Hong Kong Institute for Monetary Research 香港金融研究中心

Public Seminar
Date : 14 August 2002 (Wednesday), 9:45 – 10:45 a.m.
Venue : Rm813, Citibank Tower, 3 Garden Road, Central

FDI Contribution to Capital Flows and Investment in Capacity

by

Assaf Razin

Tel Aviv University and Cornell University

Contents:

1. FDI Gravity

FDI Flows and domestic investment: Evidence from a Gravity Model

Gravity models have proven useful as a framework for analyzing the determinants of asset flows (Wei, 2000 and Portes and Rey, 1999). This paper builds on such empirical models by examining additional determinants of asset flows as suggested by recent theoretical work--and, as a consequence--differentiates between the determinants of foreign direct investment and equity flows. Specifically, we identify three categories of variables: "degree of country specialization," "search costs," and "institutional quality." Specialization is measured using the export concentration of the host and source countries. The extent of search costs involved in matching recipients and providers is proxied by the following variables: telephone traffic between

the host and source countries, distance between them, and linguistic ties. Institutional quality is reflected through use of measures of credit risk, corporate governance, and transparency. We use a large data set of bilateral FDI flows to 45 host countries from 12 source countries over the 1990s and a data set of bilateral equity flows for a smaller set of countries. We first provide a stylized model summarizing recent theoretical work on FDI (Razin and Sadka, forthcoming; Loungani and Razin, 2001). Each of the three broad determinants of FDI turns out to be empirically relevant in explaining the behavior of FDI flows. The determinants that we highlight remain significant after we control for the role of factors identified in previous work, for example the relative GDPs of the host and source countries and corruption in the host country. We

also provide evidence on differences between the determinants of FDI and the determinants of portfolio equity flows (Portes and Rey, 1999).

July 1st, 2002

Prepared For CES-Ifo Studies

FDI Flows and Domestic Investment: Overview

by

Assaf Razin[1]

1 Introduction

The name "Foreign Direct Investment" usually brings to mind a significant contribution of FDI to domestic investment. However, there has been a lot of skepticism concerning the contribution of inward FDI to domestic investment. As noted by Froot (1993), FDI (the purchase by a domestic resident of a controlling stake in a foreign company) actually requires neither capital flows nor investment in capacity. Conceptually, FDI is an extension of corporate control over international boundaries: "When Japanese-owned Bridgestone takes control over the US firm Firestone, capital need not flow into the US. The equity purchase can be largely financed by US domestic lenders. Any borrowing by Bridgestone from foreign -based third parties also does not qualify as FDI (although it would count as an inflow of portfolio capital into the US). And, of course, in such acquisition there is no investment expenditure; merely an international transfer in the title of corporate assets." Does this example captures the essence of FDI? The answer we provide here , based on a new theory, and recent empirical evidence is that FDI flows play an important role in the process of skimming high productivity investment projects and contributes significantly to domestic investment in both the quantity and the quality dimensions.

2 FDI in Developing Countries: Stylized Facts

A comprehensive study by Bosworth and Collins (1999) provides evidence concerning the effect of capital inflows on domestic investment for 58 developing countries during 1978-95. The authors distinguish among three types of inflows: FDI, portfolio investment, and other financial flows (primarily bank loans). Bosworth and Collins find

[1]Key note address to CES-ifo macro seminar, March 2002. I would like to thank two anonymous referees for their very useful comments.

that an increase of a dollar in capital inflows is associated with an increase in domestic investment of about 50 cents. (Both capital inflows and domestic investment are expressed as percentages of GDP.) This result, however, masks significant differences among different types of inflows. FDI appears to bring about close to a one-for-one increase in domestic investment; there is virtually no discernible relationship between portfolio inflows and investment (little or no impact); and the impact of loans falls between those of the other two. These results hold both for the 58-country sample and for a subset of 18 emerging markets. (See Figure 1; source: Loungani and Razin (2001)).

An additional (striking) feature of FDI flows is that the share of FDI in total inflows is higher in riskier countries, as measured either by countries' credit ratings for sovereign (government) debt or other indicators of country risk (see Figure 2). There is also some evidence that the FDI share is higher in countries where the quality of corporate governance institutions is lower. What can explain these seemingly paradoxical findings? One explanation is that FDI is more likely, compared with other forms of capital flows, to take place in countries with missing or inefficient markets. In such settings, foreign investors will prefer to operate directly instead of relying on local financial markets, suppliers, or legal arrangements.

3 Old and New Theories

Theories of FDI can essentially be divided into two categories: micro (industrial organization) theories and macro (cost of capital) theories. The early literature that explains FDI in microeconomic terms focuses on market imperfections, and the desire of multinational enterprises to expand their monopolistic power (see Caves (1971). Subsequent literature centered more on firm-specific advantages owing to product superiority or cost advantages, stemming from economies of scale, multi-plants economies and advanced technology, or superior marketing and distribution (see Helpman(1984)). According to this view, multinationals find it cheaper to expand directly in a foreign country rather than through trade in cases where the advantages associated with cost or product are based

on internal, indivisible assets based on knowledge and technology. Alternative explanations for FDI have focused on regulatory restrictions, including tariffs, quotas, that either encourage or discourage cross-border acquisitions, depending on whether one considers horizontal or vertical integrations.

Studies examining the macroeconomic effects of exchange rate on FDI centered on the positive effects of an exchange rate depreciation of the host country on FDI inflows, because it lowers the cost of production and investment in the host countries, raising the profitability of foreign direct investment. The wealth effect is another channel through which a depreciation of the real exchange rate could raise FDI. By raising the relative wealth of foreign firms, a depreciation of the real exchange rate could make it easier for those firms to use retained profits to finance investment abroad and to post a collateral in borrowing from domestic lenders in the host country capital market (see Froot (1991) and Razin and Sadka (2001)). There is a large literature on different forms of spillovers from inward investors in the form of new technologies, ideas and capital (see Blomstrom, Kokko and Globerman (2001)).

Management under portfolio equity ownership may be plagued by a free-rider problem. Under disperse ownership if an individual shareholder does something to improve the quality of management, the benefits will accrue also to all other shareholders. In contrast, FDI investor, who gains control of the firm and is endowed with mamagement skills, has proper incentives to pursue proper monitoring of management. Furthermore, based on possession of "intangible capital" in the source country, the FDI investor can apply more efficient management standards in the host country compared to domestic. The unique advantage to FDI, that has only recently been explored, is its potential for superior micro-management, based on the specialization in niches of industry in the operation in the source country. Important issues are: (1) Which are the salient characteristics of the free-FDI-flows equilibrium, when FDI investors take control over domestic firms. (2) What constitute the gains from FDI flows to the host economy in this context, given that the foreign investors appropriate the private rewards resulting from their superior management skills; and (3) Whether or not the free-FDI-flows regime is efficient.

In Razin and Sadka (2002), we developed a stylized model of FDI in the presence of imperfect information with respect to the firm's productivity. In an integrated capital market, with full information, all forms of capital flows (FDI, loans, and Portfolio equity and debt) are indistinguishable. In the presence of incomplete information, these flows are significantly different from one another. The disadvantage of portfolio investments relative to FDI

is rooted in the following problem.

The management of firms owned by portfolio investors is plagued by a "free-rider" problem. Oliver Hart (2000), in a related context put it like this. " If the shareholder does something to improve the quality of management, then the benefits will be enjoyed by all shareholders. Unless the shareholder is altruistic, she will ignore this beneficial impact on other shareholders and so will under-invest in the activity of monitoring or improving management." In contrast, shareholders, such as FDI investors, which take control of the firm, and are equipped with managerial know-how, can obtain the full benefits of their actions for themselves and therefore do not face the same free-rider problem.

We formalized this unique advantage of FDI investment over other types of investment in a stylized model. Suppose that initially all firms are still owned by original (domestic) uninformed owners, and suppose that the productivity shock is purely idiosyncratic. At the beginning of the first period, when investment decisions are made, firms are uninformed about the productivity shock. It will be revealed only in the second period, when output from new capital is already materialized. In order to make new investment the firm must incur first a fixed setup cost. As the firms are all ex-ante identical if they have to make the investment decision at this level of information, they will all invest the same, based on the expected level of the productivity factor. Assume now that at this stage, before the productivity factor is known, foreign direct investors step in. Once acquiring and effectively managing the firm, the FDI investor can better monitor the productivity of the firm than the her domestic investor counterpar. She can thus fine tune the level of capital stock more closely to the value of the productivity factor. Anticipating this fine-tuned investment schedule, the value of the firm to the potential FDI investor is larger than the reservation value to the original owner, and the corresponding value to potential domestic investors. Therefore, FDI investors will outbid domestic investors for the firms in the domestic industry. Competition among potential FDI investors, will drive up the price close to the price which reflect the upgraded micromanagement of the firm. The initial domestic owners will gain the rent, which is equal to difference between the FDI investor's shadow price and the initial owner's reservation price.

If the competition between potential FDI investors is perfect, all the benefits from the superior FDI management skills accrue to the host economy, leaving the FDI investors with a return on their investment just equaling the world rate of interest. The gains to the host economy from FDI inflows can therefore be classified into two

categories. First, there are the conventional gains that stem from opening the economy to the new flow of capital, thereby allowing a more efficient intertemporal allocation of consumption (via consumption smoothing). Second, there are the intrinsic gains associated with the superior micromanagement by FDI investors. The entire gain of the FDI investors is captured by the domestic economy because of assumed perfect competition among these investors over the domestic firms.

The economic gains from FDI, relative to portfolio inflows, lie only in the efficiency of investment, since in both cases there are consumption smoothing effects and the same world interest rate (r) prevails in the host country in the two regimes. In other words, the gains from FDI, in comparison to portfolio flows, do not include the traditional gains from opening up the domestic capital market to foreign capital inflows because these traditional gains are present also in the portfolio regime. Under some plausible conditions the size of the aggregate stock of capital is larger under FDI than under Portfolio equity flows.

4 Some Evidence

Like its theoretical counterpart, empirical work has tended to focus either on underlying factors to explain the location of FDI flows across countries or on explaining the cyclical behavior of FDI flows using macroeconomic variables, and assessing the contribution of FDI flows to investment and growth.

To what extent is there empirical support for such claims of the significant impact of FDI on domestic investment?

Loungani, Mody, Razin and Sadka (2003) employ a gravity model of bilateral FDI and portfolio capital flows in order to explain determinants of the mobility of financial capital across countries. The authors identify three main categories of variables that significantly explain FDI inflows in the data. First, a positive correlation between the industry specialization in the source countries and FDI flows into the destination countries is shown to exist. Second, the ease of communications between the source country and the destination country (as measured by telephone densities in each country) is found to have positive effects on the size of FDI flows. Third, countries with higher debt-equity ratios of publicly traded companies attract less FDI flows; these findings are summarized in Table 1.

In Loungani, Mody, Razin and Sadka (2003) we interpreted the industry specialization in the source country

as providing a comparative advantage to the potential foreign direct investors in eliciting good investment opportunities in the destination country, relative to domestic investors in the host country. This advantage may stem, for example, from the ability of FDI investors to apply better industry-specific micro-management standards. In the model this element is captured by assuming a lower cost of cream (high-productivity firms)-skimming on the part of foreign direct investors. The second category of variables underscores the role of information as a determinant of FDI inflows. As banks are the main providers of debt capital and they usually conduct rigorous scrutiny of the credit worthiness of their debtors, we conjecture that, ceteris paribus, firms with high debt-equity ratio tend to be more transparent. In this case, the advantage of FDI investors in their cream-skimming skills is less pronounced and therefore FDI inflows are less abundant.

As indicated in section 3, in Razin and Sadka (forthcoming) the gains from FDI are reflected in a more efficient size of the stock of domestic capital and its allocation across firms. FDI firms are typically the "cream" (high productivity firms). Also, FDI inflows enlarge (under plausible assumptions) the size of the aggregate stock of domestic capital. This result is consistent with empirical evidence. For instance, Bosworth and Collins (1999) provide such evidence for a sample of developing countries during the period 1978-1995. More recently, Hecht, Razin and Shinar (2002) find in similar samples that the effect of FDI inflows on domestic investment is significantly larger than either portfolio equity or loan inflows; see table 2. They provide also evidence that FDI inflows promote efficiency: The effect of FDI on GDP growth is higher than the effect of other inflows, after controlling for the effect of capital accumulation on GDP growth; see table 3.

Table 1: Determinants of FDI in a Gravity Model

Host GDP	0.54 (11.06)
Source GDP	1.63 (20.72)
Distance	−1.13 (−23.23)
Common Language	0.89 (6.72)
Industry Specialization	12.05 (3.42)
Specialialization>Source GDP	−2.39 (−3.56)
Host Telephone Density	0.52 (9.63)
Source Telephone Density	3.52 (14.43)
Host Debt-Equity Ratio	−0.005 (−3.43)
Number of Observations	2326 (632)

Notes:

1. Dependent Variable: FDI (real US$) from source to destination country (1981-1998, three-year averages, using panel tobit method).

2. Source: Loungani, Mody, Razin and Sadka (2002).

Table 2: Determinants of Domestic Investment

	OLS	TSLS
Foreign Direct Investment (FDI)	0.13 (5.5)	0.23 (6.8)
Loan Inflows (L)	0.14 (4.0)	0.12 (3.0)
Portfolio Inflows (P)	0.02 (0.3)	0.18 (2.0)
Lagged (one year) Domestic Investment	0.83 (99.7)	0.66 (51.2)
GNP Growth	0.2 (15.1)	0.15 (10.9)
Lagged (one year) GNP Growth	0.04 (2.8)	0.06 (4.6)
Government Expenditure	0.03 (2.7)	0.01 (0.5)
Long-run effect of FDI	0.76**	0.68**
Long-run effect of L	0.82**	0.35**
Long-run effect of P	*	0.53*

Notes:

1. Except for GNP growth rates, all other variables are measured as percentages of GNP.
2. Source: Hecht, Razin and Shinar (2002).
3. The second column of coefficients (TSLS) reports the estimation of one equation of a four-equation system; other endogenous variables are FDI, L and P.
4. A double asterisk stands for statistical significance (at the one-percent level).
5. A single asterisk stands for statistical insignificance (at the five-percent level).

Table 3: Determinants of GDP Growth

	OLS	TSLS
Foreign Direct Investment (FDI)	0.09 (3.01)	0.2 (6.02)
Loan Inflows (L)	0.01 (0.24)	0.02 (0.39)
Portfolio Inflows (P)	0.05 (0.62)	0.10 (1.00)
Lagged (one-year) GDP Growth	0.12 (7.68)	0.12 (6.90)
Domestic Investment	0.27 (14.40)	0.24 (11.38)
Lagged (one-year) Domestic Investment	−0.22 (−12.08)	−0.18 (−9.11)
Government Expenditures	−0.019 (−8.39)	−0.019 (−7.92)
Initial GDP	−0.01 (−3.27)	−0.004 (−1.45)
Long-Run Effect of FDI	0.10**	0.23**
Long-Run Effect of L	0.01*	0.01*
Long-Run Effect of P	0.06*	0.07*

Notes:

Notes are the same in Table 2 as in Table 3.

5 Conclusion

Kindleberger (1969) suggested that in order to think about FDI we must ask not why capital might flow into a country, but rather why some particular asset would be worth more under foreign than under domestic control. I discussed here a theory of FDI, which captures a unique feature: hands-on management standards to react in real time to a changing economic environment in the firms that FDI investors gain control. Equipped with superior managerial skills, foreign direct investors outbid portfolio investors for the top productivity firms in a particular industry in which they have specialized in the source country. Consequently, FDI investors would make investment, both larger, and higher quality, than the domestic investors. The theory can explain both two-way

FDI flows among developed countries, and one-way FDI flows from developed to developing countries. Gains to the host country from FDI stem from the informational value of FDI.

The predictions of the theory are consistent with the evidence: larger FDI coefficient in the domestic investment and output growth regressions relative to the equity flow coefficient, reflects a more significant role for FDI in the domestic investment process.

I would like to end with a cautionary word based on the Irish case. It may be argued that the heavy subsidization of FDI in Ireland in the past two decades resulted in impressive GDP growth, but with less pronounced effect on the well being of Irish residents, as proxied by the Irish GNP growth rates. Gains to the country that serve as host to FDI flows are not necessarily captured by the increase in domestic investment, and productivity, to which FDI flows give rise.

References

[1] Rui Albuquerque, 2000, "The Composition of International Capital Flows: Risk Sharing through Foreign Direct Investment," Bradley Policy Research Center Working Paper No. FR 00-08 (Rochester, New York: University of Rochester).

[2] Blomstrom, M., Kokko, A. and Globerman, S. (2001), "The Determinants of Host Country Spillovers from Foreign Direct Investment: A Review and Synthesis of the Literature," in: Pain, N. (ed.) Inward Investment, Technological Change and Growth: The Impact of Multinational Corporations on the U.K. Economy, Palgrave Press.

[3] Eduardo Borensztein, Jose De Gregorio, and Jong-Wha Lee, 1998, "How Does Foreign DIrect Investment Affect Growth?" Journal of International Economics, Vol. 45, pp. 115-35.

[4] Barry P. Bosworth and Susan M. Collins, 1999, "Capital Flows to Developing Economies: Implications for Saving and Investment," Brookings Papers on Economic Activity:1, Brookings Institution, pp. 143-69.

[5] Caves, Richard E., 1971, "International Corporations: The Industrial Economics of Foreign Investment," Economica, Vol. 38(February), pp. 1-27.

[6] Kenneth A. Froot, 1991, "Japanese Foreign Direct Investment," Working Paper No.3737, issued in June 1991, Published in US-Japan Economic Forum, edited by Martin Feldstein and Kosai.

[7] Hart, Oliver (2000), "Financial Contracting," Nancy L. Schwartz Lecture, Kellog Graduate School of Management, Northwestern University.

[8] Joel Hecht, Assaf Razin, and Nitsan Shinar, 2002, "Capital Inflows and Domestic Investment: New Econometric Look," mimeo, Bank of Israel.

[9] Elhanan Helpman,1984, A Simple Theory of International Trade with Multinational Corporations, June, Vol 92, pp. 451-471

[10] Prakash Loungani, Assaf Razin, "How Beneficial Is Foreign Direct Investment For Developing Countries?" Finance and Development, June 2001,Volume 38, Number 2, pp: 6-10.

[11] Prakash Loungani, Ashoka Mody, Assaf Razin, and Efraim Sadka, 2003, The Role of Information in Driving FDI: Theory and Evidence, Paper presented in the North American Winter Meeting of the Econometric Society on January 3 - 5, 2003.

[12] Assaf Razin and Efraim Sadka, 2002, Labor, Capital and Finance: International Flows (New York and Cambridge, England: Cambridge University Press).

[13] Assaf Razin and Efraim Sadka (forthcoming) , "Gains from FDI Inflows with Incomplete Information", Economics Letters.

FDI Flows: the Role of Information

Assaf Razin and Efraim Sadka

$$G(\varepsilon)$$

$$(\varepsilon'-\beta,\varepsilon'+\beta)$$

$$\varphi(\varepsilon/\varepsilon') = \frac{G(\varepsilon)-G(\varepsilon'-\beta)}{G(\varepsilon'+\beta)-G(\varepsilon'-\beta)}$$

$$V(\varepsilon') =$$

$$\int_{\varepsilon'-\beta}^{\varepsilon'+\beta} \left\{ \frac{F[K(\varepsilon')](1+\varepsilon)+(1-\delta)K(\varepsilon')}{1+r} - [K(\varepsilon')-(1-\delta)K_0] \right\} d\varphi(\varepsilon/\varepsilon')$$

$$F'[K(\varepsilon')][1+E(\varepsilon/\varepsilon')] = r+\delta$$

$$E(\varepsilon/\varepsilon') = \int_{\varepsilon'-\beta}^{\varepsilon'+\beta} \varepsilon d\varphi(\varepsilon/\varepsilon')$$

$$F'[K^*(\varepsilon)][1+\varepsilon] = r + \delta$$

$$P(\varepsilon') = \int_{\varepsilon'-\beta}^{\varepsilon'+\beta} \left\{ \frac{F[K^*(\varepsilon)](1+\varepsilon) + (1-\delta)K^*(\varepsilon)}{1+r} - [K^*(\varepsilon) - (1-\delta)K_0] \right\} d\varphi(\varepsilon / \varepsilon')$$

$$P[\varepsilon_0'(C)] - C = V[\varepsilon_0'(C)]$$

$$\varepsilon_{0F}' = \varepsilon_0'(C_F)$$

$$E[K^*(\varepsilon)/\varepsilon'] = \int_{\varepsilon'-\beta}^{\varepsilon'+\beta} K^*(\varepsilon)\, d\phi(\varepsilon/\varepsilon')$$

$$K^F =$$

$$\int_{-1}^{\varepsilon_{0F}'} K(\varepsilon')\, dG(\varepsilon') + \int_{\varepsilon_{0F}'}^{1} E[K^*(\varepsilon)/\varepsilon']\, dG(\varepsilon')$$

Oliver Hart:

“If the shareholder does something to improve the
Quality of the management, then the benefits
Will be enjoyed by
All shareholders. Unless the shareholder
Is altruistic, she will ignore
This beneficial effect on other shareholders and so will underinest
In the activity of monitoring the
Management.”

$$\varepsilon_{0D}^{'} = \varepsilon_{0}^{'}(C_D)$$

$$C_D > C_F$$

$$\varepsilon_{0D}^{'} < \varepsilon_{0F}^{'}$$

$$K(C) = \int_{-1}^{\varepsilon_0'(C)} K(\varepsilon')dG(\varepsilon') +$$

$$\int_{\varepsilon_0'(C)}^{1} E[K^*(\varepsilon)/\varepsilon')dG(\varepsilon')$$

$$\frac{dK(C)}{dC} = \{K[\varepsilon_0'(C)] -$$

$$E[K^*(\varepsilon)/\varepsilon_0'(C)]\}g[\varepsilon_0'(C)]\frac{d\varepsilon_0'(C)}{dC}$$

$$K[\varepsilon_0'(C)] = H\{E[\varepsilon/\varepsilon_0'(C)]\}$$

$$K^*(\varepsilon) = H(\varepsilon)$$

$$H(x) = (F')^{-1}\left(\frac{r+\delta}{1+x}\right)$$

$$\frac{dK(C)}{dC} =$$

$$\left(H\{E[\varepsilon/\varepsilon_0'(C)]\} - E[H(\varepsilon)/\varepsilon_0'(C)]\right) g[\varepsilon_0'(C)] \frac{d\varepsilon_0'(C)}{dC}$$

Table 2: Determinants of Domestic Investment

	OLS	TSLS
Foreign Direct Investment, FDI	0.16	0.23
	(5.2)	(6.8)
Loan Inflows, L	-0.06	0.12
	(-2.2)	(3.0)
Portfolio Inflows, P	0.03	0.18
	(0.3)	(2.0)
Lagged Domestic Investment, I(-1)	0.87	0.66
	(96.1)	(51.2)
Output Growth, DY	0.15	0.15
	(10.4)	(10.9)
Lagged Output Growth, DY(-1)	0.06	0.06
	(3.8)	(4.4)
Government Expenditure, G	0.03	0.01
	(2.3)	(0.5)
Long run effect[1] of FDI on I	0.94	0.68
Long run effect of L on I	-0.35	0.35
Long run effect of P on I	0.18	0.53
R^2_{adj}	0.40	0.53

* I(-1), FDI, P, L and G are in terms of ratio to GDP, t values appear in parentheses.

Table 3: Determinants of FDI Inflows

	OLS	TSLS
Domestic Investment, I	0.03	0.07
	(3.0)	(5.0)
Lagged Foreign Direct Investment, FDI(-1)	0.60	0.50
	(19.6)	(16.0)
Output Growth, DY	0.01	0.02
	(0.10)	(1.6)
Lagged Output Growth, DY(-1)	-0.01	0.02
	(-0.1)	(1.3)
Dummy for Capital Controls, Res2	-0.003	-0.002
(No Controls =0, Controls=1)	(-2.1)	(-1.2)
Long run effect of I on FDI	0.08	0.14
R^2_{adj}	0.13	0.29

* FDI and I are in terms of ratio to GDP, t values appear in parentheses.

[1] The long-term effect expresses the lagged timed structure of the 2SLS estimation. It is calculated as the sum of a converging geometric series: $\beta_{xi} / (1-\beta_{x(-1)I})$

Table 4: Determinants of Loans inflows

	OLS	TSLS
Domestic Investment, I	-0.01	0.04
	(1.4)	(3.0)
Lagged L, L(-1)	0.66	0.50
	(22.9)	(16.7)
Output Growth, DY	0.01	-0.001
	(0.8)	(-0.05)
Lagged Output Growth, DY(-1)	0.02	-0.0002
	(1.2)	(-0.02)
Long run effect of I on L	-0.03	0.08
R^2_{adj}	0.24	0.25

* L(-1) and I are in terms of ratio to GDP, t values appear in parentheses.

Table 5: Determinants of PORTFOLIO investment inflows

	OLS	TSLS
Domestic Investment, I	0.004	0.01
	(0.5)	(0.7)
Lagged Portfolio Investment, P(-1)	0.46	0.40
	(4.8)	(4.8)
Output Growth, DY	0.001	-0.001
	(0.2)	(-0.1)
Lagged Output Growth, DY(-1)	0.007	0.004
	(0.5)	(0.3)
Dummy for Multiple Exchange Rates, Res1	-0.001	-0.002
(one exchange rate = 0, more than one =1)	(-0.6)	(-0.9)
Long run effect of I on Port	0.007	0.017
R^2_{adj}	0.03	0.13

* P(-1) and I are in terms of ratio to GDP, t values appear in parentheses.

Appendix 2 - List of 64 countries in HRS estimation

Algeria	Costa Rica	Kenya	Philippines
Argentina	Cote d'Ivoire	Korea, Rep.	Rwanda
Bangladesh	Dominica	Lesotho	Senegal
Belize	Ecuador	Malawi	Sierra Leone
Benin	Egypt, Arab Rep.	Malaysia	South Africa
Bolivia	Gabon	Mali	Sri Lanka
Botswana	Gambia, The	Mauritania	St. Vincent and the Grenadines
Brazil	Ghana	Mauritius	Swaziland
Burkina Faso	Grenada	Mexico	Syrian Arab Republic
Burundi	Guatemala	Morocco	Thailand
Cameroon	Guyana	Nepal	Togo
Central African Republic	India	Niger	Trinidad and Tobago
Chad	Indonesia	Nigeria	Tunisia
Chile	Israel	Pakistan	Uruguay
Colombia	Jamaica	Papua New Guinea	Zambia
Congo, Rep.	Jordan	Peru	Zimbabwe

Figure 1: Contribution of various international inflows to output GROWTH

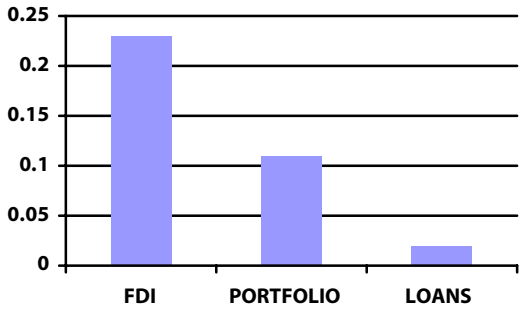


Table 1: Conjectured Interactions among Endogenous and exogenous Variables

Endogenous Variables					Exogenous Variables									
	FDI	P	L	DY	DY(-1)	FDI(-1)	P(-1)	L(-1)	Ln(GDP)	I	I(-1)	G	Res2	Res1
I	+	+	+		+				+	+	+	+		
FDI				+		+			+	+	+		+	
P				+			+		+	+	+			+
L				+				+	+	+	+			

Table 2: Determinants of Growth

	OLS	TSLS
Foreign Direct Investment, FDI	0.09	0.20
	(3.0)	(5.0)
Loan Inflows, L	0.01	0.02
	(0.2)	(0.4)
Portfolio Inflows, P	0.05	0.10
	(0.6)	(1.0)
Lagged Output Growth, DY(-1)	0.12	0.12
	(7.6)	(6.9)
Domestic Investment, I	0.27	0.24
	(14.4)	(11.4)
Lagged Domestic Investment, I(-1)	-0.22	-0.18
	(-12.1)	(-9.1)
Government Expenditure, G	-0.19	-0.19
	(-8.4)	(-7.9)
Ln(GDP)	-0.01	-0.004
	(-3.3)	(-1.45)
Long run effect[2] of FDI on DY	0.1	0.23
Long run effect of L on DY	0.01	0.02
Long run effect of P on DY	0.06	0.11
R^2_{adj}	0.04	0.1

* I(-1), FDI, P, L and G are in terms of ratio to GDP, t values appear in parentheses.

[2] The long-term effect expresses the lagged timed structure of the 2SLS estimation. It is calculated as the sum of a converging geometric series: $\beta_{xi} / (1-\beta_{x(-1)i})$

Table 3: Determinants of FDI Inflows

	OLS	TSLS
Output Growth, DY	0.02	0.05
	(1.3)	(2.2)
Lagged Foreign Direct Investment, FDI(-1)	0.45	0.49
	(13.4)	(13.4)
Domestic Investment, I	0.07	0.08
	(3.8)	(3.7)
Lagged Domestic Investment, I(-1)	-0.01	-0.01
	(-0.5)	(-0.4)
Dummy for Capital Controls, Res2	-0.002	-0.002
(No Controls =0, Controls=1)	(-0.1)	(-0.8)
Ln(GDP)	0.01	0.01
	(3.5)	(3.0)
Long run effect of DY on FDI	0.04	0.05
R^2_{adj}	0.26	0.3

* FDI and I are in terms of ratio to GDP, t values appear in parentheses.

Table 4: Determinants of Loans inflows

	OLS	TSLS
Output Growth, DY	-0.005	-0.005
	(-0.3)	(-0.2)
Lagged L, L(-1)	0.49	0.49
	(14.2)	(14.0)
Domestic Investment, I	0.06	0.07
	(3.2)	(3.4)
Lagged Domestic Investment, I(-1)	-0.03	-0.04
	(-1.5)	(-1.8)
Ln(GDP)	-0.01	-0.01
	(-2.8)	(-2.3)
Long run effect of I on L	-0.01	-0.01
R^2_{adj}	0.27	0.27

* L(-1) and I are in terms of ratio to GDP, t values appear in parentheses.

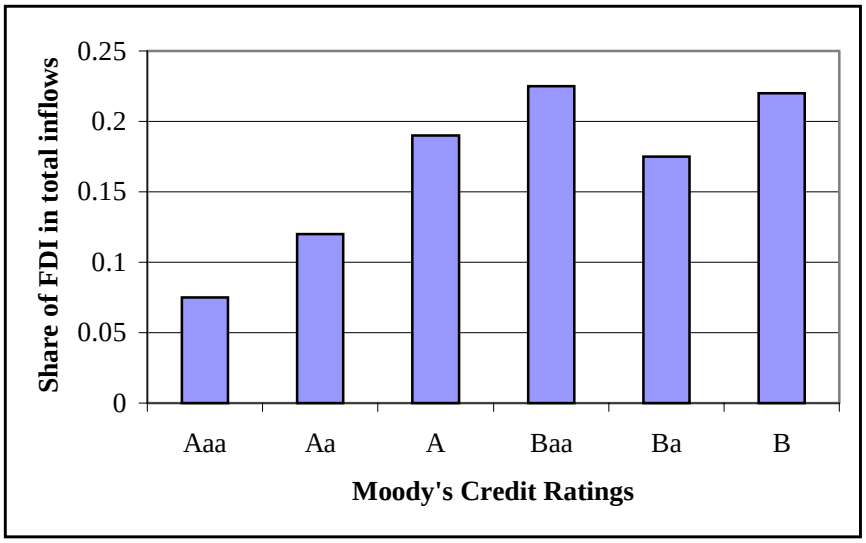
Table 5: Determinants of PORTFOLIO investment inflows

	OLS	TSLS
Output Growth, DY	-0.0004	0.003
	(-0.025)	(0.12)
Lagged Portfolio Investment, P(-1)	0.37	0.37
	(3.9)	(3.9)
Domestic Investment, I	0.003	0.001
	(0.2)	(0.05)
Lagged Domestic Investment, I(-1)	0.01	0.01
	(0.3)	(0.4)
Dummy for Multiple Exchange Rates, Res1	-0.002	-0.002
(one exchange rate = 0, more than one =1)	(-0.72)	(-0.6)
Long run effect of I on Port	0	0
R^2_{adj}	0.15	0.15

* P(-1) and I are in terms of ratio to GDP, t values appear in parentheses.

5. Credit Rating

Chart 3
FDI's share in total inflows is higher in countries with weaker credit ratings



Source: Albuquerque (2000).