



Emerging Markets Group

**EMG** Working Paper Series

WP-EMG-04-2008

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September 2008

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# Capital Flight from Central and East European Countries: Estimates and Causes

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## **ABSTRACT**

### **Capital Flight from Central and East European Countries: Estimates and Causes**

We estimate of capital flight from twelve transition economies of Central and Eastern Europe for the period 1995-2005. Capital flight from these transition economies has been comparable when adjusted for country size to the more highly publicized capital outflows from Russia despite East Europe's seemingly better transition and reform performance and greater political stability. We find that capital flight from the transition economies is mainly an economic phenomenon, driven by differences in interest rates and investors' expectations about future tax rates, inflation, etc. in their countries as well as by the ease with which they are able to transfer their wealth overseas. Our empirical results are thus consistent with the mainstream explanations of capital flight and they mirror results obtained for other countries and time periods.

**JEL Classification Numbers: E26, F31, F32, P33, P37**

**Key words: capital flight, financial sector liberalization, money laundering, transition economies**

## **I. Introduction**

A great deal of attention has been paid to measuring and explaining the causes of capital flight from Russia. For example, Abalkin and Whalley (1999) estimated capital flight from Russia at \$56-70 billion for the period 1992-3 and at an annual rate of \$17 billion from 1994 to 1997. Buitert and Szegvari (2002) offer somewhat higher estimates as do Sarafanov (1995) and Loukine (1998), and Brada et al. (2008) show accelerating levels of capital flight, up to \$50 billion per year, in the mid-2000 period. Tikhomirov (1997) estimated that the mispricing of Russian trade in the years 1990-95 resulted in capital flight that was six-fold the official Russian government estimates of \$35-400 billion. Part of the reason for this widespread interest in the Russian experience with capital flight is the sheer magnitude of these flows and their implications for the Russian economy in terms of loss of government revenue and of foregone domestic investment. In part the interest has also been driven by the perception that much of the capital flight is the work of Russian oligarchs and politicians who form an interlocking kleptocracy. Certainly Russia's vast earnings from energy and mineral exports, the concentration of wealth and the uncertainty of the property rights of both Russian oligarchs and foreign investors provide incentives for moving assets offshore beyond the grasp of the Russian state.

Comparatively little effort beyond the early work of Sheets (1995) has gone into estimating capital flight from the transition economies of Central and Eastern Europe, including the Baltic States, which for the purposes of this paper we simply call East

Europe. Part of the reason is that these countries are much smaller than Russia, so their capital outflows are not likely to match the sheer size of Russian capital flight. Moreover, they also lack the natural resources to generate the huge rents that fuel Russian capital flight and although the domestic ownership of wealth in East Europe may be as concentrated as it is in Russia, the absolute amounts of wealth owned by Russian oligarchs dwarfs that of their East European counterparts, at least in the perception of the public. Finally, Russian capital flight is often associated with the lack of secure property rights, high levels of corruption and general lawlessness in that country, while many of the Central and East European countries have already joined the European Union (EU) and thus adopted its institutions, laws and standards for the protection of private property. In most international rankings of corruption, economic freedom and security of property rights, the European transition economies rank well ahead of Russia. For example, Schneider (2005) estimates that the informal or underground economy accounts for about 20 percent of Czech and Slovak GDP, 26 percent of Hungarian, and 28 percent of Polish; for Russia his estimate is 49 percent in 2003. Transparency International (2006) ranks the East European economies between 24<sup>th</sup> and 61<sup>st</sup> in its global ranking of the perception of corruption in 2005 while Russia is ranked 121<sup>st</sup>. Perhaps even more important, East Europe is more economically integrated into the EU, so that there are smaller differences between East European interest rates, stock market fluctuations, and asset values than is the case for Russia. All these factors suggest that capital flight from the East European countries should be less of a problem than is the case for Russia. However, it is important to estimate capital flight from these economies, to determine what causes it, and to compare it across the East European countries and also with Russia.

Estimates of capital flight from these countries that are based on a consistent methodology and data sources are not available, and estimates that are available cover only some countries, often only for a few years, and use a variety of methodologies.<sup>1</sup> To address this lack of consistent data on capital flight from these transition economies, in this paper we present estimates of capital flight using a consistent methodology and time frame for Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia for the years 1995 to 2005. In order to gain a better understanding of capital flight in these countries, we also model the drivers of capital flight and, from our results, draw some policy conclusions. To our best knowledge, our paper provides the most comprehensive study of capital flight from East European economies.

## **II. Capital Flight**

Capital flight is a rather loose term for unregistered private capital flows (Walter, 1985) that encompasses a broad variety of activities ranging from the legal and economically beneficial to those that are illegal and harmful to the economy. As Buiters and Szegvari (2002) note, some of what is termed capital flight represents a rational reallocation of capital from the home country to other countries in response to more favourable risk-return opportunities abroad and to investors' desire for portfolio diversification. Such portfolio decisions benefit both the investors undertaking them as well as the home and host countries. At the other end of the spectrum is money laundering, which means undertaking transactions that hide the illegal origin of the funds

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<sup>1</sup> Sheets (1995) is a valuable source on capital flight in the early transition period.

and convert them into legal income.<sup>2</sup> Money laundering involves illegality in two ways. First, the money to be laundered is often earned through illegal activity such as prostitution, drug distribution, bribe taking, etc. Second, the money is then moved abroad, possibly in contravention of capital or currency controls, to hide its criminal origin and to evade payment of taxes in the country where it is earned. Clearly, the criminal activity that generates this income imposes losses on the home country, and the movement of money to offshore sites often involves flows of capital from countries where the return on capital is high to one where it is low. Falling somewhere in the middle in terms of legality are transactions that involve income that may be legally earned, but, because the home country has restrictions on capital outflows, investing such capital abroad effectively criminalizes the capital outflow. Particularly problematic from a welfare standpoint are situations where a country's government borrows abroad while at the same time private individuals are investing abroad.<sup>3</sup> In such a situation, capital flight and borrowing offset each other, but domestic taxes must increase to service the debt, leading to a further increase in capital flight.<sup>4</sup>

Because it takes both legal and illegal forms, the measurement of capital flight is subject to considerable uncertainty even though central banks, treasuries and other government agencies as well as multilateral financial institutions have been increasingly concerned to improve their measures of capital flight and their understanding of what motivates it.<sup>5</sup> Capital flight often occurs when investors in a country believe that they face a more attractive combination of risk and return abroad than they do in their own

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<sup>2</sup> For a comprehensive analysis of money laundering, see Reuter and Truman (2004).

<sup>3</sup> There is an extensive literature on this phenomenon beginning with Khan and Ul Haque (1985) and Eaton (1987).

<sup>4</sup> Shibuya (2001) constructs an interesting model where a country may be caught in low-capital equilibrium due to capital flight.

<sup>5</sup> For details, see Schneider (2003).

country. Those who wish to move their capital abroad have the option of portfolio investment in foreign countries or undertaking foreign direct investment (FDI). Investors generally prefer portfolio investment to FDI because it entails lower transactions costs and because portfolio investments are much more liquid. Nevertheless, portfolio investment may prove unappealing to some investors because the returns are often quite low or because, if the home country imposes restrictions on portfolio outflows, portfolio investment abroad may be both illegal and difficult to do. As result, FDI may prove to be an attractive vehicle for facilitating capital flight, especially for large amounts of money.

While there is general agreement that it is the difference between the risks and returns available to investors at home and abroad that leads to capital flight, both theoretical and empirical work on this topic has tended to emphasize either the differences in returns or the differences in risks as being more salient to decisions to move funds off shore. Those stressing differences in returns tend to take an explicitly portfolio-oriented approach where returns and risks are measured by macroeconomic conditions (Harrigan et al. (2002). For example, Le and Zak (2006) construct a model where home country residents are able to hold either a risky domestic asset or a riskless foreign asset.<sup>6</sup> They assume that domestic risk consists of financial risk caused by cyclical factors and inflation, and of political risk, which consists of the stability of the ruling regime and the possibility of changes in economic policy by either the existing or a new government. Thus, in their empirical work they include interest rate differentials, inflation and its variance, etc. as important explanatory variables. Cuddington (1987a) also stresses the portfolio approach, building a model with domestic and foreign financial

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<sup>6</sup> The riskless asset is the US Treasury Bill, which is riskless to the foreign holder because their model ignores domestic money and thus exchange rate fluctuations.

assets and consumer durables to model capital flight. A more recent paper by Collier *et al.* (2004) also models capital flight as the result investors' desires for portfolio diversification resulting from perceptions of relative returns and risks at home and abroad. They draw on a theoretical model of Sheets (1995), who constructs a demand function for domestic assets as a function of wealth, risk aversion and the differential between domestic and world interest rates. Because this model includes domestic money as an asset, it provides a richer explanation of risks, and in particular allows for foreign exchange crises brought about by the effects of cumulative capital outflows on investor expectations. Collier and his colleagues then use the model to estimate the proportion of total wealth held by households abroad, a good correlate of past capital flight. Hermes and Lensink (2001) model policy uncertainty explicitly, and conclude that uncertainty about macroeconomic variables increases capital flight.

Other researchers tend to view capital flight as being more sensitive to what may be termed idiosyncratic country risk factors, meaning specific aspects of political, institutional and economic arrangements or policies in countries that create greater risks for investors. Uncertainty about future fiscal policies due to changes of governments with different policy objectives and priorities is emphasized by Alesina and Tabellini (1989). Dooley and Kletzer (1994) focus on the tax treatment of residents and non-residents. A similar argument is also put forward by Bachattarya (1999), who adds that uncertainty about future trade liberalization creates an incentive for capital flight. In a paper that is particularly suggestive for capital flight from transition economies, Kant (2002) argues that the short-term and long-term uncertainties and risks related to instability and lack of transparency in property rights, excessive taxation, corruption, lack of contract

enforcement and the like are the key drivers of capital flight. Likewise, Khan and Ul Haque (1985) and Schineller (1993) emphasize that risk of expropriation serves as one of the main incentives for capital flight. Khan and Ul Haque (1985) were among the first to observe that private capital flight can occur simultaneously with public foreign borrowing, and they explain the phenomenon on the grounds of asymmetric risk of expropriation, which is higher for domestic investors than for foreign ones. This and similar papers (Eaton 1987 and Boyce 1992) also show that capital flight can also take forms other than portfolio investment.

This difference in emphasis on the drivers of capital flight has not been resolved by empirical research, as each approach seems to enjoy at least some empirical support. Ndikumana and Boyce (2003) review a large number of empirical studies of capital flight, summing up which variables are significant explanatory factors of capital flight and Harrigan *et al.* (2002) also survey a number of empirical studies. Nearly every explanatory variable that is statistically significant in one study is found to be statistically insignificant or zero in another study. In some cases, coefficients are significantly positive in one study, significantly negative in another. Significance thus clearly depends on specification, country sample and time period, leaving us with no firm basis for a parsimonious specification of a model of capital flight.

In the case of transition economies, both portfolio and country-specific risk factors would seem to be important *a priori*. Portfolio considerations rest in part on the fact that, prior to the transition, there had been very little capital outflow from these countries due to currency inconvertibility and the state's almost total control over foreign trade and foreign exchange transactions. As a result, at the start of the transition,

domestic agents had virtually no foreign assets, and thus basic portfolio theory would suggest that normal considerations of portfolio diversification should have led to significant capital flight even in the face of restrictions on outward investment.<sup>7</sup> Moreover, returns to capital were likely quite low during the onset of transition. Inflation was high due to price liberalization, output and profits were falling due to the so-called transition recession, and many firms were in financial distress and facing bankruptcy. Real deposit rates were generally low in the transition economies so as to prop up the banking system, which faced a daunting stock of bad debts. Thus foreign assets likely offered a much more attractive combination of risk and return, encouraging capital flight from transition economies. While investment returns in some transition economies have risen as economic conditions improved and risks have fallen, Ndikmana and Boyce (2003, p. 109) note that capital flight can be “habit forming”, and the outflows of the early transition may have had a follow-on effect in the later transition period even as risk has fallen, inflation has abated and output has recovered.

Another factor leading to the possibility of capital flight from the transition economies is the weakness of the state and the resulting high levels of corruption and criminality. Criminal activity such as drug dealing, prostitution, fraud, bribery and various economic crimes generates large amounts of cash, and so do bribes paid to politicians, regulators and business executives. In order to safely use the money generated in these illegal ways, its recipients use the financial system to hold and move this money so as to hide its origins in illegal activity. Through this process of laundering, the

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<sup>7</sup> Even in a country with a large and well functioning capital market as the United States, an optimal portfolio would include a large proportion of foreign shares (Levy and Sarnat, 1970). For transition economies with smaller and thinner capital markets, international diversification of holdings would be even more valuable and necessary.

criminals make the proceeds of their illegal activity assume the form of legitimate income so that the authorities are unable to identify its criminal origins. While much money laundering takes place in the country where it is earned, for example by using numerous accomplices who deposit small amounts of illegally earned cash in their accounts and then return the money to the criminal by paying him or her for fictitious goods or services, thus turning the illegal income into seemingly legal earnings, laundering too much money domestically is both risky and expensive because large cash transactions arouse the suspicions of the authorities and require an ever increasing number of accomplices.

One way of overcoming the difficulty and risk of laundering large sums of money domestically is to launder it through foreign financial institutions and companies. To do this, the money is deposited into the financial system of the home country, often through a shell corporation. The money is then moved off shore to disguise its origins. Businesses that undertake a large number of cash transactions, such as restaurants and retail establishments, are particularly attractive because their cash deposits are less likely to attract attention.<sup>8</sup> Firms engaged in international trade and financing are also attractive because moving the money to a foreign location, especially one where banking regulation and privacy laws are favourable to money laundering, and then bringing it back to the country of origin further disguises its criminal origins. Nevertheless, because money laundering is hard to identify, even legitimate business may be caught up in it. Between \$7 and \$16 billion of Russian capital flight was allegedly laundered through The Bank of New York and Republic National Bank from 1996 to 1999. Much of this money was said

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<sup>8</sup> Many visitors to East Europe report that local residents often point out large and expensive restaurants said to be owned by “the Russian Mafia”. The large cash revenues and outlays of such establishments as well as their locations outside Russia clearly would facilitate money laundering.

to be the proceeds of criminal activity in Russia, and some of it may have been looted IMF aid to that country.

A common way of moving money offshore even in the presence of capital controls is through under- and over-invoicing. Companies that engage in international trade can disguise the movement of money being laundered through over- or under-invoicing or otherwise manipulating the prices of the goods and services they buy or sell. Of course, international trade transactions between firms that involve under- or over-invoicing or the mispricing of goods require the complicity of both parties, which makes such transactions risky and costly to the participants, in part because the parties have to rely on dual invoicing, with one invoice intended for the authorities and the other to spell out the sharing of the money being moved from one country to the other. Despite these drawbacks, the amount of money moved thorough under- and over-invoicing is large. For example, De Boyrie *et al.* (n.d.) estimated that over- and under-invoicing accounted for the movement of \$1.01 to \$4.85 billion per year between Russia and the United States during 1995-1999.

### **III. Estimates of Capital Flight**

In this paper, we take capital flight to be the net unrecorded private capital outflows from the home country. Because these flows are unrecorded, we estimate them as the difference between the recorded sources and uses of funds for the country. This definition was developed by the World Bank (1985), and it is often referred to as the World Bank method, although it is also known as the “residual method”.<sup>9</sup> There are other

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<sup>9</sup> Hermes *et al.* (2002) and Chang *et al.* (1997) provide good discussions of the various methods for measuring capital flight.

definitions and ways of estimating capital flight, but we choose to use the residual method because we want to obtain estimates for as many economies as possible, and the residual method lends itself to this effort since it is relatively straightforward to implement. Moreover, as Hannigan et al. (2002, p.207) note, this measure of capital flight is most appropriate “if one thinks that most of the funds used for capital flight would have been utilized for more productive and beneficial domestic investment activities.”

The residual method estimates capital flight indirectly, using balance of payments and international asset data. It weighs the country’s sources of funds, as given by the net increase in external debt and the net inflow of foreign investment against the uses of these funds as given by the current account deficit and the change in foreign reserves. If the recorded sources are greater than the recorded uses then there is capital flight from the country. Thus

$$\text{Capital Flight} = \Delta\text{ED} + \text{NFI} - \text{CA} - \Delta\text{R} \quad \text{Eq. 1}$$

where  $\Delta\text{ED}$  is the change in the stock of gross external debt, NFI is the net foreign investment inflow, CA is the current account deficit and  $\Delta\text{R}$  is the change in the stock of official foreign reserves.<sup>10</sup>

Two methodological caveats are necessary in the case of our application of the residual method in the case of the East European countries. One of these is how to treat cash holdings of the countries’ residents and the dollarization or euroization of these economies. In the beginning of the transition process, agents in the transition economies

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<sup>10</sup> Definitions of the variables are from the IMF’s *International Financial Statistics*, which is also the source of most of the data. See the Data Appendix for details.

had little experience with, and few realistic possibilities for, portfolio optimization through foreign investments. Therefore they may have chosen the easiest form of portfolio diversification into foreign assets by allocating part of their wealth to foreign currency holdings, with the currency often held inside the East European country. In the spirit of the model of capital flight discussed above, such cash holdings should be counted as part of capital flight. However, some of the East European economies also had high levels of dollarization or euroization, and whether the foreign currencies that went into transactions demand in those countries should count as capital flight is more open to discussion. Since we cannot estimate the euros, the dollars or other foreign currencies going into transactions demand, we assume all such foreign cash holdings in these countries do represent capital flight in the logic of Equation 1.

Another potential problem linked to the use of Equation 1 is the role of exchange rate fluctuations between the US\$ and the euro. Both the change in the stock of external debt and change of official reserves can be substantially influenced by US\$/euro exchange rate fluctuations because both the debt and reserves are calculated in US dollars at the current exchange rate. If some of the debt and some of the reserves are denominated in euros or other currencies, then exchange rate fluctuations may generate changes in the total dollar value of debt and reserves that, in the framework of Equation 1, will appear as capital flight. Given the difficulties in obtaining even US dollar estimates of debt, we are not able to make the appropriate corrections, but we do wish to alert the reader to this issue.

Table 1 reports our estimates of capital flight for the 12 East European countries in our sample. For each country we provide estimates of capital flight in US dollars for

the 1995-2005 period, and, to aid in interpreting the results, we normalize the capital flight estimate by current GDP, also in US dollars. The use of current US dollar GDP adds volatility to the ratios of capital flight to GDP for some countries because of exchange rate fluctuations, but, since capital flight is also measured in current US\$, the use of current US\$ GDP for normalization provides a degree of market-based comparability for the two variables. It also tends to overstate the ratio of capital flight to GDP because of the systematic undervaluation of these countries' currencies. We therefore also report the ratio of capital flight to GDP measured in current international purchasing power dollars to eliminate the effects of undervaluation. In our previous discussion, we noted the attention paid to capital flight from Russia, and thus in Table 2 we provide estimates of capital flight from Russia for the same period, calculated by the same method as our estimates for the East European economies and also normalized by Russian GDP.

The results in Table 1 show that there are considerable differences in the experience of individual East European countries with this phenomenon. For example the first country in Table 1, Albania, with the exception of 1998, appears not to have experienced any unrecorded capital outflows. Indeed, it consistently has unrecorded capital inflows. This is not surprising given that between 20 and 25 percent of the Albanian labor force has migrated overseas either on a semi-permanent or seasonal basis to seek work. These migrant workers send home remittances, but they may also be investing in Albania, either by financing the business investments of family members or by purchasing real estate that they intend to occupy when they return to Albania.

The Central European countries that joined the EU in the first eastward expansion, the Czech Republic, Hungary, Poland, Slovakia and Slovenia generally have low levels of capital flight until 2002 or 2003. Relative to PPP GDP, capital flight from these countries is around 1 percent of GDP per annum, with some exceptions in 1998, and there are also years in which there are small unrecorded net inflows of capital. This is consistent with the belief that these countries have relatively low levels of risk of expropriation, improving political stability, and improving returns on domestic assets. When measured against official GDP, the ratio of capital flight is higher, in the neighbourhood of 3 to 5 percent on average due to the undervaluation of these countries' currencies. In view of the fact that domestic resources are diverted from investment in the home economy and converted to foreign assets at the official exchange rate, the use of GDP at the official exchange rate as the basis for measuring the resource costs of capital flight may be a more accurate measure of the true costs of capital flight. The upsurge in capital flight at the end of our sample period is surprising, and it may represent the efforts of individuals who wanted to move assets of dubious provenance out of these countries before the onset of the closer monitoring of financial transactions that investors may have expected EU membership to bring about.<sup>11</sup> The sharp fall in capital flight in 2005, after the inception of EU membership, in a number of these countries, lends support to this hypothesis.

The Baltic Republics joined the EU at the same time as the Central European countries. Lithuania had quite low levels of capital flight comparable to the Central European countries, but Estonia and Latvia had ratios of capital flight to PPP GDP in the

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<sup>11</sup> It may also partially reflect the effects of US\$/euro exchange rate movements on national assets and liabilities.

range of 3-4 percent and much higher at the end of the sample period. Indeed, comparing the results for these two countries relative to the calculations for Russia reported in Table 2 shows that capital flight in these countries was as much, if not more, of a problem that it was in Russia. It may be possible that such high levels of unrecorded capital outflows reflect not the behaviour of local investors, but rather the possibility that the banking systems of these countries serve as a conduit for capital flight from nearby countries such as Russia and Belarus.

Finally there are three European countries that did not join the EU during our sample period, Bulgaria, Croatia and Romania. The first two have rather erratic unrecorded capital flows, negative in some years, positive in others, but the magnitude of the flows appears to be somewhat bigger than they are for the Central European EU member countries. Croatia in particular has some years during which capital flight seems relatively high. In contrast, Romania, despite a rather erratic transition experience and political instability has comparatively low levels of capital flight.

Overall, while the levels of capital flight from the East European countries tend to be somewhat lower than those from Russia when scaled by GDP in PPP, they are comparable to the magnitude of Russian capital outflows when scaled for GDP at official exchange rates in some of these countries, and, for some countries, they rise to very high levels at the end of the sample period. This may be somewhat surprising given the different perceptions of returns and risks encountered by domestic investors in Russia and East Europe. Nevertheless, some reflection suggests that levels of capital flight from East Europe comparable to those from Russia are not unreasonable. Russian investors may face greater macroeconomic instability as well as higher risks of expropriation and

government predation than do those in East Europe, however, they also face greater restrictions on their ability to move money out of the country even in ways that are illegal because of capital controls as well as the concentration of trading activities in a few large firms. On the other hand, the East European economies are much more permeable to unrecorded money flows because of their higher trade volumes as well as greater openness to the international movement of capital and people. Moreover, while returns on foreign direct investments in East Europe are high, domestic capital markets are weak and under regulated and, as a result, have not performed as well in terms of returns as have markets elsewhere (Glaeser et al. 2001). The difference between capital flight from East Europe and Russia may thus not be quantitative, but rather qualitative in that Russian capital flight is driven by political and macroeconomic uncertainty and the fear of expropriation while capital flight from East Europe is more the consequence of a rational portfolio diversification on the part of investors in East Europe.<sup>12</sup> To examine this hypothesis more closely, we now turn to an examination of the determinants of capital flight from the region.

#### **IV. Drivers of Capital Flight from Transition Economies**

As we mentioned in Section II, there is no generally accepted specification for the explanation of the level of capital flight from a country, and thus we examined a variety of explanatory factors proposed in the literature and tested a number of alternative specifications in order to determine which factors seem the most robust in explaining

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<sup>12</sup> Sicular (1998) examines capital flight from Russia and the Peoples Republic of China and finds capital flight from the latter in the early 1990s was higher despite much better economic performance, large capital inflows in the form of FDI and greater political stability in China. He attributes these results to the spread between returns to foreign and domestic investors in China.

capital flight from the East European countries. In order to account for differences in country size, we scaled capital flight and appropriate potential explanatory variables by current GDP at official exchange rates.

The first choice to make in terms of specification is whether or not to use lagged capital flight as an explanatory variable. Some of the empirical studies surveyed by Ndikumana and Boyce (2003) use lagged capital flight as an explanatory variable to capture the persistence of capital flight.<sup>13</sup> Such persistence is believed to exist because of the high start up costs of creating an infrastructure for moving and investing funds overseas, often in the face of stringent capital controls and other barriers. Once these fixed costs are paid by investors, it makes sense for them to take advantage of the established conduits for capital flight on an ongoing basis. For our sample of countries, when we used lagged capital flight in combination with any other economic explanatory variables such as the interest rate differential, etc., the coefficient for lagged capital flight was not significantly different from zero. Consequently, in the empirical work we report below, we opt for specifications that do not rely on lagged capital flight as an explanatory variable.

The explanatory variables we do use can be grouped into three broad categories. The first set of variables, which we call the economic variables, reflects the portfolio motive, meaning mainly economic variables that measure the benefits of relatively higher returns abroad, more efficient financial intermediation, and less risk of losing the value of liquid assets to inflation, currency depreciation and high future taxes in the home country. The real interest rate differential, the growth of GDP, the current account deficit and the

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<sup>13</sup> Cuddington (1987b), Mikkelsen (1991) and Nyoni (2000) are good examples of studies that find a role for lagged capital flight.

government deficit are all related to this general portfolio approach to capital flight. The real interest rate differential and the rate of inflation are closely related because the real interest rate differential is calculated using the inflation rate, and both affect the risk and opportunity cost of holding domestic financial assets; in our empirical work the two variables were never significant when both were present in the same specification, and the real interest rate differential performed better in terms of significance and explanatory power. Consequently we report results only for the interest rate differential because it embodies information about both domestic and foreign returns. We expect that the sign for the interest rate differential to be negative, since the higher the domestic interest rate, *ceteris paribus*, the greater the opportunity cost of holding foreign assets. The government deficit is a sign of future inflation as well as of the likelihood of higher taxes in the future, and both of these should encourage capital flight. The sign for the growth of GDP is unclear *ex ante*; falling GDP can be a signal of economic difficulties that encourage capital flight, but higher GDP also means higher incomes and profits, increasing the funds that investors can send off shore. Finally, we assume that the country's exchange rate is subject to devaluation, and thus it affects investors' perceptions of risk from holding domestic assets. This risk of future devaluation is captured by the size of the current account deficit.

A second set of variables measure the ease with which agents in the economy can move capital out of the country in ways that are not seen by the authorities and captured by the balance of payments accounts. We call these variables the facilitating variables, as they either make capital flight easier or more difficult. In the preceding section we have identified some of the means for doing that, such as under- or over-invoicing and

“fictitious” outward foreign direct investment. The amount of money that can be moved abroad through miss-invoicing should be proportional to the volume of trade and also to the degree of liberalization of the trade regime. If the volume of trade is low, relative to GDP, or if it is strictly controlled by the government, then engaging in capital flight will be more difficult. Moreover, if there are extensive capital controls and if the financial system is highly regulated, then capital flight facilitated by fictitious investments overseas will also prove difficult. We capture these variables by means of a measure of openness, meaning the ratio of exports plus imports to GDP and the index of liberalization, either of the foreign sector or of the entire economy, compiled by the European Bank for Reconstruction and Development (EBRD). The access of agents to loans also facilitates their ability to convert illiquid wealth into liquid assets that can be moved abroad, and we measure the possibility of doing so by means of a variable that measures the change in private credit to GDP.<sup>14</sup> Because the literature also stresses that foreign direct investment inflows into a country often result in capital flight because these investments put money onto the hands of local residents, who may then move it abroad, we also include the ratio of inward foreign investment to GDP as a variable facilitating capital flight.

The political factors affecting capital flight are captured by level of the country’s index of economic freedom, as compiled by the Heritage Foundation, and the country’s polity score.<sup>15</sup> The polity score is the difference between a country’s rating on a ten point scale for democracy minus its ranking on a ten point scale for autocracy (Marshall and

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<sup>14</sup> It is commonly acknowledged in many of the transition economies that “well connected” local investors are able to obtain large loans from local branches of foreign banks without offering much tangible collateral. The explanation usually given is that the collateral exists in the form of off-shore deposits made with parent banks abroad. In this way CF contributes to private credit expansion in the home country and subverts monetary policy.

<sup>15</sup> Data on corruption and the size of the shadow economy were not available for the entire sample period.

Jagers 2007); higher values thus reflect a more democratic regime, lower values a more autocratic one. The coefficient of economic freedom variable cannot be signed *a priori*. Greater economic freedom should encourage domestic investment by increasing protection against predation and expropriation, but, at the same time, it reduces the legal and bureaucratic obstacles to capital flight by promoting greater capital mobility, the freedom to travel abroad, etc. The same is true for the coefficient for the polity score. A more democratic regime provides investors with protection through the rule of law and limits on predation, thus reducing capital flight. But, the strengthening of democracy may be seen by old elites in these countries as a danger to the wealth that they may have acquired early in the transition through corrupt privatizations, etc. Thus, it may also increase capital flight.

Finally, we include two dummy variables. The first is to account for the effects on these countries of the Russian ruble crisis in 1998, which had important effects on investors' perceptions of the financial stability of the transition economies. The second dummy variable accounts for the effects of EU accession in the behavior of the residents of the countries who joined the EU in 2004. Specifically, we set the dummy equal to one for 2003 and 2004 to account for this effect on investor behavior.

The most general specification is:

$$CF_{i,t} = \alpha + \sum \beta_m (\text{Economic variable } m, i, t) + \sum \gamma_j (\text{Facilitating variable } j, i, t) + \sum \delta_k (\text{Political variable } k, i, t) + \sum \epsilon_n (\text{Ruble Crisis and EU Accession dummy } n, i, t) + u_{i,t} \quad \text{Eq. 2}$$

where the dependent variable is:

$CF_{i,t}$  – Capital flight/ nominal GDP in country  $i$  in year  $t$  as calculated in Table 1.

The economic variables are:<sup>16</sup>

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<sup>16</sup> Data definitions and sources are reported in the Data Appendix.

$RIRD_{i,t}$  – the real ex post interest rate in country  $i$  minus LIBOR in year  $t$

$CAB_{i,t}$  – current account/GDP in country  $i$  in year  $t$

$GGB_{i,t}$  – government deficit/GDP in country  $i$  in year  $t$

$\Delta GDP_{i,t}$  – real GDP growth of country  $i$  in year  $t$ .

The facilitating variables are:

$OPEN_{i,t}$  – ratio of exports plus imports to GDP in current US \$ in country  $i$  in year  $t$

$REFORM_{i,t}$  – Overall or Foreign Sector EBRD index of liberalization in country  $i$  in year  $t$

$IFDI_{i,t}$  – Inward foreign direct investment / GDP in country  $i$  in year  $t$

$DPC_{i,t}$  – Change in the ratio of private credit to GDP in country  $i$  in year  $t$ .

The political variables are:

$IEF_{i,t}$  – Index of economic freedom in country  $i$  in year  $t$ , scaled from 0 to 100 where 100 represents the greatest freedom

$PS_{i,t}$  – Polity score in country  $i$  in year  $t$ , ranging from +10 for most democratic political institutions to -10 for most autocratic political institutions.

The Dummy variables are:

$D98_{i,t}$  – The Russian crisis dummy takes a value of 1 for all countries when  $t = 1998$ , equals zero otherwise

$DEU_{i,t}$  – The EU membership dummy, which is equal 1 when  $i =$  Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic or Slovenia and  $t = 2003$  or 2004, equals zero otherwise. We include the year of 2003 to capture the expectations of the accession.

Our estimation of the model's parameters over 1995-2005 is by means of an OLS panel regression with 120 observations. Because lagged capital flight proved not to be a significant explanatory variable we were able to use a country fixed-effects specification (Arellano and Bond, 1991). The regression results are reported in Table 3. Because a number of explanatory variables in the economic and facilitation categories were highly correlated, parameter estimates of the full specification as set out in Equation 2 were

plagued by high standard errors. We thus estimated more parsimonious specifications, eliminating variables that duplicated the information provided by others.

Turning first to the economic drivers of capital flight, we find that, as in many other studies of capital flight, economic factors have considerable explanatory power. Specifications 1 and 2 focus primarily on the economic drivers of capital flight, with the inclusion of several facilitating variables that can be seen as having an economic character as well. Specifications 3 and 4 then add some additional facilitating variables to gauge their effect on capital flight, and finally, specifications 5 and 6 examine the role of political factors in capital flight from the East European countries.

The desire to obtain higher real returns by home country residents appears to be an important motivator for capital flight. The real interest rate differential, RIRD, is significant at the 1 percent level in every specification and its coefficient is very stable across specifications. A 1 percentage point increase in RIRD leads to fall in the ratio of capital flight to GDP of 0.009. The coefficient of GGB, the ratio of the government balance to GDP, is negative and significant across all specifications as well. An increase in the government surplus to GDP of one will reduce the ratio of capital flight to GDP by about 0.5. This result is consistent with the theories of capital flight that view government deficits as fueling investors' fears of domestic inflation and higher future taxes. Real GDP growth,  $\Delta$ GDP, has a positive and significant effect on capital flight, suggesting that greater incomes and the accumulation of wealth by households translates into demand for foreign assets. The only economic variable that does not show a strong effect on capital flight is the current account balance, whose coefficient is only marginally significant in three of the six specifications, suggesting that capital flight in these countries is not

strongly influenced by fears of devaluation, at least over our sample period. As can be seen from the  $R^2$ , the economic variables alone explain a good deal of the variance in the dependent variable despite the significance of other explanatory variables. Moreover, our parameter estimates of the economic variables are consistent with the theories of capital flight we have surveyed above as well as with the findings of studies of capital flight in other countries around the world.

Of the facilitating variables, we retrained openness for all specifications because of the emphasis in the literature on over- and under-invoicing as a mechanism for capital flight. However, the coefficients for openness were not significant in any of our specifications.<sup>17</sup> We also included two measures of reform or transition progress as measured by the EBRD among our facilitating variables in the expectation that a more liberal regime would provide for more opportunities for capital flight. As can be seen from specifications 3 and 4, neither foreign sector liberalization nor overall reform has any effect on capital flight.<sup>18</sup> The ratio of inward foreign direct investment to GDP, IFDI, is positive and significant in all specifications in which this variable is included. The expectation is that inward FDI, to the extent that it involves acquisitions of local firms by foreigners, puts money into the hands of domestic owners of the firms being acquired and thus increases their demand for foreign assets and, ultimately, promotes capital flight. The availability of domestic private credit, as proxied by DPC, the change in the ratio of private credit to GDP, is also a very significant factor in explaining capital flight; its coefficient is significant and quite stable across specifications. With the exception of the

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<sup>17</sup> This may be due to the differences in size and hence trade dependence among our sample of countries.

<sup>18</sup> We note that Lensink *et al.* (1998) found that financial sector liberalization reduced capital flight in a sample of African countries.

non-significance of the openness variable, our results with respect to the facilitating variables are also consistent with many theories of capital flight as well as with the empirical literature.

In considering the political drivers of capital flight, we chose not to use dummy variables for short-term political events such as elections, domestic disturbances, regional tensions, etc. because, given the length of our sample and the turbulent nature of the region, such dummies would use up too many degrees of freedom. Moreover, the decisions on which events rate a dummy and which ones do not can become excessively subjective and data driven. Consequently, we focused on longer-term measures of the evolution of the political system. The index of economic freedom, IEF, compiled by the Heritage Foundation is widely used in studies such as this because it combines political characteristics with those related to secure property rights, protection of entrepreneurs, etc. which bear directly on the causes of capital flight. Surprisingly the index did not have a significant coefficient in specification 6, and, given its rather poor performance there, we did not use it in other specifications. The polity variable, PS, on the other hand, was strongly significant in specification 5. Because this variable is quite sensitive to even nuanced changes in the balance between democracy and autocracy in the political regime of a country, it may convey information more relevant than the index of economic freedom. In any case, the coefficient suggests that increases in democracy tend to increase capital flight, a result that may seem paradoxical except for the fact that a strengthening of democracy may be seen by old elites in these countries as a danger to the wealth that they may have acquired early in the transition through corrupt privatizations, etc. In any case, while there is some room in the results for political drivers of capital

flight, our overall results suggest that capital flight from the transition economies of East Europe is largely an economic phenomenon driven by considerations of risk and return on domestic and foreign assets.

Finally, the dummy for the regional effects of the Ruble Crisis is significant and positive in all specifications. Its value suggests that in 1998, the year after the crisis hit the region's economies, the ratio of capital flight to GDP increased by over 3, which given the level of capital flight prior to the crisis, shows a significant increase in the desire for foreign assets by the region's citizens. The dummy for the run-up to EU accession is also significant and positive. While EU accession should have increased investors' confidence in domestic assets in the countries joining the EU, their evident capital flight may also have been due either to increased personal holdings of the euro in these countries, which would show up as capital flight, or as a "last chance" effort to take advantage of lax domestic restrictions on capital flight to move wealth of dubious provenance offshore.

## **V. Conclusions**

We have provided estimates of capital flight from twelve transition economies of Central and Eastern Europe for the period 1995-2005. Despite the attention given to capital flight from Russia, we find that capital flight from these transition economies has been comparable when adjusted for country size, despite their seemingly better transition and reform performance and greater political stability. We also find that capital flight from the transition economies is mainly an economic phenomenon, driven by differences in interest rates and investors' expectations about future tax rates, inflation, etc. in their

countries as well as by the ease with which they are able to transfer their wealth overseas. Our empirical results are thus consistent with the mainstream explanations of capital flight and they mirror results obtained for other countries and time periods.

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## Data Appendix

Capital flight is calculated by the authors from Equation 1 using the following variables.

### Definition of variables used to calculate capital flight:

**Total external debt** is debt owed to nonresidents repayable in foreign currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. Data are in current U.S. dollars.

The source of data for total external debt is the EBRD *Transition Report* (2007). A detailed overview of definitions and the data are available at: <http://www.ebrd.com/pubs/econo/tr07.htm>. Data for Latvia for the period 1994 – 1995 are taken from the older issues of EBRD Transition Report. Data for Czech Republic in 1994 is from the Central Bank. External debt increases in 1996 for Croatia and Slovenia are corrected for the part of the old debt from former Yugoslavia, which was allocated to these countries in 1996 (the source of this information are the Croatian and Slovenian Central Banks).

**Current account balance** is the sum of net exports of goods, services, net income, and net current transfers. Data are in current U.S. dollars.

**Foreign direct investment** is net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows total net, that is, net FDI in the reporting economy less net FDI by the reporting economy. Data are in current U.S. dollars.

**Reserves and related items** is the sum of transactions in reserve assets, exceptional financing and use of Fund credit and loans. Data are in current U.S. dollars.

These three variables stem from IMF, *International Financial Statistics* CD Rom (March 2008), except for the observations for Slovakia in 2001 and 2004 – 2005, which are obtained from the Slovakian Central Bank.

### Other data

**Gross Domestic Product data** (in current US dollars) are taken from the UNCTAD database, available at: <http://www.unctad.org/Templates/Page.asp?intItemID=1890&lang=1>.

**Gross Domestic Product data** (in current international purchasing power dollars) are taken from the World Bank's *World Development Indicators* database.

**Real interest rate differential** (in %) is calculated as national deposit rate minus inflation rate minus 6-months LIBOR. The source of data for national deposit rates, inflation rates and LIBOR is IMF, *International Financial Statistics* (March 2008).

**Inflation rate** (in %) is a change of CPI over the previous year (from IMF, *International Financial Statistics*, March 2008).

**Current account balance** (in % of current GDP) is the sum of net exports of goods, services, net income, and net current transfers (from IMF, *International Financial Statistics* (March 2008)) divided by GDP in current USD. Data for Slovakia in 2001 and 2004 – 2005 stem from the Central Bank.

**Openness** (in % of current GDP) is the sum of exports of goods and services and imports of goods and services from IMF's *International Financial Statistics* (March 2008) divided by the GDP in current USD. Data for Slovakia in 2001 and 2004 – 2005 stem from the Central Bank.

**General government balance** data (in % of official GDP) are obtained from the EBRD *Transition Report* (2007).

**Gross Domestic Product real growth rate** (in %) data are taken the World Bank's *World Development Indicators* database.

**Inward foreign direct investment** data (in % of current GDP) are from IMF's *International Financial Statistics* (March 2008). Data for Slovakia in 2001 and 2004 – 2005 are taken from the Slovakian Central Bank.

**Credit to private sector** data (in % of current GDP) stem from Financial Structure Dataset (Private credit by deposit money banks to GDP), available from the World Bank at: [http://siteresources.worldbank.org/INTRES/Resources/469232-1107449512766/FinStructure\\_60\\_06\\_final.xls](http://siteresources.worldbank.org/INTRES/Resources/469232-1107449512766/FinStructure_60_06_final.xls). Data for Romania in 1994 – 1996 are estimated using linear trend: we fit the straight line using the least square method with the available data for later years as dependent and time trend as independent variable, and estimating the observations for 1994 – 1996.

**Index of trade and foreign exchange liberalization** is constructed by EBRD. Index ranges between 1 and 4.3 in which higher value stands for more liberal regime. Source is the EBRD *Transition Report* (2007).

**Index of overall reforms** is an average of the following individual EBRD indices: *Large scale privatization, Small scale privatization, Enterprise restructuring, Price liberalization, Trade and foreign exchange liberalization, Competition policy, Banking reform and interest rate liberalization, Securities markets and non-bank financial institutions* and *Overall infrastructure reform*. Single indices (as well as the average) range between 1 and 4.3, in which the higher value denotes more liberalized regime. Data are taken from the EBRD *Transition Report* (2007).

**Index of economic freedom** is an index constructed by The Heritage Foundation. It ranges from 0 to 100, where higher value means higher level of freedom. Detailed methodology and data available at: <http://www.heritage.org/index>. The values for Croatia and Slovenia in 1995 are

estimated using linear trend: we fit the straight line using the least square method with the available data for later years as dependent and time trend as independent variable, and estimating the observations for 1995.

**Polity score** is computed by subtracting a country's rating on a ten points scale for autocracy, from a country's rating on a ten points scale for democracy; the resulting unified polity scale ranges from +10 (strongly democratic) to -10 (strongly autocratic). The value for Croatia in 1999 equals -88, denoting a transition periods: "A score of "-88" indicates a period of transition. Some new polities are preceded by a "transition period" during which new institutions are planned, legally constituted, and put into effect." The methodology is explained in detail in Marshall, M.G. and Jaggers, K. (2007): POLITY IV PROJECT: Political Regime Characteristics and Transitions, 1800-2006. Dataset Users' Manual.

Data are taken from: <http://www.systemicpeace.org/inscr/inscr.htm>.

**Table 1. Estimates of Capital Flight from Selected Central and East European Counties, 1995-2005**

	Albania			Bulgaria			Croatia		
	CF, Mio USD	CF / GDP	CF / GDP PPP	CF, Mio USD	CF / GDP	CF / GDP PPP	CF, Mio USD	CF / GDP	CF / GDP PPP
1995	-249.09	-10.05	-3.00	-1562.38	-11.92	-3.29	-534.86	-2.84	-1.66
1996	-15.10	-0.45	-0.16	345.47	3.49	0.79	-947.76	-4.77	-2.73
1997	-232.26	-9.78	-2.76	594.95	5.74	1.41	-726.86	-3.62	-1.93
1998	541.51	19.56	5.64	1053.04	8.27	2.38	2492.00	11.52	6.38
1999	-124.29	-3.56	-1.16	68.71	0.53	0.15	-1124.31	-5.65	-2.86
2000	-81.59	-2.20	-0.69	415.77	3.30	0.84	1126.06	6.11	2.73
2001	-596.28	-14.49	-4.63	-914.09	-6.72	-1.73	-151.48	-0.76	-0.34
2002	-328.13	-7.28	-2.43	-1234.66	-7.93	-2.20	1580.57	6.87	3.33
2003	-86.92	-1.48	-0.60	2348.97	11.78	3.91	7443.31	25.15	14.59
2004	-63.33	-0.84	-0.40	2713.53	11.17	4.11	5124.39	14.53	9.37
2005	-386.84	-4.56	-2.24	-340.69	-1.28	-0.47	-2787.60	-7.24	-4.74
	Czech Republic			Estonia			Hungary		
	CF, Mio USD	CF / GDP	CF / GDP PPP	CF, Mio USD	CF / GDP	CF / GDP PPP	CF, Mio USD	CF / GDP	CF / GDP PPP
1995	-1315.69	-2.38	-1.01	202.68	4.53	2.18	1400.77	3.05	1.50
1996	1969.24	3.18	1.42	514.08	10.78	5.20	-669.10	-1.44	-0.70
1997	-168.48	-0.29	-0.12	379.83	7.48	3.40	-1551.96	-3.30	-1.52
1998	2806.13	4.54	2.00	420.50	7.38	3.57	-214.09	-0.44	-0.20
1999	1931.16	3.21	1.34	-236.67	-4.13	-1.97	1778.88	3.60	1.55
2000	158.76	0.28	0.10	25.09	0.45	0.19	-3903.05	-8.14	-3.17
2001	1182.03	1.91	0.74	331.46	5.35	2.28	4123.09	7.73	3.14
2002	2011.61	2.67	1.21	729.07	9.98	4.55	2761.54	4.14	1.98
2003	3494.74	3.83	1.99	1839.01	19.17	10.50	10344.26	12.25	6.97
2004	8276.23	7.65	4.37	1926.92	16.55	9.90	9967.05	9.76	6.23
2005	7022.85	5.66	3.38	1855.64	13.49	8.38	8532.19	7.73	4.97

<b>Latvia</b>				<b>Lithuania</b>			<b>Poland</b>		
	CF, Mio USD	CF / GDP	CF / GDP PPP	CF, Mio USD	CF / GDP	CF / GDP PPP	CF, Mio USD	CF / GDP	CF / GDP PPP
1995	974.64	19.66	7.66	134.01	2.07	0.61	3546.60	2.55	1.27
1996	441.24	7.77	3.28	460.96	5.63	1.97	-7613.29	-4.86	-2.52
1997	732.04	11.71	4.94	20.73	0.21	0.08	-1816.26	-1.16	-0.55
1998	-66.40	-0.99	-0.42	-308.07	-2.76	-1.11	2753.61	1.59	0.79
1999	233.52	3.20	1.40	207.75	1.90	0.75	862.41	0.51	0.23
2000	908.15	11.59	4.99	-141.18	-1.24	-0.48	2741.84	1.60	0.70
2001	42.86	0.52	0.21	-82.53	-0.68	-0.26	3363.84	1.77	0.82
2002	1085.66	11.66	4.98	442.17	3.13	1.27	11148.32	5.63	2.65
2003	1610.51	14.40	6.75	389.97	2.10	1.00	20564.71	9.50	4.60
2004	2362.03	17.16	8.85	1024.12	4.55	2.37	23226.37	9.21	4.80
2005	-147.74	-0.92	-0.49	233.72	0.91	0.49	-2644.81	-0.87	-0.51
<b>Romania</b>				<b>Slovakia</b>			<b>Slovenia</b>		
	CF, Mio USD	CF / GDP	CF / GDP PPP	CF, Mio USD	CF / GDP	CF / GDP PPP	CF, Mio USD	CF / GDP	CF / GDP PPP
1995	35.60	0.10	0.03	-157.10	-0.80	-0.34	905.49	4.46	3.62
1996	825.37	2.32	0.58	-165.75	-0.78	-0.32	25.20	0.12	0.10
1997	-1240.93	-3.49	-0.92	244.76	1.14	0.44	-858.20	-4.35	-3.04
1998	-129.39	-0.31	-0.10	774.38	3.45	1.34	704.37	3.35	2.38
1999	-1204.50	-3.38	-0.92	-2585.77	-12.55	-4.39	-34.41	-0.16	-0.11
2000	489.05	1.32	0.36	703.35	3.44	1.16	204.73	1.06	0.61
2001	-796.61	-1.98	-0.54	94.08	0.45	0.15	-552.85	-2.80	-1.56
2002	1650.03	3.60	1.05	381.93	1.56	0.56	2793.41	12.53	7.49
2003	3092.76	5.20	1.82	3647.96	11.06	5.05	3898.14	13.89	9.96
2004	1179.89	1.56	0.62	3750.67	8.93	4.79	3922.42	12.03	9.34
2005	-2594.40	-2.63	-1.28	-1069.24	-2.25	-1.25	2602.01	7.57	5.78

**Table 2. Estimates of Capital Flight from Russia  
1995-2005**

Year	Capital Flight - residual method million US\$	Capital Flight/nominal \$GDP (%)	Capital Flight/ PPP \$ GDP (%)
1995	16376.55	4.10	1.72
1996	51921.09	13.24	5.56
1997	45117.60	11.14	4.69
1998	28188.99	10.40	3.06
1999	18821.13	9.61	1.89
2000	15380.65	5.92	1.38
2001	13979.31	4.56	1.16
2002	36258.98	10.49	2.83
2003	34879.29	8.08	2.48
2004	39886.10	6.74	2.58
2005	51794.10	6.78	3.05

**Table 3: Parameter Estimates for Equation 2**  
(*t-ratio* below each coefficient)

Dependent Variable: CF/GDP

SPECIFICATION						
VARIABLE	1	2	3	4	5	6
Constant	-4.835	-2.736	8.108	-1.774	-2.545	-4.652
	<i>-0.816</i>	<i>-0.451</i>	<i>-0.623</i>	<i>-0.177</i>	<i>-0.438</i>	<i>-0.719</i>
RIRD	<b>-0.008</b>	<b>-0.009</b>	<b>-0.008</b>	<b>-0.009</b>	<b>-0.009</b>	<b>-0.009</b>
	<i>-4.159*</i>	<i>-4.209*</i>	<i>-3.678*</i>	<i>-4.107*</i>	<i>-4.306*</i>	<i>-4.484*</i>
CAB	0.322	0.384	<b>0.421</b>	<b>0.388</b>	0.342	<b>0.381</b>
	<i>1.395</i>	<i>1.621</i>	<i>1.754***</i>	<i>1.666***</i>	<i>1.341</i>	<i>1.664***</i>
GGB	<b>-0.583</b>	<b>-0.566</b>	<b>-0.528</b>	<b>-0.558</b>	<b>-0.601</b>	<b>-0.576</b>
	<i>-2.217**</i>	<i>-2.026**</i>	<i>-1.859***</i>	<i>-1.943***</i>	<i>-2.272**</i>	<i>-2.094**</i>
ΔGDP	<b>0.522</b>	<b>0.494</b>	<b>0.492</b>	<b>0.496</b>	<b>0.471</b>	<b>0.503</b>
	<i>2.862*</i>	<i>2.592**</i>	<i>2.650*</i>	<i>2.615*</i>	<i>2.442**</i>	<i>2.433**</i>
OPEN	0.034	0.004	0.009	0.007	-0.011	0.001
	<i>0.578</i>	<i>0.061</i>	<i>0.153</i>	<i>0.105</i>	<i>-0.194</i>	<i>0.023</i>
REFORM <sup>a</sup>			-2.641	-0.417		
			<i>-1.043</i>	<i>-0.115</i>		
IFDI		<b>0.306</b>	<b>0.336</b>	<b>0.314</b>	<b>0.341</b>	<b>0.297</b>
		<i>1.767***</i>	<i>2.090**</i>	<i>1.917***</i>	<i>1.789***</i>	<i>1.706***</i>
DPC	<b>0.188</b>	<b>0.222</b>	<b>0.243</b>	<b>0.227</b>	<b>0.208</b>	<b>0.213</b>
	<i>1.822***</i>	<i>2.369**</i>	<i>2.695*</i>	<i>2.651*</i>	<i>2.223**</i>	<i>2.309**</i>
IEF						0.035
						<i>0.266</i>
PS					<b>0.120</b>	
					<i>2.357**</i>	
D98	<b>3.594</b>	<b>3.457</b>	<b>3.289</b>	<b>3.423</b>	<b>3.339</b>	<b>3.449</b>
	<i>4.807*</i>	<i>4.608*</i>	<i>4.925*</i>	<i>5.701*</i>	<i>4.672*</i>	<i>4.530*</i>
DEU	<b>8.406</b>	<b>9.084</b>	<b>9.217</b>	<b>9.148</b>	<b>9.243</b>	<b>8.994</b>
	<i>7.864*</i>	<i>7.943*</i>	<i>7.599*</i>	<i>6.808*</i>	<i>8.237*</i>	<i>8.572*</i>
R <sup>2</sup>	0.434	0.448	0.451	0.448	0.467	0.448
no. obs.	120	120	120	120	120	120
F	4.040*	4.013*	3.833*	3.785*	4.095*	3.788*

\* = significant at 1% level, \*\* = significant at 5% level, \*\*\* = significant at 10% level

Note a: In specification 3, the REFORM variable is the EBRD index for foreign sector liberalization, and in specification 4 it is the EBRD index for overall liberalization.