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Currency Crises and Fiscal Imbalances – the Transition Countries Perspective

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Abstract

The financial innovations and increased integration of capital markets have made the nature of balance of payments turmoil much more complex, than described by first-generation models. The severe financial crises, which erupted in 1990's in many seemingly "invulnerable" economies that in most cases were characterised by a balanced budget and a modest public debt have turned away the attention of analysts and policymakers from fiscal variables towards other determinants. The fiscal factors, nonetheless, still remain among important causes of financial turbulences, especially in emerging markets, what has been manifested by the 1998/1999 crises of FSU (Former Soviet Union) economies.

The purpose of this paper is to re-examine the theoretical and empirical links between fiscal sector and the emergence of financial crises, with an emphasis on transition economies.

It outlines the main theoretical channels and seeks for the empirical evidence of the influence of fiscal sector on the vulnerability to currency crises in developing and transition countries.

Using a large sample of developing and transition countries, it examines the pattern of fiscal variables before and during the crisis, to see whether, on average, the behaviour of fiscal variables during a crisis is different form tranquil periods. The results indicate, that in the case of developing as well as Central European and CIS countries, the crisis is, on average preceded by larger, than in normal times, fiscal deficits and higher level of public debt.

The paper also assesses the recent series of financial crises that have emerged in FSU economies. These turbulences, have once again demonstrated the crucial role of fiscal sustainability in the overall vulnerability to negative external developments. The FSU countries, which experienced a crisis, did, on average, exhibit more widespread fiscal weaknesses and/or their external liabilities were more vulnerable to turbulences than other countries in that group. However, the fiscal imbalances of FSU economies were not just a consequence of the conducted fiscal policy. They were also a manifestation of the deeper structural shortcomings and the lack of consistent reforms: soft budget constraints across the economy, weak governments, inefficient tax systems, Soviet-type budget expenditures.

Overall, empirical research indicates that in developing and transition countries, fiscal variables remain among factors that increase the likelihood of exchange rate and financial pressures.

Introduction

The links between fiscal sector imbalances and the probability of a financial crisis are not a new field of research. The fact that excessive fiscal imbalance may lead to currency crises has been well understood, at least since 1979 Krugman's seminal paper showing the scheme of the so called "first-generation" model.

However, the financial innovations and increased integration of markets have made the nature of balance of payments turmoil much more complex, than described by first-generation models. The severe financial crises, which erupted in 1990's in many seemingly "invulnerable" economies that in most cases were characterised by a balanced budget and a modest public debt have turned away the attention of analysts and policymakers from fiscal variables towards other determinants. The fiscal factors, nonetheless, still remain among important causes of financial turbulences, especially in emerging markets, what has been manifested by the 1998/1999 crises of FSU (Former Soviet Union) economies.

The purpose of this paper is to re-examine the theoretical and empirical links between fiscal sector and the emergence of financial crises, with an emphasis on transition economies.

The paper is organized as follows:

Section I describes the theoretical links between the fiscal sector and the risk of crises: part I.1 outlines how the fiscal deficit may lead to a currency crisis, part I.2. describes the connection between domestic debt and currency market turbulences (the second-generation Obstfeld model), and part I.3. shortly describes the possible impact of increased government operations on the stability of foreign exchange market.

Part II is devoted to empirical research. It is based on statistical criteria and is conducted on two large samples consisting of developing and transition countries.

Part III focuses only on currency market turbulences in transition countries.

The main thesis of the paper is as much simple as not surprising: fiscal imbalances still remain an important cause of currency crisis in developing, Central European and CIS (Commonwealth of Independent States) countries.

I. Theoretical Links

Looking from monetary perspective, the pressure on reserves and exchange rate arises form the imbalance between the supply and demand for domestic money. Thus,

the reasons for a crisis lie in sources of either (or both) excess supply of or shrinking demand for money (Freis, et. al., 1999). These sources can stem form either domestic or external disturbances. For instance, central bank financing of government deficit belongs to domestic factors. Among exogenous disturbances one can stress sudden shifts in investors' portfolio allocation, which, as it is argued, can be rational and related to economic fundamentals (like unsustainable cost of public debt) but can also be provoked by elements, that are not linked to changes in macroeconomic conditions of a country (like contagion, herding).

The amount of theoretical and empirical research done to explain financial crises is enormous [1]. It generally supports the proposition that fiscal imbalances are among the many possible causes of currency crises. However, it also proves, that weak fiscal stance does automatically lead to a crisis and analogously, sound fiscal variables will not guard the economy form financial turbulence, if other factors are leading to it.

This part outlines the main proposed channels of the influence of fiscal sector on the vulnerability to currency crises.

I.1. The Links between Fiscal Deficit and Currency Crises

I.1.1. Macroeconomic Identity.

The probably most straightforward reason, why a budget deficit might be among the factors that increase country's vulnerability to a currency crisis, is not provided by any formal model, but by a simple macroeconomic identity [see Siwinski, 2000].

$$CA = (S_p - I) + (T - G), \qquad (1)$$

where
CA: current account
S_p: private savings (equal to $Y - T - C$)
I: investment
T: net taxes (after subtracting transfers to the private sector)
G: government spending (without transfers to the private sector)

Identity (1) makes clear, that increased budget deficit, if not balanced by domestic savings, must either result in decreased investment or in larger current account deficit.

[1] For an excellent survey of selected work, see for example Zabczyk (2000), or Flood, Marion (1998)

The latter has to be financed by foreign capital or by the stock of foreign reserves of a country (equation (2)):

$$CA = -(KA + R + St.E.), \quad (2)$$

where
KA: capital account
R: reserves
St.E.: statistical error

Equations (1) and (2) imply, that budget deficit might be a cause of external imbalances (the so-called twin deficits). Although current account deficit and related capital inflow are generally not negative phenomena – on the contrary, they allow for increasing investments above domestic savings – but under certain conditions, they may increase country's vulnerability to a currency crisis. If, due to external or domestic shocks, investors' sentiments change, and the capital inflow dries up, this will enforce a sudden adjustment on the current account side, usually in the form of a sharp depreciation of the home currency [2]. The notion of twin deficits and external sustainability is particularly relevant in transition economies, where the often unavoidable domestic imbalances lead to substantial trade deficits.

However, it must be emphasised that the sustainability of trade deficit is determined by many factors and its potential threat to external stability cannot be analysed without an assessment of the condition of the whole economy.

Another, more comprehensive explanation of how the fiscal deficit may become a cause of currency crisis has been provided by the first generation canonical models.

I.1.2. The First-generation Models

These models explain exchange market turbulences as a consequence of inconsistency between irresponsible domestic policies, like persistent money-financed public deficits – and the attempt to maintain a controlled exchange rate regime. The "fathers" of these models are Krugman (1979) and Flood and Graber (1984).

The models are built along the line of argument of Salant and Henderson's speculative attack model, made to shed light on the issue of attacks on government-controlled price of exhaustible resources.

The basic model is done for a small country that fixes its exchange rate to a currency of a large trading partner. The government of this country runs a budget deficit and finances

[2] For a discussion on current account sustainability, see Milesi-Ferretti, Razin (1996).

it by issuing money. The model shows that under fixed exchange rate regime, following such policy must lead to a loss of international reserves and to the breakdown of the fixed rate regime. As Krugman (1992, p. 70) states: "pegging the exchange rate ultimately becomes impossible if the budget is in deficit, no matter how large the initial reserves are".

The explanation for this phenomenon, after Obstfeld (1994) and Flood and Marion (1998) is the following [3].

The demand for domestic high-powered money is:

$$M/P = e^{-\alpha i} \qquad (3)$$

where

M is the domestic money supply,

P is the price level,

i is interest rate,

α is parameter greater than zero

---

[3] It is not exactly the model derived by Krugman (1979), but the conclusions are similar. The Krugman model rests on different assumptions, for example of how the demand for money is determined. Its presentation is also different. In my personal opinion, the presentation by Obstfeld or Flood and Marion are more straightforward than Krugman's. But since Krugman's model is the most famous, I provide the simplified summary of Krugman's model below. The building of the model, simplifying, runs in the following fashion:

The demand for money is

$$M/P = L(\pi) * W; \quad L<0,$$

where p is the expected rate of inflation (and depreciation) and is fixed; W is total wealth of domestic residents. Wealth in turn is equal to the value of residents' domestic and foreign money holdings:

$$W = M/P + F$$

Wealth changes, when private sector saves:

$$\Delta W = \Delta M/P + \Delta F = S(Y - T - C(Y - T, W)$$

Of the change in wealth, some of it will be allocated to domestic and some to foreign money:

$$\Delta M/P = LS$$

$$\Delta F = (1-L)S$$

What happens, when the government runs a budget deficit and finances it by printing money at a constant rate g?

$$G-T = g(M/P)$$

If the government issues more domestic money, than the private sector is willing to hold, than private agents will simply exchange it for foreign currency, decreasing the government's stock of reserves. Therefore the government has no control over how the deficit is financed: by increasing the domestic money stock or decreasing reserves (in Krugman's presentation a positive value of the change of reserves ΔR is equivalent to a decrease of its stock):

$$G - T = \Delta M/P + \Delta R = LS + \Delta R$$

The change of the stock of reserves is determined by the size of budget deficit and by willingness of private agent to hold additional money:

$$-\Delta R = -(G-T) + LS$$

Eventually, the stock of reserves will run down to zero.

And in logs:

$$m - p = -\alpha(i), \quad (4)$$

The domestic money supply (in logs) is equal to:

$$m = d + r \quad (5)$$

d - domestic credit

r - international reserves.

The price level is given by purchasing power parity:

$$p = p^f + s \quad (6)$$

p^f is the log of foreign price level

s is log exchange rate (domestic currency to foreign currency)

and the interest rate by uncovered interest parity (assuming perfect asset substitution, capital mobility and perfect foresight):

$$i = i^f + \dot{s} \quad (7)$$

if foreign currency interest rate

$\dot{s}$ is the expected and actual rate of exchange rate change.

The exchange rate is fixed at $s = S$, $\dot{s} = 0$, $i = i^f$ and the changes in foreign prices determine the domestic price level.

Combining equations (4) – (7) together results in:

$$d + r - p^f - S = -\alpha(i^f) \quad (8)$$

Now suppose that the budget deficit is financed by a domestic credit that grows at constant rate m. In our model, the exchange rate, interest rate and price level are fixed, and therefore the equilibrium in money market requires that the stock of reserves declines at the rate $-\mu$ [4] . Eventually, the stock of reserves will run down and the exchange rate will depreciate.

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[4] In a flexible exchange rate regime, the exchange rate moves to equilibrate the money market. However in a fixed exchange rate regime, the adjustment is can only be done through the change in the stock of international reserves.

At the time of attack reserves take a discrete jump to zero. Assuming no change in credit expansion, exchange rate depreciates at rate μ and the interest parity requires that the interest rate jump up by μ. As a result of the interest rate rise, real money demand falls.

One of the remarkable findings of the model was, that the attack will take place before exhaustion of reserves, in a precisely definable moment. The model showed, that rational speculators will attack when the exchange rate that would prevail under a flexible exchange rate – the so-called shadow exchange rate (*SER*) – will be equal to the actual fixed exchange rate. When the actual fixed rate is higher (less appreciated) than SER, then after the attack the currency will appreciate and investors loose. If the actual rate is lower (more appreciated) than SER, the investors can gain by purchasing the reserves from the government. Foresighted speculators realize that there is a profit to make and compete for it by making the attack earlier. Competition continues until the time of the attack is taken back to the point of zero profit, when $S = SER$.

Assuming, for simplicity $p^f = i^f = 0$, SER is determined by the level of domestic credit and the rate of its expansion, thus by the magnitude of budget deficit. The post-attack equilibrium is:

$$d - SER = - \alpha \dot{SER} \tag{9}$$

$$(10)\ SER = d + \alpha \mu. \tag{10}$$

Canonical model was extended widely. One of the augmentations was provided by Savastano (1992). He showed, that including the properties of the inflation-tax Laffer curve in the model leads to two potential after-attack equilibriums, at which the consistency between the fiscal and exchange rate policies can be restored.

These equilibriums are characterized by different rates of depreciation, domestic credit growth and inflation and therefore the ex-ante size and time of the attack is uncertain. The actual, post-attack equilibrium depends on the credibility of government announcements regarding its policies during the disequilibria period preceding the collapse [5].

---

[5] The explanation, in short, is the following. Government finances its budget deficit only from inflation tax. The only source of inflation is the growth of domestic credit. From inflation-tax Laffer curve, we know, that the government can collect the same level of revenue from two different rates of inflation. We also know, that in equilibrium the rate of growth of domestic credit equals the rate of depreciation.

When the level of budget deficit and domestic credit growth is inconsistent with the depreciation rate, there will be a crisis. However, after the equilibrium is restored, the government can finance the fiscal deficit with two rates of domestic credit growth, and therefore there exist two possible rates of depreciation. The time and magnitude of the attack depends on the investors' expectation of the restored equilibrium rate of depreciation. If they expect the depreciation rate to be higher, consistent with higher rate of credit growth, the attack will take place sooner and will have greater magnitude.

Canonical models have many virtues. As Krugman (1998) argues, they may be viewed as a metaphor for the more complex policy incoherence of many exchange regimes

However, they also have been criticized. "*The models ignore, however, the policy options available to authorities and the ways in which the marginal costs of exercising these options are balanced. Since the actions of rational speculators must be conditioned on the conjectured response of the authorities, (this) class of models (…) gives relatively little guidance on the factors generating crises and determining their outcomes*" [Obstfeld, 1994, p.196].

The drawbacks of first-generation models, as well as the changing nature of the economic environment and of currency crises have led economist to develop new models, which would encompass recent events.

Among them are the so-called second-generation models, which were developed in response to successful attacks on currency parities in Europe and to Mexican crisis in the first half of 1990's.

Although through different mechanisms, the second-generation models also show, that fiscal imbalances can lead to currency crises.

I.2. The Link between Government Debt and Currency Crises: the Obstfeld Second-generation Model

The theoretical deliberations indicate that significant domestic debt is another fiscal factor, which increases the likelihood of a currency crisis. However, in this case, the path leading to a crisis is longer and less determined, than in the case of money-financed budget deficit [6].

The model linking the occurrence of a crisis with excessive domestic debt has been classified under the second-generation crisis models. This class of models shows, that even sustainable exchange rate pegs can be attacked. As an explanation of the currency crisis they point to the government trade-off between the currency peg and other objectives and focus on the government's constant comparison between net benefits from defending the exchange rate versus changing it. These models allow for nonlinearity in government behaviour and allow for the shift in market expectations to alter the government actions and to bring self-fulfilling crisis.

The basic idea of second-generation models is simply and accurately explained by Krugman (1998). He states, that these models require three components. First, there

[6] I thank Marek Dąbrowski for pointing this to me.

must be a reason for the government to abandon its currency peg. Second, there is a reason of why the government would like to defend the peg. The third element is that the cost of defending the peg must increase when investors suspect the exchange rate regime may be abandoned.

One of the reasons for "voluntarily" abandoning the peg may be large cost of government debt [Obstfeld, 1994]. The government decides to abandon the peg, when the cost of servicing public debt denominated in domestic currency becomes greater than the cost of devaluation [7].

The framework of the model is the following [Obstfeld, 1994].

The government issues domestic debt, but also participates in foreign market and buys foreign assets, which entitle to receive payments, denominated in foreign currency.

There are only two periods: 1 and 2. The world begins in the period 1, but the government enters it, already having obligations and assets. The government may choose to roll over debt, which was accrued up to period 1, issue new obligations or increase its foreign assets.

The government has also consumption expenditures and may levy taxes on output, but only in period 2.

It is assumed that PPP holds: $P_t = E_t P^*$, and to simplify the analysis, that the foreign price level P^* is constant. Normalizing it at unity, we can view the price level and exchange rate as equal: $P_t = E_t$.

The notation is the following.

D_1^0, D_2^0, D_2^1 :

are respectively: domestic debt repayable in period 1, in period 2 and rolled over form period 1 to period 2.

Analogously:

f_1^0, f_2^0, f_2^1:

are the payments that the government is entitled to in period 1, 2 and new claims due in period 2 that the government has acquired in period 1.

Government real (i.e. denominated in foreign currency) consumption expenditures in period 1 and 2 are g_1 and g_2.

Tax rate (levied only in period 2) is t.

E is domestic currency/ foreign currency exchange rate. In the first period the

[7] This model, as well as the second model by Obstfeld [Obstfeld, 1994] was inspired by the 1992 ERM crisis. The governments had open access to international capital markets and could have borrowed to back up their currencies. However the level of reserves, crucial in the first-generation models, did not play a significant role in the crisis. The models try to provide the answer for this phenomenon.

exchange rate is fixed at E_1, but in the second period the government may choose to change it to E_2.

The money demand is: $M=kyE_t$ and real (foreign currency denominated) output y is assumed constant.

The government budget constraints in each period, expressed in domestic currency are:

in the first period:

$$D_2^1 = (1+i)*\left[D_1^0 + E_1 g_1 - E_1 f_1^0 + \frac{E_1 f_2^1}{(1+i^*)}\right] \qquad (11)$$

in the second period:

$$D_2^0 + D_2^1 + E_2 g = E_2\left(f_2^0 + f_2^1\right) + E_2 ty + (M_2 - M_1) \ .$$

Equations (11) and (12) state that in period 1 government has outlays in the form of: consumption expenditure, domestic debt repayment and acquisition of new foreign assets. It can finance these outlays by issuing new domestic obligations and foreign-currency denominated receipts.

In period 2 however, government must meet all its obligations and finance its consumption expenditure. The financing can come from foreign receipts, taxes on output and any increase in the high-powered money the residents wish to hold in period 2, compared to period 1.

Note however, that the government has one more source of revenue, which is not explicitly shown in the constraints. This additional source is depreciation/inflation. Depreciation decreases the value of domestic debt and domestic currency, in terms of foreign currency, in which part of government revenue is denominated. It is equivalent to tax, where the tax base are government obligations repayable in period 2 and the domestic currency held by economic agents.

To see this, rewrite equation (12) and (11) in terms of foreign currency, where denote the real value of domestic currency debt payment in period 2, at period 1 price level [8].

$$\varepsilon\left(d_2^1 + d_2^0 + ky\right) + ty = d_2^1 + d_2^0 + g_2 - f_2^1 - f_2^0 \ , \qquad (13)$$

[8] Note, that ${}_t d_s = {}_t D_s / E_1$. Equation (1.2.3) is derived by dividing (1.2.2) by E_2 and adding to both sides of the equation ${}_1 D_2 / E_1$ and ${}_0 D_2 / E_1$ (to see this, you should add to RHS of (1.2.2) ${}_1 D_2 / E_1 * E_2 / E_2$ and ${}_0 D_2 / E_1 * E_2 / E_2$). Equation (1.2.4.) is derived by simply dividing (1.2.1) by E_1.

where ε is the depreciation of domestic currency between periods 2 and 1

$$\varepsilon = \frac{E_2 - E_1}{E_1}$$

and

$$d_2^1 = (1+i) + g_1 - f_1^0 + \frac{f_2^1}{(1+i^*)}$$

Equation (13) states, that the funds to repay all the government's net obligations come from ordinary taxes and inflation (depreciation) tax, where $\varepsilon(d^1{}_2 + d^0{}_2 + ky)$ is total revenue from depreciation

But depreciation (inflation) and taxes have a negative impact on the economy, and it is assumed that the policymakers care about these effects and try to make them as small as possible.

Since both of these variables are assumed to be zero in the first period, the objective of government is to minimize the loss function of the form:

$$\Gamma = ½\tau^2 + \theta * ½ * \varepsilon, \quad \theta > 0 \tag{15}$$

where θ is the relative weight placed on depreciation, relative to taxation and all other variables, besides t and ε, are predetermined. The minimisation of the loss function (15) is subject to (13.):

The optimal solution is (note, that the government optimises only in the second period) is:

$$\varepsilon = \frac{\left(d_2^1 + d_2^0 + ky\right)\left(d_2^1 + d_2^1 + g - f_2^1 - f_2^0\right)}{\left(d_2^1 + d_2^0 + ky\right)^2 + \theta y^2} \tag{16}$$

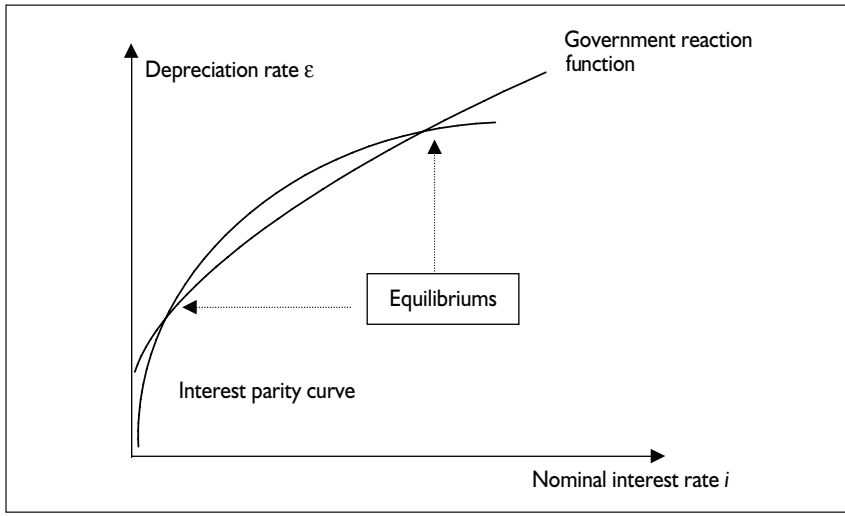
This expression is called the government reaction function. It shows, that the optimal depreciation rate depends, among other, on the amount of domestic debt repayable in period 2. Substituting (14) for $d^1{}_2$ makes clear, that the optimal depreciation rate, depends also on the interest rate in period 1: the higher is the interest rate in period 1, the greater the optimal devaluation in period 2.

To complete the model, we also need to take into account the interest parity

$$\varepsilon = \frac{i - i^*}{1+i}$$

Under the assumption of a perfect foresight, the expected depreciation rate equals the optimal depreciation for the government. The solution to both equations determines the equilibriums (as Obstfeld shows, there exists a possibility of more than one equilibrium). This is shown in Figure 1.

Figure 1. Multiple Equilibriums in the Obstfeld Model



Source: Obstfeld (1994).

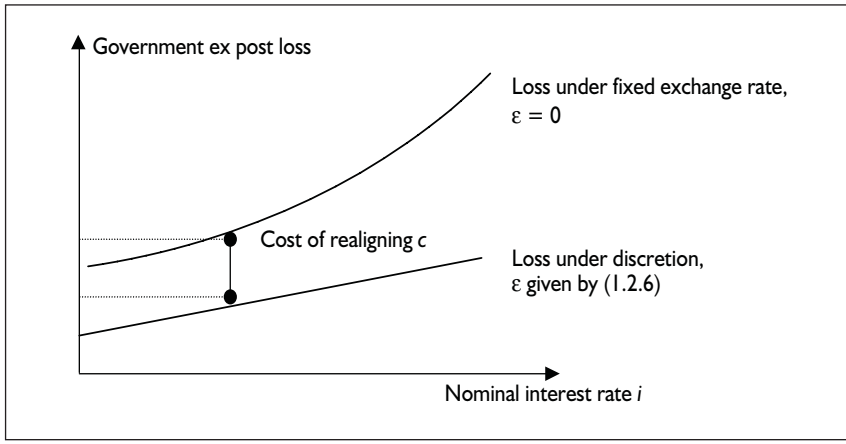
The government loss is lower in the low interest rate – low depreciation equilibrium, but if the bond market decides on the high interest rate, then it will be optimal for the government to choose the higher depreciation rate.

Next, consider a fixed exchange rate regime. In such regime, we have to take into account, that it is costly to abandon the parity – there are costs associated with political embarrassment, lost credibility, etc. The loss function is then:

$$\Gamma = \tfrac{1}{2} t^2 + \theta * \tfrac{1}{2} * \varepsilon + cZ, (Z=1, if\ \varepsilon>0, Z=0\ if\ \varepsilon=0) \qquad (18)$$

As long as the fixed cost c is smaller that the difference between the government loss under a fixed and discretionary regime (where ε is given by (17)), the government will maintain the peg. Once the loss under fixed exchange rate exceeds the loss under floating by more than *c*, than it will be optimal for the government to devalue. This is shown in Figure 2.

Figure 2. The Level of Interest Rate and Government Loss Function



Source: Obstfeld (1994).

If the market expects no devaluation, than the interest rate will be set at low value, and indeed the devaluation will not take place. But if investors expect the government to abandon the peg, they will only agree for a high interest rate (what is a consequence of the multiple equilibriums), and the government will be led to devalue, because the cost of adhering to the fixed regime will be too high. Thus Obstfeld shows, that the expectations of devaluation make it too costly for the government to hold the peg fixed – the devaluation becomes self-fulfilling. "*The government faces a dynamic inconsistency problem: as much as it would like to, it cannot credibly promise not to validate expectations if the bond market settles on the high-inflation equilibrium's interest rate*" [Obstfeld, p.203]. The multiple equilibriums solution is particularly relevant in the case of transition and developing countries, where the governments' reputation is not very good, fuelling negative expectations and enforcing high rate of return.

Obstfeld (1994) also notes, that the possibility of foreign currency borrowing gives a chance to escape the multiple equilibriums, but if it is insufficient, it may worsen the situation.

Since interest rate enters the government reaction function only through the new debt incurred in period 1 and due in period 2, then if new debt is absent, there will be no reason for self-fulfilling devaluations.

Therefore foreign currency receipts due in period 1, that are large enough to cover all the government's first period obligations (see 1.2.8) will allow to avoid the possibility of multiple equilibriums, which could lead to devaluation.

$$\frac{f_2^I}{\left(I+i^*\right)} = -\left(d_I^0 + g_I - f_I^o\right) \tag{19}$$

However, Obstfeld (1994, p.205) warns that: "while sufficient [foreign] borrowing can remove the multiplicity problem in this model (…), a small amount of foreign currency borrowing can make matters worse by lowering the depreciation tax base in period 2 but not radically reducing the government's incentive to devalue."

I.3. The Link between the Magnitude of Government Operations and Currency Crises

Kalter and Ribas (1999) provide another insight on the potential role of government in invoking a currency crisis. They argue, that in an economy with fixed exchange rates, an important fiscal factor leading to a crisis may be, rather than the size of budget deficit, the magnitude of government operations. Their argument is based on the observation of the crisis in Mexico in 1994.

They postulate, that large public expenditures financed by taxation put upward pressure on the cost of production inputs, such as labour, energy, communication and transportation. While in the non-traded goods sector, this increase in cost may be passed on to output prices; this is not easy in the traded goods sector. As the authors state: "*sustained over a period of time, the decline in the price of traded goods relative to that of nontraded goods stemming from increased government operations is (…) equivalent to a real appreciation of the exchange rate*" (p. 5).

Additionally, due to balanced-budget multiplier effect, larger government spending, financed by increased taxation stimulate aggregate demand. This pressures the interest rate to rise and when the exchange rate is fixed, stimulates capital inflow.

These mechanisms cause the trade deficit to increase. Together with the high interest rate and easier access to foreign capital, it weakens the condition of the traded-good sector. A fundamental factor behind financial stance of any sector is the relationship between the real interest rate and the return on capital in this sector. As the interest rate rises, the cost of credit becomes higher that the traded goods rate of return. The authors argue, that in Mexico in 1994 "*this (mechanism) enabled the finances of both the banking system and the traded goods sector to deteriorate and created increasing vulnerability to potential negative shock*" (p. 8).

Although the economy should adjust to new conditions: the production should shift to non-traded goods sector and banks should reduce their lending to the traded goods

sector, but the adjustment may be staggered due to incorrect signals, the time needed to transfer real resources and imprudent bank policies.

2. Empirical Evidence – Developing and Transition Countries

The theory on currency crises indicates, that budget deficit or/and amount and composition of public debt are among the factors that contribute to the emergence of currency crisis.

The existing empirical evidence on the links between currency crisis and fiscal variables generally supports this proposition. It indicates that excessive budget deficit and public debt, together with other factors, can cause a crisis. However, as I already have written, sound fiscal variables cannot defend a country from a crisis, if other factors are leading to it and large fiscal imbalances do not mean that a country will undoubtedly experience a crisis.

Table 1 summarises the connection between the fiscal variables and the occurrence of a crisis found in the selected empirical work.

2.1. Empirical Links – Statistical Analysis

This section re-examines the links between fiscal variables and the occurrence of currency crisis, with emphasis on the countries of Central Europe and CIS.

Sample consists of 30 developing countries for the period 1980–1999 and 20 Central European and CIS countries for the period 1992–1999.

The methodology is similar to the one used by Eichengreeen, Rose and Wyplosz (1995), Frenkel and Rose (1996), Kaminsky and Reinhart (1999) and Aziz, Caramazza and Salgado (2000).

First, using statistical criteria, I identified the periods of currency crisis. Following Kaminsky and Reinhart (1999) and Aziz, Caramazza and Salgado (2000), I constructed an index of foreign market pressure, as a weighted average of monthly currency and reserve changes. The periods, during which index exceeded a specified threshold – equal to the sum of mean plus two times the standard deviation of the index – were classified as crisis.

Having identified the periods of currency market turbulence, I examined the pattern of fiscal variables before and during the crisis, to see whether, on average, the behaviour of fiscal variables during a crisis is different form tranquil periods.

Table 1. Links between Fiscal Variables and Currency Crisis – Empirical Research

Authors.	Sample	Univariate Analysis	Econometric Analysis
Eichengreen, Rose, Wyplosz (1994)	1967-1992, 23 countries, mostly of ERM	**Links found, but only in non-ERM sample.** Non-ERM sample: the hypothesis of the equal distribution of the fiscal deficits in crisis and non-crisis periods is rejected; the same hypothesis is ERM sample is accepted.	Effect of budget deficit and public debt on the probability of a crisis is insignificant.
Frankel, Rose (1996)	1971-1994, 105 countries	**Links not found.** Fiscal deficit tends to be small and shrinking in countries experiencing a crisis. These countries tend to have high proportions of their external debt on variable rates terms and in short maturities and relatively low fractions of debt that are lent to public sector.	Effect of budget deficit and public debt on the probability of a crisis is insignificant
Kaminsky, Reinhart (1999)	1970-1995, 20 countries	**Links found.** Fiscal deficit found to be higher in the two years prior to currency crisis, as compared to tranquil period. Fiscal deficit as an indicator of crisis has accurately called 27% of currency crisis (the lowest share out of the considered indicators).	
Aziz, Caramazza, Salgado (2000)	1975-1997, 20 industrial and 30 developing countries	**Weak links found.** Fiscal deficit found to be on average larger for two years before the crisis across the whole sample, but the result was not significant at 95-percent level and not robust across different sub sample.	

Source: Own compilation on the basis of: Aziz, Caramazza, Salgado (2000), Eichengreen, Rose, Wyplosz (1994) Frankel, Rose (1996) Kaminsky, Reinhart (1999).

The details of this methodology are described in Appendix 1.

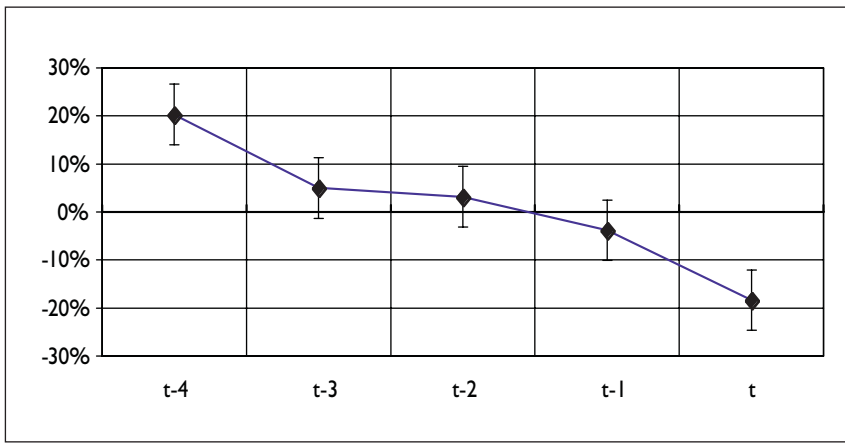
This methodology has advantages as well as drawbacks. To its advantages belong simplicity of the procedure and its ability to extract the average patterns of behaviour of variables. Since it does not require any demanding assumptions about the distribution of variables, it does not run into the problems of econometric analysis.

Among the disadvantages of this method is the univariate technique, which does not take into account the influence of other variables. Another drawback is due to the construction of the sample: since many divergent countries, with different institutional frameworks, are included in the sample, the average behaviour of variables is not always meaningful. However this poses a problem mainly for surveying series that can have very different growth rates or volatility, like financial data [see Aziz, Caramazza, Salgado, 2000]. Fiscal data behaves more similarly across countries.

The figures 3 to 6 illustrate the behaviour of fiscal variables in developing countries before and during the crisis (figures 3, 3a and 3b show the development of budget deficit in developing countries, in different periods: 1980–1999, 1980–1989, 1990–1999 respectively), and figures 7 to 9 – the evolution of these variables in Central European and CIS countries.

The horizontal axis represents the number of years before the year of a crisis, which is denoted by *t*. The vertical axis denotes the percent difference between the values of the variables before and during the crisis, relative to its non-crisis period mean (therefore zero means that the variable around and during crisis did not behave differently than in

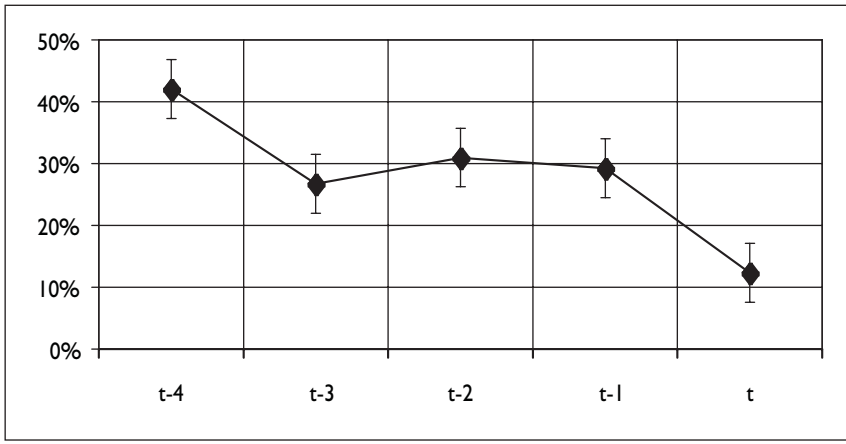
Figure 3. The Government Budget Deficit before and during the Crisis, Relative to the Tranquil Period Mean. The Developing Countries Sample, 1980–1999



Source: Own calculations, on basis of data from IFS, CD-ROM, May 2000.

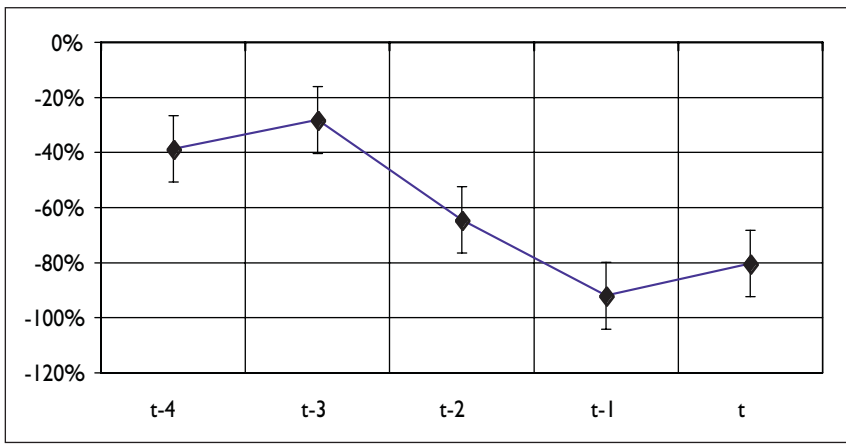
tranquil periods). The solid line depicts the average for all the observation before and during crisis, for which data was available, plus/minus one standard error.

Figure 3a. The Government Budget Deficit before and during the Crisis, Relative to the Tranquil Period Mean. The Developing Countries Sample, 1980–1989



Source: Own calculations, on basis of data from IFS, CD-ROM, May 2000.

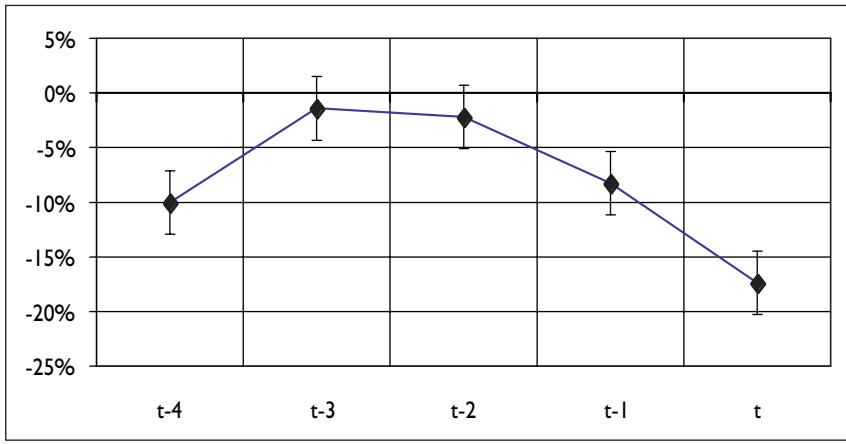
Figure 3b. The Government Budget Deficit before and during the Crisis, Relative to the Tranquil Period Mean. The Developing Countries Sample, 1990–1999



Source: Own calculations, on basis of data from IFS, CD-ROM, May 2000.

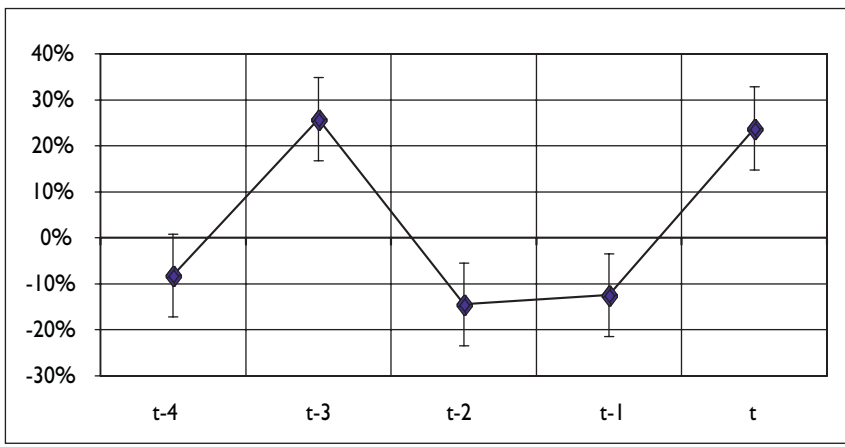
Note to 1, 1a, 1b: A negative value indicates that the budget deficit around the time of crisis was larger than in tranquil period.

Figure 4. The Government Consumption before and during the Crisis, Relative to the Tranquil Period Mean. The Developing Countries Sample, 1980–1999



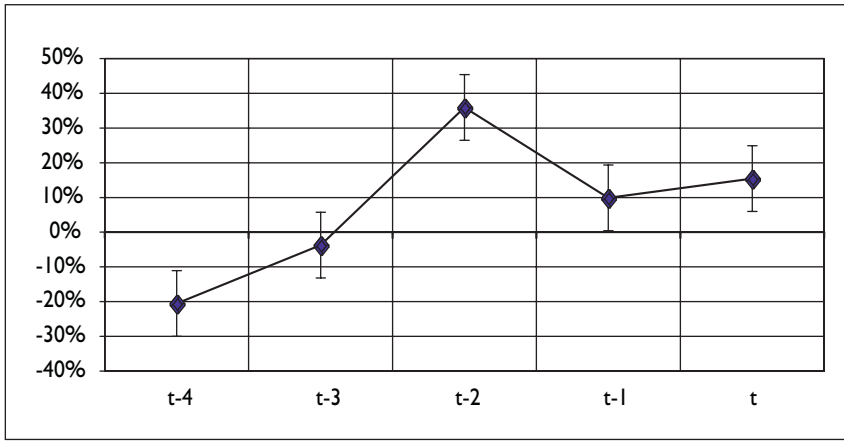
Source: Own calculations, on basis of data from IFS, CD-ROM, May 2000.

Figure 5. The External Public Debt before and during the Crisis, Relative to the Tranquil Period Mean. The Developing Countries Sample, 1980–1999



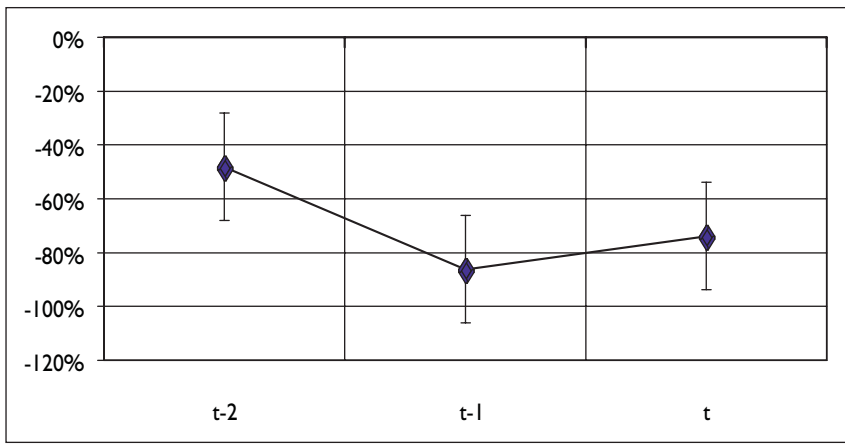
Source: Own calculations, on basis of data from IFS, CD-ROM, May 2000.

Figure 6. The Domestic Public Debt before and during the Crisis, Relative to the Tranquil Period Mean. The Developing Countries Sample, 1980–1999



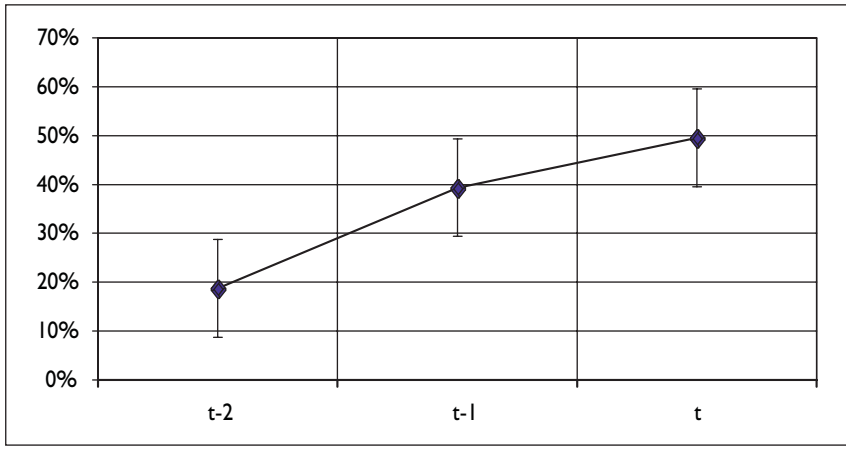
Source: Own calculations, on basis of data from IFS, CD-ROM, May 2000.

Figure 7. The Government Budget Deficit before and during the Crisis, Relative to the Tranquil Period Mean. The Central European and CIS Countries Sample, 1992–1999



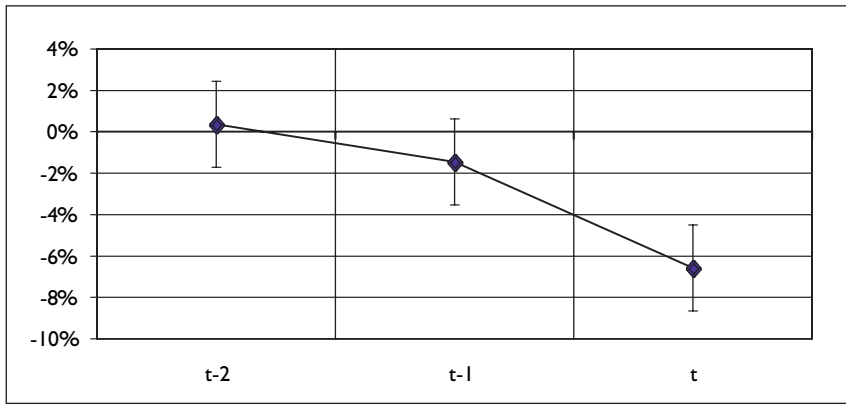
Source: Own calculations, on basis of data from IFS, CD-ROM, May 2000.

Figure 8. The External Long and Medium-term Public Debt before and during the Crisis, Relative to the Tranquil Period Mean. The Central European and CIS Countries Sample, 1992–1999



Source: Own calculation, on basis of data form World Bank, World Development Indicators, CD-ROM, 1999.

Figure 9. The Government Consumption before and during the Crisis, Relative to the Tranquil Period Mean. The Central European and CIS Countries Sample, 1992–1999



Source: Own calculations, on basis of data from IFS, CD-ROM, May 2000.

The results indicate, that in the case of developing as well as Central European and CIS countries, the crisis is, on average preceded by larger, than in normal times, fiscal deficits. In CIS countries the difference has been up to 80%.

In the case of developing countries, I divided the sample into two sub samples: one covering the 1980s and the other 1990s. This has lead to an interesting result: only in the 1990s sub sample, the crisis period was characterised by a higher budget deficit, as compared to no-crisis period. In 1980s such regularity was not observed (see Figure 1a and 1b). While the average budget deficit in the crisis periods in 1980s was not lower than in the 1990's, the average "tranquil period deficit" was much higher during the 1980's than 1990's.

Government consumption was, on average, lower than in tranquil times – the result is robust across samples, what is contrary to the proposition Kalter and Ribas (1999) (see section 1.3). A detailed examination of the data points to two explanations of this phenomenon. First, some countries, tried to lower their expenditures before a crisis, probably in an attempt to stabilise fiscal imbalances; second – this fact was especially pronounced among transition countries – the economies, that suffered form a crisis, had in all years, crisis and tranquil, on average lower expenditures, that the non-crisis economies, which can be explained by a lower GDP per capita level of the former countries.

The external public debt of developing countries failed to display any distinct pattern, but sovereign foreign indebtedness in transition economies was, on average, higher before and during the year of a crisis.

The development of domestic debt is done only for developing countries sample, due to the lack of data for CIS countries. The domestic debt was higher than tranquil average for up to two years before the crisis. This is in line with the model developed by Obstfeld (see section 1.2)

3. Fiscal Imbalances and Financial Crises in Transition Economies in the Second Half of 1990's

This section extends the analysis of the links between fiscal imbalances and financial crises in transition economies, concentrating on the recent examples of currency market turbulences of 1998/1999 [9]. These include the turbulences in Russian Federation,

[9] The criterion used to identify a crisis is the same as in section II, i.e. crisis is defined as a period, during which crisis index has exceeded a specified threshold – equal to the sum of mean plus two times the standard deviation of the index. Starting from year 1995, the index points to 1995 turbulences in Kyrgyz Republic and Moldova, 1996/1997 crisis in Bulgaria, Romania and 1998/1999 crises in Russia, Ukraine, Moldova, Kazakhstan and Belarus and to near crisis in Kyrgyz Republic, Romania, and Georgia. Due to data unavailability, it was impossible to calculate the crisis index for Tajikistan, Turkmenistan and Uzbekistan.

Moldova, Ukraine, Belarus, Kazakhstan and a near-crisis situation in Kyrgyz Republic, Georgia and Romania. In most of these countries the crises incorporated elements of currency, banking and debt crises, and significantly hampered growth and macroeconomic stability.

The scenario of financial turbulences that have hit Russia, Ukraine or Moldova, is strikingly similar. They were a result of interplay of unfavourable external conditions and significant domestic imbalances; the latter were, however, decisive. While contagion form East Asia has undoubtedly triggered the crises, domestic weaknesses determined the countries' vulnerability to a crisis.

As Fries et. al. (1999, p. 535) state: "*Contagion form East Asia imposed a severe "stress test" on the (…) reforms of transition economies*". Indeed, the countries that consequently implemented challenging structural reforms have survived this test and have managed to maintain stability. Contrary, the countries, which were characterised by macroeconomic imbalances and slow and inconsistent reforms, were more vulnerable to East Asian contagion. Among the main macroeconomic and structural shortcomings were inadequate fiscal performance and failure to overcome fiscal problems.

Since 1992 fiscal policy conducted by these countries was characterized by major imbalances: fiscal deficit was large and persistent and public debt was growing. In 1996–1997, due to very favourable situation on world financial markets and tight monetary policy carried out by domestic authorities, there was a considerable foreign demand for government securities issued by these countries. As a result, a growing share of fiscal deficit was financed with short and medium term foreign capital, what led to worsening of government debt structure. What is also worth noting, the government sector was major recipient of the inflowing foreign capital.

The access to foreign finance had loosened fiscal constraints and allowed for a non-inflationary financing of public deficit. On one hand, this gave time to adopt policy measures to resolve fiscal troubles, but on the other, it also increased the vulnerability to changes in investors' sentiments and exposure to exchange rate risk.

As it turned out, the additional time was lost: foreign capital was used for current spending and not for implementing necessary reforms [Dąbrowski, 1999].

As a consequence of the Asian crisis, investors' evaluation of emerging and developing markets has changed. They reassessed economic fundamentals and risk across all emerging markets, "*prompting a flight to "quality""* [EBRD, 1998]. Countries, which achieved only a limited success in key structural reforms, had fiscal problems and relied on short-term financing, were particularly vulnerable to these conditions.

Among them were Russia, Ukraine and Moldova. In light of persistent budget imbalances, the growing short and medium -term public obligations raised investors'

concerns about the ability of government to service them and to further finance the budget deficit. The confidence in domestic currency sunk.

As investors started to withdraw capital form these countries the pressures on exchange rates and reserves emerged and governments were faced with liquidity crisis [Dąbrowski, 1999].

These developments specify, that the domestic reasons for the crises stemmed from inconsistent policies and reforms. One hand these countries developed a market – based financing of fiscal deficits, which is a step in the right direction but, on the other hand, failed to implement hard budget constraints, necessary for the market economy to function properly. This inconsistency led to accumulation of short-term government liabilities and increased external vulnerability, which together with unsolved fiscal deficit and increasing difficulties in financing the interest payments, had to end with a financial disaster.

Fiscal problems of these countries were also an outcome of the insufficient and inconsequent institutional (structural) reform: badly functioning tax systems, soft budget constraints, large involvement of government in an economy, etc. In words of Dąbrowski (1999, p. 10): "*Experience of transition process gives a lot of evidence that fiscal policy performance reflects a quality of economic policy and systemic reforms in the specific country. Any inconsequence of the conducted policy, delay in transition on the microeconomic level, weakness of government institutions and favourable political climate for intensive rent seeking negatively influence fiscal balances. Thus fiscal equilibrium depends not only on the fiscal policy itself but also on the speed, quality and consequence of overall reform process*".

3.1. Case Studies of Selected Crises – Fiscal Side [10]

This subsection consists of case studies of selected events of crises in transition economies. It must be emphasised that these case studies do not intend to give a detailed overview of the causes and unfolding of the crises [11]; instead they concentrate mainly on the underlying fiscal factors that have built the crisis potential.

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[10] The selection of case studies has been dictated by data availability. The progress in transition was also a relevant criterion. I have concentrated on transition countries, classified as intermediate reformers. I have left out Belarus, which has also suffered from a crisis, but because of very slow progress in reforms this country is different from the rest of studied countries.

[11] This can be found, for instance in: Radziwill, et. al (1999), Dąbrowski (ed.), (1999), various IMF Staff Country Reports, Buchs, (1999), Fries et. al. (1999).

3.1.1. Russian Crisis, August 1998

The Russian crisis is one of the boldest examples of how an unsustainable fiscal policy may be among the key determinants of a financial crisis.

The roots of Russian meltdown lie in combination of weak fundamentals and external effects, mainly contagion from the Asian crisis. The domestic factors, however, have played a much bigger role: the contagion from Asian crisis determined particular time and speed of the crisis, but the underlying vulnerability made the crisis almost inevitable (IMF, 1999, Buchs, 1999, Hanson 1999). The domestic weaknesses manifested themselves in persistent fiscal imbalances, which were the main reason for the increased vulnerability to changes in investors' sentiments [12].

The Russian Federation struggled with fiscal problems since 1992. The immediate result of large and persistent budget deficits was a growing public debt. Large interest payments imposed additional strain on the budget; soon the government was caught in a vicious circle of growing interest payments, which enforced further borrowing. In 1997 interest payments ate up 46,8% of federal government cash revenues (and 38% of total revenue – cash and noncash) [13].

Table 2 shows the magnitude of fiscal deficit and Tables 3 and 4 the amount of public debt.

Table 2. Fiscal Imbalances of Russian Federation, in Percent of GDP

	1992	1993	1994	1995	1996	1997	1998
General govt. balance	-18.4	-7.4	-10.4	-6.1	-8.9	-7.7	-8.0
Revenue	39.3	36.2	34.6	33.5	33	35.5	31.7
Expenditure	57.7	43.6	45.0	39.6	41.9	43.2	39.7
Financing, in percent of deficit							
Net foreign financing.	60.0	26.2	0.3	-3.4	7.6	20.3	25.6
Domestic financing	40.0	73.8	99.7	103.4	92.3	79.8	74.4
Banking system	28.6	69.0	85.2	84.1	82.8	22.1	26.7
incl. monetary auth.	48.6	80.2	77.6	27.1	25.6	15.3	39.5
Nonbank sector	…	-4.8	8.6	-1.2	-2.6	39.2	3.8
Other domestic financing	8.6	9.5	5.8	20.4	12.2	18.4	43.9

Source: IMF (1999e).

[12] The other fragile area was the domestic banking system (Hanson, 1999).

[13] Data from IMF 1999, own calculations.

Table 3. Russian Federation – Total Government Debt, in Percent of GDP

	1995	1996	1997
Total debt	51.1	52.3	52.5
Rouble denominated debt	14.7	19.9	22.8
Foreign currency denominated debt	36.4	32.4	29.7
Debt service payments. in % of enlarged government revenues	10.6	17.9	12.8

Source: IFS CD-Rom, May 2000, IMF (1999e).

Table 4. Russian Federation – External Sovereign Debt, in billions US$

	1994	1995	1996	1997	1998
Total sovereign foreign currency debt	127.5	128	136.1	134.6	158.2
Debt incurred after 01.01.1992	11.3	17.4	27.7	35.6	55.4
Multilateral creditors	5.4	11.4	15.3	18.7	26
Official creditors	5.9	6	7.9	7.6	9.7
Eurobonds	0	0	1	4.5	16
Minfin. bonds (VI+VII)	0	0	3.5	3.5	3.5
Commercial creditors	0	0	0	1.3	0.2
Soviet – era debt	116.2	110.6	108.4	99	102.8

Source: IMF (1999e).

In spite of such fiscal developments, years: 1996 and first half of 1997, were marked by a considerable optimism regarding Russian economic outlook. In second half of 1995, the authorities successfully pegged the Rouble to a dollar, which signalled financial discipline. Moreover, Russian Federation received a substantial financial support from the IMF and the World Bank, and reached debt-rescheduling agreements. The good outlook was reinforced by the positive real GDP growth and falling inflation, which were recorded in third quarter of 1997 [IMF, 1999e].

This optimism, together with very good situation on international financial markets, has resulted in a substantial foreign demand for Russian assets, including government securities. The removal of capital controls limiting foreign access to domestic securities market brought a surge in foreign demand for Russian debt securities. According to EBRD (1998): "*by summer 1997 investors appeared to be buying Russian securities indiscriminately*".

These developments have allowed the authorities to resort to financing the deficit with short-term securities GKO's (three moth treasury bills) and OFZ's (variable coupon bonds) as well as with borrowings on international markets. In 1996 Russian government issued 1 billion US$ debt instruments and over the next two years borrowed further US$ 15 billion on international capital markets [OECD, 2000].

At the end of 1997 the total amount of GKO's and OFZ's outstanding was equal to 14.4% of GDP, compared to 1.7% in 1994, with non-residents purchasing US$ 6 billion in 1996 and 11 billion in 1997 [IMF, 1999e]. By late 1997 foreigners held about 30% of GKO's, while Russian banks held the remaining 70% (the activities of banks also involved foreign participation).

It is also worth noting, that in 1997, that the portfolio investments absorbed by government sector constituted the major part of total capital inflow to Russian Federation (see table 5).

Table 5. Russia – Balance of Payments, in billions of US$

	1995	1996	1997	1998
Current account	4.8	3.9	-3.0	2.3
Capital account	-4.2	-10.9	6.3	-9.7
Capital flows relating to federal government	-9.7	1.7	15.1	7.7
Including				
Disbursements	2.5	5.5	8.8	9.5
Purchases of government securities, net	0	5.9	10.9	2.8
Medium and short term capital to other sectors	1.6	3.8	5.8	2.2
Including FDI	1.7	1.7	3.6	1.2
Other, including short-term	3.9	-16.4	-14.5	-19.6
Errors and omissions	-7.9	-8.6	-7.8	-7.9
Overall balance	-7.3	-15.6	-4.5	-15.3
Financing				
Net reserves	-5.4	4.6	-1.4	10.2

Source: IMF (1999e).

The access to foreign financing relaxed fiscal constraints and gave time to deal with fiscal problems, but the other side of the coin was increased vulnerability to changes in investors' sentiments. The implemented method of deficit financing has worsened public debt structure, as its growing share was medium and short-term, held mostly by non-residents and by banks. Consequently, the government sector's and banking sector's liquidity became intertwined and very vulnerable to changes in capital flows and exchange rate risk [14].

The additional time to solve fiscal problems was wasted: the authorities failed to address fiscal weaknesses and implement hard budget constraints, and subsequently the accumulation of short-term debt proved to be unsustainable [OECD, 2000].

[14] Banks had acquired large foreign-denominated liabilities, relative to assets. Furthermore, a significant amount of foreign-denominated liabilities were off-balance sheet (primary forward contracts) [OECD, 2000].

With the beginning of the East Asian crisis, investors began to reassess the economic fundamentals across all emerging markets and the Russian financial market has been subject to repeated pressures [15]. This was a reflection of growing concern for the sustainability of fiscal position and the ability of government to honour its debt obligations (equivalent to US$ 1.5 billion falling due each week in the end of 1998, [IMF, 1998b]), as well as perceptions of the fragility of Russian banks. Increases in interest rates worsened the deficit of government finances. The combination of high yields and short maturities raised investors' doubts whether the government would be able to meet its obligations. "*The decline of confidence in authorities' ability to bring the fiscal situation under control and to roll over the treasury bills (…) was the main immediate cause of August 1998 crisis*" [IMF, 1998b, p. 54]. As the debt stock grew, foreign holders of Russian debt increasingly believed that either government will default on its debt or the currency will be devaluated.

In October 1997, the prices on Russian stock exchange plunged. Foreign exchange reserves fell in the last quarter of 1997, which was mainly due to increases of purchases of foreign currency by domestic residents. In January 1998 the capital started to flow out form the domestic GKO market [Buchs, 1999]. The government, cut off from capital, faced a liquidity crisis. Moreover, the tax revenues declined significantly in second quarter of 1998 and growing interest rates on securities caused an outburst of debt service payments, equal to over 40 % of expenditures. This further exacerbated concerns of government solvency.

In mid-July 1998, the government announced a new policy package, and an agreement with IMF on additional assistance. This improved the conditions on financial market and the pressure on interest rates and reserves eased. However, the credibility of the program was crippled, when Duma opposed key measures of the program. As a result of this and other critical factors, the interest rates have reached new heights and reserves new lows, and a number of banks had defaulted on their forward contracts with investors.

On August 17, 1998, government announced a series of emergency measures, among other: a widening and an upward shift in exchange rate bands, 90-day moratorium on private sector payments on external liabilities, a cessation of payments on GKO/OFZ with maturity before 1999. In late August, the central bank suspended trading in the Rouble in the country's main exchanges and in the beginning of September authorities were forced to abandon the exchange rate bands. Prices rose quickly, the banking system virtually collapsed, households' accounts were frozen until

[15] To make matters worse, in second half of 1997 Russia's export prices deteriorated, driven mostly by decline in gasoline and oil prices [IMF, 1999e].

mid-November, what due to inflation and depreciation of the Rouble was equivalent to a massive write-offs [Buchs, 1999].

3.1.2. Ukraine, 1998

The crisis in Ukraine was undoubtedly triggered by developments in Asia and contagion from Russian Federation (in 1997 22% of Ukrainian exports was to Russia), but besides the sharp external swings, there were domestic processes at work which, when not reversed, made the crisis, such as that of 1998, inescapable. The key factor behind the vulnerability of Ukrainian economy to deteriorating conditions on the international markets was the weakness of public finances. Table 6 below shows the magnitude of fiscal imbalances.

Table 6. Ukraine – Consolidated Government Budget, in percent of GDP

	1995	1996	1997	1998
Revenues, cash basis	37.8	36.7	38	35.2
Expenditures, cash basis	42.7	39.9	43.6	37.9
Budget deficit, cash basis	-4.9	-3.2	-5.6	-2.7
Budget deficit, commitment basis, IMF data	-6.1	-6.1	-5.2	-3
Budget deficit, commitment basis, data from Kovalev	-8.3	-8.1	-10.7	
Financing, in % of cash deficit				
Net external	-18	-3.5	4.5	66.16
Domestic	115.2	95.9	93	17.15
Central Bank	…	61.62	20.93	156.56
Commercial Banks	…	7.13	22.5	-17.3
Nonbank	…	7.67	49.51	-122.11
Privatisation	2.7	7.67	2.47	16.69

Source: IMF (1999d), Kovalev (1999).

Since 1992, Ukrainian fiscal policy was characterised by large imbalances. Persistent budget deficits led to accumulation of public debt and growing service payments.

In years 1992–1995, budget deficits were mainly financed by credit form Central Bank, what had led Ukraine to the verge of hyperinflation [Kovalev, 1999]. Beginning in 1996, similarly to the case of Russia, good conditions on the international markets, as well as positive developments of Ukrainian macroeconomic indicators, resulted in a considerable demand for Ukrainian securities. This allowed to change the method of financing and two years later, in 1997 the main sources of budget financing were short-

term securities. The changed method of budget financing eased inflationary pressures, but it also worsened the structure of public debt, as its growing share were short-term liabilities.

Since the fiscal deficit was not contained, this has led, together with the growing amount of T-bills, to an unsustainable "financial pyramid" [Dekhtiarchuk, 1999].

Table 7. Ukraine – Public Debt, in percent of GDP

	1995	1996	1997	1998
Total public debt	27	21	28.2	44.8
Domestic debt	0.4	2.2	7.2	7.2
Central Bank	0	0.4	1.7	6
Commercial banks	0.4	1	1.9	0.7
Nonbank institutions	0	0.1	0.5	0.1
Non-residents	0	0.7	3	0.4
Foreign debt	26.7	18.8	21	37.2
Interest payments. in % of consolidated govt. revenues	4	4.3	4.8	6.5

Source: IMF (1999d).

The fiscal imbalances manifested themselves in a current account deficit, which further increased the vulnerability to a crisis (see Table 8).

Table 8. Current Account Deficit and Government and Private Saving-investment Balances, in percent of GDP

	1993	1994	1995	1996	1997
Current account	-6.1	-5.8	-4.1	-2.7	-3.3
General government	-9.7	-8.7	-4.9	-3.2	-5.6
Private sector	3.6	2.9	0.8	0.5	2.3

Source: McGettigan (2000).

The rapid accumulation of government obligations raised investors' doubts concerning fiscal sustainability. In light of these developments and events in Asia, investors became increasingly reluctant to finance the government budget. NBU became the main participant on the market, which meant the return to monetary financing of the fiscal deficit [Dąbrowski, 1999]. Consequently, the investors' confidence in government honouring its obligations was shrinking and the increasing difficulties in financing the budget accelerated their departure form the market. Reserves declined, and authorities were no longer able to keep the exchange rate stable. As the currency depreciated and reserves fell, the authorities introduced administrative measures to control the demand for foreign exchange and negotiated a

voluntary conversion of short-term debt into longer-term instruments [IMF, 1999d]. As Dąbrowski notes (1999, p.9): "*this is equivalent to near-default, as the "voluntary" debt conversion was made under the danger of official default*".

3.1.3. Moldova, 1998

Moldova experienced a balance of payments crisis in late 1998. In mid-August the level of foreign reserves was reduced by 60%, and covered less than a month and a half of imports, and in November 1998 authorities freed the exchange rate [IMF, 1999].

As in the cases of the turbulences in other FSU countries, this crisis was also a result of unfavourable external developments. The Russian crisis had a deep negative impact on Moldova's current account, as Russia was the main receiver of Moldova's exports. However, the crucial reason of the financial meltdown lied in internal factors. Among them, the key problems were fiscal imbalances and the growing concerns regarding the ability of government to service its debt obligations.

Moldova struggled with budget deficits since its independence in 1991 and rapid growth of public indebtedness was the inevitable consequence of conducted fiscal policy.

Tables 9 and 10 report the data on fiscal imbalances.

In 1998, the external government debt has climbed to 74% of GDP and total public debt to 92%, very high compared to other FSU countries. The speed of its accumulation is a pronounced sign of the unsustainability of fiscal policy. While the rapid increase in indebtedness in 1998 was a consequence of a currency devaluation, the

Table 9. Revenues, Expenditures and Budget Deficit of the General Government Sector of Moldova, in percent of GDP

	1993	1994	1995	1996	1997	1998
Revenues	22.8	33.5	33.9	32.1	36.3	34.6
Expenditures (commitments)	31.7	44.6	41.6	42.8	38.3	42.4
Commitments deficit	8.8	11.1	7.7	10.7	4	8.1
Cash deficit	7.6	9.1	5.8	6.6	6.8	3
Financing, in % of cash deficit						
Foreign	32.9	76.9	55.2	77.3	41.2	-100
Domestic	67.1	23.1	43.1	22.7	58.8	200
Central Bank	67.1	20.9	25.9	-10.6	20.6	270
Commercial banks	2.6	2.2	15.5	7.6	27.9	-30
Nonbank	0.0	0.0	1.7	25.8	11.8	43

Source: IMF (1998a,1999c), Radziwiłł (1999).

Table 10. Public Debt of Moldova, in percent of GDP

	1994	1995	1996	1997	1998
Total public debt	49	54	61	69	92
Domestic debt	6	7	10	11	18
NBM loans	5	6	6	6	11
Treasury Securities	0	2	4	5	6
External debt	43	47	51	58	74
Debt service payments. in % of gov. revenues	8.8*	10.4*	8.5*	10.8**	42

Source: Radziwiłł, p.39, 40,*IMF (1998a), **Radziwiłł (1999) estimate this number to be 25%.

build up in earlier years was an outcome of the shortsightedness of the policy. An important and poorly controllable source of external public debt accumulation was the energy sector debt [Radziwiłł, et. al. 1999].

Although such level of external public debt is not the highest compared to some other countries, but Moldova has so far noted negative growth rates, has had weak government revenues and has recorded persistent budget deficits. As most of the debt financing was not used to increase the economy's growth prospective [Radziwiłł, 1999], Moldova, so far, did not have the potential to repay so high debt.

Moreover, the debt structure was becoming less favourable. Until 1996, the debt reflected mostly longer-term borrowing from multilateral and bilateral creditors; but since 1996 there has been a switch to short-term commercial creditors.

The switch to short-term liabilities reflected changing sources of financing the deficit. Until 1993 the government deficit was mostly funded by credit from Central Bank. Improved access to external capital and a good situation on international markets allowed to a reduce these practices and the government increasingly financed the deficit by borrowing on domestic and international markets. The T-bill market was established in 1995, however, due to shallow domestic markets, non-residents have played on it an increasing role.

In 1997 the deficit was financed mainly by domestic sources, mostly T-bill sales and the run-down of government deposits held at central bank. External financing was dominated by proceeds form Eurobond issue (US$ 75 million) and the first tranche of the loan form World Bank (US$ 35 million) [IMF, 1999c].

However, as in the case of Russia, the additional time gained by access to foreign financing was not used to overcome fiscal difficulties and implement reforms that could result in an improved fiscal stance in the future. Instead, Moldova has built an unsustainable debt pyramid: the growing debt service payments absorbed a significant amount of government resources, further deepening the fiscal problems. Moldova was

caught in a debt trap, in which growing borrowing was used to finance growing interest rate payments.

Government sector absorbed most of the inflowing capital, dominated by portfolio investment. The increased inflow of capital was mirrored by large current account deficit, increasing the country's vulnerability to change in investors' sentiments. The current account deficit was also rooted in the lax budget constraints, resulting in a deterioration of the saving-investment balance [IMF, 1999c].

Table 11. Moldova, Balance of Payments, millions US$

	1996	1997	1998
Current account	-188	-268	-334
Capital account	170	324	-2
Portfolio investment (net)	54	237	-55
Direct investment	23	71	86
Loans	101	23	28
Other	-9	-7	-64
Balance	-1	67	-314

Source: IMF, (1999c).

The change of investors' sentiments' after the Asian crisis and growing concerns regarding unsustainable domestic policies caused the interest rates to rise. Moreover, during the first 9 months of 1998 the revenue collection was very low (54% of the whole projected revenues, compared to 64% last year, see Zaman, 1999).

As the investors lost confidence that the government will be able to service the debt, capital started to massively flow out of the country and the government was faced with liquidity crisis and a near default.

3.1.4. Bulgaria, 1997

The crisis in Bulgaria happened before the East Asian turbulences and its scenario was different than in the above cases, but it also exemplifies the importance of fiscal sustainability.

Bulgaria experienced a severe currency and banking crisis in 1996 and beginning of 1997. The underlying origins of the crisis were Bulgaria's economic problems stemming mainly form the inconsistent stabilization efforts and slow structural reforms. The immediate cause of the turmoil was a weak banking system, however, fiscal factors were also very relevant. Among the underlying weaknesses of Bulgarian economy were large and persistent budget deficits and very large debt payments.

Persistent deficits and quasi-fiscal operations supporting the banking system, resulted in a rapid accumulation of public debt. To make matters worse, Bulgaria inherited a very large external public debt after the centrally planned economy. The growing debt service payments made it clear, that the fiscal policy and public debt were unsustainable.

Table 12. Bulgaria: Consolidated Government Finances, in percent of GDP

	1993	1994	1995	1996
Revenues	37.2	39.9	35.7	31.9
Expenditures	48.1	45.7	41.3	42.3
Balance	-10.9	-5.8	-5.6	-10.4
Financing, in % of budget deficit				
External financing	-11	-8.6	-23.2	-27.9
Domestic financing	111	108.6	125	127.9
Banking system	100.9	94.8	87.5	117.3
Nonbank	11	12	37.5	10.6
Privatisation	0	0	0	0

Source: IMF, (1999b).

Table 13. Bulgaria: Government Debt, in percent of GDP

	1993	1994	1995	1996
Total	149.4	149.9	106.4	111.8
Domestic debt	34.3	42.7	37.3	22
deficit financing	24	18.3	19.7	9.2
bank recapitalization	10.3	24.4	17.6	11.6
External debt	115.1	107.2	69.1	89.8
Memorandum items				
Share of foreign currency denominated debt	0	43.6	19.9	47.7
Interest				
as % of GDP	9.3	13.5	14.1	19.7
as % of cons. gov. revenue	25	33.8	39.5	61.7

Source: IMF, (1999b).

The lack of fiscal sustainability became looming in 1996, when the budget deficit reached over 10 % of GDP and interest payments absorbed over 60% of government revenue. A further contraction of non-interest expenditure was not feasible and arrears emerged.

Moreover, the conditions of domestic banks weakened in second half of 1995. Most of them continued to credit loss-making public and private enterprises. The resulting bank losses decreased the confidence in the whole banking system.

In the beginning of 1995, there was an unexpectedly low inflation rate, but the basic interest rate of National Bank was fixed considerably high. In effect, the expected premium of lev-denominated assets became very high, which resulted in increased demand for these assets and a rapid accumulation of reserves. However, authorities, pressured by the growing debt-service requirements, attempted to bring the interest rate down.

This has ended the lev-favourable interest rate parity and investors shifted their portfolio capital away form the lev and, starting in October 1995, the level of reserves deteriorated [OECD, 1998].

At roughly the same time, a rumour, that the leading bank was insolvent, triggered a bank run. The National Bank of Bulgaria provided banks with substantial refinancing, what led to large credit expansion. As nominal interest rates were kept constant, in face of growing inflation, the real rates approached zero.

The prospect of a more than 1 billion US$ of debt service due in 1996 contributed to destabilizing expectations.

"Growing awareness of the insolvency of banking systems as well as scepticisms about the government honouring its obligations caused speculations against the currency" [IMF, 1999b, p. 72].

In May 1996, the NBB stopped intervening in the forex market. In December 1996, a supplementary budget law required the NBB to finance the budget deficit. This further undermined the confidence in lev and triggered hyperinflation. The government was not able to roll over its debt and defaulted on it.

3.1.5. The Main Reasons behind Fiscal Instability in Surveyed Countries

The fiscal problems in the surveyed CIS countries were, as pointed out by Dąbrowski (1999), a consequence of the incomplete structural reforms, weaknesses of government institutions and soft budget constraints across the whole economy, which manifested themselves in difficulties with collecting revenue and relatively large public expenditure.

Troubles with tax collection

The main cause for weak tax collection was an inadequate progress in the reform of tax systems. Widespread were tax evasions, tax arrears, payment defaults, various tax exemptions, and tax forgiveness. Weak tax administration and corruption magnified the revenue problems. Moreover, frequent changes in legislation decreased transparency and efficiency of tax systems. Extremely harmful have also been soft

budget constraints remaining in many areas of economy. As Kovalev (1999, p.40), describing Ukraine, point out: "*lack of enterprise restructuring did not improve the tax base (…) Bankruptcy and liquidation procedures against companies running losses and owing huge arrears to the budget are almost completely absent*."

In Moldova, smuggling through the unprotected border with Transnistria has additionally lowered trade taxes and VAT revenues. According to Radziwiłł et. al. (1999) the cost of the lost tax receipts is estimated at 9% of GDP.

Among the more significant factors that have impeded the tax system, are also the noncash fiscal operations [IMF, 1999e]. These operations have been developed to settle mutual claims between the taxpayers and the government. They impair government's ability to meet its cash obligation on time, lead to overpricing of the goods and services delivered to government, contribute to inefficient and non-transparent expenditures, give opportunities for corruption, and provide taxpayers with partial tax forgiveness. They also weaken the tax-payment culture and discipline, as they "engender a general belief among taxpayers that the central government is incapable of enforcing statutory tax obligations" [IMF, 1999e, p. 58].

Table 14 shows the amount of netting out operations.

Table 14. Noncash Revenues of Consolidated Government, in percent of Total Revenues*

	1994	1995	1996	1997	1998
Russia	3.5	14.8	26.1	18.8	15.6
Moldova			35.2	36.8	35.8

Source: IMF (1999c, e).

* In Ukraine in 1997 47% of state budget revenues had the form of netting out operations (Kovalev).

The weak tax collection has squeezed the tax base and enforced high tax rates, which in turn have given incentives for tax evasion and shadow economy activities [IMF, 1998a]. Kovalev estimates, that eliminating exemptions and arrears, the Ukrainian budget revenues would be 56% of GDP, which is extremely high, comparing even to developed countries. The shadow economy in Ukraine is estimated to be between 20 and 80% of the official GDP [IMF, 1999d]. In Moldova the shadow economy is estimated to be 40% to 60% of a formal sector GDP [Radziwiłł et, al., 1999, p. 27]. In Russia, according to estimates, quoted in Buchs (1999), 35% of Russian firms do not pay taxes at all, while over 50% pay only occasionally.

Tax arrears are widespread. In Ukraine, in 1997 enterprises' tax arrears amounted to 5.8% of GDP, and this amount was restructured and partially written off [Kovalev, 1999]. In Moldova, total arrears on fiscal revenues amounted in 1996 to 7. 54% of GDP

and in 1997 to 5,89 and together with arrears on Social Fund contributions, respectively to 13.6% and 11% of GDP [IMF, 1999c].

Large expenditures

In Moldova, Russia and Ukraine the level of public spending was lowered since the beginning of the transition, but is still comparable to developed countries level, which, taking into account the economic characteristics of these countries (and the level of public revenue) is too high. Their structure is more characteristic to Soviet-type economy, than to a market oriented one.

One of the larger positions in the budget is social spending. In Russia, four main social extra budgetary funds collect 8–9% of GDP as revenue and redistribute around 8–10% of GDP in form of expenditure. In Moldova, in 1997 over 12% of GDP were spent on social security and welfare, and over 14% of GDP on health and education. The spending on the latter two elements is considered as highly beneficiary for development and growth of a country, provided that it is efficient and well targeted. This usually means financing basic health care and basic education, i.e. these spheres where the positive externalities are the largest, and consequently, the free market provision is significantly below the level of Pareto optimum. However, in the case of Moldova, these expenditures seem to be inefficient: the expenditures in health care finance an excessive number of hospital beds and doctors but are insufficient in basic preventive health care [Radziwiłł et. al., 1999].

Social spending in these countries, although high, often fails to support the most vulnerable. The benefit system is badly targeted and non-transparent. [IMF, 1999; Kovalev, 1999; Radziwiłł 1999].

Another problem is constituted by large interest expenditures. Due to accumulation of public debt, the interest payments have increased significantly, especially in Russian Federation.

Table 15. Interest as percent of GDP and percent of Government Expenditures

		1994	1995	1996	1997
Moldova	% of expenditure of general govt.	7	8.8	7.1	9
	% of GDP	3	3.5	2.8	3.7
Russian Federation	% of expenditure of federal govt.	8.4	19	28.3	42.2
	% of GDP	2	3.5	5.9	4.5
Ukraine	% of expenditure of central govt.		3.6	3.9	4.1
	% of GDP	1	1.5	1.6	1.8

Source: IMF (1999, c, d, e).

The disproportion between revenues and expenditures and the lack of control over expenditures is manifested also by large expenditure arrears.

Table 16. Government Expenditure Arrears, as percent of GDP

	1994	1995	1996	1997
Moldova	2.3	2.2	4.8	3.2
Ukraine		1.2	3.7	2.8

Source: IMF (1999, c, d).

Summing up, the main problem of the fiscal system is the lack of proper institutional reform: a well functioning, market-friendly and transparent tax system and tax administration, that is capable of collecting revenues; expenditures, which amount is balanced with the revenue capabilities, well targeted and transparent.

3.2. Fiscal Developments in Second Half of 1990's – Relative Performance of Crisis Economies

As the case studies indicate, the 1998/1999 series of financial crises that have erupted in transition economies, were caused by an interplay of domestic and external factors. Among the domestic factors, crucial were fiscal imbalances.

This section evaluates the fiscal performance of these FSU economies [16], which have been significantly affected during the financial crises of 1998/1999, relative to other countries in the region, that have managed to avoid significant exchange rate pressures. Some indicators – budget deficits, and the speed of accumulation of public debt – are also compared to the data on Eastern European countries [17].

Such an exercise allows to comprehensively gauge the importance of fiscal aspects in increasing vulnerability of CIS and Baltic countries; it also helps to judge the potential usefulness of fiscal factors as crisis indicators. It must be emphasised, however, that a full assessment of vulnerability to a currency crisis requires several indicators, which cover many aspects of an economy [see, for example, Kaminsky, Lizondo and Reinhart, 1997]. This however is beyond the scope of this paper.

[16] This section concentrates mainly on FSU economies, as most of the crises of 1998/1999 emerged in these economies. The exercise in this section is similar to the one done is section II.1, however, this one is more specific and detailed.

[17] The other statistics were left out form the comparison of performance of FSU and Eastern European countries, due to either lack of comparable data, or to structural differences, which make the comparison meaningless.

Among the fiscal signs, which might indicate an increased probability of a currency crisis, are indicators of fiscal stance: budget deficit, the level of government revenues, level of indebtedness, as well as external sustainability indicators (in FSU countries fiscal stance is closely linked with external position): external debt indicators and debt service ratios.

3.2.1. Fiscal Stance – Budgetary Data

Government budget deficit

Government budget balance is an indicator of the overall fiscal stance, and in case of FSU countries, it often is an indicator of the external sustainability as well. In many of these economies, current account deficits are linked to fiscal deficits (the so called twin deficits), capital account is dominated by debt-creating inflows and government owns most of the external debt. Therefore, the external implications of fiscal stance are of central importance.

General government balances of FSU and Eastern European countries are presented in Table 17. It must be noted however, that these balances are not a complete measure of overall fiscal position. Ideally, a complete measure should also contain an assessment of quasi-fiscal activities, contingent liabilities of public sector and tax and spending arrears, which are significant in many CIS countries [18]. Unfortunately, limitations of the data make such assessment impossible.

As Table 17 shows, in 1997, out of CIS countries, Kyrgyz Republic, Russia, Kazakhstan, Moldova, Armenia, Georgia and Ukraine recorded large budget deficits, above 5% of GDP. Out of these countries only Armenia has escaped a crisis and Georgia and Kyrgyz Republic found themselves in a near-crisis situation [19]. It is also worth noting, that these imbalances were persistent – they weren't just an one-year deviation – what shows a total lack of commitment towards fiscal stabilization.

Before 1997, large deficits were also a feature of Tajikistan (1994–1996) and Uzbekistan (1996) [20].

Nonetheless, when one incorporates the standard statistical tool to judge the relative weaknesses of fiscal stance of FSU countries (the smaller CIS and Baltic

[18] For example, it is estimated that in Turkmenistan quasi-fiscal operations in 1997 or 1998 were equal to 4,3% of GDP [IMF, 1999]

[19] I assume, that a "near crisis" situation is when the crisis index was bigger than average plus 1.5 standard deviations (as opposed to "crisis", which is defined as index value that is bigger than average plus 2 standard deviations).

[20] Due to lack of comparable data, the crisis indexes for Tajikistan, Turkmenistan and Uzbekistan were not calculated, however the existing data indicates, that these countries were also subject to exchange rate pressures (see 3.3).

Table 17. General Government Budget Balance in CIS, Baltic Countries and Eastern European Countries, 1994–1997, in percent of GDP

	1994	1995	1996	1997	1998
CIS countries					
Armenia	-10.1	-11.1	-9.3	-5.8	-4.2
Azerbaijan	-12.1	-4.8	-2.8	-1.7	-1.7
Belarus	-2.5	-1.9	-1.7	-0.7	-2.7
Georgia	-25.5	-6.9	-6.7	-5.6	-5.1
Kazakhstan	-7.7	-3.2	-5.3	-7.1	-7.6
Kyrgyz Republic	-11.6	-17.3	-9.9	-8.9	-10
Moldova	-9.5	-5.8	-6.6	-6.8	-3
Russia	-10.4	-6.1	-8.7	-7.9	-8
Tajikistan	-5	-7.9	-5.8	-3.1	-3.8
Turkmenistan	-1.1	-1.4	-0.3	0	-2.7
Ukraine	-8.7	-4.9	-3.2	-5.6	-2.7
Uzbekistan	-4.1	-3.5	-5.6	-2.4	-3.4
Baltic countries					
Estonia	1.3	-1.2	-1.6	1.8	-0.3
Latvia	-4	-3.5	-1.4	1.4	0
Lithuania	-4.8	-4.5	-4.5	-1.8	-5.8
Eastern Europe					
Bulgaria	-5.8	-6.3	-12.7	-2.5	1.5
Croatia	1.4	-1.5	-1.6	-2.6	-0.8
Czech Republic	-1.2	-1.8	-1.2	-2.1	-1.9
Hungary	-8.6	-6.2	-3.1	-4.7	-4.2
Poland	-2.4	-1.9	-2.3	-3.1	-2.4
Romania	-1.9	-2.6	-4	-3.6	-3.6
Slovak Republic	-1.3	0.4	-1.3	-4.4	-4.9
Slovenia	-0.2	-0.4	-0.1	-1.7	-1
Average. whole sample	-5.90	-4.53	-4.33	-3.43	-3.40
Average plus std. deviation.	-11.85	-8.43	-7.73	-6.25	-6.10
Average	-23.22	-21.10	-20.39	-19.11	-19.57
Average plus std. deviation	-29.56	-25.26	-23.42	-22.56	-22.38

Source: Tanzi, (2000).

countries sample), namely that a country is an outlier, when the budget deficit is bigger than the average plus number of standard deviations (here plus one standard deviation), than, out of the group of countries, which experienced a crisis, only Kyrgyz Republic, Russia and Kazakhstan appear to perform significantly worse.

However, Armenia is also classified as an outlier in 1995–1996, and Georgia has performed significantly worse in 1994, and yet these countries did not experience a currency crisis (according to crisis index) within the standard signalling horizon, i.e. 24 months. The only effect of the fiscal imbalances was a hyperinflation that both countries experienced in 1993–1994.

Overall, the countries that experienced a crisis, had, on average, larger fiscal deficits, than remaining economies. The only exception is Belarus, which did experience a crisis, and yet did not exhibit excessive fiscal deficit, however in this case data probably underestimates the true stance of budget deficit [Antczak, et. al., 2000].

Looking at the enlarged sample, and comparing FSU economies with Eastern European countries, leads to similar conclusions. Eastern European countries have had, on average, much lower fiscal deficits that FSU economies. In the enlarged sample, Kazakhstan, Kyrgyz Republic, Armenia, Moldova, and Russia have found themselves among outliers, and out of Eastern European countries, Bulgaria had significantly larger imbalances in 1996, and in 1995 the deficit in this country was above 5% of GDP. Hungary's deficit was also large in 1995, but not large enough to classify this country as an outlier. Both Hungary in 1994, and Bulgaria in 1997, have experienced a currency crisis. However, the crisis in Hungary was relatively mild and was thus not identified by the exchange market pressure index.

Another country, among Eastern European economies, which suffered form a crisis in 1997, and a near-crisis in 1999, was Romania. This country displayed a fiscal deficit (around 4% of GDP), but it was not excessively large. Nonetheless, as in the case of Belarus, Romania's fiscal data is not very reliable.

Other countries, which experienced currency market turbulences during the second half on 1990's, but were not characterised by excessive deficits, were Czech Republic in 1997 and Slovak Republic in 1999 (the deficit of Slovak Republic approached 5% of GDP, but did has not exceeded this threshold). However, the exchange rate pressures in these countries were comparably small, and the crisis index did not identify them as crises countries.

Hence, most of the countries, that experienced a severe crisis during 1998–1999, were characterised by significant fiscal deficits, and these deficits were higher than in remaining economies. Nevertheless, the difference between the deficits of "calm" and "crisis" countries was not always statistically significant, but in each case the fiscal gap

of "crisis" country was above 5% of GDP. The exceptions are Romania and Belarus, but the fiscal statistics of these countries might understate the true stance of their public finances. Another exception is Armenia, which had a large deficit in 1997 and yet did not experience a crisis.

Government revenue ratio

Another useful indicator of fiscal sustainability is the ability of government to generate fiscal revenues. Inadequate revenues may result in a built-up of arrears or postponement of necessary expenditures, what is unsustainable and yet not manifested in a conventional cash-basis deficit.

Table 18. General Government Revenue to GDP Ratio

	1994	1995	1996	1997	1998
Armenia	27.7	19.9	17.6	19.7	20.6
Azerbaijan	33.8	17.6	17.6	19.7	17.1
Belarus	47.5	42.7	40.9	31.4	39
Georgia	7.7	10.7	14.2	17.8	16.4
Kazakhstan	18.5	16.9	13.2	13.6	18.2
Kyrgyz Republic	20.8	16.7	16.6	16.2	18.1
Moldova	31.3	33.9	32.1	36.3	34.6
Russia	34.6	33.5	33	36.4	31.5
Tajikistan	56	10.8	12.1	12.2	12
Turkmenistan	8.1	10.7	16.6	25.4	23.1
Ukraine	41.9	37.8	36.7	38	34
Uzbekistan	32.3	34.6	34.2	30.1	31.1
Baltic countries					
Estonia	41.1	39.9	39	39.3	39.5
Latvia	36.5	37.6	38.3	40.6	43.9
Lithuania	31.7	32.3	29.6	32.6	33.8
Average	31.3	26.3	26.1	27.3	27.5
Average (excl. Baltic countries)	30.0	23.8	23.7	24.7	24.6
Eastern Europe average		42.6	41.9	40.3	39.4

Source: Tanzi, (2000).

Compared to industrial or Eastern European transition countries, the ratio of fiscal revenues to GDP in FSU countries is generally low. This is however not surprising, given these countries GDP per capita levels [21]. According to Barbone and Polackova (1996) and Barbone and Polastri (1998), judging by the potential revenue capacity, the existing revenue level of FSU countries may be even too high. Their estimates of potential revenue capacity indicate, that the only countries that collected too little revenue, compared to potential level, were Kyrgyz Republic, Kazakhstan and Turkmenistan.

However, very low revenue levels are unsustainable and undermine the basic functions of the state. Buitler points out, that: "It seems unlikely that even the barest nightwatchman duties of the state can be discharged adequately with tax revenues

Table19. Budgetary Debt Service to Revenues

	1995	1996	1997
Armenia	…	…	7
Azerbaijan	0.1	0.3	1.6
Belarus	4	3	…
Georgia	9.5	8.3	9.1
Kazakhstan	1.7	2.1	4.3
Kyrgyz Republic	11.9	8.2	…8
Moldova	13.9	8.5	15.4
Russia	10.9	8.3	7.9
Tajikistan	22.5	18.4	6.6
Turkmenistan	…	…	…
Ukraine	10.9	7.5	5.3
Uzbekistan	18.1	7.1	11.3
Baltic countries			
Estonia	0.9	1.6	
Latvia	1.1	1.3	3.8
Lithuania	4.4	7.9	10.3
EU15 average. 1996	11.3		
Advanced transition 3*. 1995	8.1		

Source: McGettigan (2000), Kosterna (1998).

* Czech Republic, Poland, Hungary.

[21] As empirical studies show, GDP per capita is one of the most important determinants of revenue to GDP ratio.

restricted to 17% of GDP. The very survival of the state is put at risk by very low tax revenues" (1997, p. 35).

Adopting the Butler threshold of 17% of GDP, the collection of revenues has been a particularly pressing problem in Georgia, Kazakhstan and Kyrgyz Republic (in these countries this ratio improved in 1998), Tajikistan, and until 1996 Turkmenistan.

Debt service to government revenue

Another indicator of fiscal stance, proposed by Kapur and van der Mensbrugghe (1997) and McGettigan (2000) is public debt service, as percent of government revenue. This indicator serves to assess, although very imperfectly, the ability and willingness of government to service its obligations out of its current income.

The estimates are presented in Table 19. The data suggest that interest payments generally do not account for a large percentage of government revenue, compared for instance to the EU or advanced transition countries. This ratio is above 10 percent of revenues, therefore quite high, only in Moldova, Uzbekistan, and Lithuania.

Deficit financing

An important determinant of the sustainability of budget deficits is the source of their financing. Steady and predictable flow of concessional foreign finance is much more stable than short-term private financing [22]. Examination of this indicator roughly confirms the proposition, that private financing and rapid accumulation of short and medium term obligations, together with a significant budget deficit, were important determinants of increased vulnerability to 1998/1999 financial turmoil.

In 1997 Russia, Ukraine and Moldova relied mostly on domestic financing, mainly by short-term government securities (see case studies). Moreover, the remaining external sources of finance were mostly commercial, medium term bonds.

Kazakhstan, another crisis-hit country, in 1997 relied on privatisation receipts and foreign financing, a significant part of which was owed to commercial creditors (see Table 23). In 1996 and 1997 Kazakhstan borrowed 550 million US$ on international markets; the authorities also issued domestic T-bills and it is estimated that by the end of 1997 foreigners held over 120 million US$ of these securities [Gurgen, 2000, Valdivieso, 1998].

The remaining FSU countries relied on non-commercial domestic financing or on foreign sources, mostly longer-term, owned to official multilateral and bilateral creditors

[22] The case studies suggest that another very useful indicator would be the accumulation of short-term domestic debt; unfortunately the complete data on domestic debt of FSU countries is unavailable. An imperfect approximation of accumulation of public debt is the method of deficit financing.

(see Appendix 2). The T-bill markets in these countries remained very modest; for instance in Azerbaijan and Armenia the T-bill market has been very limited (in Azerbaijan in 1999 and Armenia in 1996 and 1997 T-bills amounted to less than 1% of GDP), in Tajikistan T-bill market has been established in September 1998 only and has also been very modest.

Therefore a majority of the countries, that experienced the 1998/1999 crisis were one step ahead in developing financial markets, what has allowed them to rely on short -term commercial financing of the deficit. However, this market-based financing, without achieving fiscal sustainability led to a disaster. Therefore, ironically, these countries have been punished for turning to the market, or rather by not backing financial reforms with fiscal adjustment.

3.2.1. Fiscal Stance – External Liabilities

External liabilities significantly influence the ability of a country to withstand negative shocks [Frenkel and Rose, 1996; IMF, 1998b]. The country's vulnerability to negative disturbances is affected by the amount and composition of its liabilities, their duration, interest rate structure, currency composition, and type of creditor.

It is generally perceived, that FDI's are the most stable and safe form of capital inflow, while short-term capital is the most volatile and therefore makes a country more vulnerable to shocks [23]. Capital from official sources is less likely to be prone to sudden reversals, contrary these flows may even increase in event of crisis. However, they also may be delayed, for instance due poor policy practices.

The level and composition of external debt

The remarkable feature of the FSU indebtedness, compared to most other developing economies, is that most of the outstanding stock of external debt is owed by government. This is another feature, which links the fiscal and external sustainability.

A large part of external liabilities are owed to official creditors, what partly safeguards the countries from sudden reversals of foreign capital flows. However, some countries have shifted towards private market financing, predominantly through Eurobond issues [24].

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[23] However, the stability of FDI's has been questioned by Doodley et. al. They have found, that a high level of FDI seems to be related with higher variability of capital flows. This is probably due to multinational corporations moving money across countries trough transfers between subsidiary and parent (Frenkel, Rose, 1996).

[24] Kapur and van der Mensbrugghe (1997) note, that a very broad range of debt instruments has been used across CIS countries, including public bond issue, medium-term loans, private placements, individual bank borrowing, etc.

Table 20. Financing of Government Deficit in 1997, in percent of GDP

Country	Domestic financing						Privatis. revenues	Foreign financing	Deficit
	Total	Banking sector	Monetary auth.	Comm. banks	Non-bank	T-bills			
Armenia	-0.6	-1.1	-1.4		0.5	0.5	0.0	6.4	5.9
Azerbaijan	-0.5	-0.5	-1.3			0.0	0.1	2.0	1.6
Georgia	3.6						0.6	2.2	6.3
Kazakhstan	1.0	0.9			0.1		3.2	2.6	6.8
Kyrgyz Republic	1.1	0.8	0.4	0.4	0.4		0.1	8.0	9.2
Uzbekistan	1.5	1.3	0.0			0.2	0.5	0.0	2.2
Tajikistan	1.6						0.6	1.1	3.3
Moldova	4.0		1.4	1.9	0.8			2.8	6.8
Ukraine	5.2		1.2	1.3	2.8		0.1	0.3	5.6
Russia	5.2	1.7	1.2	0.5	4.4	3.0	0.9	1.6	7.7

Source: various IMF Staff Country Reports.

Subsequently, the share of liabilities toward private creditors, particularly short and medium term, has increased, what leaves these countries more vulnerable to capital flow reversals. As Kapur and van der Mensbrugghe (1997) point out, a substantial part of public borrowing is not used for investment purposes, but rather it finances current consumption. As a result, the growing amount of short and medium term commercial debt is not reflected in increased capacity to repay.

Tables 21, 22 and 23 provide data for selected aspects of external indebtedness. Complete data on external debt is in Appendix 2.

Table 21. Total External Debt and Total Long-term Public Debt, in percent of GDP

	Total external debt			Long-term public debt	
	1995	1996	1997	1996	1997
Armenia	26.7	33.7	38.0	26.5	29.2
Azerbaijan	9.2	12.1	11.7	6.8	5.4
Belarus	9.1	5.4	5.2	3.4	2.9
Georgia	40.8	30.6	27.5	24.8	22.3
Kazakhstan	19.4	15.2	19.5	10.4	12.8
Kyrgyz Republic	18.5	28.5	42.8	22.9	33.7
Moldova	22.3	37.5	51.8	25.3	39.2
Russian Federation	35.3	29.7	26.2	23.8	21.8
Tajikistan	32.2	35.2	44.6	33.0	33.1
Turkmenistan	9.3	18.7	63.4	11.5	44.5
Ukraine	17.4	21.6	18.5	15.0	11.8
Uzbekistan	8.0	10.0	11.2	8.3	8.2
Baltic countries					
Estonia	6.0	9.3	14.1	5.0	4.6
Latvia	9.4	9.2	9.3	5.8	6.0
Lithuania	11.1	15.6	16.4	9.3	11.2
Average	18.3	20.8	26.7	15.5	19.1
Average plus std. deviation	29.4	31.7	44.2		
Average. excl. Baltic countries	20.7	23.2	30.0	16.64	22.08

Source: World Bank, Global Development Finance, 1999 CD-ROM.

Until 1997, the external debt of FSU countries was not high, compared to international standards. However, in some countries it has increased rapidly. However,

after 1998–1999 series of devaluation crises, the ration of external debt to GDP increased in most CIS countries, dramatically exceeding the level of 100%.

The growth of external debt started form null, as all the countries have signed the Zero-Option Agreement, under which Russia took the responsibility for all outstanding debt of USSR (Baltic countries did not signed the Agreement as they argued that they were legally never a part of USSR and therefore the ownership of the former USSR liabilities did not arise, [Gurgen, 1999]).

During 1995–1997, high external liabilities, relative to other countries were noted in Armenia (1996), Georgia (1995), Moldova (1997), Russian Federation (1995), Tajikistan (1995–1997), and Turkmenistan (1997). The liabilities of Kyrgyz Republic were also quite high in 1997, however less than the threshold value of average plus one standard deviation.

Table 21 thus indicates, that some of crisis countries had significantly larger level of public indebtedness, but not all of them. Ukraine and Belarus had relatively low levels

Table 22. Short-term Debt Outstanding, in percent of GDP

	1995	1996	1997
Armenia	0.2	0.1	1.3
Azerbaijan	0.4	0.4	0.1
Belarus	0.6	0.5	1.0
Georgia	2.9	1.5	0.4
Kazakhstan	2.0	1.1	1.6
Kyrgyz Republic	0.4	0.3	1.5
Moldova	0.2	1.2	1.1
Russian Federation	3.0	2.9	1.3
Tajikistan	2.2	1.1	3.6
Turkmenistan	0.4	7.1	18.9
Ukraine	0.5	1.0	1.8
Uzbekistan	0.9	0.4	1.7
Baltic countries			
Estonia	0.6	2.5	6.6
Latvia	0.6	0.9	1.2
Lithuania	0.7	2.0	1.7
Average	1.0	1.5	2.9
Average + std. deviation	2.0	3.3	7.6
Average (exc. Turkmenistan)	1.1	1.1	1.8
Average + std. deviation	2.1	2.0	3.4

Source: World Bank, Global Development Finance, 1999 CD-ROM.

of external debt, what did not safeguard them form a significant exchange market pressure. However, in the context of external sustainability, other aspects of indebtedness, apart form its size, are also relevant.

Some interesting patterns emerge when we compare the most volatile indebtedness: ratios of short-term debt to GDP and the amount of debt owed to private creditors.

The crises in Asia and Mexico exemplified the dangers of short-term liabilities. Both Mexico and Asian countries, prior to crises, accumulated short-term debt, which resulted in severe problems with liquidity.

Among the FSU economies, the biggest external short-term debt has belonged to Turkmenistan. Turkmenistan has acquired also a large trade – related claims against Ukraine, Georgia, Azerbaijan and Armenia – at the end of 1997 Turkmenistan held a stock of outstanding claims of over 1 billion US$ for unpaid natural gas bills (Gurgen, 1999). Therefore the net debt of Turkmenistan is considerably smaller.

Table 23. Long and Medium Term Public Debt Owed to Private Creditors, in percent of GDP

	1995	1996	1997
Armenia	0.0	0.0	0.0
Azerbaijan	0.0	0.0	0.2
Belarus	2.6	1.6	1.2
Georgia	3.7	2.2	0.2
Kazakhstan	2.8	4.2	5.5
Kyrgyz Republic	0.0	0.0	0.0
Moldova	0.5	3.5	13.6
Russian Federation	12.6	8.9	8.7
Tajikistan	3.5	3.4	3.4
Turkmenistan	3.9	8.2	38.8
Ukraine	4.6	4.8	4.4
Uzbekistan	1.8	3.2	3.5
Baltic countries			
Estonia	0.4	1.2	1.0
Latvia	1.4	1.4	0.9
Lithuania	1.6	4.2	6.5
Average	2.6	3.1	5.9
Average excl. Turkmenistan	2.5	2.8	3.5
Average + std. deviation (excl. Turkmenistan)	5.8	5.2	7.5

Source: World Bank, Global Development Finance, 1999 CD-ROM.

Apart form Turkmenistan, Estonia and Tajikistan have also acquired quite a large share of short-term liabilities. The debt of Tajikistan has mainly been a result of an accumulation of short-term trade credits and unsettled debit balances with CIS and neighbouring countries. During 1996–1997 Tajikistan reached agreements with Russia and Uzbekistan to reschedule their debt on concessional terms. [IMF, 2000].

In other countries short-term indebtedness was relatively small, but in 1997 it has rapidly increased in several countries: in Kyrgyz Republic, Ukraine, Uzbekistan, Belarus, Tajikistan and Armenia. This rapid increase might signal increased vulnerability, but due to lack of data it is impossible to establish, whether this debt is public or private, and therefore, whether the mechanisms behind this accumulations were related to fiscal factors.

Public debt owed to private creditors was largest in Turkmenistan, Moldova, Russian Federation, Kazakhstan, Ukraine and Lithuania. Apart form Lithuania [25], all of these countries were hit by a crisis. However, formal statistical criteria applied to all countries, excluding Turkmenistan, pointed only to Moldova (1997), and Russian Federation (1995–1997), as outliers.

This indicates, that most of the countries, which were severely hit by a crisis, resorted to finance the large fiscal deficits (or other fiscal operations) with commercial

Table 24. Debt Service to Reserves (in % of Gross Reserves)

	1995	1996	1997
Armenia	58.6	43.8	15.2
Azerbaijan	25.5	30.1	18.4
Belarus	21.9	20	17.7
Estonia	6	9.8	6.8
Georgia	22.9	36.8	46.2
Kazakhstan	17.9	27.2	44.6
Kyrgyz Republic	52.7	53.6	27.7
Latvia	11.1	9.2	7.6
Lithuania	12.5	30	49
Moldova	50.3	27.6	57.1
Russia	148.3	249.7	157.4
Tajikistan	1857.1	1200	417.5
Turkmenistan	23.4	25.3	17.9
Ukraine	198.5	224.1	251.4
Uzbekistan	34.2	18.5	46.1

Source: McGettigan, (2000).

[25] On Turkmenistan see footnote 20.

borrowing, what soon proved to be unsustainable. None of the FSU economies, that exhibited the combination of growing debt owed to private creditors and large fiscal deficit, has escaped the crisis.

Debt service to reserves

Another useful indicator of external sustainability may that of ratio of reserves relative to debt stock and debt service payments. This ratio is crucial in times of turbulences, when the lack of liquidity can significantly hamper investors' confidence.

Table 25. Long Term Public Debt in 1997, in percent of GDP, and its Average Growth Rate During 1995–1997, CIS, Baltic and Eastern European Countries

	1997	Growth rate
FSU economies		
Armenia	29.20	16.87%
Azerbaijan	5.40	-2.75%
Belarus	2.90	-32.08%
Estonia	4.60	20.68%
Georgia	22.30	-18.62%
Kazakhstan	12.80	-2.79%
Kyrgyz Republic	33.70	53.59%
Latvia	6.00	6.19%
Lithuania	11.20	32.83%
Moldova	39.20	62.36%
Russian Federation	21.80	-13.85%
Tajikistan	33.10	5.13%
Turkmenistan	44.50	157.28%
Ukraine	11.80	-5.44%
Uzbekistan	8.20	13.14%
Eastern Europe		
Bulgaria	79.33	8.71%
Czech Republic	23.89	12.19%
Hungary	33.72	-22.02%
Poland	24.88	-15.45%
Romania	25.60	48.57%
Slovak Republic	24.08	10.91%
Average. FSU	19.11	19.50%
Average. whole sample	23.72	15.97%
Average. whole sample.	22.14	8.91%
Average + std. dev	39.83	34.29%

Source: World Bank, Global Development Finance, 1999 CD-ROM.

The debt service to reserves ratio has been dangerously high in Tajikistan, Russia and Ukraine, signalling a serious liquidity problem.

Public debt dynamics

The dynamics of public debt accumulation allows to assess the sustainability of fiscal policy and to compare the developments of indebtedness among FSU and Eastern European countries together. The evaluation of the level of indebtedness of these two

Table 26. Long-term Public Debt Owed to Private Creditors in 1997, in percent of GDP, and its Average Growth Rate During 1995–1997, CIS, Baltic and Eastern European Countries

	1997	Growth rate
FSU economies		
Armenia	0.00	0.00%
Azerbaijan	0.20	0.00%
Belarus	1.20	-31.73%
Estonia	1.00	91.67%
Georgia	0.20	-65.72%
Kazakhstan	5.50	40.48%
Kyrgyz Republic	0.00	0.00%
Latvia	0.90	-17.86%
Lithuania	6.50	108.63%
Moldova	13.60	444.29%
Russian Federation	8.70	-15.81%
Tajikistan	3.40	-1.43%
Turkmenistan	38.80	241.71%
Ukraine	4.40	-1.99%
Uzbekistan	3.50	43.58%
Eastern Europe		
Bulgaria	55.50	10.36%
Czech Republic	21.71	15.89%
Hungary	26.83	-22.97%
Poland	5.24	-16.33%
Romania	10.61	114.02%
Slovak Republic	19.91	10.89%
Average. FSU	5.90	42.44%
Average. enlarged sample	10.84	45.13

Source: World Bank, Global Development Finance, 1999 CD-ROM.

group of countries is not very meaningful due to at least a couple of reasons. To name just one, some Eastern European countries entered the transition period with significant debt burdens, while FSU countries began form zero level.

In the larger sample, excluding Turkmenistan, which rate of public debt growth has been huge and exceeding any standards, a substantial indebtedness accumulation has been recorded in Moldova, Kyrgyz Republic and Romania, all of which experienced a crisis. On the other hand Georgia, Kazakhstan, Russian Federation and Ukraine have lowered their debt ratio, and yet suffered form exchange market turbulences.

Regarding the developments of public indebtedness owed to private creditors, the performance of FSU, Baltic and Eastern European countries was very divergent. While many countries have, on average, lowered their debt owed to private creditors, in some it has increased rapidly. Among the latter are Moldova, Turkmenistan and Romania, where the debt has increased by more than 100 percent.

3.3. The Relative Performance of FSU Countries and Fiscal Indicators – Summary

Table 27 and 28 provide a summary of the relative fiscal performance of the FSU countries. Table 27 contains an assessment of only FSU countries, while Table 28 contains data on the larger sample of both FSU and Eastern European countries.

(+) denotes that an indicator was larger than its average plus one standard deviation across all FSU.

(?) indicates missing data.

(*) indicates that the indicator was relatively large, but did not exceed the statistical threshold. In case of budget deficit "relatively large" is over 5% of GDP, during at least two years; in case of public debt owed to private creditors – over 4% of GDP, and external debt – over 40 of GDP.

(1995) shows that the ratio was larger in year 1995, and therefore did not fall within the 24 months' signalling horizon, thus was not counted as an indicator of vulnerability.

The "excessiveness" of debt service to revenues and debt service to reserves were judged basis of arbitrary judgement – debt service to revenues was considered as large, if it exceeded 10% and debt service to reserves was treated as excessive, if it exceeded 100%. Public revenue to GDP was considered as too small if it was below 17% (Buitler's threshold).

Table 27. The Relative Fiscal Performance of FSU Countries in 1995–1997 – Summary, Smaller Sample (Relative to GDP, Unless Otherwise Stated)

	Crisis in 1998/1999	Government budget deficit	Public revenue	External debt	Short-term debt	Long-term public debt owed to private creditors	Debt service to revenue	Debt service to reserves	Memorandum: Short-term deficit financing	No. of (+) + no. of (*)
Armenia	no	+		+						2
Azerbaijan	no									0
Belarus	yes								?	0
Georgia	near	*	+	+ (1995)	+				?	2+1
Kazakhstan	yes	+	+			*				2+1
Kyrgyz Republic	near	+	+	*						2+1
Moldova	yes	*		+		+	+		+	4+1
Russia	yes	+		+ (1995)	+	+		+	+	5
Tajikistan	?	*	+	+	+			+		4+1
Turkmenistan	?		+	+	+	+			?	4
Ukraine	yes	*				*		+	+	2+2
Uzbekistan	?						+			1
Estonia	no				+				?	1
Latvia	no								?	0
Lithuania	no				+	*	+		?	2+1

Source: Tables 17–26.

A "near crisis" denotes, that the currency market pressure indicator was larger than its mean plus 1,5 standard deviations (as opposed to "crisis", where the indicator was bigger than average plus 2 standard deviations).

A "near/no crisis" means, that the countries were not identified by exchange rate market pressure index as crisis countries, but have suffered from currency market pressures.

The FSU countries that experienced a crisis or a near-crisis, did, on average, exhibit more widespread fiscal weaknesses and/or their external liabilities were more vulnerable to turbulences than other countries in that group. This is especially evident, if we adopt less strict (statistically) and more arbitrary criteria of judging, what value of an indicator signals fiscal trouble. In that case Russian Federation, Moldova, Ukraine, had four or more "fiscal weaknesses", Kazakhstan three. Therefore, all countries that experienced a crisis or a near-crisis situation, had numerous fiscal imbalances. The countries that had a near-crisis situation, i.e. Georgian and Kyrgyz Republic also had three "fiscal weaknesses".

The fiscal indicators also point to Tajikistan and Turkmenistan, as to vulnerable countries. The existing data on exchange rates indicates, that these countries did experience exchange rate turbulences. However, since the crisis index was not calculated due to unavailability of full data, it is hard to judge, whether the magnitude o these turbulences was comparable to the crises events in other countries. Turkmenistan has a multiple exchange rate system, non-convertible currency and credit rationing (the same relates to Belarus and Uzbekistan). Even if the official exchange rate did not depreciate, the black market one certainly did depreciate. What concerns Tajikistan, they had to devalue in 1999 [26].

Furthermore, Table 27 indicates, that apart from the number of "fiscal weaknesses" an important aspect in assessing the vulnerability of a country are specific combinations of "weaknesses", like a substantial deficit, together with short and medium term deficit financing and an accumulation of debt owed to private creditors. None of the countries, that exhibited such combination, had escaped a crisis.

Obviously, the analysis of only fiscal indicators is not enough to fully assess the probability of a crisis. For instance Belarus, did experience a crisis, but the fiscal indicators did not point to troubles yet (however, in case on Belarus the reported fiscal deficit is probably understated, see Antczak et. al. 2000). On the other hand, Lithuania has shown three "fiscal weaknesses" and yet has escaped significant exchange rate market pressures

[26] I thank Marek Dąbrowski for the remarks concerning Tajikistan and Turkmenistan.

This does not mean that fiscal indicators are misleading. It just indicates that other factors have to be taken into account, since it is impossible to fully assess the vulnerability of an economy, without looking at several different spheres.

In fact, overall, fiscal indicators did quite a good job in indicating the potential dangers of a crisis. Out of the sample of fifteen countries, they did point to nine countries of increased fiscal imbalances, out of which four did experience a crisis and two found itself in a near crisis situation (according to the crisis index). The remaining three were Lithuania, Tajikistan and Turkmenistan. Out of the rest of the countries, only one – Belarus – not indicated as vulnerable, experienced a crisis.

Table 28. The Relative Performance of Transition Countries in 1996–1997, Larger Sample

	Crisis	Fiscal deficit to GDP	External public debt dynamics	Public debt owed to private creditors dynamics
Armenia	no	+		
Azerbaijan	no			
Belarus	yes			
Estonia	no			
Georgia	near	*		
Kazakhstan	yes	+		
Kyrgyz Republic	near	+	+	
Latvia	no			
Lithuania	no			+
Moldova	yes	+	+	+
Russian Federation	yes	+		
Tajikistan	?	*		
Turkmenistan	?		+	+
Ukraine	yes	*		
Uzbekistan	?			
Bulgaria	yes	+		
Czech Republic	no/near			
Hungary	no/near	*		
Poland	no			
Romania	yes		+	+
Slovak Republic	no/near			

Source: Tables 17, 24, 25.

Table 28 reinforces the conclusion, that most of the countries, which experienced a severe currency crisis, had significant fiscal deficits. Out of twenty-one countries listed in Table 28, nine have experienced crisis or near-crisis, and out of these, seven had large fiscal deficits. Among the remaining twelve economies, that did not experience a crisis, only two had large deficits, and one of them was Hungary, which in fact had suffered form exchange rate pressures (but they were not singled out buy the crisis index).

The public debt dynamics was also larger in some of the countries, which experienced a currency market pressures, but it was not a distinguished feature of most of crisis economies.

Table 29 presents an assessment of the usefulness of fiscal indicators in predicating the crises, on basis of the smaller sample, containing only FSU countries.

All indicators are analysed from 1995. Tajikistan, Turkmenistan and Uzbekistan were excluded due to lack of crisis index. "Near crisis" was counted as a crisis event.

(+) indicates that only the indicators, which received a (+) in Table 27 were taken into account, and (+*) denotes, that both (+) and (*) were considered.

The most reliable indicator has been the ratio of government budget deficit. Both the tendency to issue the signal before a crisis and not to issue a signal, when the crisis did not emerge, was quite high. This indicator was also reliable in the larger sample (see Table 28): its tendency to issue a signal, when the crisis did occur within next 24 months was 7/8 and its tendency not to issue a signal when the crisis did not occur was 8/10.

The amount of external public liabilities owed to commercial creditors also performed quite well, but only when the arbitrary values (*) were taken, however then, it had a tendency to overstate the danger of crisis.

The indicator of the indebtedness level was less reliable.

4. Conclusions

While the deepening of financial markets has made the nature and roots of crises much more complex, than it is described by the first-generation models, the empirical research indicates that in developing and transition countries, fiscal variables remain among factors, that increase the likelihood of exchange rate and financial pressures.

On average, currency crises in developing and transition were preceded by a higher than in tranquil periods, budget deficits and public indebtedness.

Table 29. The Relative Fiscal Performance of FSU Countries in 1995–1997 – Summary, Smaller Sample (Relative to GDP, Unless Otherwise Stated)

	A No. of countries, where indicator was **larger** and crisis **did emerge** within 24 months	B No. of countries, where indicator was **larger** and crisis did **not emerge** within 24 months	C No. of countries, where indicator was **not larger** and crisis did **emerge** within 24 months	D No. of countries, where indicator was **not larger** and crisis did **not emerge** within 24 months	True indications (A+D)	Wrong indications (B+C)	Tendency to issue a signal before a crisis A/(A+C)	Tendency not to issue a signal when there is no crisis D/(D+B)
Government budget deficit	3 (+); 6(+*)	1 (+*)	1 (+*); 4(+)	4 (+*)	7 (+); 10 (+*)	2 (+*); 5 (+)	3/7 (+); 6/7 (+*)	4/5 (*+)
External debt	1 (+); 2(+*)	3 (+*)	6 (+); 5 (+*)	4	5 (+); 6 (+*)	8 (+*); 9 (+)	1/7(+); 2/7(+*)	4/7
Short – term external debt	2	2	5	3	5	7	2/7	3/5
Debt service to reserves	2	0	5	5	7	5	2/7	1
External public liabilities owed to private creditors	2 (+); 4 (+*)	1 (*+); 0 (+)	5 (+); 3 (+*)	5 (+); 4 (+*)	7 (+); 8 (*+)	5 (+); 4 (*+)	2/7 (+); 4/7(+*)	1 (+) 4/5 (+*)

Source: Tables 17 – 24.

The 1998–1999 series of currency crises of FSU economies, have once again demonstrated the crucial role of fiscal sustainability in the overall vulnerability to negative external developments. Fiscal imbalances: large deficits and rapidly growing short and medium term liabilities, have been among the key determinants of the recent financial turbulences in transition countries. A majority of the countries, which suffered form the 1998/1999 crisis, implemented a marked based financing of the fiscal deficit, but have failed to overcome fiscal problems. As these countries accumulated large short and medium term liabilities, the investors became increasingly concerned about the ability of governments to honour their obligations. When they began to withdraw their capital, the countries were faced with significant reserves and exchange rate pressures and governments with liquidity crisis.

The indicators of fiscal vulnerability, especially the level of public deficit, amount of debt owed to commercial creditors and short-term deficit financing have been quite successful in establishing the increased risk of a crisis.

However, the fiscal imbalances of FSU economies were not just a consequence of the conducted fiscal policy. They were also a manifestation of the deeper structural shortcomings and the lack of consistent reforms: soft budget constraints across the economy, weak governments, inefficient tax systems, Soviet-type budget expenditures.

The recent crises served, therefore, as stress test on the reforms in transition economies. The countries, which have pushed ahead with challenging structural reforms, have survived the test and managed to maintain stability. In countries, which lacked the sustained progress in structural reforms, the contagion effects of the East Asian crisis were readily propagated.

However, when discussing the importance of fiscal indicators, a general warning is needed: no two currency crises have been alike, and so far, no indicator has been developed that can successfully predict a crisis. Fiscal factors are not an exception – we do observe developing as well as transition countries, with large fiscal imbalances, that were not hit by a crisis and on the other hand, countries with sound fiscal balance that experienced a crisis.

Appendix 1

Sample and data:

Developing countries sample, 1980–1999:

Argentina, Bangladesh, Brazil, Chile, China, P.R Mainland, China, P.R. Hong Kong, Colombia, Costa Rica, Ecuador, Egypt, India, Indonesia, Israel, Jamaica, Korea, Malaysia, Mexico, Nigeria, Pakistan, Paraguay, Peru, Philippines, Singapore, South Africa, Sri Lanka, Thailand, Turkey, Uruguay, Venezuela, Bolivia, Zimbabwe

Central European and CIS countries sample, 1992–2000:

Armenia, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, Ukraine.

All the data is from IFS CD-ROM, May 2000.

Index

Following Kaminsky and Reinhart (1999) the index of currency crisis I is constructed on the basis of monthly data, as follows:

$I = (e_t - e_{t-1}) / e_{t-1} - w * (R_t - R_{t-1}) / R_{t-1}$,

where

e: exchange rate

R: reserves

$w = \sigma e/\sigma R$

σe: standard deviation of $(e_t - e_{t-1}) / e_{t-1}$,

σR: standard deviation of $(R_t - R_{t-1}) / R_{t-1}$,

The values of the index that were greater than the sum of its the mean and two standard deviations, were classified as crisis.

The index was constructed separately for developing countries sample and for Central European and CIS countries sample. To avoid the distortions associated with high inflation, each sample was divided, according to whether the yearly inflation is higher or lower than 150%.

In each sample, the index for the countries, that had inflation equal or greater than 150% percent, was calculated separately.

Fiscal indicators:

To depict the behaviour of fiscal variables during and before the crisis, each variable was divided into "crisis" and "tranquil" observations. The "crisis" observations were the

values of a variable in the year of crisis and two years before the crisis. Tranquil period observations were the remaining.

Then, for each variable, I computed the means of the "crisis" observations and the mean of all the "tranquil" observations. The last step was to calculate the percent difference between "crisis" and their "tranquil" period means.

For developing countries, the percent difference (relative to "tranquil" mean) was also calculated for observations three and four years prior to crisis.

Appendix 2

Table 1A. Total External, Public and Publicly Guaranteed (PPG) and Total Private Debt of FSU Countries, in % of GDP

Country	Series Name	1994	1995	1996	1997
Armenia					
	Total debt stocks	18.9%	26.7%	33.7%	38.0%
	PPG. total	16.6%	21.5%	26.5%	29.2%
	PPG. private creditors	0.0%	0.0%	0.0%	0.0%
	PPG. official creditors	16.6%	21.5%	26.5%	29.2%
	PPG. multilateral	9.2%	15.0%	19.1%	21.1%
	PPG. bilateral	7.5%	6.5%	7.4%	8.1%
	PNG. total private nonguaranteed	0.0%	0.0%	0.0%	0.0%
	Short-term debt outstanding	0.1%	0.2%	0.1%	1.3%
	Concessional debt/Total debt (%)	9.6	28.6	36.7	38.9
	Average maturity (years)	20.7	32.6	33.7	28.8
Azerbaijan					
	Total debt stocks	3.1%	9.2%	12.1%	11.7%
	PPG. total	2.8%	5.9%	6.8%	5.4%
	PPG. private creditors	0.0%	0.0%	0.0%	0.2%
	PPG. official creditors	2.8%	5.9%	6.8%	5.2%
	PPG. multilateral	0.2%	2.8%	3.8%	3.5%
	PPG. bilateral	2.6%	3.1%	3.0%	1.7%
	PNG. total private nonguaranteed	0.0%	0.0%	0.0%	0.0%
	Short-term debt outstanding	0.3%	0.4%	0.4%	0.1%
	Concessional debt/Total debt (%)	0.0	9.4	14.8	23.2
	Average maturity (years)	9.4	32.2	27.9	22.3

Table 1A. Total External, Public and Publicly Guaranteed (PPG) and Total Private Debt of FSU Countries, in % of GDP

Country	Series Name	1994	1995	1996	1997
Belarus					
	Total debt stocks	6.7%	9.1%	5.4%	5.2%
	PPG. total	5.8%	6.8%	3.4%	2.9%
	PPG. private creditors	2.0%	2.6%	1.6%	1.2%
	PPG. official creditors	3.8%	4.2%	1.8%	1.7%
	PPG. multilateral	0.9%	1.0%	1.1%	1.2%
	PPG. bilateral	2.9%	3.2%	0.7%	0.6%
	PNG. total private nonguaranteed)	0.0%	0.1%	0.1%	0.0%
	Short-term debt outstanding	0.4%	0.6%	0.5%	1.0%
	Concessional debt/Total debt (%)	36.2	28.6	7.8	7.4
	Average maturity (years)	11.8	14.0	19.0	6.9
Georgia					
	Total debt stocks	134.7%	40.8%	30.6%	27.5%
	PPG. total	84.5%	33.9%	24.8%	22.3%
	PPG. private creditors	9.4%	3.7%	2.2%	0.2%
	PPG. official creditors	75.1%	30.2%	22.6%	22.1%
	PPG. multilateral	13.5%	8.0%	6.8%	6.6%
	PPG. bilateral	61.6%	22.2%	15.8%	15.5%
	PNG. total private nonguaranteed)	0.0%	0.0%	0.0%	0.0%
	Short-term debt outstanding	46.4%	2.9%	1.5%	0.4%
	Concessional debt/Total debt (%)	0.1	7.2	30.3	43.5
	Average maturity (years)	13.5	35.2	37.0	34.2
Kazakhstan					
	Total debt stocks	14.4%	19.4%	15.2%	19.5%
	PPG. total	11.5%	14.6%	10.4%	12.8%
	PPG. private creditors	1.7%	2.8%	4.2%	5.5%
	PPG. official creditors	9.8%	11.8%	6.3%	7.3%
	PPG. multilateral	1.1%	2.0%	2.8%	3.8%
	PPG. bilateral	8.7%	9.8%	3.4%	3.6%
	PNG. total private nonguaranteed)	0.1%	0.4%	0.7%	2.3%
	Short-term debt outstanding	1.2%	2.0%	1.1%	1.6%
	Concessional debt/Total debt (%)	0.1	2.7	4.1	3.7
	Average maturity (years)	13.3	13.3	11.5	13.9

Table 1A. Total External, Public and Publicly Guaranteed (PPG) and Total Private Debt of FSU Countries, in % of GDP

Country	Series Name	1994	1995	1996	1997
Kyrgyz Republic					
	Total debt stocks	17.8%	18.5%	28.5%	42.8%
	PPG. total	14.2%	14.3%	22.9%	33.7%
	PPG. private creditors	0.0%	0.0%	0.0%	0.0%
	PPG. official creditors	14.2%	14.3%	22.9%	33.7%
	PPG. multilateral	3.6%	5.5%	10.7%	18.6%
	PPG. bilateral	10.7%	8.8%	12.3%	15.0%
	PNG. total private nonguaranteed)	0.0%	0.0%	0.0%	0.0%
	Short-term debt outstanding	0.5%	0.4%	0.3%	1.5%
	Concessional debt/Total debt (%)	52.0	60.4	47.9	50.0
	Average maturity (years)	34.3	28.8	31.6	26.9
Latvia					
	Total debt stocks	6.8%	9.4%	9.2%	9.3%
	PPG. total	3.8%	5.5%	5.8%	6.0%
	PPG. private creditors	0.6%	1.4%	1.4%	0.9%
	PPG. official creditors	3.2%	4.1%	4.4%	5.1%
	PPG. multilateral	2.1%	2.8%	3.2%	3.7%
	PPG. bilateral	1.1%	1.2%	1.3%	1.4%
	PNG. total private nonguaranteed)	0.0%	0.0%	0.0%	0.6%
	Short-term debt outstanding	0.1%	0.6%	0.9%	1.2%
	Concessional debt/Total debt (%)	15.7	12.7	13.4	13.9
	Average maturity (years)	14.7	9.0	15.3	13.8
Lithuania					
	Total debt stocks	8.5%	11.1%	15.6%	16.4%
	PPG. total	4.6%	6.2%	9.3%	11.2%
	PPG. private creditors	0.9%	1.6%	4.2%	6.5%
	PPG. official creditors	3.7%	4.5%	5.2%	4.7%
	PPG. multilateral	2.0%	2.4%	2.9%	2.6%
	PPG. bilateral	1.6%	2.2%	2.3%	2.1%
	PNG. total private nonguaranteed)	0.0%	0.0%	0.5%	0.0%
	Short-term debt outstanding	0.5%	0.7%	2.0%	1.7%
	Concessional debt/Total debt (%)	15.7	13.1	8.6	7.0
	Average maturity (years)	12.5	9.3	11.3	6.0

Table 1A. Total External, Public and Publicly Guaranteed (PPG) and Total Private Debt of FSU Countries, in % of GDP

Country	Series Name	1994	1995	1996	1997
Moldova					
	Total debt stocks	21.3%	22.3%	37.5%	51.8%
	PPG. total	13.9%	14.6%	25.3%	39.2%
	PPG. private creditors	0.0%	0.5%	3.5%	13.6%
	PPG. official creditors	13.9%	14.1%	21.8%	25.6%
	PPG. multilateral	6.9%	7.1%	11.2%	14.1%
	PPG. bilateral	7.0%	7.0%	10.7%	11.5%
	PNG. total private nonguaranteed)	0.0%	0.0%	0.0%	0.0%
	Short-term debt outstanding	0.3%	0.2%	1.2%	1.1%
	Concessional debt/Total debt (%)	15.6	23.5	19.7	18.5
	Average maturity (years)	17.1	11.8	8.5	18.0
Russian Federation					
	Total debt stocks	37.9%	35.3%	29.7%	26.2%
	PPG. total	33.5%	29.4%	23.8%	21.8%
	PPG. private creditors	13.9%	12.6%	8.9%	8.7%
	PPG. official creditors	19.6%	16.8%	15.0%	13.0%
	PPG. multilateral	0.5%	0.6%	0.7%	1.1%
	PPG. bilateral	19.2%	16.2%	14.3%	11.9%
	PNG. total private nonguaranteed)	0.0%	0.0%	0.0%	0.4%
	Short-term debt outstanding	3.1%	3.0%	2.9%	1.3%
	Concessional debt/Total debt (%)	27.2	18.3	19.8	20.6
	Average maturity (years)	12.9	14.1	9.9	12.6
Tajikistan					
	Total debt stocks	28.6%	32.2%	35.2%	44.6%
	PPG. total	27.7%	30.0%	33.0%	33.1%
	PPG. private creditors	3.4%	3.5%	3.4%	3.4%
	PPG. official creditors	24.3%	26.6%	29.6%	29.8%
	PPG. multilateral	0.0%	0.0%	1.5%	2.5%
	PPG. bilateral	24.3%	26.6%	28.1%	27.3%
	PNG. total private nonguaranteed)	0.0%	0.0%	0.0%	0.0%
	Short-term debt outstanding	0.9%	2.2%	1.1%	3.6%
	Concessional debt/Total debt (%)	3.4	3.3	79.6	61.9
	Average maturity (years)	7.2	0.0	39.8	37.9

Table 1A. Total External, Public and Publicly Guaranteed (PPG) and Total Private Debt of FSU Countries, in % of GDP

Country	Series Name	1994	1995	1996	1997
Turkmenistan					
	Total debt stocks	9.9%	9.3%	18.7%	63.4%
	PPG. total	7.9%	8.9%	11.5%	44.5%
	PPG. private creditors	3.3%	3.9%	8.2%	38.8%
	PPG. official creditors	4.6%	5.1%	3.4%	5.7%
	PPG. multilateral	1.2%	1.4%	0.1%	0.7%
	PPG. bilateral	3.4%	3.7%	3.3%	5.0%
	PNG. total private nonguaranteed)	0.0%	0.0%	0.0%	0.0%
	Short-term debt outstanding	1.9%	0.4%	7.1%	18.9%
	Concessional debt/Total debt (%)	4.6	4.9	2.6	2.2
	Average maturity (years)	10.3	8.1	9.6	7.6
Ukraine					
	Total debt stocks	10.8%	17.4%	21.6%	18.5%
	PPG. total	9.2%	13.6%	15.0%	11.8%
	PPG. private creditors	1.9%	4.6%	4.8%	4.4%
	PPG. official creditors	7.2%	8.9%	10.2%	7.4%
	PPG. multilateral	0.4%	1.3%	2.6%	2.5%
	PPG. bilateral	6.8%	7.6%	7.6%	4.9%
	PNG. total private nonguaranteed)	0.2%	0.1%	0.3%	0.5%
	Short-term debt outstanding	0.8%	0.5%	1.0%	1.8%
	Concessional debt/Total debt (%)	0.7	0.8	2.3	1.9
	Average maturity (years)	13.8	12.0	14.7	4.1
Uzbekistan					
	Total debt stocks	5.9%	8.0%	10.0%	11.2%
	PPG. total	4.5%	6.4%	8.3%	8.2%
	PPG. private creditors	1.0%	1.8%	3.2%	3.5%
	PPG. official creditors	3.6%	4.6%	5.1%	4.7%
	PPG. multilateral	0.0%	1.1%	1.2%	0.8%
	PPG. bilateral	3.5%	3.5%	4.0%	3.9%
	PNG. total private nonguaranteed)	0.0%	0.0%	0.0%	0.1%
	Short-term debt outstanding	1.4%	0.9%	0.4%	1.7%
	Concessional debt/Total debt (%)	11.5	10.5	26.0	7.4
	Average maturity (years)	9.5	15.2	15.6	10.7

Source: World Bank, World Development Indicators, CD-ROM, 1999.

References

Antczak R., S. Bogdankiewich, P. Daneiko, K. Połomski, V. Usowski (2000). "Impact of Russian Crisis on Belarussian Economy". CASE, Studies and Analyses No. 206, Warsaw.

Aziz J., F. Caramazza, R. Salgado (2000). "Currency Crises: In Search of Common Elements". IMF Working Paper, WP/00/67 (http://www.imf.org/).

Barbone L., H. Polackova (1996). "Public Finances and Economic Transition". CASE, Warsaw.

Barbone L., R. Polastri (1998). "Hungary's Public Finances in International Context". [in:] Bokros L., J. Dethier, "Public Finance Reform during the Transition. The Experience of Hungary". World Bank, Washington D.C.

Buchs T. (1999). "Financial Crisis in the Russian Federation. Are the Russians Learning to Tango?" Economics of Transition, Vol. 7.

Buitler W. (1997). "Aspects of Fiscal Performance in some Transition Economies Under Fund-Supported Programs". IMF Working Paper WP/97/31.

Chang R., A. Velasco (1998). "Financial Crises in Emerging Markets: A Canonical Model". NBER Working Paper 6606.

Dąbrowski M. (eds) (1999). "Ukraine: Form Fragile Stabilisation to Financial Crisis". CASE, Studies and Analyses No. 158, Warsaw.

Eichengreen R., Wyplosz (1994). "Speculative Attacks on Pegged Exchange Rates: An Empirical Exploration with Special Reference to the European Monetary System". Federal Reserve Bank of San Francisco.

Edwards E. (1995). "Crisis and Reform in Latin America: form Despair to Hope". Oxford University Press.

Edwards S. (1996). "A Tale of Two Crises: Chile and Mexico". NBER Working Paper 5794.

Flood R., N. Marion (1998). "Perspectives on the Recent Currency Crises Literature". NBER Working Paper 6380.

Frankel R. (1996). "Currency Crashes in Emerging Markets: Empirical Indicators". NBER Working Paper 5437.

Fries S., M. Raiser, N. Stern (1999). "Stress Test for Reforms. Transition and East Asia Contagion". Economics of Transition Vol. 7.

Gurgen E., H. Snoek, J. Craig (1999). "Economic Reforms in Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan". IMF Occasional Paper No. 183.

Hanson P, (1999). "The Russian Economic Crisis and the Future of Russian Economic Reform". Europe-Asia Studies, Vol. 51, No. 7.

Heller S. (1997). "Fiscal Policy Management in an Open Capital Regime". IMF Working Paper, WP/97/20.

IMF (1999a). "Armenia: Recent Economic Developments and Selected Issues". IMF Staff Country Report No. 99/128 (http://www.imf.org/).

IMF (2000a). "Azerbaijan: Recent Economic Developments and Selected Issues". IMF Staff Country Report No. 00/121 (http://www.imf.org/).

IMF (1999b). "Bulgaria: Recent Economic Developments and Statistical Appendix". IMF Staff Country Report No. 99/26 (http://www.imf.org/).

IMF (1998a). "Republic of Moldova: Recent Economic Developments". IMF Staff Country Report No. 98/58 (http://www.imf.org/).

IMF (1999c). "Republic of Moldova: Recent Economic Developments". IMF Staff Country Report No. 99/110 (http://www.imf.org/).

IMF (1999d). "Ukraine: Recent Economic Developments". IMF Staff Country Report No. 99/42 (http://www.imf.org/).

IMF (2000b). "Republic of Tajikistan: Recent Economic Developments". IMF Staff Country Report No. 00/27 (http://www.imf.org/).

IMF (2000c). "Republic of Uzbekistan: Recent Economic Developments". IMF Staff Country Report No. 00/36 (http://www.imf.org/).

IMF (1999e). "Russian Federation: Recent Economic Developments". IMF Staff Country Report No. 99/100 (http://www.imf.org/).

IMF (2000d). "Republic of Tajikistan: Recent Economic Developments". IMF Staff Country Report No. 00/27 (http://www.imf.org/).

IMF (1998b). "World Economic Outlook".

Kalter E., A. Ribas (1999). "The 1994 Mexican Economic Crisis: The Role of Government Expenditure and Relative Prices". IMF Working Paper WP/99/160 (http://www.imf.org/).

Kaminsky G., S. Lizondo, C. Reinhart (1997). "Leading Indicators of Currency Crises". IMF Working Paper, WP/97/79 (http://www.imf.org/).

Kaminsky G., C. Reinhart (1999). "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems". American Economic Review, Vol. 89, No. 3.

Kapur I., van der Mensbrugghe (1997). "External Borrowing by the Baltics, Russia and Other Countries of Former Soviet Union: Development and Policy Issues". IMF Working Paper WP/97/72.

Kovalev P. (1999). "Some Fiscal Policy Problems". [in:] Dąbrowski M. (eds.).

Krugman P. (1979). "A Model of Balance-of-Payment Crises". Journal of Money, Credit and Banking, August.

Krugman P. (1992). "Currencies and Crises". MIT Press.

Krugman P. (1998). "Currency crises". http:// www.web.mit.edu./crises.html

Milesi-Ferretti G. M., A. Razin (1996). "Current Account Sustainability: Selected East Asian and Latin American Experiences". NBER Working Paper 5791

McGettigan D. (2000). "Current Account and External Sustainability in the Baltics, Russia and Other Countries of the Former Soviet Union". IMF Occasional Paper No. 189

Obstfeld M. (1994). "The Logic of Currency Crises", Banque de France, Cathiers economiques et monetaires, No.43, (http://elsa.berkeley.edu/`obstfeld/ftp/currency_crises).

OECD (2000). "Russian Federation". Economic Surveys.

Radziwiłł A., O. Cserbatchi, C. Zaman (1999). "Financial Crisis in Moldova – Causes and Consequences". CASE Studies and Analyses No. 192, Warsaw.

Sachs J., A. Tornell, A. Velasco (1995). "The Collapse of the Mexican Peso: What Have we Learned?" NBER Working Paper 5142.

Savastano M. (1992). "Collapse of a Crawling Peg Regime in the Presence of a Government Budget Constraint". IMF Staff Papers Vol. 39, No.1.

Siwinski W. (2000). "Czy grozi nam kryzys walutowy?" (Are we threatened by a currency crisis?), Master of Business Administration, Nr 3(44).

Tanzi V (2000). "Fiscal Reform Over Ten Years of Transition". IMF Working Paper WP/00/113 (http://www.imf.org/).

Tornell A. (1999). "Common Fundamentals in the Tequila and Asian Crises". NBER Working Paper 7139.

Valdivieso L. (1998). "Macroeconomic Developments in the Baltics, Russia and Other Countries of the Former Soviet Union". IMF Occasional Paper No. 175.

Zabczyk P. (2000). "Currency Crises – Facts and Theory". Master Thesis, Warsaw University, Faculty of Economic Sciences. Thesis directed by Prof. Siwinski.