

## **Capital Flows to Transition Economies: Master or Servant**

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### **Abstract**

<p>The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.</p>
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This paper discusses the forces driving capital flows in transition countries of Central and Eastern Europe (CEE), factors limiting these inflows, their macroeconomic consequences and policy issues they raise. In considering these issues, the paper draws on the lessons from experience elsewhere—especially the Asian crisis countries, Brazil and Mexico. Capital inflows in the CEE countries reflect real factors and can be a useful servant in the process of development, convergence and catch up. But to the extent that inflows render CEE countries vulnerable to global capital market conditions, they can also be a cruel master, punishing perceived domestic policy weaknesses and responsive to events beyond the control of domestic policymakers.

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## I. INTRODUCTION

Substantial private capital inflows have been a fact of life for many of Europe's transition economies over the past decade (Figure 1).<sup>1</sup> Capital flows to economies undergoing far-reaching structural change are to be expected, as they reflect investment opportunities in excess of those that can be financed by domestic savings.

But recent emerging market financial crises serve as a reminder that capital flows are a good servant but a bad master. In the countries affected by the Asian financial crisis, for example, the capital inflows that preceded the crisis were widely regarded as benign, particularly as they corresponded to high levels of domestic investment in economies that were growing rapidly and had strong fiscal positions and high domestic savings rates. Only in hindsight did it become evident that the capital inflows, together with rapid domestic credit expansion, were contributing to a highly vulnerable financial and corporate structure. This experience has underscored the need for countries receiving substantial capital inflows to consider carefully the reasons for these flows and the appropriate policy response.

This note is motivated and illustrated by data from the transition countries of central and eastern Europe (CEE). It discusses the factors driving capital flows and the policy issues raised by these flows in the context of those CEE economies that are substantially open to private markets. The analysis has implications for other emerging market countries even though their circumstances may be different.<sup>2</sup>

Capital inflows to the CEE countries with market access have financed current account imbalances (Figure 2) associated, to varying degrees, with relatively high levels of investment spending and with consumption smoothing (as well as, in some cases, fiscal imbalances). Such deficits have been particularly large in the three Baltic countries as well as Hungary and Poland.<sup>3</sup>

Foreign direct investment (FDI) has been a major component of capital inflows (Figure 3). While its macroeconomic consequences are similar to those of other forms of capital inflow, FDI plays a role different from other flows at the microeconomic level, for instance

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<sup>1</sup> For a general discussion of the determinants and systematic consequences of capital flows, see for instance Goldstein, Mathieson, and Lane (1989).

<sup>2</sup> The other CIS countries are not included in this comparison, as they face a quite different set of issues: a greater role of government rather than private sector borrowing, greater reliance on official rather than private sector lending (except in some oil-producing countries); and a different stage of transition. See for instance McGettigan 2000 and EBRD 1997.

<sup>3</sup> Keller et al. (2000) analyzes various indicators of external vulnerability in the Baltic countries, arguing in particular that current account deficits may overstate the degree of external vulnerability.

by facilitating the transfer of technology and management techniques. Moreover, compared with other kinds of capital inflows, FDI is less likely to be unwound quickly in response to changes in market sentiment and some of the impact of such a change on the country's external position is absorbed by changes in market valuation—although experience shows that net FDI flows can nonetheless be quite volatile (Dooley, Fernandez-Arias, and Kletzer, 1994), as illustrated by the marked decline in FDI in Russia in the aftermath of its 1998 crisis.

At the same time, several countries in the region have experienced substantial short-term capital inflows, including portfolio investment and bank claims (Figure 4). In the Czech Republic and Estonia, for instance, portfolio investment and other inflows amounted to around 5 percentage points of GDP in 1999. Such short-term inflows have in some cases been quite volatile; they played an important role in the buildup of vulnerabilities leading to the Russian crisis of 1998.

The remainder of the paper is structured as follows. Section II discusses the motivations for capital flows and their consequences. Section III discusses possible policy responses to capital inflows in light of international experience, and especially the recent global financial crises. In considering these issues, the note draws on the lessons from experience elsewhere in the world—especially the Asian crisis countries, Brazil, and Mexico. Section IV presents some concluding observations.

## I. MOTIVATION FOR CAPITAL FLOWS

There are two ways to think about the motivation for capital flows to transition economies: One can think, in portfolio terms, about interest rate differentials and arbitrage conditions, or one can think in terms of fundamentally different supply conditions—mainly capital-labor ratios—and rates of return on capital. Either way one arrives at a compelling motivation for large capital inflows and some real dilemmas for policy.

### A. Real interest rate differentials and arbitrage flows

Capital inflows are linked with the real appreciations of exchange rates that many transition countries in the region have undergone (Figure 5). On the one hand, inflows may be motivated by the anticipation of real appreciations. On the other, inflows support the real appreciation: huge starting disparities in capital/labor ratios and real rates of return are bound to elicit capital flows, large but uneven productivity gains, substantial increases in income, and significant Balassa-Samuelson effects (see sections II.B and II.C).

The first point can be made with reference to the basic uncovered interest parity relationship, linking nominal interest rates to the expected nominal depreciation of the transition country's currency:

$$i^C = i^G + \Delta e / e \quad (1)$$

where superscripts refer to a transition country  $C$  and the industrial country  $G$ ,  $i$  is the nominal interest rate, and  $e$  is the exchange rate expressed in units of currency  $C$  per unit of currency  $G$ . This implies the following relationship between real interest rates and the rate of real appreciation of the transition country currency:<sup>4</sup>

$$r^C = r^G - (\pi^C - \pi^G - \Delta e / e), \quad (2)$$

where the expression in parentheses on the right-hand side represents the rate of real appreciation of the currency of the transition country, expressed in terms of consumer price indices, and  $\pi^i$  is the rate of consumer price inflation in country  $i$ .

This relationship can be considered in light of the substantial real appreciations experienced by a number of transition economies. Table 1 presents illustrative calculations for the real interest rates for selected European transition economies implied by the right-hand side of (2), on the assumption of uncovered interest parity vis-à-vis Germany, and assuming that the average rates of real appreciation experienced since 1995 are expected to continue.<sup>5</sup>

These results indicate that, under the assumptions made, unfettered capital mobility would drive real interest rates well into negative territory. The substantial gaps between implied and actual interest rates needs to be explained, as they would seem to imply a rather compelling incentive to import capital into these countries. These gaps suggest that, for several of the transition countries, what has to be explained is not the tendency for capital inflows, but rather what has limited these inflows.

These illustrative computations raise several questions:

- Why are the currencies of transition countries appreciating in real terms and is this appreciation likely to continue?
- Given differences in the capital structure between the transition countries and their more advanced western neighbors, what can we glean about the notional closed economy interest rates in these countries and the likely magnitude of capital inflows when the capital account is opened up?
- Why have capital inflows been insufficient to arbitrage out real interest rate differentials?

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<sup>4</sup> This derivation uses the usual approximation  $(1 + a)/(1 + b) \approx (a - b)$  when  $a, b$  are small.

<sup>5</sup> The reader is cautioned regarding the limitations of comparability of data. For instance, in Latvia yields on Treasury Bills are lower than other interest rates, reflecting their value to banks as collateral. (This would of course amplify the difference between actual and implied real interest rates highlighted in the table.)

- To the extent that these differentials reflect risk premia, how rational has been the setting of these premia?

## B. Real Appreciation

Several alternative interpretations of these real appreciations are possible:<sup>6</sup>

a. The tradable-producing industries in the transition countries started the transition with depressed demand and new competition in their traditional markets, and little if any reputation or brand recognition in western markets. To the extent that current account flows influenced starting exchange rates, therefore, it is not surprising that these rates were very depreciated. As reputations were established and penetration of western markets progressed, some real appreciation was warranted solely on the basis of the changing conditions for trade. This process has been protracted and, indeed, is still far from complete.

b. A slightly more complex interpretation attributes the real appreciations to Balassa-Samuelson effects—i.e., rising *total factor productivity in tradable goods* relative to nontradables. The gain in total factor productivity could reflect the efficiency gains of exposure to global markets, or the benefits of operating in an economy with increasingly more effective markets and institutions and a more stable macroeconomic setting. Rising output of traded goods and higher incomes are bound to put upward pressures on prices in the nontraded sectors—both through wage leadership and demand pressures.

The Balassa-Samuelson result can be illustrated using a model with two goods (tradables and nontradables) and two factors (labor and capital). Labor is immobile internationally but is fully mobile across sectors within a country. Capital is fully mobile internationally and the real interest rate (in terms of tradables) is determined exogenously in the world capital market. In this model, in which there is no capital scarcity by definition, domestic real interest rates in terms of tradables are always equal to world real interest rates. A country's relative price level will tend to rise if its TFP growth differential vis-à-vis the rest of the world is higher in the tradables sector than in the nontradables sector. The only requirement is that nontradables are not less labor-intensive than tradables (See the Appendix for more details).

Suppose for instance, that growth in total factor productivity in the tradables sector of the transition country, denoted  $\hat{A}_T^C$ , exceeds that of the industrial country,  $\hat{A}_T^G$ , and that TFP is constant in non-tradables in both countries. Assume too that the price of traded goods is

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<sup>6</sup> See Halpern and Wyplosz (1996). In addition to the explanations discussed in this section, in some countries removal of consumer subsidies and price liberalization, as well as the introduction of VAT and excise taxes, also affected CPI real exchange rates without having any direct implications for competitiveness. These effects have been sizable for some countries, including the Baltics.

arbitraged internationally, and that there is wage leadership from the traded to the non-traded sector in the transition country. In these circumstances, the real appreciation of currency C in terms of relative CPIs would be equal to

$$(3) \quad \pi^C - \pi^G - \Delta e / e = (1 - \gamma)(\hat{A}_T^C - \hat{A}_T^G),$$

where  $\gamma$  is the weight of tradables in the CPI, assumed the same in the transition country and in Germany. This result is derived for the more general case in the Appendix.

c. An alternative case would be one in which the real appreciation results entirely from *capital accumulation in the tradables sector*. This will raise the marginal product of labor in tradables, raise wage rates in the sector, and, through wage leadership, increase wages too in the production of non-tradables—with much the same effect as in the previous example. It is worth noting that there is no real appreciation in this case in terms of relative unit labor costs in tradables—as productivity changes offset wage increases—but there is a real appreciation in terms of broader price indices such as the CPI.<sup>7</sup>

d. Of course, a real appreciation may be simply a monetary phenomenon, reflecting an unsustainable loss of competitiveness—e.g., because of excessive monetization of government deficits within a pegged exchange rate regime.

In cases a, b, and c the real appreciation reflects an ongoing equilibrating process. The capital inflow that puts downward pressure on real interest rates is a *real* phenomenon reflecting productivity trends; it is independent of the nominal exchange rate regime.

Case d is less interesting for the purposes of the present analysis in that the historical appreciation is unlikely to continue—indeed, it is likely to be reversed sharply at some stage.

### C. Capital accumulation

To the extent that capital flows reflect imbalances in initial stocks of capital, the magnitude of potential capital flows to European transition economies can be estimated based on existing capital stocks.<sup>8</sup>

As a starting point, Table 2 highlights the large differences in output per worker between the European Union (EU) countries and the CEE countries at the onset of the transition. Output per worker in 1989 was between 27 and 58 percent of German levels when

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<sup>7</sup> See Lipschitz and McDonald (1990).

<sup>8</sup> For a detailed analysis of supply conditions at the start of the transition see McDonald and Thumann (1990).

measured using WEO data that adjust for cross-country differences in purchasing power. In the decade that followed some countries (Hungary, Poland, Slovenia and, to a lesser extent, the Czech Republic) experienced real convergence, while others (Bulgaria, Latvia, Lithuania, and Romania) experienced real divergence and yet others (Estonia and Slovakia) kept their relative incomes constant. Consequently, in 1999 the dispersion of CEE relative incomes had increased, ranging between 21 and 73 percent of German levels.

Insofar as the large and persistent differences in output per worker reflect differences in capital-labor ratios, the process of growth and development should have entailed huge capital inflows. The magnitude of these potential flows can be ascertained by the following calculations, which closely follow Lucas (1990). Suppose output in both the EU and CEE is produced by a single sector, with the *same* Cobb-Douglas production function in each country,  $Y_i = AK_i^\alpha L_i^{1-\alpha}$ . In intensive form, output per worker ( $y$ ) is function of capital per worker ( $k$ ),  $y_i = Ak_i^\alpha$ . The marginal product of capital is  $r_i = A\alpha k_i^{-(1-\alpha)}$  or, in terms of output per worker,

$$r_i = \alpha A^{1/\alpha} y_i^{\frac{1-\alpha}{\alpha}}. \quad (4)$$

If Germany is taken to represent the EU, and  $i$  denotes a representative CEE country, then from equation (4),

$$\frac{r_i}{r_{ger}} = \left( \frac{y_i}{y_{ger}} \right)^{\frac{1-\alpha}{\alpha}}. \quad (5)$$

Equation (5), together with an estimate of the capital intensity of production, can be used to estimate the returns to capital in the CEE (Table 3). Assuming a benchmark value of  $\alpha = 1/3$ , the marginal product in the transition economies in 1989 was between 3 and 14 times the marginal product of capital in Germany.

If the simple model were true and world capital markets were free and complete, these enormous rate of return differentials would induce rapid flows of investment goods from Germany and other capital-abundant countries to the transition economies of the CEE, Russia, and elsewhere. Indeed, as observed by Lucas, *no* investment would occur in the wealthy countries in the face of rate of return differentials of this magnitude.

Assuming that the European transition economies are small relative to global capital markets, equality of rates of return for capital would imply that capital per worker and output per worker in the transition economies would be equalized to world levels in a single period. If  $\bar{k}_i = k_{ger}$  denotes capital per worker following financial liberalization, the capital flow in relation to pre-flow GDP would be

$$\frac{\bar{k}_i - k_i}{y_i} = \frac{k_{ger} - k_i}{y_i} = \frac{k_{ger}}{y_{ger}} \frac{y_{ger}}{y_i} \left[ 1 - \left( \frac{y_i}{y_{ger}} \right)^{\frac{1}{\alpha}} \right]. \quad (6)$$

The potential capital flow in relation to GDP varies directly with German capital abundance (the German capital-labor ratio); the potential flow is also higher the greater is the difference in relative per-worker outputs  $y_{ger}/y_i$ . To estimate the size of these potential one-time flows predicted by this simple model, we used the Penn World Tables' estimate of 1.74 for the German capital-output ratio in the late 1980s-early 1990s (Table 4). An economy with per worker output equal to  $\frac{1}{2}$  of Germany's would experience a one-time income-equalizing flow of over 300 percent of GDP. Even if output per worker is 80 percent of Germany's, this flow would still be over 100 percent of GDP.

Turning to the CEE countries, the magnitude of the capital flows predicted by the simple model ranges from 240 to almost 630 percent of GDP in 1989 (Table 5). To put this in perspective, in a similar exercise for Spain's experience with capital flows following financial liberalization in 1986, Cordoba and Kehoe (1999) found that the capital flow required to equalize German and Spanish interest rates would be of the order of 86 percent of GDP.

#### **D. What limits capital flows to transition economies?**

While the European transition countries have received substantial amount of foreign financing in the decade following the transition, the current account deficits shown in Figure 2 above have not been anywhere close to those predicted by the simple model, as shown in Table 4. This raises the question of why capital flows have been so small, compared with the predictions of the model. Here, several factors will be mentioned briefly (although each could be analyzed in more detail).

- a. *Differences in technology* may result in differences in the productivity of capital across countries. This could reduce the incentive for capital to move to the transition economies, especially to the extent that these gaps are not expected to close over the lifespan of the capital. Broadly interpreted, these technological differences reflect not just the state of knowledge but also aspects of the way production is organized. For instance, there may be inefficiencies in production even in advanced transition countries—corresponding to the observation that there is room for further progress in industrial restructuring (for instance, in the Czech Republic, Poland, and Slovenia) and in agriculture (e.g. in Poland).
- b. *Externalities*, particularly those associated with human capital accumulation. Such externalities have been used, in particular by Lucas (1988, 1990), to analyze persistent cross-country differences in income per capita. They would also tend to imply a higher marginal product of capital in industrialized countries and thus a diminished incentive for capital to flow to developing and transition countries.
- c. *Adjustment costs* of various kinds would tend to slow the adjustment of capital toward the levels of the industrialized countries.
- d. *Immobile factors of production* such as suitable land or particular types of human capital may create bottlenecks that delay the adjustment of capital stocks.

e. *Institutional factors* may play an important role in limiting capital inflows. Foreign investors may be concerned that the rules of the game are uncertain, or may change—owing, in some cases, to concerns about the possibility of confiscatory taxation or exchange controls, as well as insecure property rights and uneven application of laws and contracts.<sup>9</sup> (Such concerns are not confined to transition countries, of course, but are among the factors that limit the extent to which we operate in a truly global capital market.)

f. Investors may be uncertain about the ability of the *financial system* to channel capital flows efficiently, and this would affect the risks and prospective returns on their investments. As a related point, there may be *credit market constraints* as access to credit may be limited by the availability of suitable domestic assets to serve as collateral.<sup>10</sup>

g. *Macroeconomic instability* may reduce the profitability of investment by making rational investment planning more difficult; uncertain or turbulent macroeconomic prospects tend to limit capital inflows and in some cases lead to capital flight. (The latter has been particularly important in the case of Russia.<sup>11</sup>)

h. Finally, capital flows much larger than those actually witnessed would result in *increasing concerns about repayment*. Such concerns are reflected in the fact that current account deficits are regarded as warning indicators of a crisis.<sup>12</sup> Underlying market concerns over current account deficits—even if they, in fact, reflect real factors such as capital scarcity and productivity growth—are the institutional and financial considerations mentioned in the previous two points, together with the difficulty market participants face in ascertaining that capital inflows are in fact based on these real factors. For these reasons, larger current account deficits would tend to be associated with higher required risk premia and would serve to limit the capital flows in response to any given differential in returns.

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<sup>9</sup> Tornell and Velasco (1992) attribute capital flows from poor to rich countries to weak property rights which induce a “tragedy of the commons”. Groups representing special interests in poor countries are able to appropriate other groups’ capital stocks, either directly or indirectly through their influence on the budgetary process. By contrast, investments citizens of poor countries make in rich countries are safe from expropriation risk. Recent findings by Garibaldi et al. (1999) that the distribution of FDI flows across countries is significantly influenced by investor perceptions of country risk as well as survey-based indicators of the legal and political climate are consistent with the view that such factors are important limitations to capital flows.

<sup>10</sup> See Barro, Mankiw, and Sala-i-Martin, 1992; and Barro and Sala-i-Martin, 1995, p. 101.

<sup>11</sup> See for instance Abalkin and Whalley, 1999.

<sup>12</sup> Warning indicators have been discussed, for instance, by Berg and Patillo (1999). See also Keller et al. (2000), and McGettigan (2000).

## **E. The dilemma for policy and the role of risk premia**

From the above analysis, two points of reference emerge. First, from the analysis related to equation (2), it is clear that, given a trend real appreciation, the real interest rate in the transition country required for interest parity is substantially below that in the industrial countries. Second, from the analysis of domestic supply conditions it is clear that capital scarcity should make the rate of return on capital in European transition countries higher than that in advanced industrial countries. In many circumstances, these two phenomena may be intimately related. Rapid capital accumulation in areas of relative capital scarcity is often accompanied by rapid growth in total factor productivity in tradables. Such growth in TFP in countries catching up is the result of exposure to modern technology incorporated in imported, latest-vintage capital goods, assuming that there are no serious locational disadvantages to production in these areas associated with poor infrastructure, imperfect property and legal rights, corruption, and the like.

If the authorities seek to set real interest rates low enough to limit ex ante arbitrage inflows, there will almost certainly be a massive ex post imbalance between investment and saving—that is, a huge capital inflow. If, on the other hand, the authorities seek to set real interest rates at a rate reflective of the relatively high returns to capital, there will be very large arbitraging inflows. While various fundamental and institutional factors may impart some friction to the process—thereby limiting the size of capital flows—it is not likely that these will be sufficient to afford the transition country any significant interest rate independence.

It is conceivable that movements in risk premia could help contain the size of capital inflows and allow for some natural speed limits on the pace of capital accumulation and the size of current account imbalances. The simplest ideal would be the case where the risk premium on the currency of the transition country was related in a smooth monotonic fashion to the size of the current account deficit. This would facilitate a smooth increase in domestic interest rates to the point where, at a certain level of the current account deficit, domestic interest rates would be high enough to balance real intertemporal forces—decisions on saving and consumption and the timing of investment—without eliciting overwhelming portfolio inflows. In practice, however, risk premia are unlikely to be so well behaved. They will be a function not only of the current account deficits, but also of a broad array of other variables—including political developments, bandwagon effects, and various elements of contagion from other emerging market countries—that may well be highly erratic and will certainly be beyond the control of the domestic policymakers.<sup>13</sup>

The problem for policy, therefore, is that macroeconomic developments will turn on capital account developments which will be highly sensitive to a vector of possibly erratic exogenous variables. There may thus be times when policymakers are trying to cope with overwhelming inflows that undermine any semblance of financial restraint. At other times,

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<sup>13</sup> See for instance Lane (1992).

a sudden exogenous jump in risk premia may reverse capital flows and force a financing crisis and/or a major compression of demand.

The problem is a real one, and different nominal exchange rate regimes will not alter it fundamentally. It is true that floating exchange rates may be able to absorb shifting risk premia more smoothly. But they will not help stabilize the influence on domestic demand. Consider, for example, the case of a sudden drop in the risk premium from a seemingly settled domestic situation. Under a pegged exchange rate regime, the transition country may be overwhelmed with capital inflows resulting in inflation and a sharp deterioration in the competitiveness of the traded goods sector. Under a floating exchange rate regime where the domestic monetary authorities retain interest rate independence, the value of the domestic currency will jump to an overappreciated level where some interest-equalizing depreciation is expected; and this appreciation could well be devastating for the traded goods sector of the economy.

As is clear from the experience of the Asian crisis, the Lawson Doctrine does not provide much comfort: even if the government accounts are balanced and capital flows reflect private investment decisions, government policy will have to confront the instability imparted by a volatile capital account.

## **II. POLICY RESPONSES TO CAPITAL INFLOWS**

The previous section has stressed that in the absence of frictions, *real* factors, notably capital scarcity and productivity growth differentials, would account for capital flows to transition economies much larger than those actually observed. While these capital flows are limited by a variety of factors that were enumerated—and in particular by volatile risk premia associated with information and other frictions—they may nonetheless be huge. Certainly these capital flows are large enough to pose a challenge for economic policy and to lead to a buildup of vulnerabilities of the kind reflected in recent capital account crises.<sup>14</sup> The question is then what kinds of policy may be useful in tackling this challenge.

### **A. Exchange rate regime**

The choice of exchange rate regime affects the channels through which capital inflows affect the economy, but no regime would by itself be sufficient to neutralize these effects.

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<sup>14</sup> A useful reference is Schadler et al., 1993, which considered the experience of 6 countries faced with surges of capital inflows: within the five years following the publication of this study, three of these countries had undergone major crises. The countries experiencing crises were Spain (1993), Mexico (1994-95), and Thailand (1997-98); Chile and Colombia weathered international financial crises; while in Egypt, the episode of capital inflows proved short-lived.

Under a fixed exchange rate—either through a conventional peg or a currency board— inflows are associated with an increase in foreign exchange reserves and thence in the domestic money supply. The authorities then face a dilemma between monetary tightening, intended to restrain domestic monetary expansion and thus inflation, albeit at the cost of attracting more capital flows, versus monetary easing, aimed at restricting the capital inflows, albeit at the cost of fuelling domestic inflation. If real factors are driving the real exchange rate to appreciate, this appreciation will take place through an inflation differential if it does not take place through nominal currency appreciation. If capital is mobile, the use of sterilized intervention to maintain a peg is ultimately a losing game.

Under floating exchange rates, capital inflows typically result in a nominal (and real) appreciation that generates a current account deficit validating the capital inflow. To the extent that shifts in the capital account are much more rapid than changes in current account flows, there will almost certainly be some overshooting. This will entail distortions to competitive conditions that may persist for some time to the detriment of domestic resource allocation. Indeed, some producers of traded goods may face extremely difficult financial circumstances in the aftermath of a sudden rise in risk premia. As discussed above, even if the capital inflows are based on real productivity gains and capital scarcity, a very large current account deficit will make the country vulnerable to changes in market sentiment.

Since the mechanisms motivating capital flows are real rather than monetary, they cannot be influenced decisively by monetary policy or the nominal exchange rate regime. However, insofar as the exchange rate regime influences market perceptions, it will affect opportunistic speculative flows. As is evident from the capital-account-based financial crises of the second half of the 1990s, a long-lived pegged exchange rate, with declining risk premia, increasing capital inflows, and a widening current account deficit, may be a recipe for disaster. A country with a fixed exchange rate may manage to hold onto the peg through substantial inflows by resorting to various sterilization mechanisms and accepting some real appreciation through inflation. As confidence in the nominal exchange rate grows, it is likely that more and more private foreign exchange positions will go unhedged, and that the vulnerability to—and the potential cost of—a change in market sentiment will increase.<sup>15</sup> In these circumstances, the authorities are likely to resist any downward pressure on the currency that may result from a sudden increase in the risk premium. To the extent that the market sees this resistance as ultimately futile, the central bank could be seen as a sitting duck for speculative market forces, and this perception of vulnerability will increase speculation against the currency to the point of its becoming irresistible. Thus, whatever the

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<sup>15</sup> On the other hand, to the extent that the exchange rate fluctuates in response to market forces, private agents may be induced to eschew unhedged financial exposure and even to hedge the risks in export earnings and import costs. The relatively benign reaction of Australia and New Zealand to the Asian crisis may be indicative of this sort of private behavior.

underlying fundamentals, the exchange rate regime may itself serve to exacerbate volatility.<sup>16</sup>

The experience of recent crises suggests, therefore, that a flexible exchange rate is likely to be the regime of choice for countries experiencing large capital inflows. But, if capital inflows have real origins, the authorities cannot look to their choice of nominal exchange rate regime alone to resolve their dilemma.

## **B. Fiscal policy**

In theory, contractionary fiscal policy can offset the expansionary influence of capital inflows.<sup>17</sup> In practice it makes sense to pursue contractionary fiscal policies during periods of large inflows. Moreover, a strong fiscal position should make it possible to adopt an expansionary stance in response to a sharp turnaround in the capital account.<sup>18</sup> But there are practical limits to what should be expected of fiscal policy: it is highly unlikely that any government will be able to change the stance of fiscal policy in the magnitudes and with the rapidity required to offset shifts in the capital account. Fiscal policy—which is constrained by multi-year governmental obligations and programs, and is subject to parliamentary debate and approval—is simply not a sufficiently flexible instrument.

## **C. Structural reforms**

Various aspects of structural reform may also be considered as part of the response to capital inflows. At the most basic level, the better the structure—labor market flexibility, enabling legal structure, absence of restrictive regulations, corporate governance, etc—the greater will be the supply response to capital inflows and the smaller the resultant

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<sup>16</sup> There is a role for exchange rate based stabilizations, and in particular hard pegs—through currency boards or dollarization—and considerable evidence that they can deliver credibility benefits that translate into lower inflation without sacrificing growth performance (see Ghosh et al. (1998); Hamann (1999); Masson (1999); and Corker et al. (2000)). Nevertheless, the foregoing analysis suggests that the authorities would be wise to consider and embark on exit strategies before the onset of crisis.

<sup>17</sup> In a simple Mundell-Fleming model with fixed exchange rates and capital mobility monetary policy is irrelevant and only fiscal adjustment can be used to prevent overheating and reduce the current account deficit associated with capital inflows. In the same model with floating exchange rates, a combination of fiscal tightening and monetary easing can be used to reduce the current account deficit.

<sup>18</sup> The experience of the 1997-98 Asian crisis illustrates the importance of a sound fiscal position in providing room for the authorities to respond to a crisis in a way that served to cushion the macroeconomic consequences of a sharp reversal in the capital account. Once it became evident that the crisis was leading to a precipitous drop in private domestic demand, fiscal deficits were allowed to expand substantially (Lane et al. (1999)).

imbalances (in the external current account and inflation). But the structure of the financial sector is particularly important. The crises in Asia and elsewhere have underscored the risks of liberalizing capital flows when the financial sector is weakly governed.<sup>19 20</sup>

The circumstances analyzed in section II—where there are huge fundamental incentives to capital inflows and corresponding current account deficits—are bound to leave a country highly vulnerable to sharp changes in risk premia. Residents will already have incentives to borrow abroad, and any government guarantees (explicit, implicit or perceived) against exchange rate or illiquidity risk, any situation in which risks appear to be socialized without adequate regulation to limit institutions' exposures to such risks, will exacerbate this vulnerability.<sup>21</sup> Avoiding such risks requires both limiting the scope of guarantees to those that are essential to economic stability, and implementing adequate prudential regulations to ensure that excessively risky behavior does not result.<sup>22</sup>

#### **D. Capital controls**

The conventional desiderata on the pace and sequencing of capital account liberalization<sup>23</sup> apply, and, indeed, some countries in Central and Eastern Europe—including Hungary,

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<sup>19</sup> Also evident from recent crises, is the particular importance of the legal structure: without proper bankruptcy laws, for example, it may take years to unravel competing claims on assets after a crisis—and during this time assets will be underemployed, entrepreneurial activity misdirected, and growth reduced.

<sup>20</sup> Developing a sound financial system has been a priority for transition economies since the early days of transition (see for instance the volume edited by Caprio, Folkerts-Landau, and Lane (1994)). Many of the countries have made substantial progress, while in others there are evident weaknesses. For instance, among the Baltics, Estonia and Lithuania underwent considerable financial restructuring in the wake of serious banking problems in 1992-93 and 1995-96 respectively; in Latvia, in contrast, considerable vulnerabilities remain.

<sup>21</sup> See Dooley (1998). Also, such guarantees are the basis of the so-called “Pangloss values” discussed by Krugman (1998), whereby investments are undertaken on the basis of their prospective returns in the best possible state of the world.

<sup>22</sup> More generally, financial sector supervision and regulation in line with the Basel Core Principles is essential to ensuring that transition economies are adequately prepared to cope with capital inflows, and that these do not result in a buildup of vulnerabilities. See Folkerts-Landau et al. (1998).

<sup>23</sup> A key principle is to liberalize longer-term and more stable flows—e.g., direct investment—before shorter-term and less stable flows. If resorting to capital controls, price based controls à la Chile are better than quantitative restrictions and may well manage to lengthen the maturity structure of liabilities. See for instance Johnston et al. (1999).

Poland, Slovenia, and Croatia—have retained some controls on short-term capital. Even though capital controls distort the intertemporal allocation of resources, are subject to evasion, and could be used as a pretext to relax macroeconomic discipline, they could provide emerging market countries a temporary shield from volatile short-term capital flows like interbank lending and portfolio investment.

What is the case for capital controls for a country where substantial inflows reflect capital scarcity and productivity gains? Such controls constitute an interference with market forces and, presumably, slow down the convergence of capital-labor ratios, productivity, and per capita income. An important rationale has to do with externalities. Clearly very large capital inflows increase current account imbalances, dependence on foreign capital, and thus vulnerabilities to international financial market conditions. To the extent that risk premia increase smoothly with current account deficits and other measures of vulnerability, there would probably be little justification for capital controls. However, to the extent that risk premia are erratic, or at least subject to influences unrelated to domestic economic developments, capital flows may impose enormous instability on an economy and overwhelm stabilization policy.

The conclusion is that, where there are existing restrictions on capital inflows, the authorities should proceed cautiously in liberalizing these restrictions. The sequencing of capital account liberalization should take into account the need to address domestic capital market imperfections and weaknesses in regulatory systems, with a view to taking advantage of the benefits of free capital mobility while minimizing the risks from short-term volatility. The situation is different for a country with a history of an open capital account: it may prove difficult to reintroduce capital controls successfully, particularly where there are numerous closely-held corporations and substantial intracorporate flows, requiring the authorities to run a race with the markets to keep up with the markets' ability to circumvent them.

## **E. Transparency**

If the case for capital controls rests on erratic movements in risk premia, the case for transparency—assuming the sources of instability are not in domestic policy reversals—rests on providing markets with a continuous stream of accurate information so as to facilitate proper assessment. In circumstances of incomplete or asymmetric information, because some investors fear that others have more complete information, there will be herding, or bandwagon behavior, and, in extreme circumstances, investor panics. Contagion too is exacerbated by an insufficiency of information that makes it difficult for lenders to differentiate among borrowers on the basis of credit-worthiness.<sup>24</sup>

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<sup>24</sup> This and other conditions for effective market discipline are discussed in Lane, 1992. Of course, there are several alternative explanations of contagion, only some of which reflect such informational imperfections. See for instance Masson et al., 1999.

The benefits of transparency—or rather, the costs of opaqueness—were highlighted by some episodes in the Mexican and later the Asian financial crises as unpleasant information, particularly regarding the countries' usable reserve positions, became known to markets at the worst possible time, in the midst of a crisis. Had this information been made available all along, and had each of these countries maintained a dialogue with its international creditors aimed at keeping them fully informed, the information could have been priced into markets more smoothly. The recent initiatives, under the auspices of the IMF, to establish and monitor codes and standards in these areas, and to encourage the publication of IMF assessments reflects the international community's increasing awareness of the importance of these aspects of transparency as an element of crisis prevention.

## **V. Conclusion**

Freed from controls, the development of the transition economies should be accompanied by very large capital inflows. The incentives for these flows are embedded in the initial conditions and the process of development. Such flows can be a useful servant—serving the purposes of development: financing investment, raising productivity, and increasing per capita incomes. But global capital markets can also be a cruel master: capital inflows and the corresponding current account deficits render countries vulnerable to global capital market conditions, and these can be both punishing of perceived domestic policy weaknesses and highly erratic (or at least highly responsive to events beyond the control of domestic policymakers). This state of the world requires that stabilization policy be cognizant of some nontraditional considerations related to exchange rate regimes, fiscal policy, structural and institutional factors, the rules governing capital flows, and the transparency of economic data and policy.

### III. APPENDIX

This Appendix following provides more details on the derivation of equation (3) on page 4, based on Obstfeld and Rogoff (1996). This analysis takes tradables as numeraire and normalizes the price of nontradables to 1 in both countries. (This is a real model which ignores the split between nominal currency appreciation and inflation).

The transition country's price index,  $P$ , is given by  $P = 1^\gamma p^{1-\gamma}$ , where the price of tradables is normalized to unity and  $p$  is the relative price of nontradables in terms of tradables in the transition country and  $\gamma$  is the weight of tradables in consumer price index in the transition country. Likewise, the price level,  $P^*$ , in the industrial country (Germany), is given by  $P^* = 1^\gamma (p^*)^{1-\gamma}$ , where it is assumed that the share of tradables is the same in both countries. Dividing  $P$  by  $P^*$ , taking logarithmic derivatives with respect to time and indicating instantaneous percentage changes by a  $\hat{\ }^{\wedge}$  yields

$$\frac{d \log P}{dt} - \frac{d \log P^*}{dt} \equiv \hat{P} - \hat{P}^* = (1-\gamma)(\hat{p} - \hat{p}^*). \quad (\text{A7})$$

Equation (A7) is the key expression linking cross-country differences in inflation to real appreciation differentials. If we assume for the sake of simplicity that the industrial country had a constant price of nontradables, then its price level would be constant. The inflation differential between the transition country and Germany would then be equal to  $(1-\gamma)\hat{p}$ , the product of the share of nontradables in the transition country's price index times the percentage increase in its nontradables price. If the price of nontradables rose by 15 percent during a given year and their share in the price index were 50 percent, then the transition country's real appreciation rate would be 7 1/2 percent, and so on.

According to Balassa-Samuelson, appreciation in the relative price of nontradables is driven by technological change in the tradables sector. Let  $Y_i = A_i F_i(K_i, L_i)$  be the CRS production function in the tradables and nontradables sectors,  $i=T, N$ , and  $\mu_{LT} \equiv \frac{wL_T}{Y_T}$

denote labor's income share in the tradables sector ( $\mu_{LN}$  is defined similarly). Also let

$\hat{A}_T \equiv \frac{\dot{A}_T}{A_T} > 0$  denote the rate of growth of TFP in tradables is (a dot over a variable indicates differentiation with respect to time). It can be shown (see Rogoff and Obstfeld, page 212) that the rate of real appreciation in the transition country is given by

$$\hat{P} - \hat{P}^* = (1-\gamma) \left[ \frac{\mu_{LN}}{\mu_{LT}} (\hat{A}_T - \hat{A}_T^*) - (\hat{A}_N - \hat{A}_N^*) \right]. \quad (\text{A8})$$

Higher productivity growth in tradables in the transition country pushes up the relative price of nontraded goods over time provided that  $\mu_{LN} \geq \mu_{LT}$ , that is provided that labor is used relatively intensively in the nontraded goods sector. If the production function for

nontraded goods is Cobb-Douglas,  $Y_N = A_N K_N^\alpha L_N^{1-\alpha}$ , the factor shares are constant:  $\mu_{LN} = 1 - \alpha_N$ , and  $\mu_{KN} = \alpha_N$ . In the Cobb-Douglas case, the condition  $\mu_{LN} \geq \mu_{LT}$  boils down to the requirement that  $\alpha_N < \alpha_T$  which is likely to be satisfied given that in practice traded goods have a larger content of imported capital inputs.

Equation (A8) is the key link between TFP growth in tradables and real appreciation. Assume in addition that (1) tradables and nontradables have the same labor intensity ( $\mu_{LT} = \mu_{LN}$ ); and (2) Equal rates of technical progress in the nontradables sector in the transition country and Germany). Then the inflation differential between the transition country and the west will be equal to the share of nontradables in the CPI times the differential in the growth rate of TFP in the tradables sector between the transition country:

$$\hat{P} - \hat{P}^* = (1 - \gamma)(\hat{A}_T - \hat{A}_T^*). \quad (\text{A9})$$

This is equation (3) in the main text. Presumably the TFP growth differential between the transition countries and Germany was very high in the aftermath of these economies' opening up in the late 1980s and early 1990s as these countries adopted readily available western technology and management. The TFP differential would presumably taper off gradually as these "technological arbitrage" opportunities available to the transition countries are exhausted. Further growth in TFP in the transition countries would then come from local or western R&D.

#### IV. REFERENCES

- Abalkin, A., and J. Whalley (1999). The Problem of Capital Flight from Russia. *World Economy* (May).
- Barro, Robert J., N. Gregory Mankiw, and Xavier Sala-I-Martin (1992), Capital Mobility in Neoclassical Models of Growth, NBER Working Paper NO. 4206 (November).
- Barro, Robert J., and Xavier Sala-I-Martin (1995). *Economic Growth* (New York: McGraw-Hill).
- Berg, Andrew, and Catherine Patillo (1999). Are Currency Crises Predictable? A Test. *IMF Staff Papers* 46 (June): 107-138.
- Caprio, Gerald, David Folkerts-Landau, and Timothy D. Lane, editors (1994). *Building Sound Finance in Emerging Market Economies* IMF and World Bank.
- Cordoba, Gonzalo Fernandez, and Timothy J. Kehoe (1999). Capital Flows and Real Exchange Rate Fluctuations Following Spain's Entry into the European Community. Working Paper, Federal Reserve Bank of Minneapolis (May).
- Corker, Robert, Craig Beaumont, Rachel van Elkan, and Dora Iakova (2000). Exchange Rate Regimes in Selected Advanced Transition Economies—Coping with Transition, Capital Inflows, and EU Accession. IMF Policy Discussion Paper.
- Dooley, Michael P. (1998) A Model of Crises in Emerging Markets. NBER Working Paper No. 6300.
- Dooley, Michael P., Eduardo Fernandez-Arias, and Kenneth Kletzer (1994) Recent Private Capital Flows to Developing Countries: Is the Debt Crisis History? NBER Working Paper no. 4792.
- EBRD (1997) *Transition Report 1997*. (London; European Bank for Reconstruction and Development)
- Folkerts-Landau, David, Carl-Johan Lindgren, et al. (1998). Toward a Framework for Financial Stability. IMF World Economic and Financial Surveys.
- Garibaldi, Pietro, Nada Mora, Ratna Sahay, and Jeromin Zettelmeyer (1999). What Moves Capital to Transition Economies? Paper presented at IMF Conference *A Decade of Transition: Achievements and Challenges*.
- Ghosh, Atish R., Anne-Marie Gulde, and Holger C. Wolf (1998). Currency Boards: The Ultimate Fix? IMF Working Paper WP/98/8.

- Goldstein, Morris, Donald J. Mathieson, and Timothy Lane (1991) *Determinants and Systemic Consequences of International Capital Flows*. IMF Occasional Paper No. 77.
- Halpern, Laszlo, and Charles Wyplosz, 1996, "Equilibrium Exchange Rates in Transition Economies", International Monetary Fund Working Paper 96/125, (November)
- Hamann, A. Javier (1999). Exchange-Rate-Based Stabilization: A Critical Look at the Stylized Facts. IMF Working Paper WP/99/132.
- Johnston, R. Barry, Salim M. Darbar, and Claudia Echeverria (1999). Sequencing Capital Account Liberalization: Lessons from the Experience in Chile, Indonesia, Korea, and Thailand. IMF Working Paper WP/97/157.
- Keller, Peter M., Anne-Marie Gulde, and Juha Kähkönen (2000) Pros and Cons of Currency Board Arrangements in the Lead-Up to EU Accession and Participation in the Euro Zone. IMF Policy Discussion Paper PDP/00/1/
- Keller, Peter M. et al. (2000). The Baltics: Exchange Rate Regimes and External Sustainability. Draft, IMF.
- Krajnyak, Kornelia, and Jeromin Zettelmeyer (1998) Competitiveness in Transition Economies: What Scope for Real Appreciation? IMF *Staff Papers* 45 (June).
- Krugman, Paul A. (1998) What Happened to Asia? Unpublished: MIT.
- Lane, Timothy (1992) Market Discipline. IMF *Staff Papers* 40 (March).
- Lane, Timothy, Atish R. Ghosh, A. Javier Hamann, Steven Phillips, Marianne Schulze-Ghattas, and Tsidi Tsikata (1999). *IMF-Supported Programs in Indonesia, Korea, and Thailand: A Preliminary Assessment*. IMF Occasional Paper 178.
- Lipschitz, Leslie, and Donogh McDonald (Editors), 1990, German Unification: Economic Issues, *Occasional Paper* 75, International Monetary Fund, Washington DC.
- Lipschitz, Leslie, and Donogh McDonald, 1992, Real Exchange Rates and Competitiveness: A Clarification of Concepts, and some Measurement for Europe, *Empirica – Austrian Economic Papers* 19 (1), 37-69.
- Lucas, Robert E. (1988) On the Mechanics of Economic Development. *Journal of Monetary Economics* 22 (January): 3-32.
- Lucas, Robert E. (1990) Why Doesn't Capital Flow from Rich to Poor Countries? *American Economic Review, Papers and Proceedings* 80 (May): 92-96.

Masson, Paul (1999). Monetary and Exchange Rate Policies of Transition Economies of Central and Eastern Europe After the Launch of EMU. IMF Policy Discussion Paper 99/5.

McGettigan, Donal (2000) Current Account and External Sustainability in the Baltics, Russia, and Other Countries of the Former Soviet Union. IMF Occasional Paper 189.

McDonald, Donogh, and Günther Thuman, 1990, Investment Needs in East Germany, in Lipschitz and McDonald (Editors), 1990, German Unification: Economic Issues, *Occasional Paper 75*, International Monetary Fund, Washington DC.

Obstfeld, Maurice, and Kenneth Rogoff, 1996, *Foundations of International Macroeconomics*, (Cambridge, Massachusetts: MIT Press).

Schadler, Susan, Maria Carkovic, Adam Bennett, and Robert Kahn (1993) *Recent Experiences with Surges in Capital Flows*. IMF Occasional Paper 108.

Tornell, Aaron, and Andres Velasco, 1992, The Tragedy of the Commons and Economic Growth: Why Does Capital Flow from Poor to Rich Countries? *Journal of Political Economy* 100 (6), 1208-1231.