breush Pagan LM test. We define our null of fixed effect as:

$$Ho: \sigma^2\mu = 0$$

If we reject the null, then the random effect model is the correct specification. However, when the μ_i effects are treated as random variables but where there is non-zero covariance between the μ_i effects and the X_{it} variables, the GLS random effects estimator will be biased and inconsistent. Then the fixed effect within the group estimator should be adopted, as it is biased but consistent even though it is inefficient. To test for the covariance we use the Hausman test.

H_0: Cov $(\mu_i, X_i) = 0$ against the alternative

H_1: Cov $(\mu_i, X_i) \neq 0$

If we reject the null, the fixed effects estimator is used even though the individual effects are stochastic.

Results for Portfolio Flows

The model is first estimated with random effects. Both domestic and external factors were included as determinants of portfolio flows. Then the Breusch Pagan test was conducted, which strongly rejected the random effect model. Moreover, the Pooling restriction: Ho $\mu_i = 0$ (individual effects are 0) was rejected at the 1% level.[7] This justifies the use of fixed effects rather than OLS. A general-to-specific modelling strategy was then followed to converge to a 'congruent model' (Hendry 1995). Table 1 reports the calculated elasticities of the congruent model.

Table 1: Panel Data Estimates 1989-1998 (7 Asian and 5 Latin American Countries)

	Portfolio flows
Method of estimation	Fixed effects
U.S. interest rates	-1.23
	(2.23)*
U.S. GDP	-6.9
	(3.11)**
Foreign Exchange Reserves	1.89
	(5.14)**
Number of observations	468
R-Squared (Within)	0.30

Source: Research data
Coefficients are elasticities
Absolute value of t-statistics in parentheses
* significant at 5%; ** significant at 1%

In the case of portfolio flows, the results show the importance of external factors in driving portfolio flows into the countries selected. The only domestic factor, which is statistically significant in explaining portfolio

flows, is total foreign exchange reserves. Therefore, portfolio flows converge on these emerging market economies when returns and opportunities in industrial countries decline. They also take into account the degree of exchange rate risk when investing in these economies. A 1% change in all statistically significant 'Pull' and 'Push' factors affects portfolio flows by 10.02%. However, only 19% of this change is accounted for by 'Pull' factors, with the remaining 81% determined by 'Push' factors.[8] This shows that funds flowing into the stock and bond markets of an emerging market country are largely driven by external factors.

Table 2 : Panel Data Estimates 1989-1998 (7 Asian and 5 Latin American Countries)

	FDI
Method of estimation	Fixed effects
Economic risk	9.07
	(3.80)**
Black market premium	-3.6
	(1.18)
Domestic GDP	2.94
	(5.67)**
Domestic GDP growth	0.91
	(2.83)**
U.S. interest rates	-4.11
	(7.87)**
Exports	3.51
	(5.74)**
U.S. GDP	-10.08
	(2.56)**
Number of observations	107
R-Squared (Within)	0.70

Source: Research data
Coefficients are elasticities
Absolute value of t-statistics in parentheses
* significant at 5%; ** significant at 1%

Results for FDI

A general-to-specific modelling strategy is pursued to converge to a 'congruent' model, which is presented in Table 2. Again, the model is estimated by a fixed effects estimator.[9] The results confirm the importance of domestic factors as set out in the OLI framework.

From the results, we can see that domestic GDP, growth rate of GDP, and export of goods and services are important. This confirms the importance of the market-seeking motive as a determinant for FDI flows. The elasticity on the domestic GDP variable and exports is high, suggesting market size has a big impact on flows. Resource seeking and efficiency seeking factors are important as well. The coefficient on average wage rates is highly significant and elastic. However, gross export revenues from primary commodities, which is a measure of FDI for natural resource extraction is insignificant. Economic risk is significant and highly elastic, which shows that stability of the economy is important for FDI flows. Any increase in the perception of risk of the country reduces FDI very substantially. This is probably because investors prefer to delay investment and wait for the outcome of the uncertain. The black market premium, which is a proxy for the rules regarding repatriation of capital, is also statistically significant. A decrease in the black market premium has quite a large positive effect on FDI. A decrease in U.S. industrial activity has a statistically significant and large positive effect on FDI as well. This is an instance where a decrease in opportunities in industrial countries 'Push' FDI into emerging markets to seek greater returns.

The results do show that the domestic economic climate, risk, return, and government regulation play a vital role in explaining FDI flows. However, due to lack of measurability, determinants such as business facilitation measures have been excluded. Thus, the results will be biased to some extent. The extent of bias depends on the statistical significance of the variable and its correlation with the variables that have been included. However, factors, which are time invariant, but differ across countries, are eliminated in the fixed effect model. This means that the level of bias will be much lower in the panel regressions than Ordinary Least squares.

We also disaggregate the relative importance of 'Push' and 'Pull' factors in explaining FDI flows. Seventy per cent of changes in FDI are explained by 'Pull' factors and thirty per cent by 'Push' factors. Thus, in the case of FDI, 'Pull' factors are relatively more important in determining flows to emerging markets.

Conclusion

The results suggest that Foreign Direct Investment is predominately caused by 'Pull' factors, which is consistent with the OLI hypothesis of FDI. However, 'Push' factors explain about 80% of the variation in portfolio flows to Asia and Latin America, with exchange rate risk explaining the rest. It is easy to take the view that FDI flows do not represent a policy problem because they could be influenced by domestic policies (Pull view), while portfolio flows are an external shock, which can easily be reversed (Push view), thus warranting a policy response. However, at best, this framework represents a point of departure for policy analysis because the mapping from Push or Pull views to policy is highly imperfect. This is because both broad categories of factors can encompass a number of domestic and foreign phenomena. For example, capital inflows pushed by external factors can converge on an economy free of distortions, while they can also be pulled by the presence of domestic distortions. Therefore, the welfare implications of 'Push' and 'Pull' factors depend on the specific 'Pull' or 'Push' phenomena, not just whether the origin of the shock is domestic or external.[10]

Notes

1 The Philippines also followed this example in the early 1990s.

2 Other rates of return in the U.S., e.g. on real estate, have also been low in this period.

3 Rule 144A introduced in April 1990 facilitated private placements in the U.S. market by circumventing onerous filing requirements and easing restrictions on resale of privately placed securities.

4 In contradiction to Fernandez-Arias 1996, Haque et al. 1997 argue that the effect of external factors on creditworthiness is negligible in comparison to domestic factors. This can be seen from the fact that when a country experiences high inflation its creditworthiness falls by 60-80 points. On the other hand, an increase of 100 basis points in international interest rates (as represented by the U.S. Treasury bill rate) reduces a country's credit rating by 2 points in the short term (Haque et al 1997). The factors that play a dominant role in explaining country creditworthiness are: the country's non-gold foreign exchange reserve holdings, current account balance in the year prior to the rating, the real rate of GDP growth. The effect of inflation on credit rating is non-linear, with high inflation countries penalized more than countries with low or moderated inflation (Haque et al 1997). Thus, for the sake of simplicity, creditworthiness is included as a 'Pull' factor.

5 See Appendix Table 2 for the group of emerging markets that faced a surge of capital inflows in the 1990s.

6 In principle, we may want to allow for the two way error component model where:

$$u_{it} + m_{it} + l_t + n_{it}$$

Where l_t is time varying but individual invariant unobservable effects. In practice, such a model is difficult to implement and leads to a significant loss of degrees of freedom. Therefore, we include a dummy variable for Rule 144A, which can be thought of as a proxy for a change in attitude towards international financial integration and globalisation, which otherwise could be an unobservable time varying effect; and estimate the model as a one way error component model.

7 We also conducted a Hausman test to investigate whether foreign exchange rate reserves were endogenous. A Hausman test of the fixed effects estimates compared with a IV estimator (Balestra and Varadharajan-Krishnakumar, 1987) using lagged values of

foreign exchange reserves as instruments suggested that the estimates were not significantly different.

[8] If all the 'Pull' factors change by 1%, portfolio flows will change by 1.89%. If the ' Push' factors change by 1%, portfolio flows would change by 8.13%. Of the 10.02% change in portfolio, 19% (1.89/ 10.02) is due to 'Pull' factors and 81% (8.13/10.02) due to 'Push' factors.

[9] The model is first estimated with random effects. Both domestic and external factors are included as determinants of FDI. Then the Breusch Pagan test was conducted, which rejected the random effect model. Moreover, the pooling restriction: Ho mi = 0 is rejected at the 1% level. The Hausman test was also conducted, which validates the fixed effects estimator.

[10] See Agenor and Montiel (1999) for more detail.

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Appendix

Table 1 : Annual Net Private Capital Flows to Emerging Markets (By Region)

		1978-82	1983-89	1990	1991	1992	1993	1994	1995	1996	1997	1990-97
Africa	US$ Billions	6.4	2.6	-1.9	1.2	0.2	3.7	9.2	10.5	5.4	14.0	5.3
	% of Exports	7.7	3.2	-1.8	1.2	0.2	3.8	9.1	8.9	4.1	10.3	4.5
	% of GNP	2.0	0.8	-0.5	0.3	0.0	1.0	2.5	2.4	1.1	2.7	1.2
Asia	US$ Billions	7.6	12.9	27.5	32.2	20.9	54.3	64.3	91.2	98.3	28.8	52.2
	% of Exports	9.8	10.7	13.5	14.0	7.9	18.0	17.5	20.1	19.4	5.2	14.5
	% of GNP	1.2	1.5	2.6	2.9	1.7	3.7	4.1	4.9	4.6	1.3	3.2
ME & EE	US$ Billions	-24.8	3.3	9.2	65.9	31.3	30.3	13.4	7.7	4.2	8.7	21.3
	% of Exports	-12.2	2.3	4.9	38.0	16.4	16.4	7.0	3.6	1.7	3.4	11.4
	% of GNP	-5.3	0.7	1.5	11.7	5.0	4.9	2.3	1.2	0.6	1.1	5.5
LA	US$ Billions	29.1	-1.5	14.1	25.5	55.9	63.1	46.5	38.2	81.8	87.5	51.6
	% of Exports	28.9	-1.3	8.5	15.4	32.1	34.4	22.2	15.5	29.9	29.2	23.4
	% of GNP	3.9	-0.2	1.3	2.2	4.5	4.6	3.0	2.3	4.5	4.4	3.4

Source: World Economic Outlook
ME & EE - Middle East and Emerging Europe
LA - Latin America

Table 2 : The Surge in Private Capital Flows to 20 Developing Countries (1989-95) (Net Private Capital Flows as a percentage of GDP)

Country	Inflow Episode	Cumulative Inflows/GDP At end of Episode	Maximum Annual Inflow
Argentina	1991-94	9.7	3.8
Brazil	1992-95	9.4	4.8
Chile	1989-95	25.8	8.6
Colombia	1992-95	16.2	6.2
Hungary	1993-95	41.5	18.4
India	1992-95	6.4	2.7
Indonesia	1990-95	8.3	3.6
Korea	1991-95	9.3	3.5
Malaysia	1989-95	45.8	23.2
Mexico	1989-94	27.1	8.5
Morocco	1990-95	18.3	5.0
Pakistan	1992-95	13.0	4.9
Peru	1990-95	30.4	10.8
Philippines	1989-95	29.1	7.9
Poland	1992-95	22.3	12.0
Sri Lanka	1991-95	22.6	8.2
Thailand	1988-95	51.5	12.3
Tunisia	1992-95	17.6	7.1
Turkey	1992-93	5.7	4.1
Venezuela	1992-93	5.4	3.3

Source: World Bank 1997

Table 3 : Net capital flows to Emerging Markets (Billions of US$)

Regions	Descriptor	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total emerging market economies	Net private capital flows	43.75	110.43	112.64	172.12	136.31	226.88	215.93	147.61	75.09
Total emerging market economies	Net direct investment	18.51	31.61	35.44	59.45	84.01	92.61	113.18	138.6	143.3
Total emerging market economies	Net portfolio investment	15.7	27.14	56.14	84.35	09.58	36.91	77.84	2.92	8.5
Total emerging market economies	Other net investment	9.54	51.69	21.05	28.32	-57.29	97.37	24.9	-43.92	-76.7
Total emerging market economies	Net official flows	23.13	34.45	21.19	17.17	3.43	11.75	0.38	23.47	44.69
Total emerging market economies	Change in reserves	-26.31	-55.94	-56.94	-63.73	-63.56	-117.89	-114.15	-73.11	37.77
Total emerging market economies	Current account	-32.23	-85.65	-78.5	-118.89	-75.83	-107.01	-94.42	-72.14	-50.88
Asia, crisis countries	Net private capital flows	24	27.89	29.04	31.84	36.12	74.16	65.8	-20.41	-25.56
Asia, crisis countries	Net direct investment	6.01	6.24	7.3	7.6	8.8	7.5	8.43	10.33	8.61
Asia, crisis countries	Net portfolio investment	0.55	3.21	6.4	17.2	9.95	17.43	20.31	12.88	-5.98
Asia, crisis countries	Other net investment	17.43	18.44	15.34	7.04	17.37	49.23	37.06	-43.61	-28.19
Asia, crisis countries	Net official flows	0.31	4.42	2.03	0.6	0.31	0.69	-0.41	17.92	19.74
Asia, crisis countries	Change in reserves	-8.17	-8.32	-18.1	-20.59	-6.1	-18.51	-5.45	30.52	-52.08
Asia, crisis countries	Current account	-16	-25.19	-16.15	-13.53	-23.21	-40.41	-52.99	-25	69.14
Other Asian emerging markets	Net private capital flows	-4.17	6.98	-8.27	25.57	27.49	30.78	38.27	19.05	-16.99
Other Asian emerging markets	Net direct investment	3.18	8.26	8.44	26.33	38.33	39.06	44.64	45.14	49.67
Other Asian emerging markets	Net portfolio investment	-2.98	-1.98	2.58	4.58	1.83	-3.19	-7.44	-9.4	-11.93
Other Asian emerging markets	Other net investment	-4.37	0.71	-19.28	-5.34	-12.67	-5.09	1.07	-16.69	-54.73
Other Asian emerging markets	Net official flows	5.32	6.51	8.25	7.89	10.4	5.83	4.13	3.68	7.91
Other Asian emerging markets	Change in reserves	-11.8	-30.32	-6.58	-16.6	-47.3	-27.56	-44.8	-46.74	-18.16
Other Asian emerging markets	Current account	12.26	24.18	14.02	-8.24	16.82	-4.48	16.23	48.23	44.49
Western Hemisphere	Net private capital flows	13.72	24.06	55.58	66.79	49.37	53.15	72.15	85.49	70.01
Western Hemisphere	Net direct investment	6.72	11.34	13.88	13.39	23.07	24.68	39.54	53.11	56.12
Western Hemisphere	Net portfolio investment	17.52	14.71	30.35	44.02	66.72	2.97	41.04	19.16	14.72
Western Hemisphere	Other net investment	-10.52	-1.99	11.35	9.37	-40.43	25.49	-8.43	13.21	0.84
Western Hemisphere	Net official flows	3.6	2.74	-1.75	0.47	-3.6	8.11	-4.66	-3.6	6.08
Western Hemisphere	Change in reserves	-17.33	-17.44	-22.61	-20.12	4.56	-21.85	-30.78	-15.28	17.39
Western Hemisphere	Current account	-1.05	-16.95	-34.55	-45.99	-52.23	-36.78	-38.26	-64.06	-88.57

Source: World Economic Outlook
The Asian Crisis countries include Indonesia, Korea, Malaysia, the Philippines, and Thailand