

Emerging Markets Group

EMG Working Paper Series

WP-EMG-28-2009

***'The Costs of Moving Money across Borders
and the Volume of Capital Flight: The Case of
Russia and Other CIS Countries'***

Josef C. Brada, Ali M. Kutan and Goran Vukšić

October 2009

Emerging Markets Group
Cass Business School
City University
106 Bunhill Row
London
EC1Y 8TZ
UK

www.cass.city.ac.uk/emg/

The Costs of Moving Money across Borders and the Volume of Capital Flight: The Case of Russia and Other CIS Countries *

Josef C. Brada

W. P. Carey School of Business, Arizona State University
josef.brada@asu.edu

Ali M. Kutan

Southern Illinois University - Edwardsville
akutan@siue.edu

Goran Vukšić

Institute of Public Finance, Zagreb, Croatia
goran@ijf.hr

* Some of the results contained in this paper were previously presented at the CES Europe conference “Economic Transition at Midlife: Lessons from the Development of Markets and Institutions”, and we thank Conference participants as well as Zdenek Drábek and Vladimír Tomšík for helpful comments.

ABSTRACT

The Costs of Moving Money across Borders and the Volume of Capital Flight: The Case of Russia and Other CIS Countries

We estimate capital flight from seven CIS countries for the period 1995-2005. In some countries capital flight is, in absolute amounts or relative to the economy, large and growing. Other countries in our sample have relatively minor capital flight. We develop a model of capital flight that explicitly models the costs of moving money to offshore locations and we test this model using our estimates of capital flight from CIS countries. Capital flight from CIS countries is driven mainly by differences between domestic and foreign returns. The cost of moving money abroad is also an important determinant of capital flight as liberalizing the trade and financial sectors accelerates capital flight by making it easier to move capital aboard. In the short run, regulation rather than external sector liberalization appears to have more potential to combat capital flight in our sample of countries.

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

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

I. Introduction

Much of the success of the economic transition of the countries that made up the former Soviet Union depends on their ability to provide their citizens with steady improvements in incomes as well as social stability and new political freedoms. While systemic changes, including privatization, the creation of markets, the liberalization of trade and the establishment of market-supporting institutions are all important to achieving economic growth and high living standards in these economies, so is capital formation (Blanchard (1997), Buiters (2000)). In many transition economies, the capital stock inherited from the era of central planning is worn out due to the tendency of central planners not to scrap old capital. Much of it is also technologically obsolete or unsuited to the new structure of production required by a more consumer-oriented and globalized economy. Moreover, investment in many of the CIS economies fell sharply over the first fifteen years of the transition (Figure 1), in part because output and incomes declined, reducing both the volume of savings and the incentives to invest, and also because government deficits have, in many of these countries, absorbed a growing part of national savings. Thus, a shortage of domestic funds for productive investments can be seen as a potential barrier to economic progress in nearly all of the CIS countries.¹

One of the reasons for the lack of domestic funding for investment is thought to be high levels of capital flight. While capital flight occurs in virtually all economies, observers believe that it is particularly troubling for Russia and the other CIS economies for a number of reasons

¹ For a survey of the literature on the destruction of the capital stock in the course of the transition as well as estimates of the reduced capital stock in CIS countries, see Izumov and Vahaly (2008).

that we explore in the next section.² At the same time, estimates of capital flight from these countries that are based on a consistent methodology and data sources are not available, and what estimates are available cover only some countries, often only for a few years, and use a variety of methodologies.³ In this paper we present estimates of capital flight using a consistent methodology and time frame for seven CIS countries, Armenia, Azerbaijan, Belarus, Kazakhstan, Moldova, the Russian Federation and Ukraine for the years 1995 to 2005.⁴ In order to gain a better understanding of capital flight in these countries, we also model the causes of capital flight and, from our results, draw some policy conclusions. In particular, we extend the theory of capital flight to include explicitly the costs of moving capital off shore, and, based on the experience of the CIS countries, we show that these costs are an important factor determining the volume of flight capital.

The ex-CIS countries are a particularly interesting sample from which to draw some inferences about the drivers of capital flight because, unlike the African and Latin American and South East Asian countries that have been the focus of previous work on the causes of capital flight, some of the ex-CIS countries exhibit much faster and more extensive progress in financial and market reforms. These reforms quickly altered the costs of moving capital abroad, as did a very rapid opening to the world economy. Moreover, some of these countries experienced large capital inflows related to natural resource development, inflows that the literature we review below suggests should accelerate capital flight..

II. Capital Flight

² In fact, Loukine (1998, p.613) argues that capital flight "...can be seen as at least a partial reason for almost all of the major problems of the transitional Russian economy." Also see Kadochnikov (2005)..

³ Sheets (1995) is a valuable source on capital flight in the early transition period.

⁴ For the other CIS countries, some necessary data were not available.

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 and convert them into legal income.⁵ 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. 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 movement of money off shore. 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.⁶ In such a situation,

⁵ For a comprehensive analysis of money laundering, see Reuter and Truman (2004).

⁶ There is an extensive literature on this phenomenon beginning with Khan and Ul Haque (1985) and Eaton (1987).

capital flight and borrowing offset each other, but domestic taxes must increase to service the debt, leading to a further increase in capital flight.⁷

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.⁸

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 and to relate portfolio choices to home country macroeconomic variables. Harrigan *et al.* (2002), for example, emphasize the “importance of macroeconomic fundamentals in the capital flight process”. 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.⁹ Domestic risk includes 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.¹⁰ 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 assets and consumer durables to model capital flight. A more recent paper by Collier *et al.* (2004) also models capital

⁷ Shibuya (2001) constructs an interesting model where a country may be caught in low-capital equilibrium due to capital flight.

⁸ For details, see Schneider (2003).

⁹ The riskless asset is the US Treasury Bill.

¹⁰ Uncertainty about future fiscal policies due to changes of governments with different policy objectives and priorities as a portfolio risk factor is emphasized by Alesina and Tabellini (1989) as well.

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. Collier et al. 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. 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 uncertainties and risks related to instability and lack of transparency in property rights, to 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, 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 enjoys 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. Often, explanatory variables that are statistically significant in one study are found to be statistically insignificant or zero in another study. In some cases, coefficients are significantly positive in one study but significantly negative in another.

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 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.¹¹ Moreover, returns to capital were likely quite low during the onset of transition due to high inflation, falling output and profits, and the were financial distress and bankruptcy facing many firms. Real deposit rates were generally low 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, at least at the outset (Grigoriev and Kosarev, 2000). While investment returns in some transition economies have risen as economic conditions improved and risks have fallen, Ndikumana and Boyce (2003, p. 109) note that capital flight is “habit forming”, and the outflows

¹¹ 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.

of the early transition may have had a follow-on effect in the later transition period even as inflation has abated and output has recovered.

At the same time, there were also country- and transition-specific risks that investors in these countries faced. Perhaps the most critical was the uncertainty of property rights and the risk of expropriation (Weintraub, 1998). In Russia and some of the other CIS countries, privatizations were chaotic and favored a small coterie of insiders and financiers, and these privatizations continue to be seen as illegitimate by a significant proportion of the population, leading to the possibility of renationalization or expropriation. In other countries, little real privatization took place, meaning that firms were really in the hands of a small kleptocratic elite that was allied with the current regime, but whose ability to extract rents from these firms was not likely to last beyond the life of the regime. The Russian government's ongoing attack on the property rights of many of the so-called oligarchs is widely seen as the possible harbinger of a broader government effort to reverse the outcome of Russia's chaotic privatisation process.

One of the results of this uncertainty over property rights is that investors in these countries have sought to strengthen their hold on their companies by moving capital off shore and then bringing it back to their own country in the guise of "foreign" capital that would be subject to better treatment and less likely to be expropriated by the government.¹² Other risk factors include government instability and the geopolitical uncertainty resulting from the collapse of the Soviet empire and the sudden change to a new economic system.

Another factor leading to expectations of high levels 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

¹² Thus Cyprus, a leading destination for capital flight, is each year one of the major sources of FDI inflows into Russia; in Ukraine, Cyprus and the Virgin Islands, another haven for illicit capital flows, account for nearly 20% of the stock of all foreign direct investment in the country.

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 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, 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 and larger bribes to authorities.

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. Money to be laundered is deposited into the financial system of the home country using businesses that undertake a large number of cash transactions, such as restaurants and retail establishments, and then moved off shore to disguise its origins. 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 reputable banks in the United States between 1996 and 1999. Subsequently, the Dutch bank ABN Amro's New York branch took over the servicing of many of the Russian clients who had been discarded by the Bank of New York and Republic National Bank under pressure from U.S. bank regulators. Amro's own internal review estimated that as much as \$3 billion in illicit funds may have been processed by the bank in a single year. Ultimately, US bank regulators charged the bank with \$80 million in fines in 2005 (Simpson, 2005), and the Bank of New York is being sued by the Russian Customs Service for \$22 billion for facilitating money laundering and tax fraud by Russian residents (*New York Times*, 2007).

Simpson (2005) reports that money launderers from Russia often set up shell companies in the United States, citing as an example ABN Amro's transfer of over \$1 billion in one year to a shell company in the United States that belongs to an individual thought to be associated with Russian business circles.

However, not all capital flight occurs through the financial sphere. Firms engaged in international trade are also used to move money to a foreign location. 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. De Boyrie *et al.* (2005) carried out a detailed examination of U.S.-Russian trade, and they estimated that over- and under-invoicing accounted for the movement of \$1.01 to \$4.85 billion per year between the two countries for the period 1995-1999. Tikhomirov (1997) estimated that mispricing of Russian trade in the years 1990-95 resulted in capital flight that was six-fold the official Russian government estimates of \$35-40 billion.

III. Estimates of Capital Flight from CIS Countries

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".¹³ While there are some conceptual weaknesses with this measure we chose to use the residual method because we want to obtain estimates for as many CIS economies as possible and the residual method lends itself to this effort since it is relatively

¹³ Chang *et al.* (1997) and Hermes *et al.* (2002) and provide good discussions of the various methods for measuring capital flight.

straightforward to implement and relies on commonly available data, allowing us to cover more countries for a longer period of time. 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”, which the foregoing discussion suggests is the case for most ex-CIS countries.

The residual method estimates capital flight indirectly, using balance of payment 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

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

where ΔED is the change in the stock of gross external debt, NFI is the net foreign investment inflow, CA is the current account deficit and ΔR is the change in the stock of official foreign reserves.¹⁴

Two methodological caveats are warranted in the case of the CIS countries.¹⁵ One of these is the possible existence of large dollar or euro holdings by these countries’ residents. In the beginning of the transition process, agents in the transition economies 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 CIS country. In the spirit of the models of capital flight discussed above, such cash

¹⁴ Definitions of the variables are from the IMF’s *International Financial Statistics*, which is also the source of the data. See the Data Appendix for details.

¹⁵ Loukine (1998) suggests that discrepancies between national and IMF data yield moderate differences in the estimates of capital flight from Russia, and absent other evidence we assume that this is the case for the other countries in the sample as well.

holdings should be counted as part of capital flight. However, many of the CIS economies also suffered from 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 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.

The second caveat concerns 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 influenced by dollar/euro exchange rate fluctuations because both the debt and reserves are calculated in 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 will 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\$ estimates of debt, we are not able to make these adjustments to our estimates.¹⁶

Table 1 reports our estimates of capital flight for Armenia, Azerbaijan, Belarus, Kazakhstan, Moldova, Russia, and Ukraine. 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.

¹⁶ We did include the dollar/euro exchange rate as an explanatory variable in our empirical work to see if there was a significant relationship between the \$/euro exchange rate and our capital flight estimates. Our results suggested that such a relationship is not significant, perhaps because the currency composition of assets and liabilities is similar.

We also report the ratio of capital flight to current GDP in current international purchasing power dollars. Because the currencies of the Soviet Union and the other CIS countries are generally undervalued, the ratio of capital flight to PPP GDP is about one-third, on average, of the ratio of capital flight to GDP at official exchange rates, and it is also more stable due to the elimination of the effect of exchange rate fluctuations on current GDP.

Four countries, Kazakhstan, Moldova, Russia and Ukraine show consistently high levels of capital flight. In the case of Russia, the largest economy, the flows range from 14 to 52 billion dollars. These estimates are somewhat higher than the \$17 billion per year suggested by Abalkin and Whalley (1999) for 1994 to 1997 and closer to the estimates of Buitert and Szegvari (2002) and official Russian estimates as well as with the estimates of Loukine (1998) who estimated Russia's capital flight at between \$9.2 and 20.7 billion in 1994, between \$14.7 and 18.2 billion in 1995 and between \$32.5 and 40.2 billion in 1996 on the basis of both IMF and official Russian data .

Russia's capital flight is from 4 to 13 percent of current GDP and 1 to 5 percent of PPP GDP. Even if we accept that some part of capital flight from Russia returns in the form of recorded FDI inflows from off-shore havens such as Cyprus, the magnitude of capital outflows is quite significant in terms of the level of domestic investment, which would be considerably higher in the absence of such capital outflows. Moreover, the outflow of capital and the attendant tax avoidance also has a negative effect on the domestic economy in terms of the taxes imposed on domestic economic activity and the consequent fiscal soundness of Russia's government. The high level of unrecorded capital outflows evident in the years preceding the ruble crisis is likely a reaction to the untenable financial situation in the country, but it must also have been a contributing factor to the huge government deficit as well as to Russia's unstable external

balances. Moreover, Russia's growing oil revenues toward the end of the sample period appear to have accelerated capital flight as the literature on the causes of capital flight would predict.

Ukraine has capital flight as high as 13 billion dollars per year, and, over the sample period, capital flight accounts for about 10 percent of its current GDP per annum with strong volatility of annual estimates. Relative to PPP GDP, capital flight generally ranges from 2 to 5 percent of GDP, that is, at levels comparable to those for Russia, indicating that capital flight is as much of a problem for Ukraine as it is for Russia. Ukrainian capital outflows were high following the ruble crisis, and they increased again toward the end of our sample period, especially during times of elections and political crisis.

Kazakhstan also has large and growing capital outflows as high as 13 billion dollars per year, accounting for as much as 27 percent of current GDP and 3 to 5 percent of PPP GDP, rising to more than 10 percent of PPP GDP by the end of our sample period. Thus, when measured relative to PPP GDP, the capital flight problem in Kazakhstan is at least as serious as it is in Russia and Ukraine. Moreover, as in Russia and Ukraine, capital flight also increased appreciably toward the end of the sample period, suggesting that the problem is not being mastered by the authorities. Russia, Ukraine and Kazakhstan have several features in common. Until the current crisis, all three have had relatively robust economic growth since the late 1990s. In the case of Russia and Kazakhstan this growth is linked to higher energy and raw materials prices and in the case of Ukraine to an export-led boom as well as to more robust domestic demand. All three countries have also, even though in different ways, undertaken to liberalize both their domestic economy and foreign trade and investment regimes.

The last country that has relatively high levels of capital flight, Moldova, is much smaller than the other three, so the absolute level of capital flight is also small, but the outflow is

nevertheless quite large in relation to GDP. Unlike the other three high capital flight countries, Moldova's economic performance has been exceptionally poor, even by regional standards. Poverty is widespread, and there has been little economic growth. Like the other three countries, Moldova has undertaken significant liberalization of the domestic economy and external sector. Moreover, at least a quarter of Moldova's population is employed as migrant labor outside the country, some in Russia and others in Western Europe, and these migrants living abroad may serve as facilitators for small- scale capital flight by opening savings accounts abroad for friends and relatives and carrying cash to deposit in these accounts.

The other three countries in our sample do not have consistently high levels of capital flight. Indeed, with the notable exception of 2003, Armenia had appreciable unrecorded capital inflows for most years of our sample despite spotty economic performance, regional conflicts and tensions with Azerbaijan and Turkey. Economic reforms in Armenia have been relatively extensive. A possible explanation for consistent unrecorded capital inflows is the large Armenian Diaspora which may be the source of unrecorded inflows of money into the country, possibly for investment in real estate and in other tangible assets through local proxies.

Azerbaijan has had relatively small capital flight outflows, especially considering the uncertainties in its domestic politics and its conflict with Armenia. The upsurge in capital flight beginning in 2002 and 2003 may reflect decisions of a small group of Azerbaijanis who were well placed to benefit from the huge inflows of money into the country to finance the construction of oil and gas pipelines as well as the greater political uncertainty following the death of President Aliyev.

Finally, Belarus represents a somewhat special case. Its close economic and financial ties to Russia raise the possibility that some part of the huge capital flight from Russia may influence

the unrecorded outflows of money from Belarus. Nevertheless, despite its dictatorial regime and political uncertainties, gross unrecorded outward capital flows from Belarus are small, in part due to the high costs of moving funds off shore. The economy remains largely in state hands, and trade and international financial transactions are tightly controlled, making it difficult for Byelorussians to move their money out of the country. Moreover, moving money into western money havens is very risky because of international sanctions imposed on leading Byelorussian politicians, which have resulted in the freezing of their assets in Western banks. Thus, foreign assets maybe seen as uniquely risky by Belorussian investors, or at least by those investors who are likely, by virtue of their connections to politicians, to have large sums to move abroad.

Even though all the CIS countries display some important similarities in the drivers of capital flight, including potentially better returns and security for assets held overseas, avoidance of domestic political uncertainty as well as risk of expropriation and predation, the outcomes in terms of the estimates of capital flight are quite different.

IV. Drivers of Capital Flight from Transition Economies

A. A Model of Capital Flight when Moving Money Off Shore Is Costly

The literature on the causes of capital flight that we reviewed in Section II emphasized the difference between domestic and foreign risk-adjusted returns as the driver of capital flight. Such a formulation seems incomplete because the foreign return is unlikely to be affected by the amount of capital flight and the domestic return may also be unresponsive to the amount of money leaving the country. Given a relatively fixed and partly exogenous difference in domestic and foreign returns, the question arises of why does not all the capital flow out of a country that offers lower returns. The answer we suggest is that there are costs to moving money off shore

and these costs are significant and likely to increase as the volume of capital flight becomes greater.

This is particularly true for that part of capital flight that represents money laundering and the movement of illegally earned money overseas. The discovery of such flows by the authorities carries with it criminal penalties and the confiscation of the money being laundered as well as of foreign bank accounts and other assets (Reuter and Truman, 2004, pp. 69-70). The loss to the criminal is thus greater the more money that is being, and has been, laundered off shore. The likelihood of apprehension by the authorities also increases as the amount laundered increases because the authorities focus their efforts on large movements of cash (Group of Eight, 1999).

As discussed above, much capital flight takes place either through financial channels or through trade transactions that involve over and under-invoicing. If the home country imposes capital controls, or if the domestic financial system is underdeveloped, then moving money aboard through portfolio investments becomes very costly or impossible. In some cases countries prohibit outward portfolio investments but allow outward FDI, but to use FDI to facilitate capital flight, home country residents have to establish businesses overseas, a costly and potentially unprofitable undertaking. If financial channels prove too costly, it is possible to resort to over and under-invoicing of trade. But here too, there are costs. The home country resident has to be able to engage in international trade, and the right to trade depends on how liberalized the home country's trade regime is. The home country resident also has to find accomplices overseas who will participate in such a scheme, which may prove costly and time consuming. However, over- and under-invoicing carry with them tax implications and tax authorities in many countries pay considerable attention to firms that try to manipulate their tax liabilities through the use of transfer prices in international trade. Thus, over- and under-invoicing also runs the risk of

criminal penalties and loss of money for money launderers even if they are not engaged in tax evasion.

This discussion suggests that costs of moving abroad need to be incorporated explicitly into any effort to model capital flight. We consider an agent who has M currency units of assets F of which are moved abroad and take the form of capital flight and D of which are retained in the home country. The agent seeks to maximize her return, R , which is given by

$$R = i_d D + i_f F - C(F, F_{-1}, Lib) \quad \text{Eq. 2}$$

subject to

$$M = D + F \quad \text{Eq. 3}$$

where i_d and i_f are the domestic and foreign returns on investment and $C(*)$ is the cost of moving money overseas. We follow Le and Zak (2006) and treat the foreign return as riskless. The domestic return, however, is

$$i_f = i_f(E, P) \quad \text{Eq. 4}$$

where E and P are vectors of home country economic and political risk factors respectively, as described in Section 2. Finally, the cost of moving money overseas is a function of the volume of capital flight, F , of lagged capital flight and of L , the degree of liberalization of the trade and financial regimes. Costs increase with the amount of capital flight, but decrease with lagged capital flight. This is because the greater the amount of capital flight in previous years, the greater the infrastructure that home country residents have developed overseas for the movement of funds out of the home country.¹⁷ Finally, greater liberalization of the trade and financial

¹⁷ This may be one reason why Ndikmana and Boyce (2003, p. 109) find that capital flight is “habit forming” because the costs of setting up foreign bank accounts or recruiting accomplices for over and under-invoicing in trade are fixed costs, and in subsequent years the costs of utilizing these channels for capital flight are much less.

system obviously provide more opportunities for moving money overseas and reduce the penalties for doing so as well.

The maximization problem then is to select F to maximize

$$\Pi = i_d D + i_f F - C(F, F_{-1} Lib) + \lambda(M - D - F) \quad \text{Eq. 5}$$

and solving the first order condition yields

$$i_d = i_f F - C_F' \quad \text{Eq. 6}$$

The home country resident will seek to equalize the domestic return to the foreign return minus the cost of moving funds overseas. Political and economic factors well described in the literature will affect the domestic return, while costs will fall in response to prior capital flight and the liberalization of the trade and financial regimes, thus increasing capital flight.

B. Empirical Results

In order to account for differences in country size, we scaled the dependent variable, capital flight, by current GDP at official exchange rates, and, consequently, we scaled a variety of potential explanatory variables by current GDP also.

The explanatory variables can be grouped into three broad categories. The first set of variables is most strongly related to the portfolio motive, and it consists of economic variables that measure the benefits of relatively higher returns abroad and less risk of losing the value of liquid assets to inflation and high taxes in the home country. We capture these factors by the change in the real interest rate differential (Δ domestic real interest rate minus LIBOR), the change in the domestic inflation rate, the growth of GDP, the current account deficit and the government deficit (both normalized by GDP), variables that are all related to this general portfolio approach to capital flight. Changes in the interest rate differential and the rate of inflation are closely related and both measure changes in the risk and opportunity cost of holding

domestic financial assets; in our regression results the two variables were never significant when both were present in the same specification, and each did about as well in terms of significance and explanatory power in the absence of the other. Consequently we report results only for the change in interest rate differential because it embodies information about both domestic and foreign returns. We expect that the sign for the interest rate differential will be negative, since the higher the domestic interest rate, *ceteris paribus*, the greater the opportunity cost of holding foreign assets, while a higher domestic inflation rate makes foreign assets more attractive *ceteris paribus*.

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 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. In any case, GDP growth, either real or nominal, proved not to have a significant coefficient in our regressions, and thus we do not discuss it further. 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.

The political factors affecting the expected return to domestic investments are captured by indexes of the level of, or changes in, the country's index of economic freedom, as compiled by the Heritage Foundation, and the country's polity score. 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 Jaggers, 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 and increase 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, if those engaged in capital flight are mainly members of a small kleptocratic elite, then a tightening of autocratic rule may enable such individuals to appropriate more income and move it abroad.

A second set of variables measures the ease with which agents in the economy can move capital out of the country in ways that are not seen by the authorities. We call these variables the cost variables, as they either make capital flight cheaper or more costlier, thus affecting the return from moving assets off shore. All our specifications used lagged capital flight, scaled by GDP, as an explanatory variable. This variable captures the sunk costs of developing ways of moving money off shore. Once these costs are paid, it makes sense to take advantage of the resulting conduits for capital flight on an ongoing basis.¹⁸ In the preceding section we have identified some of the means for moving money off shore, 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 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 and other capital transactions overseas will also prove

¹⁸ Cuddington 1987b, Mikkelsen 1991, Nyoni, 2000 also use this variable to capture the persistence of capital flight.

difficult. Alternatively, financial sector liberalization should reduce capital flight by narrowing the difference between home country and foreign returns as Lensink *et al.* (1998) argue. We capture these variables by means of a measure of openness, meaning the ratio of exports plus imports to GDP and by indexes of trade sector and financial sector liberalization compiled by the European Bank for Reconstruction and Development (EBRD).

Because the literature also stresses that foreign government assistance and foreign direct investment inflows into a country often result in capital flight because the aid is looted by the elite and the FDI inflows often find their way into their hands as well, we also include measures of official development assistance and inward FDI as variables that stimulate capital flight as exogenous variables and we include two dummy variables to account for regional effects of the Russian ruble crisis. One dummy variable, D1, is set equal to 1 for Armenia and Belarus in 1997 because these countries were recipients of large unrecorded flows of capital from Russia due to the ruble crisis. The second dummy variable, D2, is set equal to 1 for Kazakhstan, Moldova, Russia and Ukraine for 1998 and 1999 to reflect the effects of the post-crisis stabilization on capital outflows from the four countries where capital flight appears to be a major problem.

The most general specification is:

$$CF_{i,t} = \alpha + \sum \beta_m (\text{Economic variable } m, i, t) + \sum \delta_k (\text{Political variable } k, i, t) + \sum \gamma_j (\text{Cost variable } j, i, t) + \sum \varepsilon_n (\text{Exogenous and dummy variable } n, i, t) + u_{i,t} \quad \text{Eq. 7}$$

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:¹⁹

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

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

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

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

¹⁹ Data definitions and sources are reported in the Data Appendix.

The political variables are:

$DIEF_{i,t}$ – change in the 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 cost variables are:

$CF_{i,t-1}$ – lagged capital flight/GDP

$OPEN_{i,t}$ – exports plus imports/GDP in country i in year t

$FinSecLIB_{i,t}$ – Average of the EBRD indexes of bank and interest rate liberalization and non-bank financial sector liberalization in country i in year t

$ForSecLIB_{i,t}$ – EBRD index of foreign trade liberalization and foreign exchange liberalization in country i in year t

The exogenous variables are:

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

$IFDI_{i,t-1}$ – Inward foreign direct investment/GDP in country i in year $t-1$

$ODA_{i,t}$ – Official development assistance/GDP in country i in year t .

$D1_{i,t}$ – equals 1 when $i =$ Armenia or Belarus and $t = 1997$, equals zero otherwise

$D2_{i,t}$ – equals 1 when $i =$ Kazakhstan, Moldova, Russia or Ukraine and $t = 1998$ or 1999 , equals zero otherwise.

Our estimation of the model's parameters over 1995-2005 is by means of an OLS panel regression with 70 observations. To avoid estimation problems inherent in the use of lagged dependent variables in OLS panel estimation, we eschew a fixed-effects specification (Arellano and Bond, 1991). The regression results are reported in Table 2. Because a number of explanatory variables in the economic and cost categories were highly correlated, parameter estimates of the full specification as set out in Equation 7 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, the coefficient for changes in the real interest rate differential is negative and significant in all specifications, and its value over the five specifications is also relatively stable. Thus, a desire to obtain higher real returns by home country residents appears to be an important motivator for capital flight, and high rates of inflation and the financial repression that has kept interest rates low or negative in some CIS countries can be seen as a significant contributor to capital flight from these countries. The current account balance coefficient is not significant in two of the regressions, but it is significant though somewhat unstable in value in the other three, and the positive sign is not what conventional capital flight models would predict. In these models, a current account deficit is a predictor of future devaluation, and thus serves to accelerate capital flight. However, for petroleum-exporting countries such as Russia and Kazakhstan, higher oil prices translate into both trade surpluses and more oil revenues passing into the hands of oligarchs and kleptocratic elites, who thus are able to fund even more capital flight. Finally, the government budget balance and GDP growth (for which we do not show results) were not significant in any of the regressions. Overall, the main economic driver of capital flight appears to be investors' desire to earn higher returns on their assets.

The results for the political variables suggest that political risk is less important than are economic motives for capital flight. We chose not to use dummy variables for short-term political events such as elections, domestic disturbances, international 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. Rather, we focused on longer-term measures of the evolution of the political system. The index of economic freedom 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, corruption, etc. which bear directly on the cause of capital flight. Surprisingly neither the index nor its first difference had significant coefficients in our regressions. The polity variable was weakly significant in some specifications such as specification 3 in Table 2, with less autocratic countries having more capital flight. This may reflect our finding above that less reformed, and thus more statist, countries have lower levels of capital flight. In the CIS region, governments may see the means to reducing capital flight in extensive state controls and political repression rather than in liberalization of markets, and the data appear to bear them out.

Turning to the cost variables, we find that, as in many other studies of capital flight, lagged capital flight is significant and has a value around 0.3 in all our specifications. The existence of an infrastructure for moving capital overseas is a key facilitator of ongoing capital flight, suggesting that dealing with this problem will take many years. Of the other cost variables, three, openness, financial sector liberalization and foreign sector liberalization all have a significant and positive impact on capital flight.²⁰ Because these three variables are highly correlated, efforts to include more than one of them in the regression led to inflated standard errors. Given the discussion above regarding the use of miss-invoicing to facilitate capital flight, the strong significance of openness as measured by exports to GDP should come as no surprise. Clearly liberalization of the financial sector, including capital account transactions as well as trade and foreign exchange liberalization, increase the volume of trade and foreign investment and, independent of that, make possible other ways of moving capital offshore as well.

²⁰ We note that our findings regarding the effect of financial sector liberalization on capital flight are the opposite of those of Lensink *et al.* (1998) who found that financial sector liberalization reduced capital flight in a sample of African countries.

The literature on capital flight often points to a relationship between foreign aid or foreign direct investment inflows and capital flight as elites are able to siphon those inflows to themselves and then move them out of the country. While we do not report the results in Table 2, a measure of official assistance inflows to GDP did not yield significant coefficients in any of our regressions, possibly because official assistance to Russia, a country where capital flight is relatively high, have been relatively low for geopolitical reasons. Table 2 also shows that foreign direct investment inflows, whether current or lagged, do not have a significant effect on capital flight.

Finally, the dummies for the regional effects of the Ruble Crisis are both significant in all regressions. The first dummy is negative, supporting the widely held belief that, in 1997, there were large unrecorded capital inflows into Armenia and Belarus, probably from Russia, as the result of the crisis. Conversely, D2 is positive and significant, showing accelerated capital flight in the wake of the Ruble Crisis from the four high-capital-flight countries in our sample. Thus may reflect either a “catching up” effect due to the diminution of normal levels of capital flight in the course of the financial turmoil that attended the Ruble Crisis or heightened post-Crisis perceptions of domestic risk by investors in these countries.

These results, while reasonable in the light of economic conditions in the CIS countries, are ironic in the sense that liberalizing international trade, capital flows and the domestic financial sector, which should reduce capital flight by equalizing domestic and foreign returns to assets, in fact tends to accelerate it. This can partly be explained by the existence of a pent-up demand for foreign assets in these countries and in part by the fact that financial liberalization has perhaps not proceeded as far as the EBRD indexes suggest. Conversely, the results are instructive in that they show that a sufficiently repressive trade and financial system can stem

even strongly motivated capital flight, something we have already seen in our estimates of capital flight from countries such as Belarus.

V. Conclusions

In this paper we have provided estimates of capital flight for seven CIS countries for the period 1995-2005. In four of these countries, Russia, Kazakhstan, Ukraine and Moldova capital flight is, when measured either in absolute amounts or relative to the size of the economy, a significant problem, siphoning off resources equivalent to a non-trivial share of GDP. Other countries in our sample, despite domestic political instability, or tenuous geopolitical situations, and highly economies that are subject to extensive government regulation have surprisingly low unrecorded outflows of capital, and some are even net recipients of unrecorded capital inflows. Our estimates of capital flight also suggest that it is a growing problem in the countries for which we are able to obtain estimates, and, thus, capital flight will continue to be a policy problem in these countries.

We also find that capital flight from these countries is driven by relatively basic economic forces, the persistence of differences between domestic and foreign returns. Liberalizing the external and financial sectors has a positive effect on capital flight by making it easier to move capital abroad. This facilitating effect appears to outweigh the effects of liberalization on reducing the gap between domestic and foreign returns on capital. Thus, in the CIS countries, in the short run, government repression and regulation rather than liberalization appear to be more effective in combating capital flight, at least in the short run.

References

Abalkin, A. and John Whalley (1999): The Problem of Capital Flight from Russia; *The World Economy*, Vol. 22, No. 3, pp. 412-44.

Alesina, A. and G. Tabetini (1989): External Debt, Capital Flight and Political Risk; *Journal of International Economics*, Vol. 27, No. 3-4, pp. 199-220.

Arellano, Manuel and Stephen Bond (1991): Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations, *The Review of Economic Studies*, Vol. 58, No. 2, pp. 277-297.

Bhattacharya, R. (1999): Capital Flight under Uncertainty about Domestic Taxation and Trade Liberalization, *Journal of Development Economics*, Vol. 59, pp. 365-87.

Blanchard, Olivier (1997): *The Economics of Post-Economic Transition*, Oxford and New York: Oxford University Press, 1997.

Boyce, J.K. (1992): The Revolving Door? External Debt and Capital Flight: A Philippine Case Study, *World Development*, Vol. 20, No. 2, pp. 335-49.

Buchanan, Bonnie (2004): Money Laundering - A Global Obstacle, *Research in International Business and Finance*, Vol. 18, No.1, pp. 115-127.

Buiter, Willem H. (2002): From Predation to Accumulation? The Second Transition Decade in Russia, *Economics of Transition*, Vol. 8, No. 3, pp. 603-622.

Buiter, Willem H. and Ivan Szegvari (2002): Capital Flight and Capital Outflows from Russia: Symptom, Cause and Cure, London: EBRD, Working Paper No. 73, 2002.

Chang, K.P.H., S. Claessens, and R. E. Cumby (1997); Conceptual and Methodological Issues in the Measurement of Capital Flight, *International Journal of Finance and Economics*, Vol. 2, pp. 3101-119.

Chinn, Menzie, D. and Hiro Ito (2005): What Matters for Financial Development? Capital Controls, Institutions, and Interactions, NBER Working Paper No. 11370, May, 2005.

Collier, Paul, Anke Hoeffler, and Catherine Patillo (2004): Flight Capital as a Portfolio Choice, Washington, DC: The World Bank, *mimeo*, 2004.

Cuddington, J. T. (1987a): Capital Flight, *European Economic Review*, Vol. 31, pp. 387-398.

Cuddington, J. T. (1987b): Macroeconomic Determinants of Capital Flight: An Econometric Investigation. In D. Lessard and J. T. Cuddington, eds., *Capital Flight and Third World Debt*, pp. 85-96. Washington: Institute for International Economics, 1987.

de Boyrie, Maria E., Simon J. Pak, and John S. Zdanowicz Estimating the magnitude of capital flight due to abnormal pricing in international trade: The Russia–USA case. *Accounting Forum* 29 (2005) 249–270

Dooley, Michael P. and Kenneth M. Kletzer (1994): Capital Flight, External Debt and Domestic Policies; Cambridge, Mass. NBER Working Paper No. 4793, 1994.

Eaton, Jonathan (1987): Public Debt Guarantees and Private Capital Flight; *World Bank Economic Review*, Vol. 1, No. 3, pp.377-95.

Grigoryev, L. and A. Kosarev (2000) Capital Flight: Scale and Nature; Paper presented at the conference on *Investment Climate and Russia's Economic Strategy*; Moscow, April 2000.

Group of Eight (1999) Ministerial Conference of the G-8 Countries on Combating Transnational Organized Crime. United States Department of Justice, Washington DC.

Harrigan, J., Mavrotas, G., Yusop, Z. (2002): On the determinants of capital flight: A new approach. *Journal of the Asia Pacific Economy*, Vol. 7, No. 2, pp. 203-241.

Hermes, N., and Lensink, R.(2001): Capital flight and the uncertainty of government policies. *Economics Letters* Vol.71, No. 3, pp. 377-381.

Hermes, N., Lensink, R. and Murinde V. (2002): Flight Capital and its Reversal for Development Financing, WIDER, Discussion Paper No. 2002/99.

Izumov, Alexei and John Vahaly (2008): Old Capital vs. New Investment in Post-Soviet Economies: Conceptual Issues and Estimates, *Comparative Economic Studies*, Vol. 50, No. 1, pp. 63-83.

Kant, Chander (2002): What is Capital Flight?, *The World Economy*, Vol. 25, No. 3, pp. 341-58.

Khan, Mohsin and N. Ul Haque (1985): Foreign Borrowing and Capital Flight: A Formal Analysis, *IMF Staff Papers* , Vol. 32, No.4, pp. 606-628.

Kadochnikov, Denis V. (2005) Economic Impact of Capital Flight from Russia and its Institutional Context: Why Capital Controls cannot be a Part of a Pro-Growth Policy. Working Paper, Leontief Center – International Center for Social and Economic Research, St. Petersburg, Russia.

Le, Quan Vu and Paul J. Zak (2006): Political risk and capital flight, *Journal of International Money and Finance*, Vol. 25, No. 2, pp. 308-329.

Lensink, R., Hermes, N. and Murinde V. (1998): The effects of financial liberalization on capital flight in African economies, *World Development*, Vol. 26, No. 7, pp. 1349-1368.

Levy, Haim and Marshall Sarnat (1970): International Diversification of Investment Portfolios, *American Economic Review*, Vol. 60, No. 4, pp. 668-75.

Loukine, K. (1998). Estimation of capital flight from Russia: Balance of payments approach. *World Economy*, Vol. 21, No. 5, pp. 613-628.

Marshall, Monty G., and Keith Jagers (2007): POLITY IV PROJECT: Political Regime Characteristics and Transitions, 1800-2006. Dataset Users' Manual. <http://www.cidcm.umd.edu/inscr/polity>.

Mikkelsen, J. G. (1991): An Econometric Analysis of Capital Flight, *Applied Economics*, Vol. 23, (1991), pp. 73-85.

Ndikumana, Léonce and James K. Boyce (2003): Public Debts and Private Assets: Explaining Capital Flight from Sub-Saharan African Countries, *World Development*, Vol. 31, No. 1, pp. 107-130.

Nyoni, T., (2000): Capital Flight from Tanzania. In J. Ajayi and M. Khan, eds., *External Debt and Capital Flight in Sub-Saharan Africa*, pp. 265-299, Washington: IMF Institute, 2000.

Reuter, Peter and Edwin M. Truman (2004): *Chasing Dirty Money: The Fight Against Money Laundering*. Washington: Institute for International Economics, 2004.

Schineller, Lisa M. (1993): Hysteresis, Political Risk and International Capital Movements: Essays on Capital Flight; Yale University, PhD Dissertation, 1993.

Schneider, Benu (2003): *Measuring Capital Flight: Estimates and Interpretations*; London: Overseas Development Institute, Working Paper No. 194, 2003.

Sheets, Nathan (1995): *Capital Flight from the Countries in Transition: Some Theory and Empirical Evidence*. Washington, DC: Board of Governors of the Federal Reserve System, International Finance Discussion Paper, No.514, 1995.

Shibuya, Hiroshi (2001): *Economic Takeoff and Capital Flight*, ESRI Discussion Paper Series No. 8, Economic and Social Research Institute, Cabinet Office, Tokyo, Japan (December, 2001).

Simpson, Glenn R., "Risky Territory: How Top Dutch Bank Plunged Into World of Shadowy Money" *The Wall Street Journal*, Vol. CCXLVI, No. 142, (December 30, 2005).

The New York Times, "Russia Sues U. S. Bank; Laundering Case Cited". (May 18, 2007).

Tikhomirov, Vladimir (1997): Capital Flight from Post-Soviet Russia, *Europe-Asia Studies*, Vol. 49, No. 4, pp. 591-615.

Walter, Ingo. (1987): The mechanisms of capital flight. In D. R. Lessard and J. Williamson (eds.) *Capital flight and third world debt*. Washington DC: Institute for International Economics.

Wintrobe, Ronald (1998): Privatisation, the Market for Corporate Control, and Capital Flight from Russia, *World Economy*, Vol. 21, No. 5, pp. 603-611.

World Bank (1985); *World Development Report*, Washington: World Bank, 1985.

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 Russia for the period 1994 – 1995, as well as for Ukraine for the period 1994 – 2002 are taken from the World Bank's *World Development Indicators* database for better methodological consistency, available at: <http://go.worldbank.org/IW6ZUUHUZO>.

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 come from IMF, *International Financial Statistics* (March 2008).

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). For Azerbaijan, Kazakhstan and Moldova we used the data on deposit rate from EBRD *Transition Report* (2007).

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.

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.

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

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

Financial sector liberalization index is an average of single EBRD indices for *Banking reform and interest rate liberalization* and *Securities markets and non-bank financial institutions*. Single indices (as well as the average) range between 1 and 4.3, in which the higher value denotes more liberalized regime. Data stem from EBRD *Transition Report* (2007).

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).

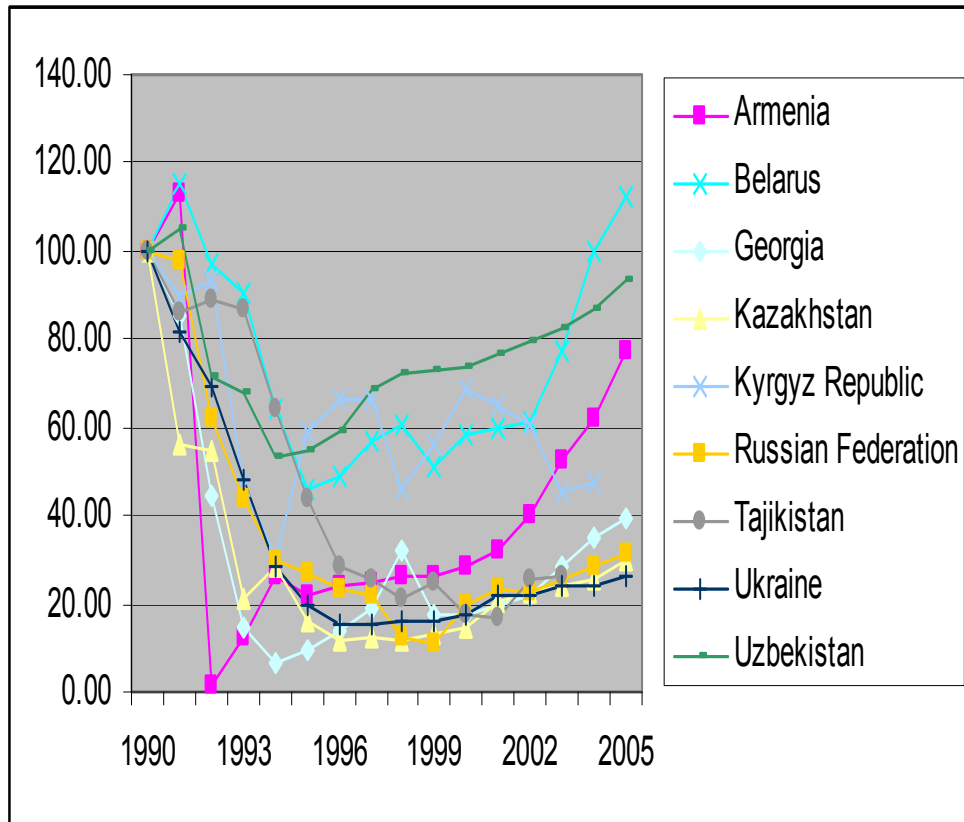
Index of economic freedom is an index constructed by The Heritage Foundation. It ranges from 0 to 100, where higher value means higher level of freedom. Detailed methodology and data available at: <http://www.heritage.org/index>. The values for Armenia and Azerbaijan in 1995, as well as the values for Kazakhstan for the period 1995 – 1997 are estimated using trend.

Net official development assistance and net official aid (in % of current GDP): Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent). Net official aid refers to aid flows (net of repayments) from official donors to countries and territories in part II of the DAC list of recipients: more advanced countries of Central and Eastern Europe, the countries of the former Soviet Union, and certain advanced developing countries and territories. Official aid is provided under terms and conditions similar to those for ODA. The observation for Russia in 2005 is estimated using trend. Data stem from OECD database available at: www.oecd.org/dac/stats/idsonline.

Inward foreign direct investment data (in % of current GDP) stem from IMF's *International Financial Statistics* (March 2008).

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). Data taken from: <http://www.systemicpeace.org/inscr/inscr.htm>. The methodology is explained in Marshall, M.G. and Jaggers, K. (2007): POLITY IV PROJECT: Political Regime Characteristics and Transitions, 1800-2006. Dataset Users' Manual.

Figure 1. Index of Gross Fixed Capital Formation in Constant 2000 US \$ (1990 = 100)



Source: United Nations Economic Commission for Europe, *Economic Survey of Europe*, 2006.

**Table 1. Estimates of Capital Flight in Selected CIS Countries
1995-2005**

| Country | Year | Capital Flight - residual method million US\$ | Capital Flight/nominal \$GDP (%) | Capital Flight/ PPP \$ GDP (%) |
|-------------------|------|---|---|--------------------------------------|
| Armenia | | | | |
| | 1995 | -35.96 | -2.80 | -0.80 |
| | 1996 | -78.65 | -4.93 | -1.62 |
| | 1997 | -157.59 | -9.62 | -3.10 |
| | 1998 | -105.73 | -5.59 | -1.92 |
| | 1999 | -94.80 | -5.14 | -1.64 |
| | 2000 | -201.10 | -10.52 | -3.21 |
| | 2001 | -100.40 | -4.74 | -1.43 |
| | 2002 | 19.66 | 0.83 | 0.24 |
| | 2003 | 619.73 | 22.08 | 6.58 |
| | 2004 | 273.11 | 7.64 | 2.55 |
| | 2005 | -13.50 | -0.28 | -0.11 |
| Azerbaijan | | | | |
| | 1995 | -46.41 | -1.51 | -0.39 |
| | 1996 | -101.86 | -3.21 | -0.83 |
| | 1997 | 128.92 | 3.25 | 0.98 |
| | 1998 | -81.33 | -1.83 | -0.56 |
| | 1999 | 33.72 | 0.74 | 0.21 |
| | 2000 | -284.39 | -5.39 | -1.57 |
| | 2001 | 211.98 | 3.71 | 1.04 |
| | 2002 | 1712.38 | 27.46 | 7.46 |
| | 2003 | 348.80 | 4.79 | 1.34 |
| | 2004 | 189.63 | 2.18 | 0.64 |
| | 2005 | 1322.46 | 9.98 | 3.44 |
| Belarus | | | | |
| | 1995 | -89.16 | -0.64 | -0.26 |
| | 1996 | -774.24 | -5.34 | -2.11 |
| | 1997 | -548.75 | -3.89 | -1.32 |
| | 1998 | -116.67 | -0.77 | -0.26 |
| | 1999 | 134.81 | 1.11 | 0.28 |
| | 2000 | -341.10 | -3.27 | -0.66 |
| | 2001 | 1021.78 | 8.27 | 1.85 |

| | | | | |
|----------------------|------|----------|-------|-------|
| | 2002 | 814.36 | 5.58 | 1.38 |
| | 2003 | 692.44 | 3.88 | 1.07 |
| | 2004 | -446.69 | -1.93 | -0.60 |
| | 2005 | 443.76 | 1.47 | 0.53 |
| <hr/> | | | | |
| Kazakhstan | | | | |
| | 1995 | 2427.71 | 11.82 | 4.18 |
| | 1996 | 1269.06 | 6.03 | 2.13 |
| | 1997 | 1914.92 | 8.64 | 3.11 |
| | 1998 | 2544.36 | 11.49 | 4.17 |
| | 1999 | 3308.41 | 19.61 | 5.20 |
| | 2000 | 1678.19 | 9.17 | 2.35 |
| | 2001 | 3559.17 | 16.07 | 4.29 |
| | 2002 | 3698.01 | 15.01 | 3.99 |
| | 2003 | 5076.79 | 16.47 | 4.91 |
| | 2004 | 11798.00 | 27.34 | 10.12 |
| | 2005 | 13598.05 | 23.80 | 10.32 |
| <hr/> | | | | |
| Moldova, Republic of | | | | |
| | 1995 | 161.00 | 9.12 | 2.90 |
| | 1996 | 328.15 | 19.38 | 6.12 |
| | 1997 | 211.22 | 10.95 | 3.82 |
| | 1998 | 260.30 | 15.33 | 4.97 |
| | 1999 | 119.16 | 10.17 | 2.32 |
| | 2000 | 249.60 | 19.37 | 4.67 |
| | 2001 | -5.61 | -0.38 | -0.10 |
| | 2002 | 246.15 | 14.81 | 3.86 |
| | 2003 | 70.58 | 3.56 | 1.02 |
| | 2004 | -137.53 | -5.29 | -1.79 |
| | 2005 | 16.63 | 0.56 | 0.20 |
| <hr/> | | | | |
| Russian Federation | | | | |
| | 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 |
| <hr/> | | | | |
| Ukraine | | | | |
| | 1995 | 3522.06 | 7.25 | 2.15 |
| | 1996 | 1053.47 | 2.36 | 0.70 |
| | 1997 | 1543.87 | 3.08 | 1.04 |
| | 1998 | 4851.22 | 11.58 | 3.30 |
| | 1999 | 3205.06 | 10.15 | 2.16 |
| | 2000 | -258.02 | -0.83 | -0.16 |

| | | | |
|------|----------|-------|------|
| 2001 | 9515.30 | 25.03 | 5.29 |
| 2002 | 3828.10 | 9.03 | 1.99 |
| 2003 | 4226.03 | 8.43 | 1.96 |
| 2004 | 12932.74 | 19.93 | 5.20 |
| 2005 | 8311.50 | 9.65 | 3.16 |

**Table 2: Parameter Estimates for Equation 7
(*t*-ratio below each coefficient)**

Dependent Variable: CF/GDP

SPECIFICATION

| VARIABLE | 1 | 2 | 3 | 4 | 5 |
|--|---------------|---------------|---------------|---------------|---------------|
| DRIRD | -0.010 | -0.012 | -0.012 | -0.012 | -0.011 |
| <i>Δ(real domestic interest rate - LIBOR)</i> | -1.750*** | -2.857* | -2.764* | -2.401** | -2.575** |
| CAB | 0.370 | 0.068 | 0.059 | 0.139 | 0.149 |
| <i>Current account balance/GDP</i> | 2.072** | 0.777 | 1.100 | 2.422** | 2.081** |
| GGB | -0.269 | 0.058 | 0.041 | | 0.121 |
| <i>General Gov't Balance/GDP</i> | -0.844 | 0.236 | 0.169 | | 0.570 |
| CF/GDP lagged | 0.299 | 0.312 | 0.306 | 0.321 | 0.341 |
| <i>(capital flight /GDP)_{t-1}</i> | 1.882*** | 2.267** | 2.259** | 2.632* | 2.796* |
| OPEN | 0.039 | 0.051 | 0.052 | | |
| <i>(X + M)/GDP</i> | 2.388** | 2.810* | 3.065* | | |
| FinSecLIB | | | | 2.664 | |
| <i>EBRD Index of bank, financial sector and interest rate liberalization</i> | | | | 3.290* | |
| ForSecLIB | | | | | 1.583 |
| <i>EBRD Index of trade and FOREX Liberalization</i> | | | | | 3.232* |
| IFDI | 0.307 | | | | |
| <i>Inward FDI/GDP</i> | 1.422 | | | | |
| IFDI lagged | | 0.003 | | | |
| | | 0.001 | | | |
| DIEF | | 0.089 | | | |
| <i>Change in Index of Economic Freedom</i> | | 0.319 | | | |
| PS | | 0.337 | 0.347 | | |
| <i>Polity Score</i> | | 1.489 | 1.634*** | | |
| D1 | -6.375 | -7.202 | -7.309 | -7.777 | -6.874 |
| <i>Dummy for Ruble Crisis</i> | -3.393* | -3.195* | -3.672* | -4.438* | -4.599* |
| D2 | 3.937 | 3.529 | 3.571 | 3.772 | 4.650 |
| <i>Dummy for Ruble Crisis</i> | 1.683*** | 1.874*** | 2.000** | 3.352* | 2.808* |

| | | | | | |
|----------------|--------|--------|--------|--------|--------|
| R ² | 0.351 | 0.358 | 0.358 | 0.358 | 0.338 |
| no. obs. | 70 | 70 | 70 | 70 | 70 |
| F | 4.791* | 3.723* | 4.923* | 7.138* | 5.389* |

- * significant at 1% level
- ** significant at 5% level
- *** significant at 10% level