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**THE IMPACT OF CAPITAL FLOWS
ON DOMESTIC INVESTMENT IN
TRANSITION ECONOMIES¹**

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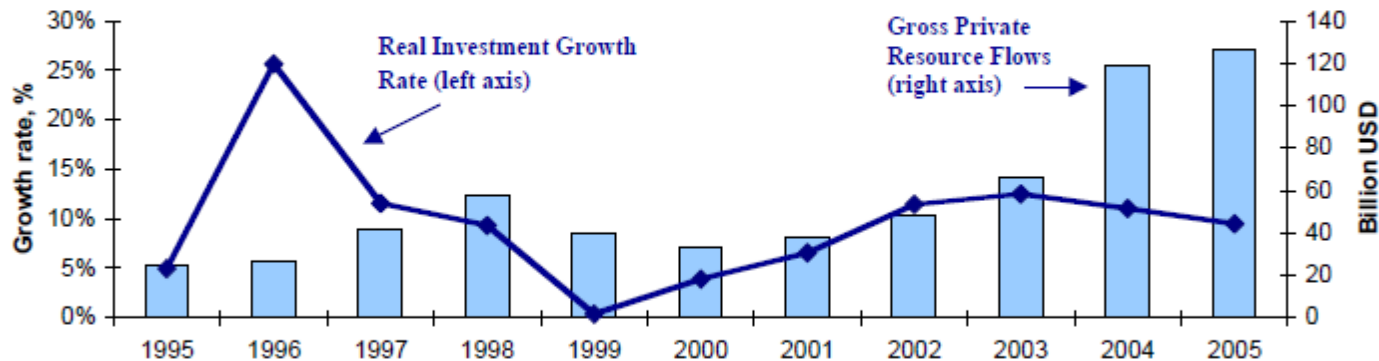
A summary for EE 459 – Thammasat University

1. Introduction

- In the 1990s the **transition economies implemented extensive reforms** to move from central planning to market economy. Since 1995 real domestic investment growth in these countries has averaged a robust 10 percent annually (see figure 1).
- The transition process invariably included **opening up to international trade and capital flows** and as a result these economies **attracted large amounts of foreign capital**.
- Gross private resource flows to the transition economies increased fivefold between 1995 and 2005, about **twice the rate** to all developing countries. In 2005 the transition economies **attracted \$106 of the \$271 billion net private capital inflows** to all developing countries.

1. Introduction

Figure 1: Real investment growth rate and gross private resource flows in the transition economies, 1995 – 2005



Source: GDF (2005), WDI (2005) and author's calculations.

- The **utilization** of these flows was also **quite different**: excluding Russia,
 - the transition economies' net capital inflows of \$105 were used in part to **finance a \$34 billion current account deficit**
 - the developing countries as a group used their net capital inflows to **accumulate foreign reserves** running a current account surplus of \$438 billion in 2005 (WEO and IFS, 2006).
- Given this difference in the use of capital flows, this paper investigates **how various types of capital inflows affect investment** in the transition economies.

1. Introduction

- There are two approaches to the analysis of the effects of foreign capital flows on host economies.
 - (1) Using **GDP growth** as the dependent variable.
 - Gruben and McLeod (1998) test empirically the relationship between growth and disaggregated capital flows in a panel of 18 mainly Asian and Latin American developing countries and find that both FDI and portfolio flows have significant positive impact on real GDP growth.
 - (2) Neoclassical growth : studying the relationship between **domestic investment** and the **three main types** of **capital inflows (FDI, loans and portfolio flows)**
 - Bosworth and Collins (1999) and Mody and Murshid (2005) study the relationship between domestic investment and the three main types of capital inflows (FDI, loans and portfolio flows) in a panel of around sixty countries, but do not include any transition economies.

2. Methodology and data

Adhering to Mody and Murshid (2005), the effects of gross long-term capital inflows on domestic investment are modelled as follows,

$$I_{it} = \beta_1 K_{it} + \beta_2 X_{it} + \beta_3 I_{i,t-1} + \varepsilon_{it}.$$

$i = 1, 2, \dots, 22$ refers to each of the 22 transition economies in sample and $t = 1995, \dots, 2005$ denotes the time period.

I_{it} is gross fixed capital formation measured in percent of GDP.

K_{it} is a matrix of the three main components of foreign resource flows – FDI, loans and portfolio (equity and bonds) – measured in percent of PPP GDP.

To the extent foreign investment goes toward the purchase of nontradables, GDP in purchasing power parity (PPP) dollars better represents the greater real purchasing power of foreign currency.

If investment only involved tradables, however, the market exchange rate would be the appropriate deflator. Using PPP exchange rates mitigates large swings in the nominal exchange rates, which artificially revalue or devalue the purchasing power of capital flows.

Exchange rate fluctuations, such as the devaluations that took place in many transition countries in the 1990s, are not relevant to the longer time horizons of most investment projects.

2. Methodology and data

- The control variables included in X_{it} in equation are the following:
 - (1) lagged real GDP growth to account for the accelerator effect
 - (2) a measure of uncertainty
 - (3) the change in the log terms of trade to gauge the price of imported capital goods
 - (4) the deviation of M2 from its three-year trend as a proxy for the liquidity available to finance investment.
- The third term, I_{it-1} , accounts for persistence in the dependent variable
- To construct the measure of uncertainty, we estimate an autoregressive model with a constant, one lag of the dependent variable and a time trend to forecast real GDP growth.
- The estimation is performed individually for each country and recursively, so that the forecast uses only information available up to the period when it is made.
- The actual measure of uncertainty is the mean absolute value of the one step ahead growth forecast error averaged over a three-year period.

2. Methodology and data

- All data in our analysis are annual.
- The data on capital flows are from the Global Development Finance database and the rest of the variables come mainly from the World Development Indicators database, both provided by the World Bank

Table 1: Partial financial account balances for the transition economies, 1995-2004.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
FDI, Loans, Portfolio: Assets	6,093	7,319	-511	81	-62	-1,767	-7,648	-14,331	-27,943	-24,712
of which Russia	6,333	8,404	3,660	3,821	2,905	1,777	-3,195	-7,144	-12,266	-12,822
FDI, Loans, Portfolio: Liabilities	36,332	35,780	98,023	54,006	35,867	24,820	26,591	41,555	75,349	123,886
Net Errors and Omissions	-6,814	-8,529	-6,678	-12,159	-8,431	-10,140	-6,390	-9,769	-13,369	-7,223
of which Russia	-9,115	-7,712	-8,808	-9,808	-8,555	-9,158	-9,350	-6,502	-8,228	-8,381

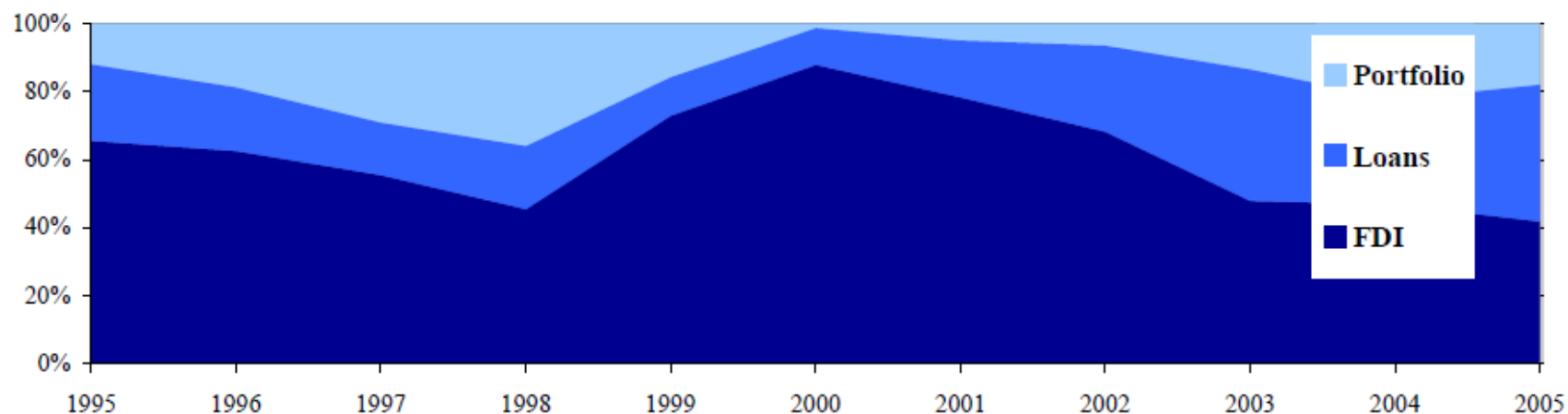
Source: Balance of Payments and International Investment Position Statistics, IMF (2005) CD-ROM and author's calculations. (Uzbekistan is excluded from Table 1 due to lack of data.)

Table 2: The impact of FDI, loans and portfolio flows on investment in 22 transition economies, 1995 – 2005.

Dependent variable: Investment as a share of GDP

Independent variable	Static Specification				Dynamic Specification			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Foreign direct investment	0.74** (0.34)	0.83* (0.44)	0.77* (0.46)	0.49* (0.26)	0.47* (0.26)	0.34 (0.22)	0.41* (0.25)	
Loans	0.46** (0.21)	0.41* (0.21)	0.55* (0.33)	0.35** (0.16)	0.36* (0.22)	0.21 (0.26)		0.31* (0.16)
Portfolio flows	0.17 (0.23)	0.18 (0.28)	-0.08 (0.85)	0.20 (0.17)	0.22 (0.24)	0.17 (0.22)		
Lagged investment				0.30** (0.14)	0.39** (0.16)	0.44*** (0.14)	0.30* (0.18)	0.61** (0.26)
Uncertainty		-0.04 (0.06)	0.02 (0.05)		0.01 (0.06)	0.02 (0.06)	-0.02 (0.08)	0.04 (0.05)
Deviation of M2/GDP		0.13*** (0.05)	0.03 (0.06)		0.12** (0.05)	0.05 (0.06)	0.01 (0.06)	0.02 (0.07)
Change in log terms of trade		-0.11 (2.48)	-0.17 (2.23)		0.17 (2.31)	-0.37 (1.94)	-1.30 (2.11)	-1.02 (1.60)
Lagged growth			0.10* (0.05)			0.11** (0.05)	0.09** (0.05)	0.12** (0.05)
Observations	219	212	195	197	195	195	195	195
Number of countries	22	22	22	22	22	22	22	22
Number of instruments	15	16	9	17	20	21	15	10
Arellano-Bond AR(1) test: p-value	0.54	0.87	0.73	0.20	0.18	0.06	0.16	0.12
Arellano-Bond AR(2) test: p-value	0.97	0.52	0.55	0.83	0.55	0.34	0.37	0.48
Sargan statistic: p-value	0.64	0.83	0.61	0.65	0.83	0.86	0.94	0.56
Long-run coefficients:								
Foreign direct investment				0.70	0.77		0.59	
Loans				0.50	0.59			0.79
Wald test p-values:								
FDI coefficient = 1	0.44	0.71	0.62	0.05	0.04		0.02	
Long-run FDI coefficient = 1				0.34	0.63		0.29	

Figure 2: Composition of private resource flows to 22 transition countries, 1995 - 2005 (in percent of total private resource flows)



Source: GDF (2005) and author's calculations (2005 figures exclude the Czech Republic).

Table 3: Comparison between the transition economies and a sample of 60 other developing countries.

Dependent variable: Investment as a share of GDP

Independent variable	Transition Economies		Mody and Murshid (2005)	
	Static	Dynamic	Static	Dynamic
Foreign direct investment	0.74**	0.49*	0.72***	0.51*
Loans	0.46**	0.35**	0.61***	0.22
Portfolio flows	0.17	0.20	0.46*	-0.70(*)
Lagged investment		0.30**		0.84***
			Dynamic 1980s	Dynamic 1990s
Foreign direct investment			0.94*	0.23
Loans			0.49**	-0.02
Portfolio flows			-0.61	0.21
Lagged investment			0.73***	0.26

Source: Author's regressions and regression results by Mody and Murshid (2005).

(*** p<0.01, ** p<0.05, * p<0.1, (*) p<0.15)

Table 4: The effect of FDI, loans and portfolio flows on investment in nine new EU member states, Croatia and FYR Macedonia, 2001 – 2005.

Dependent variable: Investment as a share of GDP

Independent variable	Static Specification			Dynamic Specification		
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign direct investment	0.59*** (0.22)	0.64** (0.31)	0.61* (0.32)	0.55*** (0.20)	0.63** (0.27)	0.60** (0.25)
Loans	0.49*** (0.19)	0.38*** (0.12)	0.44* (0.26)	0.39** (0.17)	0.39** (0.17)	0.42* (0.26)
Portfolio flows	-0.00 (0.19)	0.23 (0.14)	0.22 (0.15)	0.08 (0.16)	0.12 (0.25)	0.05 (0.27)
Lagged investment				0.40** (0.17)	0.36 (0.41)	0.20 (0.43)
Uncertainty		-0.15 (0.12)	-0.09 (0.18)		-0.14 (0.12)	-0.14 (0.14)
Deviation of M2/GDP		0.53 (0.43)	0.72* (0.43)		0.23 (0.23)	0.19 (0.18)
Change in log terms of trade		-22.08* (11.42)	-23.56* (12.77)		-21.54 (15.67)	-19.09 (13.88)
Lagged growth			0.04 (0.17)			0.01 (0.19)
Observations	54	54	54	54	54	54
Number of countries	11	11	11	11	11	11
Number of instruments	8	11	12	10	9	10
Arellano-Bond AR(1) test: p-value	0.15	0.42	0.43	0.11	0.23	0.21
Arellano-Bond AR(2) test: p-value	0.17	0.78	0.88	0.17	0.35	0.39
Sargan statistic: p-value	0.30	0.86	0.92	0.35	0.70	0.62

Table 5: The impact of FDI, loans and portfolio flows on investment in 10 CIS members and Albania, 2001 – 2005.

Dependent variable: Investment as a share of GDP

Independent variable	Static Specification				Dynamic Specification		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Foreign direct investment	1.84** (0.81)		1.38** (0.68)	1.71* (1.00)	1.71*** (0.59)	1.53** (0.72)	1.35* (0.72)
Loans variable	1.34 (1.50)		-0.34 (1.95)	2.41 (2.07)	-0.16 (1.28)	0.14 (0.98)	0.31 (0.97)
Loans		3.88 (3.14)					
Lagged investment					0.59* (0.33)	0.40* (0.21)	0.35* (0.19)
Uncertainty			-0.29 (0.21)	-0.15 (0.23)		-0.23* (0.12)	-0.23** (0.11)
Deviation of M2/GDP			1.06 (0.78)	0.48* (0.28)		0.23 (0.22)	0.16 (0.22)
Change in log terms of trade			13.83 (12.19)	3.78 (11.09)		-4.07 (3.01)	-4.12 (3.20)
Lagged growth				0.10 (0.13)			0.06 (0.11)
Observations	55	55	55	55	55	55	55
Number of countries	11	11	11	11	11	11	11
Number of instruments	8	3	10	9	9	12	13
Arellano-Bond AR(1) test: p-value	0.68	0.82	0.45	0.76	0.27	0.26	0.33
Arellano-Bond AR(2) test: p-value	0.13	0.21	0.30	0.21	0.18	0.39	0.23
Sargan statistic: p-value	0.41	0.24	0.57	0.82	0.80	0.97	0.87

4. Conclusion

- This paper investigates the relationship between capital inflows and domestic investment.
- The empirical estimation shows that **FDI flows** may **produce small investment spillovers** in host economies for the full sample or for the group of countries, which have either completed the transition process or are in its final stages.
- In ten CIS countries and Albania, however, **FDI flows crowd in domestic investment.**
- These results are consistent with the view that countries with relatively **underdeveloped financial markets** and weak institutions tend to **depend more on FDI compared to countries with bigger financial markets** and better institutions.

4. Conclusion

- The countries at a **late stage of the transition process**, however, are **better able to attract foreign loans and use them to raise domestic capital formation**.
- As to **portfolio investment**, the **transition economies still lag behind their emerging market peers** in terms of **stock and bond market development**.
- The **portfolio flows** that do flow into the transition countries have **no direct effect on domestic investment**. Instead, foreign investors seem to be led by diversification goals.
- Thus, in terms of the consequences of capital account liberalization, the transition economies by and large follow in the footsteps of the other developing countries.