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**Capital Flows in Central and Eastern Europe: Evidence  
and Policy Options 1/**

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Prepared by Guillermo A. Calvo, Ratna Sahay,  
and Carlos A. Végh

Authorized for distribution by Donald Mathieson and Peter Wickham

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**Abstract**

This paper examines the nature and composition of capital flows in selected countries in Central and Eastern Europe during 1987-93. The data show that there was a remarkable turnaround in the capital account in 1992-93. This improvement was accompanied by widening current account deficits, an increase in real consumption, and real exchange rate appreciation. In light of these developments, the paper discusses the main macroeconomic concerns raised by capital inflows and lays out the principal policy options relevant for the transition economies.

**JEL Classification Numbers:**

F41, G1, P1

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### Summary

In contrast with the previous decade, capital has flowed in abundance from industrial to developing countries in the early 1990s, most prominently in Latin America and Asia, and with a lag in Central and Eastern Europe. This paper examines emerging trends in capital flows in selected countries in Central and Eastern Europe and analyzes policy options for these countries.

The paper documents the pattern and composition of capital flows in the region during 1987-93 and finds that, in many ways, 1992-93 was a common turning point. In a remarkable turnaround, the capital account of the region improved by about \$20 billion in 1992-93, mostly reflecting a reversal in external borrowing. The capital inflows have increasingly been used to finance widening current account deficits. These large current account deficits mainly mirror increases in consumption (predominantly private consumption) rather than investment. Another common phenomenon has been the appreciation of the real exchange rate during the capital inflows episode.

It is argued that the rise in consumption and the real exchange rate appreciation may not necessarily be a cause for concern on several grounds. The higher consumption may reflect a move toward an equilibrium level from artificially depressed levels rather than a temporary binge in consumption. The real exchange rate appreciation may be a temporary phenomenon, reflecting the relative inelasticity of the supply of nontraded goods, as consumption and direct foreign investment rise. However, the real exchange rate appreciation may have a permanent component if the productivity of labor is rising as a result of qualitative changes in capital stock.

To the extent that capital inflows are financing temporary rises in consumption and causing real wages to overshoot, the inflows may need to be discouraged. In laying out the options facing policymakers, the paper points to the inherent problems of pursuing second-best policies like imposing capital controls, levying taxes, and raising interest rates on government debt to attract capital away from the private sector. The advantages and disadvantages of sterilized versus nonsterilized intervention are also examined.

## I. Introduction

In sharp contrast to the last decade, capital has been flowing in abundance from industrial to developing countries since the early 1990s. During 1990-1992, capital inflows to Latin America amounted to US\$117 billion (1.2 percent of GDP), roughly the same amount that had come to the region during the entire 1982-1989 period. Similarly, capital inflows to Asia during the period 1989-1992 amounted to US\$144 billion (3.2 of GDP). In several instances, domestic factors, such as structural reforms and successful stabilization programs, have played a key role in attracting capital flows. Despite wide differences in individual countries' economic environment, however, foreign capital has flooded entire regions, thus suggesting that external factors, such as low international interest rates and recessionary conditions in industrial countries, have been major factors in explaining the recent capital inflows episode. 1/

In contrast to Latin America and Asia, the transition economies of Central and Eastern Europe as a group exported capital in 1990-1991. This was most likely triggered by the collapse of the Communist regimes during these two years that aggravated the buildup of internal and external macroeconomic imbalances of the 1980s. With the advent of the market-oriented reforms in these economies capital flows have begun to reverse and, in some cases like (the former) Czechoslovakia and Hungary, have acquired important proportions. This reversal in the trend began in 1992-93 when the capital account swung from a deficit of US\$8 billion in 1991 to a surplus of more than US\$12 billion by 1993 (Table 1). 2/ This paper takes a first and, by necessity, preliminary look at capital flows in Central and Eastern Europe. Although events continue to unfold as this paper is written, it should prove useful to take a broad look at the events so far, examine emerging trends, and analyze policy options for these countries in light of the experiences of Latin America and Asia.

The paper proceeds as follows. Section II broadly documents the external sector developments for the individual countries. Section III examines in detail the magnitude, nature, and effects of capital flows in Central and Eastern Europe. Section IV provides an assessment of the main issues raised by the current episode of capital flows into this region. We then turn to a discussion of the main policy issues raised by capital inflows, which are presented in Section V and analyzed in Section VI. Section VII examines the inflationary consequences of capital inflows and the impact on financial vulnerability, while Section VIII discusses issues related to sterilization. The final remarks are presented in Section IX.

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1/ For a detailed analysis, see Calvo, Leiderman, and Reinhart (1993, 1994a,b) and Schadler et al. (1993).

2/ This swing in the flow of capital towards Eastern Europe in 1992-93 coincides with the ebbing of investment opportunities in Latin America and Asia.

Table 1. Central and Eastern Europe: Balance of Payments,  
1987-93 <sup>1/</sup>

(In billions of US\$)

	Balance of Goods, Services and Private Transfers (1)	Balance on Capital Account <sup>2/</sup> (2)	Balance on Capital Account Plus Net Errors and Omissions <sup>2/</sup> (3)	Overall Balance <sup>3/</sup> (4)	Official Transfers (5)
1987	0.9	-4.4	-3.5	2.6	--
1988	3.4	-9.5	-6.4	2.9	--
1989	--	-4.1	-1.4	1.4	0.1
1990	-3.3	-4.5	-4.7	8.0	0.3
1991	-2.9	-8.0	-8.0	10.9	0.3
1992	-2.7	2.4	1.6	1.1	0.4
1993	-9.2	13.2	12.2	-3.0	0.2

Source: IMF World Economic Outlook.

<sup>1/</sup> The countries included are Bulgaria, the former Czechoslovakia (until 1991), the Czech Republic (1992-93), Hungary, Poland, Romania, and the Slovak Republic (1992-93).

<sup>2/</sup> Balance on goods, services and private transfers is equal to the current account balance less official transfers. Official transfers are included in the capital account.

<sup>3/</sup> A minus sign indicates an increase in reserves.

## II. External Sector Developments in Eastern and Central Europe

Before turning to a detailed discussion of capital flows in Eastern and Central Europe, the broad picture on developments in the external sector for the transition economies under study is presented. The countries documented are Bulgaria, the Czech Republic, the Slovak Republic, Hungary, Poland, and Romania. 1/ This section will thus provide the necessary background for a general discussion of capital flows in the region.

### 1. The pre-reform period

The timing of the final demise of the economic and political systems in Central and Eastern Europe in 1990-91 was not a coincidence. With the notable exception of the former Czechoslovakia, the build up of internal and/or external macroeconomic imbalances during the 1980s was common to all transition economies. Even Hungary, which had begun reforming its economic system as early as the late 1960s and had experienced relatively low inflation, had accumulated a substantial stock of external debt by the end of the 1980s. Having pursued extremely lax financial policies and borrowed heavily from abroad in the 1980s, Bulgaria, Poland, and Romania experienced severe debt-servicing difficulties. All three countries were forced to reschedule their external debt payments.

Following the debt rescheduling in 1986, Ceausescu's economic policies in Romania were dominated by the desire to reduce external dependence at all costs. Consequently, with little regard to the adverse effects on the domestic economy, the saving-investment balance in Romania was manipulated to ensure current account surpluses to repay (and sometimes even pre-pay) external debt. The domestic counterpart of the large current account surpluses in the late 1980s were savings generated by steep taxation of state enterprises and a sharp contraction of social spending. 2/ By March 1989, nearly all debt had been repaid. The primary cost to the Romanian economy of this extreme inward-looking policy was a sharp decline in both the quality of investment and economic growth and a rapid deterioration in living standards.

During 1985-89, convertible currency debt in Bulgaria nearly tripled as the economy became increasingly dependent on imported inputs. At the same time, the economy performed poorly and the competitiveness of Bulgarian exports declined sharply. By 1989, Bulgaria was forced to cut back imports and draw down reserves to such dangerously low levels that in March 1990 a moratorium on external debt was declared. 3/ Poland, beset by high

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1/ Tables 2 through 4 contain relevant economic indicators.

2/ In fact, a decree in 1989 forbade Romanian entities from contracting new external debt. See Demekas and Khan (1991).

3/ It should be mentioned that Bulgaria was a particularly hapless case because it had a net creditor position vis-à-vis the Council for Mutual Economic Assistance (CMEA) countries. Full resolution of former bilateral payments arrangements is still pending in many cases.

inflation, was also weighed down by a significant debt burden during this period, and went into arrears in 1990. Both countries had very large capital outflows in the late 1980s concurrently with current account deficits (Tables 2 and 3).

While Hungary's macroeconomic policies in the late 1980s can be best characterized as shifting between expansion and restraint, the government remained current on its payment obligations on its large external debt (Table 3). Perhaps more than the uncertainty surrounding national elections and Hungary's erratic economic policies, the emergence of debt-servicing arrears in two heavily-indebted neighboring CMEA countries in 1990 raised concerns in the international community regarding Hungary's debt servicing capacity. Consequently, the trend in the late 1980s of growing capital inflows that was unique to Hungary was reversed in 1990.

The former Czechoslovakia's experience in the late 1980s is distinct from other transition economies because--unlike Bulgaria, Hungary, and Poland--it had very low levels of external debt (Table 4) and, unlike Romania, it had pursued balanced macroeconomic policies. In response to more stringent lending practices by international commercial banks in the early 1980s, the former Czechoslovakia successfully pursued export-oriented economic policies during the 1980s. By the end of the 1980s, it had very low levels of external debt and had accumulated substantially more reserves (measured in months of imports) than any other country. 1/

## 2. The post-reform experience

While, as described above, the transition economies went through diverse experiences during the 1980s, the period 1990-91 proved, in many ways, to be a common turning point for all these countries. As a result of (a) the break-up of the CMEA, (b) the opening up of these economies to the rest of the world, (c) the adverse terms of trade shock (stemming mainly from market-determined oil and other raw material prices in the new regime), and, (d) most importantly, the uncertainties regarding the large-scale upheaval of the economic and political systems, the current account for the region as a whole swung sharply into deficit and speculative capital outflows led to a depletion of reserves (Table 1).

All transition economies launched ambitious stabilization programs concurrently with structural reforms in 1990-91. 2/ Faced with unprecedented declines in output and rising inflation (Table 4), these countries urgently turned to the international community for financial support. With the notable exception of Bulgaria, the capital account turned positive in net terms for all countries in 1992-93; official assistance was given across the board while some also benefitted from private flows (Table 3).

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1/ See Prust et al. (1990) for a more detailed discussion.

2/ For a detailed discussion of the stabilization programs, see Bruno (1993, Chap. 7) and Sahay and Végh (1995a).



Table 2. Central and Eastern Europe: Key Macroeconomic Developments, 1987-93

(In percent of GDP)

	Bulgaria	Czech Republic <sup>1/</sup>	Hungary	Poland	Romania	Slovak Republic <sup>1/</sup>
<u>Current Account Balance</u>						
1987-91	-4.4	1.2	-0.9	-1.2	3.5	1.2
1992-93	-7.2	0.8	-5.4	-1.5	-7.1	-1.1
<u>Gross Capital Formation, Current Prices</u>						
1987-91	31.5	27.9	25.3	27.5	29.2	27.9
1992-93	17.8	20.5	21.1	15.8	29.6	24.7
<u>Total Consumption, Current Prices</u>						
1987-91	70.8	65.6	73.6	70.1	69.1	65.6
1992-93	88.8	73.1	83.5	85.0	76.8	81.7
<u>Private Final Consumption, Current Prices</u>						
1987-91	54.2	44.3	62.6	56.0	...	44.3
1992-93	73.1	54.1	70.7	62.2	...	55.6
<u>Government Final Consumption, Current Prices</u>						
1987-91	16.6	21.3	11.0	14.2	...	21.3
1992-93	15.8	15.5	12.8	22.8	...	26.2

Source: IMF World Economic Outlook.

<sup>1/</sup> Data for 1987-91 are for the former Czechoslovakia.

Table 3. Central and Eastern Europe: External Sector  
Indicators, 1987-93

	Bulgaria	Czech Republic <sup>1/</sup>	Hungary	Poland	Romania	Slovak Republic <sup>1/</sup>
<u>Capital Account Balance (In percent of GDP)</u>						
1987-91	-4.0	-0.5	2.1	-5.2	-2.0	-0.5
1992-93	-8.5	4.5	9.3	1.1	6.8	1.3
<u>Capital Account, Net Direct Investment (In percent of GDP)</u>						
1987-91	0.2	0.5	1.3	0.0	0.0	0.5
1992-93	0.5	2.7	5.6	0.5	0.3	-0.6
<u>Cumulative Net Official Borrowing (In US\$ billions)</u>						
1988-91	1.0	0.7	2.5	3.9	-2.7	0.7
1992-93	1.4	0.2	0.1	-1.1	2.8	...
<u>Cumulative Net Commercial Borrowing (In US\$ billions)</u>						
1988-91	4.1	0.0	-0.4	2.0	-2.3	0.0
1992-93	1.6	2.0	1.8	1.4	0.3	...
<u>Total External Debt to GDP Ratio</u>						
1987-91	57.4	18.4	70.8	65.6	9.7	18.4
1992-93	121.7	24.1	64.2	56.4	16.9	19.7
<u>Official to Non-official Debt Ratio</u>						
1987-91	0.4	0.1	0.1	1.8	0.5	0.1
1992-93	0.4	0.2	0.2	1.6	2.2	...
<u>Debt-Service Ratio</u>						
1987-91	33.8	9.9	31.9	13.3	12.9	9.9
1992-93	19.8	...	44.4	10.3	7.6	...

Source: IMF World Economic Outlook.

<sup>1/</sup> Data for 1987-91 are for the former Czechoslovakia.

Table 4. Central and Eastern Europe: Selected Economic Indicators, 1989-93

	1989	1990	1991	1992	1993
<u>Real GDP growth</u>					
Bulgaria	-0.5	-9.1	-11.7	-5.6	-4.2
Czechoslovakia	5.0	-0.4	-15.9	-8.5	...
Czech Republic	4.5	-1.2	-14.2	-7.1	-0.3
Hungary	0.7	-3.5	-11.9	-4.4	-2.3
Poland	0.2	-11.6	-7.6	2.6	3.8
Romania	-5.8	-5.6	-12.9	-10.1	1.3
Slovak Republic	...	...	-14.5	-7.0	-4.1
<u>Inflation rates (Period average)</u>					
Bulgaria	6.4	23.9	333.5	82.0	72.8
Czechoslovakia	1.4	10.8	59.0	11.0	...
Czech Republic	...	...	56.5	11.1	20.8
Hungary	17.0	28.9	35.0	23.0	22.5
Poland	251.1	585.8	70.3	43.0	35.3
Romania	0.9	4.7	161.1	210.3	256.0
Slovak Republic	...	...	61.2	10.0	23.2
<u>Fiscal balance (In percent of GDP)</u>					
Bulgaria <u>1/</u>	-1.4	-12.7	-15.1	-14.8	-18.5
Czechoslovakia	-3.1	-0.4	-2.0	-3.6	...
Czech Republic <u>2/</u>	...	...	...	0.4	0.5
Hungary <u>3/</u>	-1.3	0.5	-2.5	-8.0	-6.9
Poland <u>4/</u>	-7.4	3.1	-6.5	-6.6	-2.9
Romania <u>1/ 2/</u>	8.8	0.9	0.6	-4.6	-0.1
Slovak Republic	...	...	...	-13.1	-7.5
<u>External debt (In billions of US\$) <u>5/</u></u>					
Bulgaria	9.2	10.2	11.6	12.5	12.8
Czechoslovakia	7.9	8.2	9.9	...	...
Czech Republic	...	...	...	7.6	10.5
Hungary	20.0	21.3	22.7	21.4	24.6
Poland	40.2	48.9	48.3	48.7	48.7
Romania	0.8	1.1	2.1	3.4	4.4
Slovak Republic	...	...	...	2.3	3.4
<u>GDP (In billions of US\$)</u>					
Bulgaria	21.9	7.6	7.9	8.3	10.3
Czechoslovakia	...	...	...	...	...
Czech Republic	34.9	31.6	24.3	27.3	30.8
Hungary	...	32.9	30.9	35.5	36.1
Poland	66.8	62.3	78.1	83.8	85.6
Romania	22.1	22.7	27.6	19.4	26.0
Slovak Republic	...	...	10.0	10.7	11.1

Source: National authorities and IMF staff estimates.

1/ General government.

2/ Cash Basis.

3/ Consolidated state budget.

4/ General government balance on a commitment basis, except external interest which is on a cash basis.

5/ Includes non-convertible currency denominated debt.

Given the initial favorable conditions and its remarkable progress in adapting to the new conditions, the former Czechoslovakia was best poised to benefit from a relatively favorable external environment (Tables 5 and 6). At end-1990, it unified and pegged its exchange rate to a basket of currencies and followed an aggressive policy of building up reserves. This was made possible in 1991 and the first half of 1992 by a strong current account surplus, the inflow of official assistance, and direct foreign investment triggered by direct sales of public assets and mass privatization in 1991-92. <sup>1/</sup> The developments in the second half of 1992 were mainly influenced by the uncertainties regarding the break-up of the country. As a result, there was a temporary reversal in the current account and a decline in capital inflows leading to a drawing down of reserves.

The formal split of the former Czechoslovakia occurred in January 1993 with the Czech Republic in a relatively favorable position. During 1993 and the first quarter of 1994 the trade deficit in the Czech Republic was reversed and the inflow of foreign capital resumed. The accumulation of external reserves has been truly spectacular during this period (Figure 1). The dissolution caused greater disruption for the Slovak Republic as the fiscal deficit widened considerably (Table 4), mainly due to a loss of transfers from the Czech Republic, and capital flew out of the new country. In early 1993, reserves had reached very low levels (Figure 1). Tight financial policies, a one-step devaluation of 10 percent, and some temporary external controls in 1993 helped to partly revive capital inflows and build external reserves.

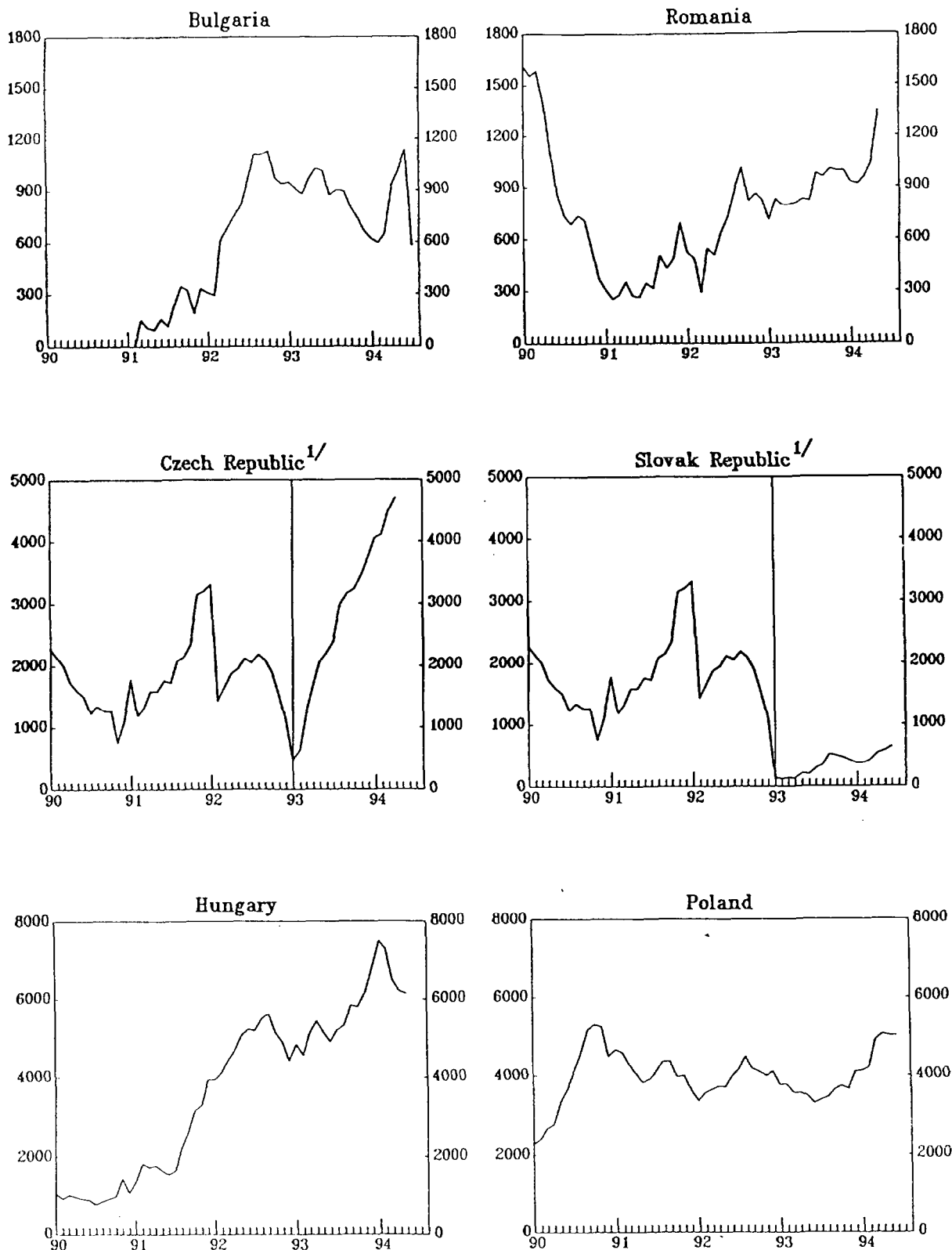
Capital flows into Hungary, which had stopped in 1990, reemerged in 1991 and gained momentum in 1993. The current account during this period began to decline and turned sharply negative in 1993 (from a small surplus in 1991-92 to a deficit of over US\$4 billion). Nevertheless, the net result was a substantial increase in reserves (Figure 1) that were brought about, in part, by direct foreign investment but mainly by a sharp increase in bond issues in international markets by the National Bank of Hungary.

While both Poland and Bulgaria faced severe debt-servicing difficulties and large macroeconomic imbalances at the start of the 1990s, Poland has recovered much faster on both fronts. In contrast to Bulgaria, Poland had succeeded in reviving output and reigning in inflation by end-1993 (Table 4). Even though both countries have received significant debt relief from the Paris Club and made progress with the London Club, Poland faces a more favorable external environment since most of its past debt is official while Bulgaria's is predominantly commercial. External accounts for both countries reflect increasing current account deficits in 1992-93 countered by a swing in the capital account in Poland since 1992 and in Bulgaria since 1993. In Bulgaria, capital flows are dominated by exceptional financing by international financial institutions.

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<sup>1/</sup> A surge in imports resulting from trade liberalization did not materialize due to large declines in output. The country also showed great versatility in reorienting exports to the industrial countries.

**Figure 1: Central & Eastern Europe: Total Reserves Minus Gold**  
(in millions of US\$)



Sources: IFS; national authorities

1/ Czechoslovakia through end of 1992.



Table 5. Stabilization Programs and External Debt

	Stabilization Program	External Debt
Bulgaria	First comprehensive program started in March 1991; still continuing.	Moratorium on debt since March 1990; most debt are commercial. Agreement with London Club reached in mid-1994.
Czech Republic	Following price jump in 1991, inflation brought down quickly; no major stabilization issue.	Low external debt (about 30 percent of GDP in 1993) and debt service (9 percent of goods and non-factor services).
Hungary	Gradual reform since 1968, accelerated since 1988.	Large external debt (about 65 percent of GDP (1992-93)); most debt is commercial, current on servicing.
Poland	Comprehensive program in early 1990; lax policies in 1992; economy began to stabilize in 1993.	Large external debt; significant arrears existed, most of which have been resolved.
Romania	Comprehensive program began in April 1991; still continuing with limited success on inflation.	Low external debt; mostly medium- and long-term official debt (debt service ratio of about 10 percent in 1993).
Slovak Republic	Since break-up, an IMF program (STF) approved in mid-1993; successful stabilization of former state continuing after temporary uncertainty following break-up in early 1993.	Low external debt (about 31 percent of GDP at end-1993 and debt service about 9 percent of exports of goods and services).

Table 6. Exchange Rate and Capital Account Regimes

	Exchange Rate Regime	Capital Account Transactions
Bulgaria	Managed float; exchange rate determined in domestic interbank market.	Relatively free for incoming capital.
Czech Republic	Pegged to basket of currencies (the composition changed in May 1993 with higher weight to the Deutsche Mark).	Most incoming capital flows not subject to any licensing; foreign equity participation, Czech bond issue abroad, and foreign suppliers credit are free; enterprise borrowing subject to licensing; most capital outflows are subject to CNB approval and some (e.g. enterprise lending) not allowed; liberal policy on foreign direct investment and repatriation.
Hungary	Fixed to a basket; adjusted periodically on basis of inflation rate differentials.	Attractive for inflows; limits on outflows; interbank foreign exchange established.
Poland	Fixed to a basket; crawling peg policy followed since October 1991.	Parliament sets annual upper limit public sector external indebtedness; foreign investment liberalized in mid-1991; limits on outflows exist.
Romania	Flexible since November 1991, determined in daily auctions by NBR.	All inward and outward transfers of foreign exchange must be authorized by the central bank; foreign investments laws are liberal.
Slovak Republic	Fixed to a basket of five currencies; weights adjusted from time to time.	Registered enterprises can freely obtain suppliers' credit. Foreign direct to investment abroad subject to approval from National Bank, usually given if it facilitates exports. No limit on equity participation by nonresidents; foreign investors can freely repatriate earnings.



Since the start of its reform program in 1991, Romania has continued to be plagued by high inflation and poor economic performance (Table 4). The internal imbalances have been reflected in current account deficits since Ceausescu's downfall (Table 2). While capital has begun to flow in since 1991, it represents predominantly medium- and long-term financing from official creditors.

### III. Evidence on Capital Flows in Central and Eastern Europe

Having reviewed the main external sector developments in Central and Eastern Europe during both the pre-reform (the 1980s) and post-reform periods (the early 1990s), this section turns to a detailed discussion of capital flows. References to the experiences of both Latin America and Asia will also help in putting the evidence in a comparative perspective. 1/

#### 1. The global picture

During the 1970s and the 1980s, the Eastern European economies' access to international capital markets was comparable to that of other developing countries. As a result, the ripples of the 1982 international debt crisis were also felt in Eastern Europe, as capital inflows declined temporarily in response to Western banks' tightened lending practices toward the rest of the world, including Eastern Europe. The former Yugoslavia, which had accumulated a substantial stock of hard-currency debt by the late 1970s, was hit the hardest by the worldwide credit squeeze and soaring interest rates in international capital markets in the early 1980s.

In spite of the more difficult access to western capital, the region (with the notable exception of Czechoslovakia) continued to borrow from abroad and became eventually heavily indebted. As discussed above, Romania (by the mid-1980s) and Bulgaria and Poland (by 1990) were forced to reschedule their external debt. In light of the difficult external and macroeconomic situation, the late 1980s witness a period of increasing capital outflows and reserve losses, which climaxed with a loss of reserves of US\$10.9 billion in 1991. For the period 1987-1991, capital outflows for the region as a whole totaled US\$24 billion, financed essentially by a loss of international reserves of US\$25.8 billion (Table 1). The region's deteriorating macroeconomic condition, together with the rapidly collapsing economic structure, led to a substantial reduction in private consumption and investment.

During 1990-91, as the Eastern European economies embarked on macroeconomic stabilization programs and far-reaching structural reforms, they also turned to the international community for financial support. In a remarkable turnaround, the capital account improved by US\$9.6 billion in

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1/ All figures on Latin America and Asia are taken from Calvo, Leiderman, and Reinhart (1993, 1994a,b).

1992 (from a deficit of US\$8 billion to a surplus of US\$1.6 billion) and by a further US\$10.6 billion in 1993 (Table 1). Given the alarming rate at which the stock of international reserves was being depleted, it should come as no surprise that the initial improvement in the capital account in 1992 was fully utilized to cut down dramatically into reserve losses, with the overall balance of payments improving by US\$9.8 billion and the current account balance remaining essentially unchanged. In contrast to these events in 1992, during the following year only US\$4.1 billion (roughly 40 percent) of the additional US\$10.6 billion that came to the region were accumulated as international reserves. The rest (US\$6.5 billion) was used to finance a more than three-fold increase in the current account deficit, which reached US\$9.2 billion of GDP in 1993. The increase in the current account deficit mostly reflected increases in private consumption. <sup>1/</sup>

The order of magnitudes involved are worth noting. Table 4 indicates that the GDP for the region as a whole in 1993 was about US\$200 billion. Hence, capital inflows during 1993, which amounted to US\$12.2 billion, represented 6.1 percent of GDP for the region as a whole. This figure is not only quite impressive in absolute terms but is also considerably larger than that observed in most countries in Latin America and Asia (see Calvo, Leiderman, and Reinhart (1994a)).

## 2. Composition of capital flows

The significant changes in the capital account during 1987-93 primarily mirror developments in external borrowing (Table 7). In particular, external borrowing hit a low of minus US\$11.3 billion in 1991--the year in which capital outflows peaked. This reflects the culmination of a period during which debt-servicing was in full swing for virtually all countries and when either fresh loans were drying up (as in the cases of Bulgaria, Poland, and, to some degree, Hungary) or countries were following a deliberate policy of not increasing external liabilities (Romania and the former Czechoslovakia). During 1992-93, all countries received external assistance from official creditors and some (like Hungary and the Czech Republic) raised funds in international capital markets. In 1993, net external borrowing accounted for almost 70 percent of the capital inflows. This pattern is similar to that observed in 1990-91 in Latin America, where net external borrowing accounted for more than 70 percent of the net capital inflows. The corresponding figure for Asia was about 50 percent.

The second notable feature in the composition of the capital account is that, starting from negligible amounts during the late 1980s, foreign direct investment has rapidly gained momentum during the 1990s (Table 7). This should not come as a surprise in light of the sudden opening up of these

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<sup>1/</sup> This pattern of using the initial wave of capital inflows to finance mainly a build-up of reserves and later on to finance widening current account deficits was also observed in Latin America. In Asia, however, capital inflows were predominantly used to build reserves.

Table 7. Central and Eastern Europe: Composition of  
Capital Account 1/

(In billions of US\$)

	Total	Foreign Direct Investment	External Borrowing	Asset Transactions	Errors and Omissions
1987	-3.5	0.0	-3.1	-1.4	0.9
1988	-6.3	0.0	-9.5	0.1	3.1
1989	-1.5	0.5	-2.5	-2.2	2.6
1990	-5.0	0.5	-5.0	-0.2	-0.2
1991	-8.3	2.3	-11.3	0.7	0.0
1992	1.2	3.0	-1.0	0.1	-0.9
1993	11.9	3.5	8.2	0.5	-0.2

Source: IMF World Economic Outlook.

1/ The countries included are Bulgaria, the former Czechoslovakia (until 1991), the Czech Republic (1992-93), Hungary, Poland, Romania, and the Slovak Republic (1992-93).

2/ The capital account figures reported in this table differ from those in column (3) in Table 1 to the extent that the latter include official transfers.

economies and the massive privatization of state enterprises in some countries. As a share of GDP, direct foreign investment has also been significant in the region during 1992-93, particularly in the Czech Republic and Hungary (Table 3). On average, direct foreign investment was about 1.5 percent of GDP during 1992-93 in the region, compared to about 1.1 percent in Latin America in 1990-92 and 3.0 percent in Asia in 1989-92. Unlike Asia and Latin America, portfolio investment in the region has been negligible during the whole period 1987-93. Within the region, however, it is gaining ground in the Czech Republic, where it accounted for nearly 25 percent of the capital inflows in 1993.

### 3. Consumption and investment

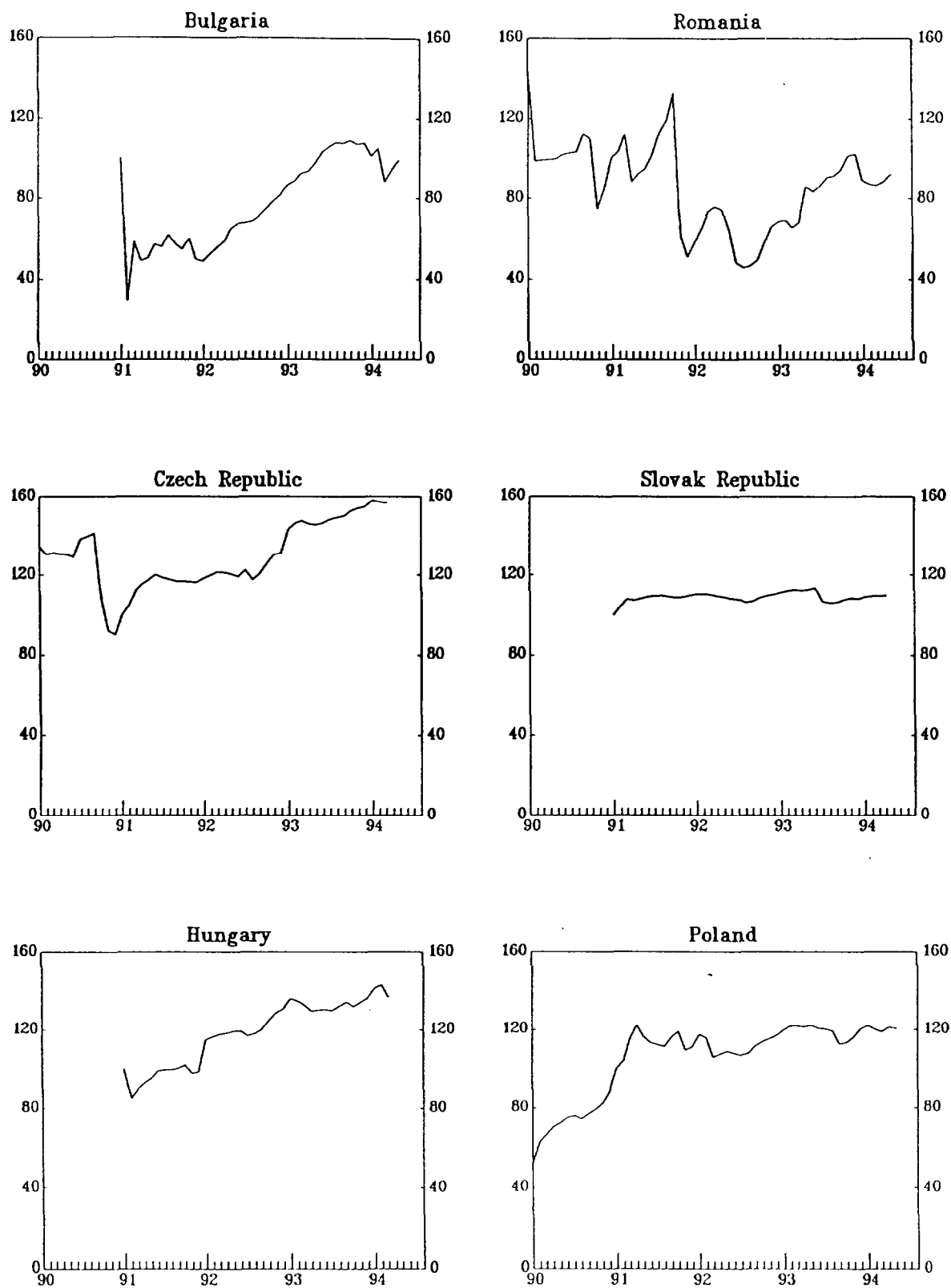
As Table 1 indicates, US\$6.3 billion of the US\$20.2 billion increase in capital inflows in the last two years (1992-1993) have been used to finance the increase in the current account deficit which reached US\$9.2 billion (roughly 4.5 percent of the region's GDP) in 1993. The larger current account deficits in 1992-93 have reflected mainly increases in consumption rather than investment (Tables 2 and 8). In fact, total consumption as a share of GDP rose by fairly large amounts from 1987-91 to 1992-93 across all countries, ranging from an increase of 18 percentage points for Bulgaria to about 7-8 percentage points for the Czech Republic and Romania. Most of this increase has been reflected in private consumption rather than government consumption (Tables 2 and 8). On the other hand, during the same period gross capital formation declined in practically all countries, particularly in Bulgaria and Poland. While in Asia, investment as a share of GDP rose by about 3 percentage points during 89-92, the trend in Latin America was similar to that in the transition economies, with investment falling and consumption rising during 1990-92.

### 4. Real exchange rate appreciation

If domestic consumption--rather than investment--increases in response to capital inflows, there is likely to be an upward pressure on the real exchange rate. The reason is that domestic consumption tends to fall relatively more on nontraded goods, while domestic capital formation is likely to be more import-intensive (see Calvo, Leiderman, and Reinhart (1994b)). Figure 2 illustrates the fact that, to varying degrees, the real exchange rate has indeed appreciated in virtually all the transition economies during 1992-93. In the majority of the Latin American countries also, the real exchange rate appreciated during 1990-92 while this trend was less common in Asia during the same period.

Among the transition economies, the appreciation of the real exchange rate is most noticeable in Bulgaria, the Czech Republic, Hungary, and Poland. In the latter two cases, it began even before 1992. The regional trend towards real exchange rate appreciation receives strong support from the cross-country correlation of real effective exchange rates presented in Table 9. This table reveals a sharp switch from very low (or even negative) coefficients during 1990-91 to very high coefficients during 1992-93 for

**Figure 2: Central & Eastern Europe: Real Effective Exchange Rates 1/**  
(Jan 1991=100)



Source: National authorities

1/ An increase in the index indicates an appreciation.



Table 8. Central and Eastern Europe: Consumption  
in U.S. dollars, 1991-93

(In millions of US\$)

	Bulgaria	Czech Republic	Hungary	Poland	Romania	Slovak Republic
<u>Total Consumption</u>						
1991	6.5	22.2	24.8	61.4	21.6	22.2
1992	8.0	19.4	27.5	67.9	14.9	8.8
1993	9.4	22.4	27.8	78.2	15.0	9.0
<u>Private Final Consumption</u>						
1991	5.4	13.5	20.7	45.5	...	13.5
1992	6.6	15.0	23.1	53.6	...	5.7
1993	7.7	17.6	23.5	62.2	...	6.4
<u>Government Final Consumption</u>						
1991	1.1	8.8	4.1	15.9	...	8.8
1992	1.5	4.5	4.4	14.3	...	3.1
1993	1.7	4.8	4.3	16.0	...	2.6

Source: IMF World Economic Outlook.

Table 9. Cross-Country Correlations: Real Effective Exchange Rates, 1990-94

	Bulgaria <u>l</u> /	Czech Republic	Hungary <u>l</u> /	Poland	Romania	Slovak Republic <u>l</u> /
Sample: 1990:1 to 1991:12						
Number of Observations: 24						
Bulgaria <u>l</u> /	1.000					
Czech Republic	-0.360	1.000				
Hungary <u>l</u> /	0.550	0.394	1.000			
Poland	-0.383	-0.462	0.089	1.000		
Romania	0.073	0.326	0.061	-0.218	1.000	
Slovak Republic <u>l</u> /	-0.499	0.950	0.241	0.656	-0.091	1.000
Sample: 1992:1 to 1994:3						
Number of Observations: 27						
Bulgaria	1.000					
Czech Republic	0.921	1.000				
Hungary	0.862	0.935	1.000			
Poland	0.624	0.733	0.730	1.000		
Romania	0.728	0.786	0.652	0.417	1.000	
Slovak Republic	-0.078	0.092	0.119	0.467	-0.048	1.000

Source: International Financial Statistics, IMF and national authorities.

l/ The sample period for cross-country correlations for Bulgaria, Hungary and the Slovak Republic is 1991:1 to 1991:12 (data for 1990 are not available for these three countries).



practically all the countries, suggesting a stronger degree of co-movement in real effective exchange rates.

#### 5. Reserve accumulation

While virtually all countries intervened in the foreign exchange markets to build reserves in 1992-93, intervention has been most discernible in the cases of the Czech Republic and Hungary. The Hungarian authorities followed a deliberate policy of accumulating reserves to take advantage of their increased access to markets abroad with low interest rates, partly in anticipation of the need to meet large debt repayments in 1995-96. This strategy, of course, increased their debt burden in 1992-93.

To the extent that movements in the capital account are reflected in the reserve account, changes in reserves are a reasonable proxy for the inflows, although, as noted, the proportion of inflows going into reserve accumulation has changed over time. Figure 1 illustrates that reserves have, in general, risen for most countries since 1992. The cross-country correlations (Table 10) are also fairly high since 1992 while there is no obvious pattern before that. 1/

#### 6. A case study: The Czech Republic

The capital inflows episode has been particularly important and probably raised the most concerns in the Czech Republic. We thus take a closer look at this particular case. The steep increase in reserves in the Czech Republic (Figure 1) has resulted from the current account being marginally in surplus at a time when the economy is being flooded by foreign capital. A closer examination of the composition of capital inflows during 1993 reveals that nearly half of the inflows reflect borrowing by Czech enterprises while the rest are mainly foreign direct and portfolio investment. 2/ Nearly 70 percent of the enterprise borrowing is undertaken by the private sector, of which about half is lent by neighboring European countries such as Germany and Austria.

The monetary authorities' policy response has been to partly sterilize the inflows through the sale of Czech National Bank bills. In addition, the reserve requirements were raised from 9 percent to 12 percent in August 1994. Given the more than comfortable external reserves position in 1994, the Bank also repaid in advance the remaining outstanding debt due to the IMF.

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1/ One exception to the high values of cross-correlations is with respect to Bulgaria where authorities have intermittently intervened in the foreign exchange market to prevent rapid depreciation of the currency.

2/ Portfolio investment, in large part, reflects the resale of stocks received by domestic residents during mass privatization of state enterprises in 1991-92 to foreigners.

Table 10. Cross-Country Correlations: Total Reserves Minus Gold, 1990-94

	Bulgaria <u>1/</u>	Czech Republic <u>2/</u>	Hungary	Poland	Romania
Sample: 1990:1 to 1991:12					
Number of Observations: 24					
Bulgaria <u>1/</u>	1.000				
Czechoslovakia	0.674	1.000			
Hungary	0.781	0.725	1.000		
Poland	-0.468	-0.474	0.082	1.000	
Romania	0.743	0.182	-0.403	-0.750	1.000

	Bulgaria	Czech Republic	Hungary	Poland	Romania	Slovak Republic
Sample: 1992:1 to 1994:4						
Number of Observations: 28						
Bulgaria	1.000					
Czech Republic <u>2/</u>	-0.646	1.000				
Hungary	0.004	0.838	1.000			
Poland	0.152	0.658	0.502	1.000		
Romania	0.447	0.851	0.672	0.405	1.000	
Slovak Republic <u>2/</u>	-0.495	0.870	0.647	0.523	0.911	1.000

Source: International Financial Statistics, IMF and national authorities.

1/ The sample period for cross-Country correlations between Bulgaria and the other countries is 1991:1 to 1991:12 (data for Bulgaria for 1990 are not available).

2/ The sample period for cross-country correlations for the Czech Republic and the Slovak Republic is 1993:1 to 1994:4 (the two countries were created in 1993:1).

Some have argued that the rise in external borrowing in 1992-93 by domestic enterprises basically reflects a substitution of domestic credit for foreign credit. This has supposedly occurred because there is a mismatch between the deposit and loan maturities, in that the latter's demand are relatively long-term. Consequently, local banks have generally been reluctant to extend medium and long term credit, which has been partly reflected in a wide gap between the lending and deposit rates. Thus, part of these inflows are arguably linked to the inefficiencies in the domestic financial system.

If banks have been reluctant to extend credit, it should be reflected in a decline in the loan to deposit ratio (given unchanged reserve requirements) and/or an increase in excess reserves. An examination of the data on these series reflects that the loan to deposit ratio has remained virtually unchanged during 1993. <sup>1/</sup> Also, the reserve requirement ratio was not raised during this period. Second, excess reserves have not increased in absolute terms or relative to total reserves during 1993. Thus, banks' reluctance to extend credit cannot be confirmed on the basis of, at least, the information presented above.

Of course, it is possible that the unwillingness of banks to extend credit is reflected in their unwillingness to accept deposits. A preliminary way of investigating the latter would be to check whether the spread between lending and deposit rates has increased and to assess whether the growth in the deposit rates can be considered "too low." The data reveal that while the spread has been large (about 6-7 percentage points), it has marginally declined from end-1992 to end-1993; also, the deposits have grown by 22 percent during the same period, a growth rate that is close to that in the corresponding previous year. <sup>2/</sup> Therefore, on the basis of these data, the conjecture that banks are not accepting deposits cannot be established.

It is possible, then, that enterprises are borrowing abroad, not because domestic banks are reluctant to lend but, because there is a genuine shortage of credit in the economy, despite the fact that interest rate spreads (particularly with respect to DM interest rates) has generally declined over time (Table 11). The strengthening of the Czech government's credibility (due to sustained stabilization and structural reforms) and the pick up of economic activity can be expected to lead to an increase in the

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<sup>1/</sup> The loan to deposit ratio in the economy declined marginally from 1.12 at end-1992 to 1.06 at end-1993.

<sup>2/</sup> Although the growth in deposits are similar in nominal terms, it should be mentioned that the growth was lower in 1993 in real terms since period-end annual inflation increased from 12 percent in 1992 to 18 percent in 1993. Also, economic growth picked up marginally in 1993.

Table 11. Czech Republic: T-bill Spreads, 1993:1-1994:1  
(In percent per annum)

	Foreign Interest Rates		Devaluation Adjustment Domestic Interest Rates <sup>1/</sup>				Interest Rates Spreads			
	U.S. T-bill	German T-bill	In \$US		In DM		In \$US		In DM	
			T-bill	CNB bill	T-bill	CNB bill	T-bill	CNB bill	T-bill	CNB bill
1993: Q1	3.0	7.1	...	5.3	...	10.1	...	2.3	...	3.0
Q2	3.0	6.6	17.8	17.7	13.1	12.9	14.9	14.7	6.5	6.4
Q3	3.0	6.0	3.8	6.9	10.6	13.9	0.7	3.9	4.6	8.0
Q4	3.1	5.4	8.0	10.2	4.6	6.7	4.9	7.1	-0.8	1.3
1994: Q1	3.3	5.1	10.6	12.5	5.5	7.3	7.3	9.2	0.4	2.2

Sources: Czech Authorities and IFS.

<sup>1/</sup> CNB bills are issued by the Czech National Bank while T-bills are issued by the government.

real demand for money. Under these circumstances, the appropriate monetary policy response would appear to be to increase money supply in the economy either by allowing capital inflows and not sterilizing the flows or by increasing base money at a more rapid pace. 1/

#### IV. Capital inflows into Eastern and Central Europe: An Assessment

Having documented in some detail the magnitudes and main characteristics of the current capital inflows into Eastern and Central Europe, this section provides an assessment of some of the main issues.

Given the relatively low initial levels of absorption present in these economies--reflecting the planned economies' highly inefficient use of available physical and human resources--it seems logical to think of the recent increase in consumption as reflecting a move towards that equilibrium level of consumption which would be consistent with a productive use of all available resources. Since, by its very nature, the process of structural reforms that will eventually lead to a full utilization of resources can proceed only gradually over time, the private (i.e., nongovernment) sector is likely to wish to borrow from abroad to satisfy its consumption needs until the full productive potential is realized. On this account, therefore, the current capital inflows would be financing a permanently higher level of consumption, rather than a temporary binge triggered by lack of credibility.

Insofar as the capital inflows are not financing unsustainable high levels of consumption, the often-mentioned negative effects of capital inflows should be of much less concern. In particular, the real exchange rate appreciation, rather than being a reflection of an unsustainable high consumption level, would simply reflect the fact that the increase in desired absorption faces an infinitely-elastic supply of traded goods and a relatively inelastic supply of nontraded goods. Hence, whatever future adjustment may be needed in the current account should come about through an increase in income (though higher production of goods), which would reflect the increasingly efficient use of resources, rather than a fall in absorption. Capital inflows would be bridging the gap until such better times actually materialize. Furthermore, any attempts at reducing these capital inflows would be welfare-reducing.

Two other factors are also likely to account for the observed real exchange rate appreciation. As argued in the previous section, there has been a large surge of foreign direct investment into these economies. Such a "bunching" of foreign direct investment, which will probably persist for a while, is likely to require inputs of nontraded goods--labor and materials--to be installed that necessarily involve a time lag before they can be utilized. The demand for these nontraded inputs will bid up the

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1/ This argument is further strengthened by the fact that the money multiplier has been declining during 1993, recording a significant fall of over 35 percent in March 1994 as compared to a year earlier.

relative price of nontraded goods (i.e., will contribute to a real exchange rate appreciation). Again, this change in relative prices should reverse itself once the first and probably the largest wave of foreign direct investment has taken place.

Unlike the two factors mentioned above, which in principle should call for a temporary real exchange rate appreciation, the upgrade and expansion of the capital stock to its new steady-state level should lead to a permanent appreciation of the real exchange rate as the higher capital stock raises the marginal productivity of labor and thus increases the demand for labor. In sum, the current real exchange appreciation is likely to reflect both permanent and temporary components. In any event, a real exchange appreciation, per se, should be no real cause for concern as it reflects--under all three scenarios--a change in relative prices which is required by the current adjustment process. Attempting to interfere with these relative price changes would only slow down the adjustment process and thus reduce welfare. <sup>1/</sup> These arguments contrast with those applicable to Latin America in the early 1990s, where a case could be made for slowing the inflows since these may have been financing unsustainably high levels of absorption. Therefore, as discussed in the next section, the policy choice would seem to consist in letting the real exchange rate appreciation occur either through an appreciation of the nominal exchange rate or through higher inflation.

A somewhat surprising piece of evidence reviewed in the previous section is that higher investment ratios have not yet materialized. Two explanations come to mind in this respect. First, roughly similar investment ratios may be hiding important differences regarding the efficiency of investment. If that were the case, investment in "efficiency units" would have increased even if investment ratios did not. Second, to the extent that structural reforms have proceeded more slowly than anticipated, investment activity can only be expected to pick up with a lag.

An interesting aspect of the evidence presented in the previous sections is that, contrary to what has been observed in other capital inflows episodes, the cross-correlations for the real exchange rates are higher than that for international reserves (Tables 9 and 10). Several factors may lie behind this pattern. First, it could be argued that, even in the absence of capital inflows, there would have been a tendency for the real exchange rate to appreciate throughout the region as price liberalization brought prices of nontraded goods closer to equilibrium levels and consumption began to increase from the very depressed levels

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<sup>1/</sup> However, to the extent that these inflows cause volatility in real effective exchange rates, they can adversely affect exports (Grobar, 1993).

corresponding to the collapse of the communist systems. Second, the relatively low cross-correlations for international reserves are likely to reflect dissimilar policy responses to capital inflows. In some cases, like the Czech Republic and Hungary, the extent of intervention in foreign exchange markets has been more than in the rest.

#### V. Problems and Policies: A First Look

As illustrated above, capital inflows have led to an increase in consumption and an appreciation of the real exchange rate in the transition economies. We have argued that, unlike in Latin America, these developments could reflect an adjustment towards a new equilibrium and may not necessarily warrant an intervention by policy makers at this time. In fact, it can even be argued that capital flows have helped in building reserves and allowed larger current account deficits, with the latter improving living standards in these economies either directly through a greater variety (and better quality) of imports of final goods or indirectly through imports of high quality capital and intermediate goods. Apart from bringing financial resources, direct foreign investment is generally also accompanied by highly-skilled human capital. If this all sounds like "good news," why should countries then be concerned?

In spite of the positive aspects of the capital inflows in the transition economies that we have focused on so far, there may be some causes of concern for the authorities. The following is a partial list of concerns: 1/

(i) If capital inflows are used to finance a temporary consumption boom, then eventually expenditure will have to fall in order to service the associated debt accumulation. 2/

(ii) Even if outside funds are used for capital accumulation, the resulting surge of domestic activity to install the new capital may call for an overshooting of the real wage. Thus, eventually the real wage will have to fall creating adjustment problems, unless the labor market exhibits very high flexibility.

(iii) Capital inflows induce (a) growth in monetary aggregates that far exceeds target inflation and/or (b) large appreciation of the nominal

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1/ For a more comprehensive discussion, see Calvo, Leiderman and Reinhart (1993 and 1994a,b).

2/ A related concern is that the consumption boom will contribute to an appreciation of the real exchange rate and undermine export competitiveness. This expenditure cycle might not necessarily occur if funds were used for productive capital accumulation, because output would grow and contribute to financing the debt.

exchange rate. Case (a) is likely associated with higher-than-planned inflation, while case (b) gives rise to an immediate loss of international competitiveness (through the resulting appreciation of the real exchange rate). Moreover, case (a) is also likely to result in an eventual real exchange rate appreciation.

The first-best reaction to concerns (i) and (ii) above is likely to be a deepening of reforms in order for markets forces to operate free from distortions which, as is well-known, takes time. A second-best solution would be to attempt to slow down the flow of funds to the private sector and/or to provide incentives for the latter to decrease its current expenditure. Examples of second-best policies are: (a) direct controls on, or taxation of, new international loans (usually, adjusting for loan maturity), (b) higher taxes (to lower private expenditure), and (c) higher interest rate on government debt (to attract international funds away from the private sector). 1/

Solution (a) is hard to implement because there are a variety of ways for the private sector to camouflage financial transactions. Solution (b) is not likely to be sufficiently effective, unless the tax hike is substantial--a highly unpopular move--or perceived to be long-lasting, which may be hard to justify when the policy is aimed at offsetting short-term developments. 2/ Finally, solution (c) may be effective but it may end up discouraging the type of expenditure that is most wanted, namely, investment. Investment projects are guided by their *internal rate of return*. In contrast, consumption projects may not, and in general will not, even be self-financing. Consumers and consumption loans are often guided by whether or not the consumer can afford to pay the credit installment. Consumer credit is normally extended until the individual's credit-service obligations reach a given critical level. Thus, below that critical level, interest rate hikes are likely to have a relatively small impact on consumption. Another negative aspect of solution (c) is that, to the extent that interest rates rise above international levels, such a policy will generate a larger fiscal deficit, which is likely to worsen over time as the interest rate differential keeps attracting foreign capital flows.

However, it is perhaps fair to say that the most widely and quickly perceived problem with a surge of capital inflows is of a monetary nature (recall concern (iii) above). This may be partly explained by the fact that monetary phenomena surface very quickly. A capital inflow puts pressure on the foreign exchange market, which forces the central bank to make a quick decision as to whether to let the exchange rate appreciate or *intervene* to buy foreign exchange. Thus, in the very short run--when there

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1/ This is closely related to the "sterilized intervention" policy discussed below.

2/ If there was no fear of capital flow reversal, then the associated developments would have a strong permanent component.



is no time for changing regulations, and little is known about the nature of the capital inflows episode--the central bank has basically two policy options: sterilized or nonsterilized intervention. Sterilized intervention consists of buying foreign exchange by issuing government (interest-bearing) debt, while nonsterilized intervention takes place through the issuance of domestic money (i.e., non-interest-bearing government debt).

In practice, at the beginning of capital-inflows episodes policy-makers have shown a predisposition to prevent the exchange rate from appreciating and resort to sterilized intervention (Frankel (1993)). Later on, as the costs of sterilized intervention grow large, sterilization tends to be abandoned by opting for nonsterilized intervention, or some form of taxation. <sup>1/</sup>

## VI. A Simple Analysis

In this section we will develop a simple analytical tool that should prove useful in understanding some of the more subtle implications of capital inflows. Suppose that, starting from an initial equilibrium, structural reforms or the opening of new markets make profitable a certain number of new investment projects. As a result, investment rises and, with it, construction activity, and employment. Thus, the demand for domestic money is likely to rise reflecting the higher activity level. In Figure 3 we draw a standard demand for real monetary balances,  $m^d$ , which is inversely related to the nominal interest rate,  $i$ . For a constant real money supply,  $m^s$ , we see that a rise in the demand for money results in a higher interest rate.

To carry the analysis one step further, let us assume a simple economy in which the price level and the exchange rate are the same (i.e.,  $P = E$ ). Let  $M$  and  $E$  denote the supply of money and the exchange rate (i.e., the price of foreign exchange in terms of domestic currency), respectively. Thus, by definition, the supply of real monetary balances,  $m^s$ , is equal to  $M/E$ . The higher real money demand provokes an incipient capital inflow and/or a nominal appreciation of the exchange rate (i.e., a fall in the price level).

As noted above, the central banker's first instinct is not to let the supply of money expand. Thus, real supply of money would be constant, as in the above experiment, and domestic interest rates will rise. However, in order to keep both  $M$  and  $E$  constant, the central bank must buy all the foreign exchange that is offered at that exchange rate, and quickly turn around and sell public debt (e.g., certificate of deposits) in the

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<sup>1/</sup> Sterilized intervention is costly because domestic interest rates (adjusted for the rate of devaluation) tend to exceed international ones. Some examples of taxation are a higher cash/deposit reserve requirements or a tax on foreign assets (see Reinhart (1991)).

same amount, in order to mop out the initially created new money. In other words, the central bank has to engage in sterilized intervention.

Two implications should be highlighted. First, if the domestic interest rate exceeds the international one, then, assuming a fixed exchange rate, the central bank would have undertaken a loss-making operation. Second, by raising interest rates, the new projects "crowd out" outstanding projects, especially those that depend on domestic financing.

Alternatively, the central bank could have acquired the new supply of foreign exchange by issuing domestic money (nonsterilized intervention), i.e., by letting  $M$  increase so as to keep the initial interest rate constant (point A in Figure 3). Since domestic money yields no return, while reserves can be invested in U.S. Treasury Bills, for example, the central bank now stands to make a profit. Moreover, there is no crowding out of outstanding projects. Thus, under the present circumstances nonsterilized intervention clearly dominates sterilized intervention.

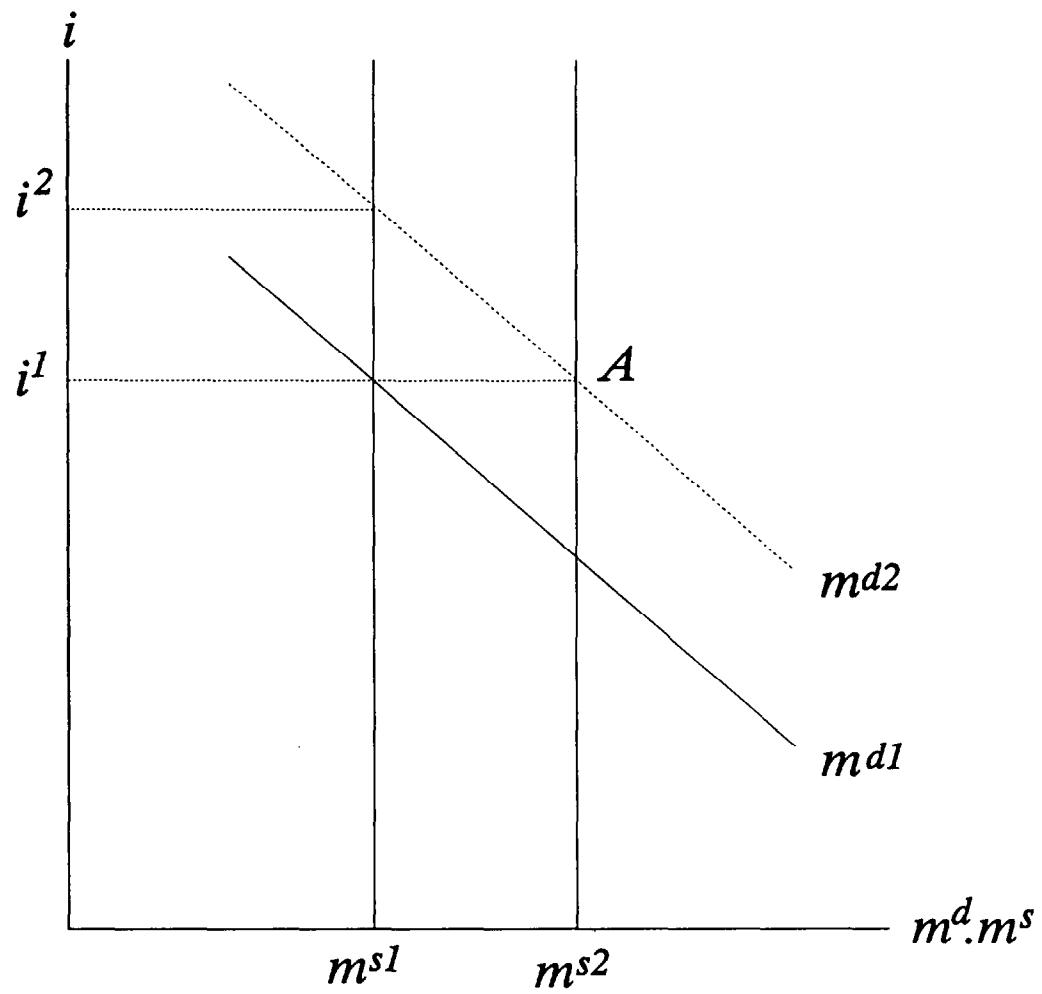
Finally, the central bank could provoke the same shift in money supply by lowering the exchange rate,  $E$ , i.e., by means of a nominal appreciation. The implications are very similar to the nonsterilized intervention case, with one important difference: to the extent that the appreciation was not fully anticipated by the public, lenders (in domestic currency) will gain and borrowers will lose in real terms (i.e., in terms of goods and services).

In practice, not all promising projects are started at the same time. Thus, as new projects filter in through time, the demand for money keeps rising and, with it, the domestic interest rate if the central bank holds on to its sterilization policy. Thus, all the negative aspects of sterilized intervention mentioned above tend to grow over time. Furthermore, even if there are no new investment projects, the central bank may still experience serious difficulties. That would be the case, for example, if sterilization policy raises interest rates to levels that look attractive to "portfolio investors," i.e., investors interested in short-term liquid assets. Under these circumstances, the economy will be flooded with foreign funds in search of domestic deposits. The sums that will have to be sterilized will skyrocket and, as result, central bank losses are likely to become unsustainable. <sup>1/</sup>

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<sup>1/</sup> The policy choices just discussed would remain essentially unchanged even when capital inflows are not responding to an increase in real money demand, along the lines of Rodriguez (1993). In the face of such an "exogenous" capital inflow, policy makers would still need to choose between letting the exchange rate fall (with a fall in interest rates)--which would be captured by a rightward shift in the real money supply in Figure 7--or engaging in sterilization, thereby preventing the real money supply from increasing and interest rates from falling.

Figure 3. Monetary Effects of Capital Inflows





The recent experience in Colombia is very revealing. Capital started to flow in around 1990. At the beginning, the central bank followed a strict sterilization policy, and abandoned it towards the end-1991. Figure 4 shows interest rates being relatively flat from 1990 to end-1991 and then sharply falling by about 10 points in 1992. Interestingly, the same chart shows that its dollar-equivalent displays no fall. 1/ It becomes considerably more volatile and, if anything, exhibits a slight tendency to rise. Figure 5 shows that upon abandoning sterilization, money supply ( $M_1$ ) rises sharply, while inflation remains about the same or falls. This change of policy is also reflected in Figure 6; before sterilization the ratio of  $M_2$  to reserves falls sharply (like in Central and Eastern Europe, see Figure 7); after sterilization, this ratio flattens out. 2/

## VII. Fear of Inflation and Financial Vulnerability

The above discussion gives strong support to nonsterilized intervention and currency appreciation as policy responses to a surge in capital inflows. In this section, such support will be somewhat tempered by bringing into the discussion additional relevant considerations. We focus the discussion on the case in which the nominal exchange rate is kept constant throughout.

A popular reason for disliking nonsterilized intervention is the fear that the resulting expansion in money supply will fuel inflation. This consideration had no role to play in the previous section because we identified the price level,  $P$ , with the exchange rate,  $E$ . However, this assumption is highly unrealistic. In practice, domestic prices are not so closely linked to international ones. This is particularly true for "services" which do not face strong competition from abroad. Goods which have no international markets are usually referred to as "home goods." We will denote its price, in terms of domestic currency, by  $P^h$ . Thus, the price level could be expressed as a weighted average of the prices of home and international goods; for example, one could define  $P = \theta E + (1 - \theta)P^h$ , where  $\theta$  is a number between 0 and 1. 3/ In the present setup the real exchange rate,  $e$ , is defined by the equation  $e = E/P$ .

The popular view referred to above often relies on extending the closed-economy monetarist statement that prices are caused by money, to an open-economy setup. Thus, it is conjectured that nonsterilized intervention, by allowing  $M$  to grow, will foster a rise in  $P^h$  and, consequently, in  $P$ . Therefore, if capital inflows persist for a while, inflation (i.e., the rate of growth of  $P$ ) would increase. We will now

1/ The dollar equivalent,  $i^*$ , is defined as follows:  $1 + i^*_t = (1 + i)/(1 + \epsilon_{t+1})$ . Where  $\epsilon_{t+1} = E_{t+1}/E_t - 1$ .

2/ See Bento (1994) for an interesting analysis of interventionist measures used to contain the surge of capital inflows in Portugal in 1990-92.

3/ In the previous section we have implicitly set  $\theta = 1$ .

argue that such a view is valid only under certain, but sometimes relevant, circumstances.

First, we will show a case where the view is not valid. Suppose the relevant price level for the concept of real monetary balances is  $P$ . Furthermore, assume, as in the previous section, that a surge in economic activity gives rise to an increase in the demand for money, which leads to a capital inflow. If money supply stays put by means of, say, sterilized intervention, then two things may happen: (a) given the price level, the nominal interest rate  $i$  will rise (as in Figure 3), and (b) given the nominal interest rate, the price of home goods,  $P^h$ , will tend to fall. Thus, capital inflows could be accompanied by a *deflation*, not inflation as the popular view would have it.

The explanation for the apparent contradiction between an episode of capital inflows and deflation is straightforward. If capital inflows have been brought about by an increase in the demand for money, no inflationary forces need to be set in motion. A good illustration of a case in point is the Portuguese experience in 1990-92. 1/ In brief, Portugal became a member of the European Community in 1986. Since then, it began to adopt macroeconomic policies that facilitated a sequence of EC convergence programs. Perceiving a reduction in the country risk and an increase in the expected profitability of the economy, capital (mostly foreign direct investment) began to flow in, reaching 5-6 percent of the GDP during 1989-92. Inevitably, these inflows caused a significant appreciation of the real exchange rate to which the authorities responded by imposing capital controls (since mid-1990). One of the consequences of these measures was, as illustrated above, that the economy experience a sharp disinflation of about 7 percentage points in 1992. 2/

However, as we said above, there is an important instance in which the popular view holds true. Suppose the capital inflows episode takes place during a stabilization program that is not fully credible. As argued in Calvo and Végh (1993), if a stabilization program is not fully credible and individuals expect inflation to resume in the near future, prices of home goods will show a tendency to rise (before the expected abandonment of the program). Thus, the demand for nominal monetary balances will rise in tandem with those prices. Suppose for a moment that there is no international capital mobility (at the margin), then keeping money supply constant may, by previous arguments, set a downward pressure on prices, preventing lack of credibility from generating a larger-than-planned inflation. 3/ Under capital mobility, the same result could be obtained by means of sterilized intervention. Consequently, if keeping inflation within the program's limits is an important policy objective, then partial sterilization of capital inflows may be called for.

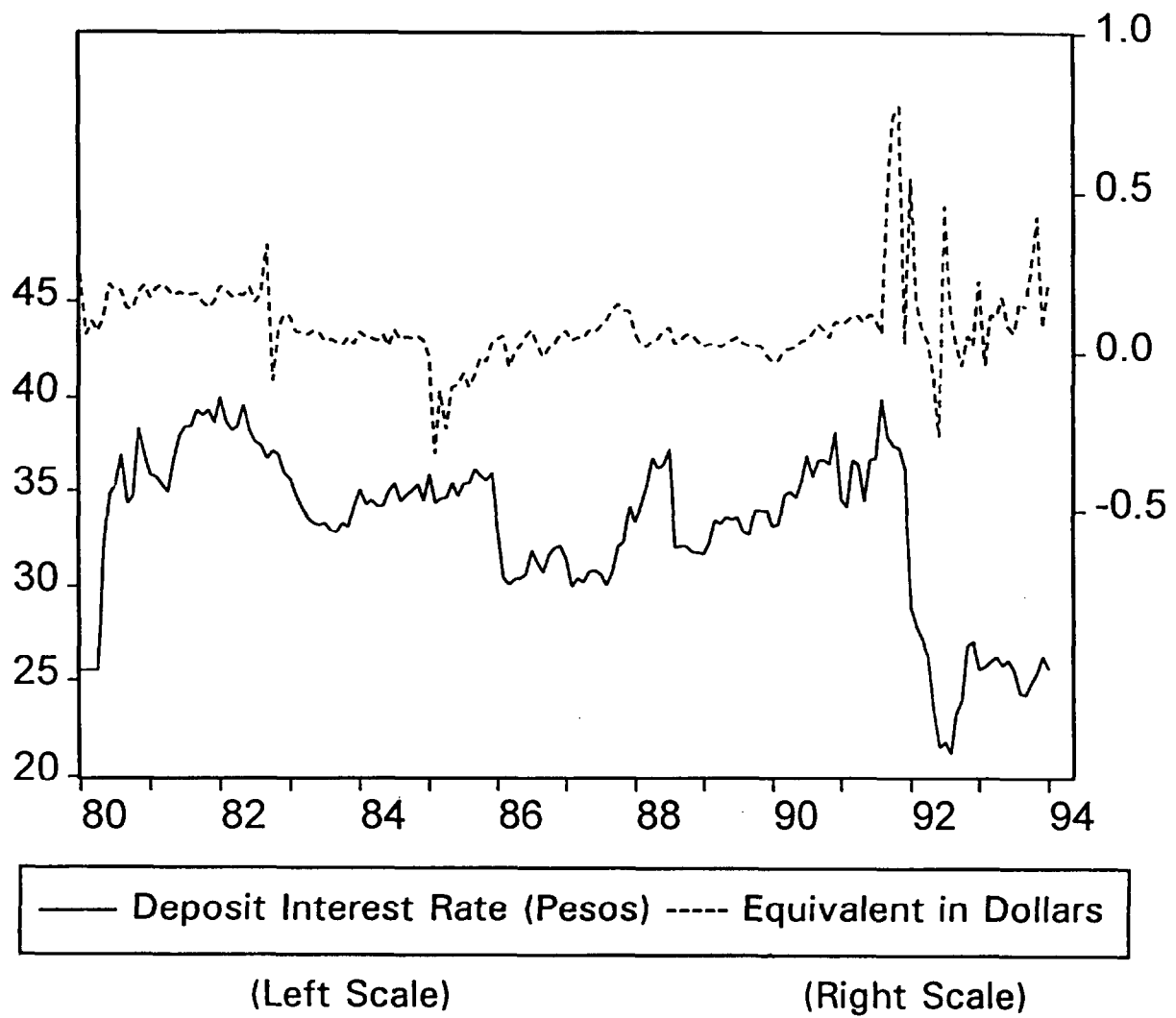
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1/ See Bento (1994).

2/ The disinflation reported here excludes the two percentage points of the increase in the CPI caused by a VAT adjustment.

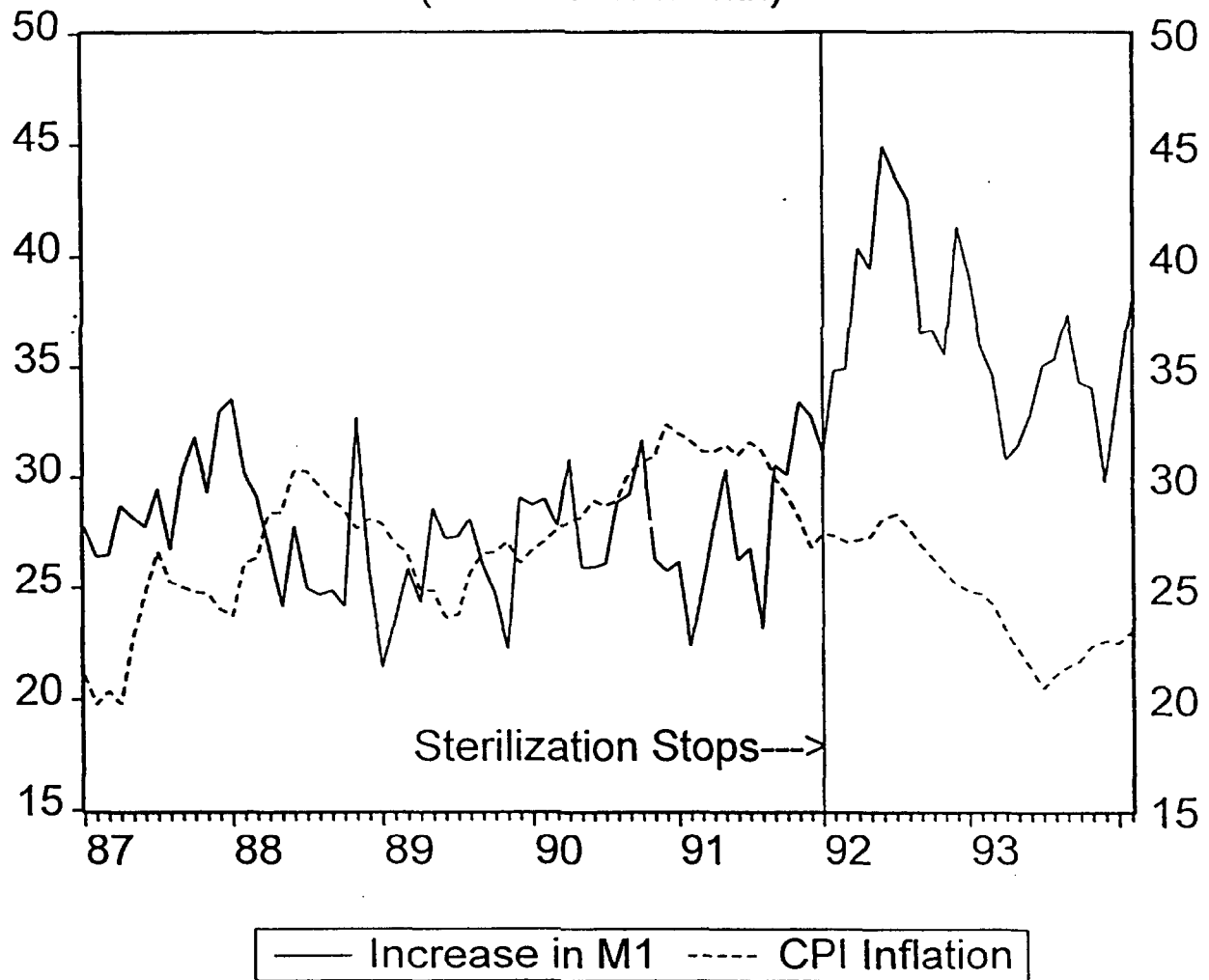
3/ For a formal proof of this proposition, see Calvo and Végh (1993).

Figure 4. Colombia: Deposit Interest Rate



Source: National authorities.

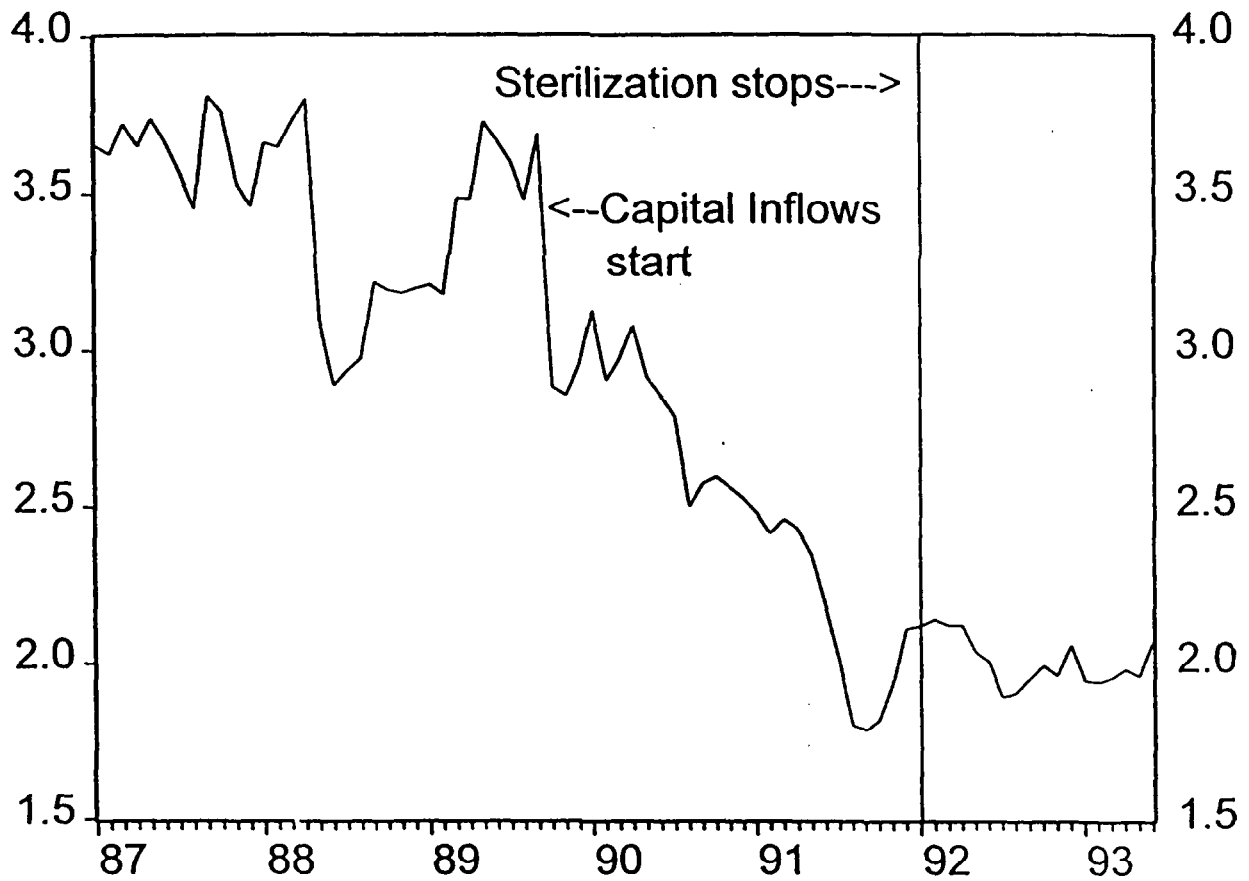
Figure 5. Colombia: M1 Growth and Inflation  
(month over month)



Source: National authorities.

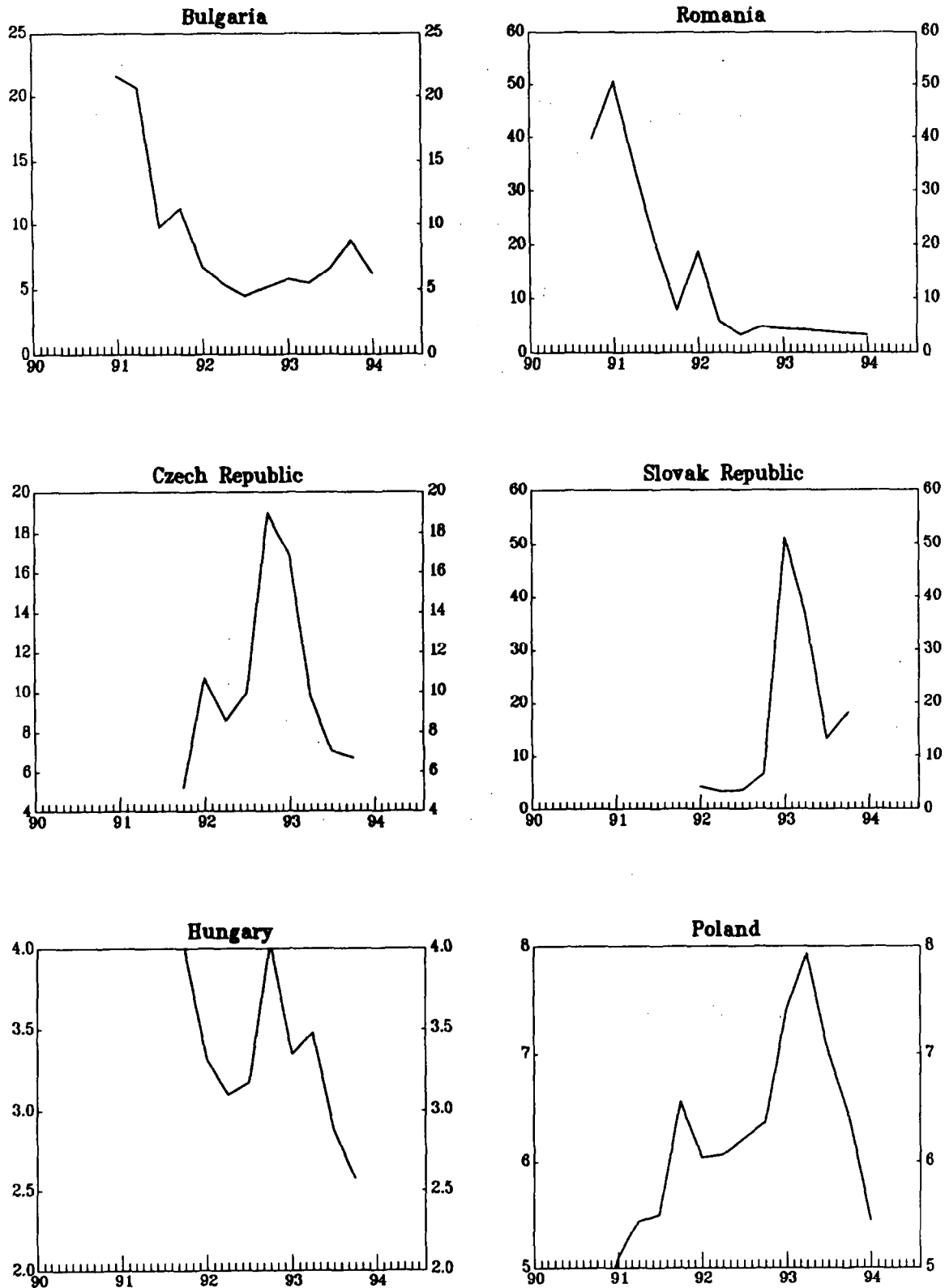


Figure 6. Colombia: Ratio of M2 to International Reserves



Source: National authorities.

Figure 7: Central & Eastern Europe: M2/Reserves Ratio



Sources: IFS; national authorities

A more fundamental criticism has to do with the greater financial vulnerability that might be brought about by nonsterilized intervention. As a general rule, nonsterilized funds will find their way through the banking system provoking, most likely, an increase in bank deposits. If banks are not subject to 100 percent reserve requirements, an increase in bank deposits will lead to an expansion in bank credit. Bank credit, in turn, is likely to be of longer maturity than bank deposits. Thus, a sudden and significant deposit withdrawal may generate a banking crisis. Clearly, the probability of a crisis will be a function of the stability of funds channelled through the banking sector and, of course, of the extent of the deposits/loans maturities mismatch. In the very short run, when the nature of the capital inflows episode is still not well understood, it may thus be advisable to resort to sterilized intervention. Later on, however, measures should be taken to lessen the extent of the maturities mismatch. As an intermediate step before fundamental measures are undertaken, it may be desirable to increase banks' reserve requirements, at least at the margin. This has the advantage of carrying lower fiscal costs than standard sterilization. However, it is still prone to generating the above-mentioned "crowding out" effect on outstanding projects.

At the heart of financial vulnerability is the deposit/loans maturity mismatch. To some extent this may be a problem associated with some bank regulations. A prominent example is bank deposit insurance. Deposit insurance is a very common feature of banking systems around the world. It serves the obvious purpose of covering depositors--especially small depositors--from bank failures. However, one key function served by deposit insurance is to enhance the liquidity of bank deposits (by lowering the costs of assessing the financial health of the institution on which a check is drawn, for example) and, thereby, to enhance the role of banks in the domestic payments mechanisms. On the other hand, deposit insurance is likely to induce banks to extend longer-term credit than they would otherwise, because they are assured of an automatic credit line from the central bank in case of a sudden deposit withdrawal. One proposal that aims at eliminating the latter moral-hazard problem, and which has received a great deal of attention--although we are not aware that it has been implemented anywhere in its pure form--consists of subjecting sight deposits to 100 percent requirements and treating time deposits as mutual funds. This proposal was called the "Chicago Plan" and was spearheaded by Henry C. Simons in 1936. According to this scheme, time deposits are a claim on the assets acquired by the bank against those deposits. The value of the claim will represent the market value of those assets and is bound to fluctuate. If the bank fails, for example, the value of time deposits could possibly collapse. Therefore, there would be *de facto* full deposit insurance on M1, and no insurance on the rest of banking liabilities.

Space limitations do not allow us to provide a full discussion of these issues. However, we would like to note that the Chicago Plan may run into

difficulties if the public expects that, with high probability, the central bank will not allow the value of time deposits to collapse. In these circumstances, the public would be expecting some kind of implicit deposit insurance; thus, if, contrary to expectations, the central bank allows the value of time deposits to plummet, serious financial strain might ensue--ex-post possibly forcing the hand of the central bank to bail out banks, and invalidating the Chicago Plan.

#### VIII. Sterilization: Relevant Monetary Aggregates

Sterilization may fail to be effective if it targets the wrong monetary aggregate. For instance, if vulnerability is a key issue, then sterilization should aim at controlling the expansion of bank liabilities as a whole ("broad money"), taking into account the quality of banks' assets. In particular, if treasury bills in local currency are deemed completely safe and liquid, then *perhaps a suitable variable to target* would be broad money minus banks' holdings of treasury bills.

On the other hand, if sterilization is driven by fear of inflation, then targeting broad money (without subtracting anything from it) could be more appropriate. Sometimes, however, the latter may not be enough. A relevant example is a "dollarized" economy in which dollar deposits constitute an important fraction of broad money. Controlling the banking "dollar" component may not be enough because that would leave out foreign currency (on which there is no reliable and/or timely information), and foreign checking accounts. 1/

In practice, central banks use sterilization to target narrow monetary aggregates, like M1. This would be clearly inappropriate in a highly "dollarized" economy. But, in general, targeting M1 will be inappropriate in economies where time deposits are also perceived as being highly liquid. 2/ The problem that arises, though, is that the larger the monetary aggregate, the harder it is for sterilization to alter its total amount. Take the limit case in which government bonds are very liquid. Then, standard sterilization will simply change the composition of "money" in favor of bonds and against cash and sight deposits, but it will fail to change its total amount. Thus, no perceptible effect on prices is likely to take place.

Even if a relatively narrow monetary aggregate like M2 is targeted, sterilization may not be effective. It is not unusual in developing

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1/ Dollarization is already becoming a major policy challenge in economies in transition (see Sahay and Végh, 1995b).

2/ We suspect that the liquidity of time deposits is particularly high in high-inflation countries.

countries for banks to be the main holders of government debt (see Calvo and Végh, 1995). Consider the following example: legal cash/deposit reserve requirement is 10 percent, and there is an inflow of capital of 100 million (or local currency) taking the form of time deposits. If the government does not issue public debt, this amount will be "multiplied" and is likely to result in an increase in M2 larger than 100 million. Instead, if the government issues 90 million in public debt it will be able to soak up the additional loanable funds, and the "bank multiplier" will be 1. Effective as it is, however, this would not be enough to sterilize the initial 100 million increase in liquidity, M2. To do so would require luring the funds away from banks. Otherwise, a new sterilization round could simply attract more foreign funds into the banking system--resulting in an increase in M2 accompanied, most likely, by an increase in domestic interest rates.

#### IX. Final Remarks

Central and Eastern Europe has experienced a dramatic turnaround in the capital account beginning in 1992, after an extended period of capital outflows. International capital has flowed unevenly into the region, although the degree of co-movement in some key macroeconomic indicators has increased in comparison to the 1987-91 period, indicating that the phenomenon is regional and not just country-specific. The phenomenon has strong parallels in experiences in Asia and Latin America. It has started later but, like in the other regions, one observes, for example, a tendency for real exchange rates to appreciate, and for international reserves to exhibit a sharp increase. Our analysis suggests that up until end-1993 there were no particular reasons to be concerned about the present capital inflows episode--at least given its recent characteristics and extent. 1/

A more detailed analysis does shows some worrisome developments side by side with very good ones. For example, a very positive development, which contrasts to Latin America, is a significant increase in foreign direct investment. The latter, however, has not been reflected in higher investment ratios. Actually, those ratios have fallen, while consumption, as a share of GDP, has increased throughout. We feel that, on the whole, the increase in consumption ratios is a normal development since, prior to reform, those ratios were lower than those in comparable market economies. Thus, the pattern of consumption could perhaps represent a redressing of a previous imbalance rather than an unsustainable "consumption boom," unlike in some Latin American countries. Still, the fall in investment is somewhat worrisome if "efficiency units" of current investment are not rising.

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1/ However, more recent data show that there may be some cause for concern regarding Hungary's external situation as short-term foreign currency denominated bonds are increasingly being issued by the government to finance the fiscal deficit.

As in other capital inflows episodes, one also finds an expansion in monetary aggregates, showing that sterilized intervention has played a relatively minor role. This seems to be a reasonable monetary strategy to have followed because capital inflows are usually characterized by a sharp increase in the demand for money. However, the paper also discusses the possible dangers of nonsterilized intervention. A major point of concern in this regard is that the resulting expansion of domestic credit to the private sector, accompanied by the likely maturity mismatch between loans and deposits, may increase the degree of financial vulnerability.

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