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**Aspects of Fiscal Performance in some Transition Economies  
Under Fund-Supported Programs**

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**Abstract**

Key medium- and longer-term fiscal issues faced by transition economies are reviewed, including government solvency and the sustainability of the fiscal-financial-monetary program. The paper aims to assist the design and implementation of future Fund programs and to contribute to the debate about fiscal policy in transition economies.

After presenting a framework for evaluating the sustainability of the fiscal-financial-monetary program of the state, some numerical material is presented on public debt, (quasi-) fiscal deficits and monetary financing. Eight budgetary issues of special relevance to transition economies are considered next. The lessons from this study are summarized in a number of propositions.

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## Summary

The paper reviews some key medium- and longer-term fiscal problems confronting transition economies such as government solvency and the longer-run sustainability of the fiscal-financial-monetary program.

Many transition economies, especially those in the early stages of transition, rely quite heavily on seigniorage revenues obtained through the issuance of base money. Excessive reliance on seigniorage causes the real revenues from money creation to decline as rising inflation causes domestic and international currency substitution.

It is essential to focus on the accounts of the consolidated general government sector (including the lower tiers of government and the off-budget entities) and the central bank, the monetary and quasifiscal agent of the state. As reliable data on the quasi-fiscal deficit of the central bank tend to be unavailable, the paper proposes to treat all credit extended by the central bank to the nongeneral government sectors as quasifiscal grants or subsidies.

The conventional general government financial deficit often bears no relationship to the government's underlying financial position. Myopic accounting conventions encourage short-sighted policies like the slashing of infrastructure investment and the use of sequestration and internal current arrears (e.g. on salaries).

In some of the less advanced transition economies, tax revenues are falling to unsustainably low levels, threatening the very survival of the state. In a number of the more advanced transition economies, the problem is one of unsustainably (or at least undesirably) high levels of general government spending, levels associated with the most affluent welfare states in the OECD. Structural reform measures, such as trade reform and privatization, have often been undertaken with little regard for their implications for future government revenues and spending obligations.

Finally, the paper notes that effective conditionality is often harder to impose the more urgent and important it is, especially where larger and more influential IMF program countries are concerned.

## I. INTRODUCTION

### A. Outline

This paper contains a selective review of some of the key fiscal issues faced by transition economies. The twelve countries that provide the empirical background for this study all have been under Fund programs for at least some of the time since they initiated their transitions from plan to market. The subject matter of the paper is vast and complicated. No doubt there are, in the selection of topics covered, both type I and type II errors. The focus of the paper is on medium- and longer-term fiscal issues, such as government solvency and the evaluation of the sustainability of the government's fiscal-financial-monetary program. The purpose of the paper is to assist the design and implementation of future Fund programs and to improve the quality of the debate about the design and conduct of fiscal policy in transition economies generally.

The outline of the paper is as follows. Following the Introduction, which contains a brief discussion of the roles of the Fund, Section II sets out a framework for evaluating the sustainability of the fiscal-financial-monetary program of the state. Section III contains some numerical material on public debt, deficits (including quasi-fiscal deficits) and monetary financing or seigniorage. Section IV discusses eight specific budgetary issues I consider to be of special relevance to transition economies. Section V concludes by summarizing the lessons from this study in a number of propositions.

### B. Fiscal Sustainability in Transition Economies

In many transition economies, large fiscal deficits have emerged and persisted. Grave consequences are commonly attributed to "excessive deficits". There is no consensus, however, on when fiscal deficits become "excessive", nor is there a generally accepted operational methodology for evaluating the sustainability of alternative fiscal-financial programs. Despite this methodological vacuum, the following qualitative characterization of the consequences of government deficits is likely to be non-controversial.

Deficits must be financed either by borrowing<sup>2</sup> or by printing money. Compare a fiscal-financial strategy of financing a given spending program by taxing today (using lump-sum taxes) with one of borrowing (that is, postponing taxation) and imposing additional future lump-sum taxes equal in present discounted value to the taxes postponed today. The borrowing strategy will, on balance, redistribute life-time resources from the young to the old and from generations yet to be born to generations currently alive. Unless generations are linked through operative Ricardian gift and bequest motives, borrowing will therefore reduce national saving and the national financial wealth-income ratio. Whenever domestic and foreign saving are imperfect substitutes (or the world rate of interest is not independent of the

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<sup>2</sup>Running down foreign exchange reserves is counted as a form of foreign borrowing.

government's borrowing program), this will cause *financial "crowding out"* and reduce domestic fixed capital formation. Government borrowing will likewise raise the cost and/or restrict the availability of working capital for enterprises. This may adversely affect production even in the short run, before any possible adverse effects of lower rates of fixed capital formation on productive potential have had time to manifest themselves. Calvo and Coricelli [1992] have argued that short-run negative supply-side crowding out may have played a role in Poland during 1990.

When a government reaches the limit of the amount of its debt that the domestic private sector and the rest of the world will absorb voluntarily, monetizing the deficit or default (including arrears) become the only financing options if the primary (non-interest) deficit is not adjusted. The real value of the amount of resources the government can extract by issuing additional monetary liabilities (that is, the real value of its seigniorage) is limited by the negative effect of rising nominal interest rates and increasing expected rates of inflation and currency depreciation on the demand for real money balances. When the maximal amount of seigniorage that can be extracted is less than the financing gap faced by the government, hyperinflation and/or default are the only possible outcomes.

While this brief characterization of the consequences of excessive deficits is likely to be noncontroversial, there is no consensus on the key issue of the determinants of the limit on the amount of public debt that would be voluntarily held. In view of the effects of public debt on national saving, financial crowding out and inflation, it is also apparent that public debt can be excessive, even if its quantity is below the maximal amount that would be held voluntarily. Likewise, inflation caused by the monetization of deficits can be excessive even if it falls short of hyperinflation. This paper outlines one simple methodology for quantifying the nexus between public debt, deficits, public spending, taxation and monetary growth and applies it to twelve transition economies.<sup>3</sup>

### C. The Roles of the Fund

The Fund performs three distinct roles. The first is its *systemic* role. The second is its *financial* role—the provision, subject to financial and policy conditionality, of short-term financing to individual member countries in balance-of-payments difficulties. The third is its *technical assistance* role. The systemic role—managing the adjustable peg exchange rate system established at Bretton Woods and providing it with sufficient liquidity—effectively came to an end in 1972 with the collapse of the Bretton Woods exchange rate system. Private capital markets increasingly took over the role of the Fund as a provider of global liquidity and a source of short-term financing for the more advanced industrial countries. Exchange rate surveillance is the principal surviving offspring of this systemic role, but it is just a pale reflection of the earlier systemic function, mainly because the Fund has no effective sticks or

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<sup>3</sup>They are Bulgaria, the Czech Republic, Hungary, Poland, Romania, and the Slovak Republic (for the European I Department) and Estonia, Kazakhstan, the Kyrgyz Republic, Lithuania, the Russian Federation, and Ukraine (for the European II Department).

carrots with which to influence the policies of the leading industrial countries. A second surviving feature of its global or systemic role is the Fund's participation in (and often leadership of) efforts to put together financial rescue packages for countries whose financial troubles are deemed to threaten the stability of financial markets globally.<sup>4</sup> The recent Mexican crisis is a frequently cited example of this function. Effective conditionality tends to be a problem when the client country is significant enough to generate global spillovers.

The Fund's technical assistance role has gained increasing importance in recent years. Many newly independent countries and countries undergoing profound structural transformations, including those engaged in the transition from central planning to the market economy, did not start off with appropriate institutions for conducting monetary policy, managing the exchange rate, raising revenues, budgeting and controlling public expenditures and engaging in fiscal and financial policy generally. The Fund has accumulated a vast stock of knowledge and expertise for the creation of the institutions necessary for macroeconomic management in often inhospitable environments.

This paper focuses on the second role of the Fund, that is, its role in assisting individual countries in financial difficulties and with restricted access to the international financial markets. While the resources made available under Fund programs are often characterized as balance-of-payments assistance, that description is not helpful for understanding the causes and consequences of or the solutions to the problems faced by the countries in question. Balance of payments crises are symptoms rather than causes of trouble. The causes of persistent and unsustainable balance-of-payments imbalances are almost invariably domestic. So are the remedies. This remains true even when one recognizes that external shocks can be extremely painful and that external assistance, whether in the form of conventional aid or debt forgiveness, can facilitate macroeconomic adjustment and structural reform when the causes of the problem have been properly diagnosed and the appropriate adjustment policies are being pursued.

At the core of virtually any financial crisis, whether it manifests itself as a balance of payments crisis or as a crisis of the domestic financial system, lies either an inconsistent and unsustainable fiscal-financial-monetary program or defective financial regulation (or both as in the case of the Russian Federation, among others). This paper will focus on the sustainability of the fiscal-financial-monetary program, although regulatory issues will be referred to where appropriate.

In its individual country assistance role, the Fund has two tasks. The first is to help a government that is insolvent under current and projected future policies to achieve solvency. This involves *diagnosis* (that is, technical assistance) when the cause of the problem is a failure by domestic policy makers to understand macroeconomic causes and consequences

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<sup>4</sup>This function can be viewed alternatively as the application of its second role, that of providing financial assistance to individual countries, when the client country is deemed large enough for its troubles to have systemic externalities.

and/or *conditionality* capable of inducing the government to pursue policies it would not otherwise have adopted, when political imperatives compel the government to knowingly pursue unsustainable policies. The second task is to ensure that a solvent government is not subject to constraints other than the long-run intertemporal budget constraint; cash-flow, liquidity or borrowing constraints are examples of such unnecessary and avoidable constraints on a government's freedom to act.

The contribution of the Fund to the achievement of solvency by a *prima-facie* insolvent government is modest, but nevertheless important. Other than expert advice, all it can offer is temporary financing.<sup>5</sup> The Fund cannot itself make a significant permanent resource transfer to countries in financial difficulties. It has neither the authority nor the resources to boost a government's (or nation's) flow of current and future primary surpluses by committing itself to provide a flow of current transfers (aid). Nor can it appreciably reduce a country's indebtedness by making a significant capital transfer out of its own resources. It can be helpful by acting as an honest broker between the debtor government and its creditors and by twisting arms in the right places. For instance, avoiding free rider problems among creditor countries in the case of a sovereign debtor default is made easier if the Fund and its key member governments can lean on recalcitrant creditors standing in the way of an orderly work-out.

Restoring solvency by boosting primary surpluses is fundamentally the task of the insolvent government itself. The process can benefit from the support of those international agencies and other multilateral and bilateral institutions that provide development assistance, either in the form of explicit foreign aid or through external debt forgiveness. The Fund's role in facilitating an efficient bargain with private external creditors has already been referred to. The Fund's ability to impose effective conditionality on program countries, that is, conditionality capable of altering policies, is as crucial for the success of the program as it is limited, especially in the case of larger and high-profile trouble cases. Mexico and Russia are recent cases in point.

The second task of the Fund when dealing with a country that is in financial difficulties is to ensure that a solvent government is not restricted in the performance of its essential tasks by remediable capital market imperfections. In other words, the Fund should enable a solvent government to act according to the permanent income hypothesis without regard to short-term cash-flow, liquidity or borrowing constraints.<sup>6</sup> This role is especially important in developing countries undergoing structural change and economic reform and in transition

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<sup>5</sup>There is a concessional or aid element in most Fund lending, as the rates paid on drawings on the Fund are undoubtedly lower than what the drawing country could have expected to pay in the private loan markets, if it had access to these at all.

<sup>6</sup>The national government in turn derives its stabilization role from its ability to remove (or at least minimize the incidence and severity of) liquidity, cash-flow or borrowing constraints on private sector spending, through the use of taxes, transfer payments, government borrowing and monetary financing.



economies. With complete, perfect international and domestic capital markets this function of the Fund would of course not exist. Capital market failure is therefore the essential *raison d'être* of the Fund.

In the case of the transition economies, the reasons for the failure of private capital markets to generate adequate resource transfers are not difficult to explain. In the early years of the transition, neither the private sector nor the government have much of a track record as borrowers. Creditworthiness, with or without sovereign guarantee, is therefore very difficult to establish. Ambiguous and constantly changing laws, regulations and legal procedures make contract enforcement problematic and costly for potential private creditors. If it is more costly for a sovereign debtor to repudiate its obligations to the Fund than to private creditors, a special role for the Fund in the international intermediation process for transition economies is easily rationalized.

For overcoming short-term liquidity or cash-flow constraints, even the short-term lending facilities of the Fund can be helpful indeed. In the cases of Mexico and Russia, the magnitudes of the Fund's own credit lines have indeed been significant. Possibly even more important is the "seal of good housekeeping" that the approval by the Fund of a formal Fund program bestows on the program country. This acts as a signal for private lenders and other private sources of funds to revise downward the country risk premium of the program country. The resulting induced inflows of private capital can easily exceed the resources coming from the Fund by an order of magnitude or more. Again the need for (correct) diagnoses of the causes of financial problems to be backed up by effective conditionality on often weak and incompetent governments is paramount.

## II. GOVERNMENT SOLVENCY AND THE SUSTAINABILITY OF THE FISCAL-FINANCIAL-MONETARY PROGRAM: AN OPERATIONAL ANALYTICAL FRAMEWORK

### A. The Scope of Government

As emphasized by Tanzi [1993], under central planning, before transition has started, the very concepts of fiscal policy and public finance are nebulous. Public finance exists only if there is private finance, that is, if there exists a significant private sector.

Once transition gets under way and a significant private sector emerges, public finance and public sector financial deficits become meaningful concepts. For our purposes the relevant definition of the state or the government is that of the *sovereign*. Included are all agencies that can levy taxes or issue legal tender and all agencies engaged in public administration (mainly the provision of intermediate public goods and services, supervision and regulation). Both the capacity to tax and the ability to issue legal tender are ultimately backed by the state's monopoly of the legitimate use of force. Under normal circumstances these are reinforced by social consensus (or acquiescence) and trust. For practical purposes this means that the government is the consolidated (or combined) general government and central bank. When the

term 'government' is used without qualification in what follows, it is this combined general government and central bank sector that we have in mind.

General government includes central, state, provincial, local and other lower-tier government institutions, as well as off-budget agencies such as the social security funds, privatization funds, etc. It excludes the state enterprise sector. Of course, current and future transfers (subsidies) between the state enterprise sector and the government must all be allowed for in the assessment of the sustainability of the government's fiscal-financial-monetary program.

It is clearly essential that, in addition to the central government, the fiscal role of all lower government tiers be considered. Both expenditure and revenue raising responsibilities can be shifted between various tiers of government and lower levels of government often borrow on their own account, but with ultimate recourse to the credit of the central government. By focusing only on one tier, even if this is a key tier like the central government, a very distorted picture of the total financial exposure of the government can emerge.

The need to include all off-budget agencies and units whose liabilities ultimately are the responsibility of the state should be self-evident as following any other procedure would invite endless window-dressing.

#### **B. The Central Bank's Quasi-Fiscal Deficit and the Contingent Deferred Fiscal Deficit**

The need to include the central bank arises from the ability of the government to shift outlays and receipts from the conventionally measured general government budget to the central bank (giving rise to the *quasi-fiscal deficit of the central bank*) or to the non-central bank financial sector, giving rise to the *contingent deferred fiscal deficit*. Quasi-fiscal outlays and receipts are operations of the central bank<sup>7</sup> that are functionally equivalent to subsidies and taxes imposed by the general government sector. Some of the most common examples are central bank credits at subsidized rates of interest (equivalent to interest subsidies), losses associated with the purchase and sale of foreign exchange in a multiple exchange rate system (equivalent to foreign exchange subsidies or taxes) and the imposition on commercial banks of reserve requirements obliging them to hold central bank liabilities with below market rates of interest (equivalent to a tax on deposits). These quasi-fiscal operations should be converted into their subsidy or tax equivalents and added to the conventionally measured primary deficit of the central bank. This primary deficit of the central bank then should be consolidated with the primary deficit of the general government sector to obtain what I call the primary deficit of the *government* sector. Likewise the financial deficit of the central bank should be

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<sup>7</sup>and possibly of other public sector banks and financial institutions (such as general or sectoral development banks)

consolidated with the financial deficit of the general government sector to obtain the financial deficit of the *government* sector.<sup>8</sup>

A contingent deferred fiscal deficit arises when the central bank or some other general government agency are known to be willing and able to engage in a future bail out of a state enterprise (or private enterprise with continued political clout) either directly or by bailing out a commercial bank that has made a nonperforming loan to the enterprise in question. Until the bail-out transfer from (say) the central bank to (say) the commercial bank actually happens (for instance through a recapitalization of the now bankrupt commercial bank), nothing would be recorded either in the general government financial deficit or in the quasi-fiscal deficit of the central bank, even under the most sophisticated accounting conventions. It is clear, however, that, without its *implicit guarantee* of the commercial bank loan to the enterprise, the resource transfer from the commercial bank to the enterprise would not have happened. The current resource transfer from the commercial banks to the state enterprise represents a *contingent deferred fiscal deficit*.

The quasi-fiscal deficits and the contingent deferred fiscal deficits matter quantitatively. For instance, Russia's State Savings Bank, Sberbank, currently (end-March 1996) holds about 70 percent of all household savings and has been using these resources to keep other banks and the Russian government afloat. The Russian central bank retains a 51 percent equity stake in Sberbank. The remaining 49 percent are owned by other commercial banks. More than a third of the bank's assets (Rbs30,000bn or US\$6billion) are held in Russian Treasury bills (GKO's). This also represents almost a third of the Russian government's Treasury debt. While savings banks in many developed countries hold more than a third of their assets in the form of government securities, there is a sense that Sberbank, acting on the instructions of either the central bank or government or both, accumulated at least some of these GKO's at prices higher than would otherwise have prevailed in the market. In addition, Sberbank appears to have been prodded by the government into keeping the banking industry afloat by lending to several cash-strapped institutions, some of which are its own shareholders. This quasi-official role has been especially prominent since a confidence crisis temporarily paralysed the inter-bank market during the autumn of 1995. Even if the government loans were free of default risk (which they are not), the quality of its loan portfolio to the banking sector appears highly dubious, and there is a serious risk of large contingent deferred fiscal deficits, if there are failures among the banks to whom Sberbank has lent and the solvency of Sberbank is thereby threatened. These contingent liabilities either come from the deposit insurance obligations of the state vis-à-vis the depositors (an obligation which is likely to be

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<sup>8</sup>From the point of view of the measurement of the financial deficit of the central bank, the reclassification of quasi-fiscal transactions into their subsidy and tax equivalents will often merely shuffle items from the 'net interest paid' column to the 'primary deficit' column, without this affecting the magnitude of the financial deficit. This is the case e.g., when central bank lending at below market rates of interest is converted into and recorded as central bank lending at imputed market interest rates (reducing 'net interest paid') combined with an explicit interest subsidy (raising the primary deficit).

taken seriously since hyperinflation wiped out the real value of Sberbank deposits during 1992) and from the implicit guarantee given by the state to guarantee the survival of Sberbank as a going concern—the benefit of being an institution too big and too visible to fail.

Conceptually, what one is after is clear. It is the present discounted value of all current and future net resource transfers between the government and any other agent or sector.<sup>9</sup> The present value of these net resource transfers between the government and any other agent can, in principle, be computed in the same way as the *generational accounts* of Auerbach, Gokhale and Kotlikoff [1991] (see also Buiter [1995b]), which are accounts, one for each generation, that add up, in present discounted value, the amount of receipts less payments the government can expect to collect from each generation over its remaining lifetime.

The various components of the contingent deferred fiscal deficit accrue in ways that are not recorded in the accounts of any government agency. They ultimately show up as capital transfers (through balance sheet restructuring, through recapitalization of bankrupt commercial banks, through deposit insurance pay-outs, etc.) often long after the real resource transfers have taken place.

Various coarse practical approximations to these streams of current and future net resource transfers is all that can, in practice, be hoped for. The *conventional fiscal deficit*, the *quasi-fiscal deficit* of the central bank and the *contingent deferred fiscal deficit* are partial observable proxies for this unobservable sequence of future net resource transfers.

A key lesson for policy reform and “sequencing” is that delayed structural transformation, especially the failure to impose hard budget constraints on (former) state enterprises (or on the agricultural sector) can be a major contributor to all three deficits. Since the quasi-fiscal deficit and the contingent deferred fiscal deficit are much less transparent than the conventional fiscal deficit, a prerequisite for achieving fiscal control in the medium and long term may well be the minimization (and preferably the abolition) of the quasi-fiscal and contingent deferred fiscal deficits. This would be valuable even though it involves, in the first instance, no more than moving the implicit subsidies, grants and transfers wholesale into the general government budget as explicit budgetary transactions (see Tanzi [1993]).

As a simple rule of thumb, one could assume that all credit extended by the central bank to all sectors other than the general government, represents *de facto* quasi-fiscal grants or subsidies. This may not be totally realistic in the more advanced transition economies, where the central banks probably do extend credit on near-market terms to bona-fide, solvent borrowers who service these debts and do not engage in Ponzi finance. The amount of such bona-fide central

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<sup>9</sup>When markets are incomplete, not only do the present discounted value of these net resource transfers matter, but also their timing.

bank credit is, however, likely to be small.<sup>10</sup> Following the proposed rule of thumb, the *augmented financial deficit* of the central bank would then be the sum of its conventionally measured financial deficit and the net increase in central bank credit to all nongeneral government sectors.<sup>11</sup> This augmented financial deficit of the central bank could then be added to the financial deficit of the general government sector to get the augmented financial deficit of the consolidated general government and central bank.

Virtually all future outlays and receipts of the government are uncertain. This holds whether or not they derive from formal contractual obligations already entered into (such interest on floating rate debt or payments due as a result of the exercise of a loan guarantee), from the existing tax-transfer system (or from the tax-transfer system assumed to be operative in the relevant future periods) or from past and present political commitments (which may be more or less credible) to future exhaustive public spending programs. Ideally, such uncertain or contingent future cash flows would be ‘priced’ today, that is, they should be reduced to a current-dated (present value) contingent liability or claim. Conceptually, this is an exercise in option pricing. In practice it often turns out to be an infeasible nightmare. Nevertheless, the ideal should be kept firmly in mind, even in the most practical, applied policy setting, lest grievous errors be committed in the assessment of the viability of the government’s budgetary program.

### **C. The Importance of Taking the Long View**

The key point for this sub-section is to emphasize the need to take a long-term view of the government’s fiscal-financial-monetary program. In principle, we should consider all current and anticipated future (uncertain) cash flows between the government sector, the rest of the domestic economy (private sector and state enterprises) and the rest of the world. Failure to do so can lead policy and program evaluation and design being based on a distorted series of snapshots that can give a wholly inaccurate characterization of the evolution of the underlying fiscal-financial-monetary reality.

One implication of this view is that neither the current value of the financial deficit (even that of the consolidated general government and central bank), or even the value of the financial deficit over the next two or three years is likely to be an informative indicator of anything that might be of interest to the Fund or anyone else. Specifically it is not a reliable measure of the change in the government’s net worth, even if we “correct” for the effects of inflation and exchange rate depreciation on the real value of outstanding stock of financial assets and liabilities. Neither is it a reliable indicator of the change in the burden the government is imposing on future generations (and on the generations currently alive during their remaining

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<sup>10</sup>An example in an American context would be “borrowed reserves”, which are claims by the central bank on commercial banks.

<sup>11</sup>I elaborate on this in Section III.B below.

lifetimes). Neither is it a reliable indicator of the financial crowding out pressure created by the government budget. The same stricture applies to the change in the current financial deficit, and to any short sequence of such changes. The continuing focus of IMF programs on the conventional general government financial deficit is therefore hard to rationalize.

The same “uninformativeness” attaches to the level of and changes in the current and near–future values of the government’s *primary* deficit. The reason is that it is simply too easy to shift cash flows from the present to the future, either by accounting sleight of hand or by economically costly cosmetic (and often unsustainable) changes in expenditures and revenues. The only defense against this is to trace the current and future cash flows of the government far enough into the future to ensure that, with reasonable discount rates, yet later changes in cash flows do not have an appreciable effect on the present discounted value of all current and future cash flows. The myopic financial indicators used by the Fund in the evaluation and design of macroeconomic policy packages are often less than useless (see Kotlikoff [1989] and Tanzi [1993]).

#### D. The Government’s Solvency Constraint

Central to our evaluation of the medium–term and long–run sustainability of the government’s fiscal–financial and monetary program is the government’s intertemporal budget constraint or solvency constraint. The starting point is the familiar single–period budget identity of the consolidated general government and central bank (henceforth the *government*), which states that the government’s financial deficit is financed by issuing domestic or foreign currency denominated interest–bearing debt, by printing money or by running down official international foreign exchange reserves.

With some rearranging and re–definition, the government budget identity yields the two following compact representations of the dynamics of the government debt–GDP ratio.  $b_t$  is the ratio of the government debt at the end of period  $t$  to period  $t$  GDP;  $r$  is the real interest rate;  $g$  is the growth rate of real GDP;  $s$  is the (adjusted)<sup>12</sup> government primary (non–interest) surplus as a fraction of GDP;  $\sigma$  seigniorage, that is, the increase in the base money stock as a

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<sup>12</sup>Let  $\bar{S}$  be the conventionally defined primary surplus as a fraction of GDP, then the adjusted primary surplus as a fraction of GDP,  $s$ , is given by

$$S_t = \bar{S}_t + \left( \frac{(1+i_t - (1+i_t^*)(1+\epsilon_t))}{(1+\pi_t)(1+g_t)} \right) b_{t-1}^*$$

where  $i$  is the domestic nominal interest rate  $i^*$  is the foreign nominal interest rate,  $\epsilon$  is the proportional rate of depreciation of the nominal exchange rate and  $b^*$  is the stock of net foreign liabilities as a fraction of GDP.

fraction of GDP;  $\pi$  is the inflation rate;  $d$  is the (adjusted)<sup>13</sup> government financial deficit as a fraction of GDP and  $\Delta$  is the backward difference operator.

$$\Delta b_t \equiv \left( \frac{r_t - g_t}{1 + g_t} \right) b_{t-1} - s_t - \sigma_t \quad (1)$$

and

$$\Delta b_t \equiv - \left( \frac{(1 + \pi_t)(1 + g_t) - 1}{(1 + \pi_t)(1 + g_t)} \right) b_{t-1} + d_t - \sigma_t \quad (2)$$

Equation (1) states that, if the interest rate exceeds the growth rate of GDP, the debt–GDP ratio will be rising unless the sum of the (adjusted) primary surplus and the seigniorage revenue appropriated by the government are sufficient to offset the explosive “intrinsic debt dynamics”. Equation (2) states that the rate of decline of the debt–GDP ratio equals (approximately)<sup>14</sup> the growth rate of nominal GDP times the outstanding debt–GDP ratio, plus the (adjusted) government financial deficit (as a fraction of GDP), minus seigniorage (as a fraction of GDP).

Equation (1) is in many ways rather more informative than equation (2), because the financial deficit includes the interest bill of the government, uncorrected for changes in the real value of the government debt or for the effect of real GDP growth on the debt–GDP ratio. The Maastricht fiscal convergence criteria (which are relevant to those transition economies (mainly east European) that have ambitions to join the European Union and are therefore likely to be confronted with the fiscal criteria of Maastricht Treaty and with the fiscal conditions of the ‘Stability Pact’ likely to succeed it) are specified in terms of a general government debt–GDP ratio ceiling of 60 percent and a general government financial deficit–GDP ratio ceiling of 3 percent. We can reinterpret equation (2) to apply to the debt and deficit of the general government sector by setting seigniorage,  $\sigma$ , equal to zero and reinterpreting  $b$  and  $d$  as the debt, respectively the financial deficit, of the general government sector, including general government debt held by the central bank. The Maastricht debt and deficit ceilings would be (approximately)<sup>15</sup> consistent with each other at a steady state growth rate of nominal GDP of 5 percent per annum.

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<sup>13</sup>Let  $\bar{d}$  be the conventionally defined financial deficit as a fraction of GDP, then the adjusted financial deficit,  $d$ , is given by

$$d_t = \bar{d}_t + \frac{\varepsilon_t}{(1 + \pi_t)(1 + g_t)} b_{t-1}^*$$

<sup>14</sup>The equality would be exact in a continuous time representation of the debt–GDP dynamics.

<sup>15</sup>The equality would be exact in a continuous time representation of the debt–GDP dynamics.

The debt–dynamics given in equation (1) imply that at any point in time, the outstanding debt is equal in value to the present discounted value of future primary surpluses and future seigniorage between the current date and some terminal future date, plus the present discounted value of the debt held at that terminal future date. Solving (1) recursively forward in time yields, for  $F \geq t$ ,

$$b_{t-1} \equiv \sum_{j=t}^F \prod_{i=t}^j \left( \frac{1+g_i}{1+r_i} \right) (s_j + \sigma_j) + \prod_{i=t}^F \left( \frac{1+g_i}{1+r_i} \right) b_F$$

If the institution of government were known to come to a sudden end at some future date, the natural solvency constraint to impose is that the government cannot leave a positive amount of debt outstanding at the end of the world. If  $F \geq t$  is the finite terminal date, the solvency constraint would be  $b_F \leq 0$ .

It follows that, for any solvent government, the value of its outstanding debt would equal the present discounted value of the future streams of primary surpluses and seigniorage.

$$b_{t-1} \leq \sum_{j=t}^F \prod_{i=t}^j \left( \frac{1+g_i}{1+r_i} \right) (s_j + \sigma_j)$$

While governments have finite horizons, the *institution* of government has no natural terminal date. As long as successive governments honor the debts they inherit, the finite–horizon solvency constraint that any debt be paid off no later than the (finite) terminal date, clearly does not apply. Traditionally, it has been replaced by the “No–Ponzi scheme” condition, that, in the long run, the present discounted value of the terminal debt of the government goes to zero, that is,

$$\lim_{F \rightarrow \infty} \prod_{i=t}^F \left( \frac{1+g_i}{1+r_i} \right) b_F \leq 0$$

Note that this constraint only makes sense in a world where the long–run (after–tax) interest rate on the public debt exceeds the long–run growth rate of GDP. With this constraint, it remains true, even in an economy without a finite terminal date, that the value of the initial stock of debt is equal to the present discounted value of the (infinite) streams of future primary surpluses and seigniorage, that is,

$$\lim_{F \rightarrow \infty} b_{t-1} \leq \sum_{j=t}^{\infty} \prod_{i=t}^j \left( \frac{1+g_i}{1+r_i} \right) (s_j + \sigma_j)$$

The conventional government solvency constraint or no–Ponzi finance constraint is actually quite weak. In an economy in which the (after–tax) interest rate exceeds the growth rate of GDP each period, it is consistent with the debt–GDP ratio rising without bound, as long as the growth rate of the debt does not equal or exceed the (after–tax) interest rate. The reason why an arbitrarily high (and rising) debt–GDP ratio is not inconsistent with government solvency is



that it is assumed implicitly that the outstanding stock of debt is part of the (lump-sum) tax base that permits that same stock of debt to be serviced. The argument assumes that this is possible without the taxes and transfers losing their non-distortionary, lump-sum character. The private sector does not perceive the link between the debt they own and the taxes levied on them to service that debt. If we rule out such fiscal Nirvanas, the tighter constraint (if the after-tax interest rate exceeds the growth rate in the long run), that the government debt cannot grow faster than the real resource base of the economy, and that the debt-GDP ratio therefore must remain bounded, must be imposed as a characteristic of any feasible fiscal-financial-monetary program.

When, under current (planned or expected) policies, the government's solvency constraint is violated, a number of policy options exist. The first policy option is to boost current and future primary surpluses, either by cutting public spending or by raising tax and non-tax revenues. The second policy option is to increase current and future seigniorage. The scope for seigniorage to close the solvency gap is limited by two considerations. First, as long as we are on the increasing-yield section of the seigniorage Laffer curve, a policy of increasing real seigniorage by raising the growth rate of the nominal stock of base money will, sooner or later, exact the price of higher inflation. Second, even the maximal feasible seigniorage revenue may not be sufficient to close the solvency gap. The third policy option is to default on some or all of the public debt, internal and/or external.

### E. Primary Gaps

For any initial government debt-GDP ratio at time  $t$ ,  $b_{t,t}$ , and any target future government debt-GDP ratio  $N > 0$  periods later,  $b_{t,t+N}$ , one can calculate the magnitude of the constant (augmented) primary surplus-GDP ratio that would get the economy from the initial debt-GDP ratio to the target at the required date. Call this the *required* primary surplus-GDP ratio. One can also project the future (augmented) primary surpluses that are likely to materialize under current (or counterfactual) policies and calculate that constant primary surplus whose present discounted value would be the same as the present discounted value of these projected primary surpluses. Call this the *actual* primary surplus-GDP ratio. The difference between the required and the actual primary surpluses is the *primary gap*<sup>16</sup> (see

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<sup>16</sup>Denote the *required*  $N$ -period primary surplus-GDP ratio at time  $t$  by  $S_R^N(b_{t,t}-b_{t,t+N})$  and the *actual*  $N$ -period seigniorage-GDP ratio by  $\sigma_A^N$ . Note that,

$$\sigma_A^N \equiv \left[ \sum_{j=t}^{t-1+N} \prod_{i=t}^j \left( \frac{1+g_i}{1+r_i} \right) \right]^{-1} \sum_{j=t}^{t-1+N} \prod_{i=t}^j \left( \frac{1+g_i}{1+r_i} \right) \sigma_j$$

The required  $N$ -Period primary surplus-GDP ratio (for  $N \geq 1$ ) is given by

(continued...)

Blanchard [1990], Blanchard et. al. [1990]). The primary gap shows the average correction that will have to be made to the primary surplus–GDP ratio over the  $N$ -period time interval starting in period  $t$ , in order to achieve the debt–GDP target by the target date.

For instance, the one–period primary gap that just stabilizes the debt–GDP ratio is the excess of the primary surplus that would just stabilize the debt–GDP ratio in period  $t$  over the primary surplus planned or expected for period  $t$ . This is equal to the difference between on the one hand the product of the initial public debt–GDP ratio and the excess of the current period real interest rate over the growth rate of real GDP, and on the other hand the sum of the current period's primary surplus–GDP ratio and the current period's seigniorage revenue–GDP ratio.<sup>17</sup>

When the long–run rate of interest exceeds the long–run growth rate of GDP, we can define the permanent primary gap or solvency gap. The *solvency gap* is given by the difference between on the one hand the product of the initial public debt–GDP ratio and the excess of the long–run real interest rate over the long–run growth rate of real GDP, and on the other

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<sup>16</sup>(...continued)

$$S_R^N(b_{t-1} - b_{t-1+N}) \equiv \left[ \sum_{j=t}^{t-1+N} \prod_{i=t}^j \left( \frac{1+g_i}{1+r_i} \right) \right]^{-1} \left[ b_{t-1} - \prod_{i=t}^{t-1+N} \left( \frac{1+g_i}{1+r_i} \right) b_{t-1+N} \right] - \sigma_A^N$$

Let the actual  $N$ -period primary surplus–GDP ratio be denoted  $S_A^N$

$$S_A^N \equiv \left[ \sum_{j=t}^{t-1+N} \prod_{i=t}^j \left( \frac{1+g_i}{1+r_i} \right) \right]^{-1} \sum_{j=t}^{t-1+N} \prod_{i=t}^j \left( \frac{1+g_i}{1+r_i} \right) s_j$$

The  $N$ -period primary gap, denoted  $GAP^N$ , is given by :

$$GAP^N(b_{t-1} - b_{t-1+N}) \equiv S_R^N(b_{t-1} - b_{t-1+N}) - S_A^N$$

<sup>17</sup> $GAP^1(0)$  is the excess of the primary surplus that would just stabilize the debt–GDP ratio in period  $t$  over the primary surplus planned or expected for period  $t$ . This is equal to

$$GAP^1(0) \equiv \left( \frac{r_t - g_t}{1+g_t} \right) b_{t-1} - \sigma_t - s_t$$

hand the sum of the long-run projected primary surplus-GDP ratio and the long-run projected seigniorage revenue-GDP ratio.<sup>18</sup>

The solvency gap is an *ex ante* measure only. *Ex post* any positive gap will be closed, through higher future realized primary surpluses or higher future realized seigniorage revenues than were allowed for in the projections, through lower than expected long-run real interest rates or higher than expected long-run real growth rates or through default. The solvency gap therefore measures the permanent increase in the primary surplus-GDP ratio that will have to be generated in order to avoid a default, given the long-run projected seigniorage revenues and the long-run projected interest rates and growth rates.

While the definition of the solvency gap is simple, its implementation is likely to be something of a nightmare, as it requires the following: (1) the estimation of the long-run real rate of interest and of the long-run real rate of growth and (2) the prediction of long-run seigniorage-GDP and primary surplus-GDP ratios under some plausible (or benchmark) policy or policies and for some acceptable scenario(s) for the behavior of the external economic environment and other relevant exogenous variables.

A tempting short-cut would be to replace the unobservable permanent expected seigniorage-GDP and primary surplus-GDP ratios by some observable proxies like the recent average behavior of the actual seigniorage-GDP and primary surplus-GDP ratios. An example of such an *ad hoc* approximation would be to replace the permanent primary surplus and seigniorage ratios by their current values. This would yield the *myopic* solvency gap.<sup>19</sup>

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<sup>18</sup>Denoting the long-run real rate of interest by  $r^\infty$  and the long-run growth rate of real GDP by  $g^\infty$ , the solvency gap is formally given by

$$GAP^\infty \equiv \left( \frac{r^\infty - g^\infty}{1 + g^\infty} \right) b_{t-1} - \sigma_A^\infty - S_A^\infty$$

Here  $\sigma_A^\infty$  denotes the permanent planned or expected seigniorage-GDP ratio and  $S_A^\infty$  denotes the permanent planned or expected primary surplus-GDP ratio.

<sup>19</sup>The myopic permanent primary gap,  $MGAP^\infty$ , is defined as follows:

$$MGAP^\infty = \left( \frac{r^\infty - g^\infty}{1 + g^\infty} \right) b_{t-1} - \sigma_t - s_t$$

A simple spread-sheet program (see e.g., Buitert [1993b]) can be used to calculate primary gaps for any time horizon given the following inputs: the initial government debt-GDP ratio, projected future real interest rates and real growth rates, projected future (augmented) primary government surpluses and projected future seigniorage (as fractions of GDP). It is unfortunate that for many of the countries considered in this study (including most of the FSU countries), reliable data on the initial government debt and on current and past government (augmented) primary surpluses are not yet available.

### F. The Long View Again

The importance of taking the long view can be illustrated by considering the way in which the current (and near-future) values of the government's primary surplus can be doctored to create a mistaken impression of fiscal soundness and sustainability. Similar points can be made about the government's financial deficit or any of its "corrected" measures. The expression for the current value of the primary surplus,  $\bar{S}_t$ , is given below.  $T$  denotes government taxes net of transfer payments and subsidies,  $N^*$  is the foreign currency value of net foreign aid inflows,  $E$  is the nominal spot exchange rate,  $C$  is government consumption spending,  $F$  is the gross cash return on the government capital stock,  $PRIV$  is privatization proceeds and  $A$  is gross domestic capital formation by the government.

$$\bar{S}_t \equiv T_t + E_t N_t^* - C_t + F_t + PRIV_t - A_t$$

Failure to pay state pensions on time increases the current value of  $T$  (taxes net of transfers and subsidies). If pension arrears have to be made up in due course in present value terms, the solvency of the government is not improved by such arrears. Bringing forward tax payments from a future fiscal year into the current one also will not improve the government's finances in any fundamental way.

Sequestrations and salary arrears to government employees temporarily depress  $C$  (government consumption spending). If, in due course, the sequestrations are reversed and the salary arrears are made good, there is no impact on the present value of current and future government cash flows. This is what seems to have happened in Russia during 1995 and early in 1996, in the run-up to the presidential elections.

Bringing forward privatization (an increase in  $PRIV$ ) also increases the conventionally measured primary surplus. Privatization (the sale of existing government assets) is a financing item that belongs below the line. Since the stock of government assets that can be privatized is given (or rather can only be augmented by government capital formation,  $A$ ) privatization itself (the asset sale) can only generate a temporary improvement in the government's cash flow. Privatization can have a lasting effect on the public finances only if the privatization proceeds exceed the present discounted value of the future stream of revenues ( $F$ ) the government would have earned had the assets remained in the public sector. It is of course perfectly possible that the future stream of  $F$  (conditional on the asset having remained in the public sector) would have been mainly negative for the privatized assets: the government

might have had to make good the losses of the state enterprises it owned. This is not inconsistent with the government getting positive privatization revenues, as the value of the privatized resources under private ownership can exceed their continuation value in the public sector. If pre-privatization  $F$  is negative and if privatization is not accompanied by an increase in efficiency (or an enhanced capacity to exploit market power), the government may find itself paying future subsidies (smaller future values of  $T$ ) that match the increase in  $F$  produced by privatization. Either way, the link between current  $PRIV$  and future  $F$  and  $T$  must be recognized in assessing the long-run budgetary implications of privatization.

A common tactic by governments faced with an urgent need for budgetary retrenchment is to slash the general government capital formation program, thus reducing  $A$ . Infrastructure investment (together with maintenance and repairs, which are part of  $C$ ) tends to be a soft target for finance ministers looking for blood. To the extent that the spending is merely postponed rather than cut permanently, the improvement in the government's finances is only temporary and the effect on the present value of present and future cash flows will be small. If additions to the government capital stock yield a positive future cash flow, current cuts in  $A$  will be followed by future reductions in  $F$ . Even if public sector capital formation does not yield a *direct* cash return (through user fees etc.), it may, if it is socially productive, increase the future tax base (for income taxes, VAT, corporate profit taxes etc), thus making future values of  $T$  larger than they would have been otherwise.

Just as bank regulators are faced with the problem of off-balance sheet assets and liabilities held by the institutions they are supervising, so those charged with the need to supervise government finances are faced with an increasing variety of contingent claims and liabilities held by governments. Loan guarantees, export credit guarantees, deposit insurance and foreign exchange guarantees are but some of the more common options owned or written by governments (see e.g., Mody and Patro [1995]). Pricing such contingent claims is a daunting task, but if the scope of these activities continues to increase, there really is no way around it. In New Zealand, the government is now legally bound to present a comprehensive public sector balance sheet which includes explicit valuations of many of the more standard contingent claims and liabilities. These contingent liabilities would be added to the stock of interest-bearing public debt in the calculation of the primary gaps.

Ideally, similar valuations should be made for the nonstandard contingent claims on the government, including its social security health and retirement programs, and government pension schemes. The approach could even be extended to the uncertain future streams of tax receipts, transfer payments and subsidies. Even crude approximations, like discounting expected future cash flows using risk-free discount rates, would be an improvement over the current practice of throwing in the towel without even putting up a fight.

### G. Seigniorage

Governments can appropriate real resource by issuing intrinsically valueless (fiat) money, provided private agents believe that fiat money will offer them a competitive rate of return (including saved transactions costs) over the planned holding period. A government can raise

the attractiveness to private agents of its fiat money by paying interest on it, by declaring it legal tender, by requiring certain transactions (say tax payments) to be made with it and by making the use of other transactions media costly or even illegal. Since the private (and social) marginal cost of producing fiat money is (approximately) zero the government must have some monopoly power over its issuance if it is going to gain command over real resources by varying its quantity.

While the terms “seigniorage” and “inflation tax” are often used interchangeably, this is a dangerous habit, as the two concepts are quite distinct. By *seigniorage* I mean the resources appropriated by the government by expanding the nominal monetary base. This resource measure of seigniorage (as a fraction of GDP), denoted  $\sigma$ , is given by equation (3), where  $H_t$  denotes the nominal stock of base money outstanding at the beginning of period  $t+1$ ,  $Q$  is real GDP and  $P$  the GDP deflator.

$$\sigma_t \equiv \frac{\Delta H_t}{P_t Q_t} \quad (3)$$

In what follows, I treat the monetary base as non-interest-bearing. This need not be the case for commercial bank reserves held with the central bank. In Hungary, for instance, near-market interest rates are paid on such reserves. The corrections that must be made to the analysis that follows when commercial bank reserves held with the central bank bear interest are straightforward.

There is a closely related concept, occasionally also referred to in the literature as seigniorage, which defines the interest burden forgone by the government through its ability to issue non-interest-bearing liabilities. This concept of *interest burden foregone* or opportunity cost measure of seigniorage (as a fraction of GDP), denoted  $\omega_t$ , is given in equation (4);  $i_t$  denotes the domestic short nominal interest rate and  $h_{t-1} \equiv H_t / (P_t Q_t)$  the base money-GDP ratio, or the inverse of the income velocity of circulation of base money.

$$\omega_t \equiv i_t \frac{H_{t-1}}{P_t Q_t} \equiv \frac{i_t}{(1 + \pi_t)(1 + g_t)} h_{t-1} \quad (4)$$

The resource measure of seigniorage and the opportunity cost measure are related by the following identity: the present discounted value of current and future seigniorage equals the present discounted value of the current and future interest burden foregone (roughly the operating profits of the central bank), minus the initial stock of base money:

$$\sum_{j=0}^{\infty} \left( \frac{1}{\prod_{k=0}^j (1 + i_{t+k})} \right) \Delta H_{t+j} \equiv \sum_{j=1}^{\infty} \left( \frac{1}{\prod_{k=0}^j (1 + i_{t+k})} \right) i_{t+j} H_{t+j-1} - \frac{H_{t-1}}{1 + i_t}$$

A third notion of seigniorage is the Central Bank's budgetary contribution to the general government. From the point of view of the approach taken in this paper, the Central Bank's budgetary contribution to the general government is an *intra-government* transaction that is of no interest.

The *inflation tax* is generally defined as the reduction in the real value of the outstanding stock of base money due to increases in the general price level. Thus, the inflation tax in period  $t$ , as a fraction of GDP,  $\tau^*$ , is given by

$$\tau_t^* \equiv \pi_t \frac{H_{t-1}}{P_t Q_t} \equiv \frac{\pi_t}{(1+\pi_t)(1+g_t)} h_{t-1} \quad (5)$$

The inflation tax and seigniorage are related by the identity given in equation (6):

$$\sigma_t \equiv \left( \frac{(1+\pi_t)(1+g_t)-1}{(1+\pi_t)(1+g_t)} \right) h_{t-1} + \Delta h_t \equiv \tau_t^* + \left( \frac{g_t}{1+g_t} \right) h_{t-1} + \Delta h_t \quad (6)$$

In the short run, seigniorage can exceed the inflation tax to the extent that there is positive real growth or to the extent that the income velocity of circulation of base money falls.

If there exists a stable base money demand function and if we are able to predict the arguments in the base money demand function for the period of interest, we can provide a map between the seigniorage revenue extracted by the government and the rate of inflation. I illustrate this with an example of a simple small open economy with an ad-hoc money demand function. Let real money demand be a negative function of the domestic short nominal interest rate (representing the domestic financial margin of substitution between non-interest-bearing currency and short interest-bearing debt) and the expected rate of depreciation of the currency  $\varepsilon^e$  (representing the direct international currency substitution margin (see e.g., van Aarle and Budina [1995])).

$$\ln \left( \frac{H_t}{P_{t+1} Q_{t+1}} \right) \equiv \ln \left( \frac{h_t}{(1+\pi_{t+1})(1+g_{t+1})} \right) = \alpha - \beta(1+i_t) - \delta(1+\varepsilon_t^e) \quad (7)$$

The domestic nominal interest is the domestic real interest rate plus the expected rate of inflation. The rate of nominal exchange rate depreciation is the rate of real exchange rate depreciation plus the domestic-foreign inflation differential. If we can project the real exchange rate, the foreign rate of inflation and the domestic real interest rate, then the monetary base-GDP ratio is uniquely (and negatively) related to the domestic expected rate of inflation.

Consider a steady state, with constant values of the domestic real interest rate, the growth rate of real GDP, the foreign rate of inflation and the real exchange rate. Expectations are realized. Seigniorage as a function of the rate of inflation exhibits the long-run seigniorage Laffer curve given in equation (8), with seigniorage first rising with inflation and, then declining and asymptotically going to zero for very high rates of inflation.<sup>20</sup>

$$\sigma = [(1 + \pi)(1 + g) - 1] e^{\alpha - \beta'(1 + \pi)} \quad (8)$$

When the demand for money is sensitive to the (expected) rate of inflation, the inflation tax is distortionary, like every other real-world tax, transfer or subsidy. The normative neoclassical theory of public finance might seem to imply that, in general, a (constrained) optimal design of fiscal policy will require the use of all distortionary tax instruments. Efficiency requires that the excess burdens imposed by the various distortionary taxes be equalized at the margin. This might seem to create a presumption that countries with well-developed direct and indirect tax systems therefore could be expected to make less use of the inflation tax than countries with less efficient revenue administrations and more relaxed public attitudes toward tax evasion. The (constrained) optimal inflation rates might therefore be expected to vary across time and across countries as tax bases, tax administration and tax ethics vary. This optimal seigniorage argument for differential national inflation rates needs to be qualified, however, even as a purely theoretical proposition, as Friedman's optimal quantity of money result, that the opportunity cost of money should be brought down to zero, turns out to be remarkably robust.<sup>21</sup>

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$$\beta' = \beta(1 + r) + \delta \left( \frac{1 + \gamma}{1 + \pi^*} \right)$$

The rate of inflation that maximizes steady-state seigniorage is

$$\pi_{\max} = \frac{1}{\beta'} - \frac{g}{1 + g}$$

and the maximum level of steady-state seigniorage is

$$\sigma_{\max} = \left( \frac{1 + g}{\beta'} \right) e^{\alpha - \beta' \left( \frac{1}{\beta'} + \frac{1}{1 + g} \right)}$$

<sup>21</sup>Recent insights into the optimal use of distortionary taxes on the returns from durable (capital) assets, due to Chamley [1986] (see also Lucas [1990], Zhu [1992], and Roubini and Milesi-Ferretti [1994]) imply that, at least in some of the standard neoclassical models, the Friedman rule for the optimal quantity of money (the nominal rate of interest should be zero and satiation with real money balances should occur) still applies despite the fact that there are no non-distortionary tax instruments available for financing public expenditure (see Buiter [1995a]).



### Seigniorage in a Currency Board System

There appears to be quite wide-spread lack of clarity about how (or in what sense) the government obtains revenues through seigniorage. A frequent comment on earlier versions of this paper was that definition of seigniorage used in this paper made no sense because under a currency board system the central bank does not extend domestic credit to the (general) government and therefore the (general) government could not be said to get revenues from the issuance of base money under a currency board system.

This argument contains two errors. First, it confuses domestic credit expansion by the central bank (net lending by the central bank to the general government) with the net budgetary transfer from the central bank to the general government sector. Second, it fails to consolidate the central bank with the general government.

As regards the second of these points, the central bank is the monetary agent of the state (and often a key quasi-fiscal agent of the state as well). The central bank's ability to issue non-interest-bearing liabilities *is* the government's ability to issue non-interest-bearing liabilities. If the government (the consolidated general government and central bank) did not have the ability to issue interest-bearing debt it would have to choose between raising taxes, cutting expenditures, issuing interest-bearing liabilities and running down foreign exchange reserves.

As regards the first point, if we look at the balance sheet and budget identity of the central bank in isolation, it soon becomes clear how the government obtains resources when the central bank issues base money, even in the case of a currency board.

Stylized Central Bank Balance Sheet	
Assets	Liabilities
$DC^G$ (Domestic credit to the general government)	H (Base money)
$DC^P$ (Domestic credit to the private sector)	$D^{CB}$ (Interest-bearing central bank debt)
$ER^*$ (Official foreign exchange reserves)	$NW^{CB}$ (Central bank net worth)

The stylized balance sheet shown above is self-explanatory. Central bank net worth equals the value of its assets minus the value of its liabilities. There are non-interest-bearing liabilities (the monetary base) and interest-bearing liabilities,  $D^{CB}$  bearing an interest rate  $i^{CB}$ . Assets include domestic assets and official foreign exchange reserves,  $R^*$ . Domestic assets consist of credit to the general government,  $DC^G$ , bearing an interest rate  $i^G$  and credit to the private

sector,  $DC^p$ , bearing an interest rate  $i^p$ . The interest rate on official foreign exchange reserves is  $i^*$  and the spot exchange rate is  $E$ .

$$\Delta H + \Delta D^{CB} - E\Delta R^* \equiv DEF^{CB} \quad (9a)$$

$$DEF^{CB} \equiv i^{cb} D^{CB} - i^G DCG - i^p DC^p - E i^* R^* + T^{CB} + C^{CB} \quad (9b)$$

The right-hand side of the central bank budget identity given in equation (9b),  $DEF^{CB}$ , is the financial deficit of the central bank.  $T^{CB}$  is the net budgetary contribution of the central bank to the general government and  $C^{CB}$  are the current expenses of running the central bank.

A pure currency board has two defining characteristics: there is an irrevocably fixed exchange rate and there is no domestic credit expansion, that is no net lending to the general government sector or to the private sector, so  $DC^G = DC^p = \Delta DC^G = \Delta DC^p = 0$ , and the monetary base is fully backed by international reserves. The central bank's balance sheet simplifies to the one shown below, while its budget identity becomes the one given in equations (10a,b).

Stylized Currency Board Balance Sheet	
Assets	Liabilities
ER* (Official foreign exchange reserves).	H (Base money)
	$D^{CB}$ (Interest-bearing central bank debt)
	$NW^{CB}$ (Central bank net worth)

$$\Delta H + \Delta D^{CB} - E\Delta R^* \equiv DEF^{CB} \quad (10a)$$

$$DEF^{CB} \equiv i^{cb} D^{CB} - E_i^* R^* + T^{CB} + C^{CB} \quad (10b)$$

On the right-hand side of equation (10b), the interest paid on the central bank's interest-bearing debt and the interest earned on its foreign assets can be taken as given at a point in time. So are the expenses of running the bank. Consider first the case where the central bank has no interest-bearing liabilities. If the central bank builds up foreign exchange reserves, it either issues base money or it reduces its net budgetary transfer to the Treasury. While, by definition, there is no domestic credit expansion under a currency board system, this does not

mean that there is no net budgetary transfer (positive or negative) to the Treasury. This argument is not materially affected if the central bank issues interest-bearing liabilities in addition to base money: for the central bank to be solvent, its outstanding net interest-bearing debt<sup>22</sup> must be equal to the present discounted value of its current and future primary surpluses  $-(T^{CB} + C^{CB})$  plus the present discounted value of its current and future issues of base money.

### A Broader View of the Inflation Tax

The inflation tax of this section is perhaps more accurately referred to as the (narrowly defined) anticipated inflation tax. Anticipated inflation can influence the government's budgetary position through other channels. The most important of these is the Olivera-Tanzi effect through which a higher rate of inflation erodes the real value of taxes subject to a collection lag.<sup>23</sup> The reason is that such deferred tax payments often are neither index-linked nor have a market interest rate reflecting anticipated inflation attached to them.

In addition to using the anticipated inflation tax (broadly defined), the government can improve its real financial net worth by reducing the real value of its outstanding domestic currency-denominated fixed interest rate debt through unanticipated inflation. The effect of an unexpected increase in the current and/or future rate of inflation on the market value of the domestic-currency-denominated non-indexed fixed-rate debt increases with the remaining term to maturity of the debt.<sup>24</sup> Even variable interest rate, very short maturity debt can have its real value eroded by an unanticipated increase in the price *level*. Even if nominal domestic costs are sticky, the CPI will be flexible in an open economy through the import component of the consumption bundle. In a small open economy, a price level jump can be engineered through a discrete (or maxi-) devaluation. The ability to impose unanticipated inflation tax levies on the national debt may be as important as the discretionary use of the anticipated inflation tax for a number of countries with high public debt GDP ratios and a doubtful capacity for generating significant and sustained primary surpluses. For such countries, the case for a *de jure* (through a (partial) "consolidation" or default by some other name) or *de facto* (through an inflation surprise or an unexpected devaluation) capital levy on the public

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<sup>22</sup>net of the value of its external assets. Obvious corrections must be made if the interest rate on the central bank's banks interest-bearing liabilities differs from the interest rate on international reserves, when both are expressed in a common currency.

<sup>23</sup>The effect applies equally when the delay in payment is limited to the legally permitted grace period and when the tax payments are technically in arrears.

<sup>24</sup>To the extent that the Fischer hypothesis does not hold and higher anticipated inflation reduces the real rate of interest, the real value of the debt is eroded even by higher *anticipated* inflation.

debt may well become irresistible. If a *de jure* public debt repudiation turns out to be politically unacceptable, a fierce burst of inflation and a maxi-devaluation may well be the only way to re-impose *ex post* consistency on the public accounts.

### III. SOME NUMBERS

#### A. Seigniorage

While few people are likely to lie awake about seigniorage for most EU countries (see Buitter [1995a] and Grilli [1989a,b]), the same cannot be said for some of the transition economies. Of the six East-European countries, shown in Table 1, only Hungary approaches the seigniorage performance of the 11 most advanced EU members. Poland approximates the performance of the least developed EU countries, Portugal, and Greece. The Czech Republic and the Slovak Republic raise more than 3 percent of GDP through seigniorage. So does Hungary, if the conventional monetary base measure (domestic currency in circulation plus banks' reserves with the central bank) is used. However, Hungary is the only country in our sample where near-market interest rates are paid on commercial bank reserves with the central bank. This suggests that domestic currency in circulation alone constitutes the base for seigniorage. On this measure, Hungary extracted less than one percent of GDP in seigniorage during 1994.

Of the 6 FSU countries shown in Table 2, only Estonia, with its currency board, raises seigniorage comparable to the EU countries. The Ukraine relies most on seigniorage, with a figure of more than 11 percent of GDP for 1994. Kazakhstan, the Kyrgyz Republic, and the Russian Federation all raised more than 5 percent of GDP through seigniorage in 1994.

With conventional tax bases as weak as they are in countries like Kazakhstan, the Kyrgyz Republic, the Russian Federation, and Ukraine, continued reliance on seigniorage as a non-trivial source of revenue seems unavoidable. The question then is what the need to extract, on a continuing basis, say 5 percent of GDP through seigniorage implies for the inflation targets that the authorities should set themselves.<sup>25</sup>

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<sup>25</sup>The "need" for seigniorage cannot be inferred accurately from the government deficit-GDP ratio, as this includes nominal interest payments which will be inflated (in every sense of the word) by a high rate of inflation. An inflation- and real growth-corrected deficit-GDP ratio provides a better guide to the magnitude of the seigniorage required in the long run (as a proportion of GDP).

Unfortunately, the data base at my disposal is not good enough to estimate, with any degree of precision, reasonably robust base money (or domestic currency) demand functions. The time series are too short (and too much affected by parameter instability despite their shortness) and there is too much unobservable cross-sectional heterogeneity to allow for confident time-series, cross section or panel data estimation.

An attempt to estimate a long-run seigniorage Laffer curve directly using pooled data for all 12 countries in my sample is reported in a longer version of this paper (Buiter [1996]). The least objectionable estimates suggests that the long-run seigniorage maximizing rate of inflation is about 137 percent per annum and that the maximal long-run seigniorage-GDP ratio is about 3.65 percent. Van Aarle and Budina [1995] using longer quarterly time-series, estimate currency and base money demand functions of the semi-logarithmic variety (as in equation 7).<sup>26</sup> Their best equation (currency demand in Poland), has a long-run semi-elasticity of currency demand with respect to the rate of inflation of  $-0.21$  (with a  $t$ -statistic of  $-3.09$ ) and a long-run semi-elasticity with respect to the rate of currency depreciation of  $-0.54$  (with a  $t$ -statistic of  $-0.11$ ). These point estimates imply,<sup>27</sup> that the long-run seigniorage maximizing rate of inflation is about 133 percent per annum if (statistically insignificant) international direct currency substitution is taken into account, and about 476 percent per annum if it is not. Maximal seigniorage is about 3.7 percent of GDP if international direct currency substitution is not taken into account and just over 2 percent of GDP if international direct currency substitution is allowed for. It goes without saying that it is very unlikely that the seigniorage maximizing rate of inflation will ever be the optimal rate.

In view of the importance of seigniorage revenue for countries in the early stages of transition, the estimation of more robust base money and domestic currency demand functions should have high research priority.

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<sup>26</sup>Van Aarle and Budina do not include real output or any other "scale variable" as an argument in their base money demand functions. I interpret their equation as if it had a unitary elasticity of real money demand with respect to real output.

<sup>27</sup>I ignore the real growth rate terms in the expressions for the long-run seigniorage maximizing inflation rate and the long-run maximal seigniorage-GDP ratio in the two equations given in footnote 33. Van Aarle and Budina have the logarithm of real money balances as the dependent variable in their money demand equations and do not include real GDP or some other scale variable as a regressor.

## B. Debts and Deficits

### A Quick First Check for Quasi-Fiscal Deficits

In most transition economies, especially in the financially less developed and sophisticated ones, it is safe to interpret any excess of domestic credit expansion ( $DCE$ ) by the central bank (the increase in the stock of base money minus the official settlements balance, roughly equal to the increase in the central bank's external assets or international reserves) over the financial deficit of the general government to be *prima facie* evidence of fiscal and/or quasi-fiscal deficits of the central bank. From equations (9a,b) it follows that

$$DCE \equiv \Delta H - E\Delta R^* \equiv \Delta DC^G - \Delta D^{CB} + \Delta DC^P + DEF^{CB} \quad (11)$$

The last two terms on the right-hand-side of equation (11),  $DC^P + DEF^{CB}$ , are the *augmented* financial deficit of the central bank, treating all central bank net credit extended to the non-general government sectors,  $DC^P$ , as de facto quasi-fiscal transfer payments. This augmented financial deficit of the central bank equals DCE minus credit extended by the central bank to the general government,  $DC^G$ , plus the increase in the interest-bearing liabilities of the central bank,  $D^{CB}$ . If the data are available to calculate the augmented financial deficit of the central bank directly, either as  $DC^P + DEF^{CB}$  or as  $DCE - DC^G + D^{CB}$ , of course no further approximations are required. If these data are not all available, we can estimate a lower bound on the augmented financial deficit of the central bank if we can assume (1) that the central bank did not issue a significant amount of interest-bearing liabilities ( $D^{CB} \leq 0$ ) and (2) that the financial deficit of the general government is at least as large as the credit extended by the central bank to the general government. This second assumption would be violated if the general government were retiring domestic or external interest-bearing debt held outside the central bank or if it was selling assets (say through privatization). Retiring public debt does not appear to have been a common occurrence in the transition economies. Privatization has been a source of revenue in many transition economies, but the amounts involved have typically been rather small. If the two assumptions are satisfied, the augmented financial deficit of the central bank is at least as large as the excess of domestic credit expansion by the central bank over the financial deficit of the general government.

In Tables 3 and 4, I check to which extent central bank dce exceeds the reported general government financial deficit figures. For reference, the seigniorage figures are also included.

The figures for the six East-European countries are given in Table 3. On the basis of these figures, only Romania is a clear candidate for sizable quasi-fiscal deficits, given in the fourth row for Romania. Note, however, that the excess of central bank dce over the general government financial deficit only provides a lower bound on the augmented financial deficit of the central bank: it is sufficient, but not necessary, to start worrying about quasi-fiscal deficits.

The figures for the six FSU countries are given in Table 4. Estonia experienced huge reserve inflows in connection with the creation of its currency board in 1993. Even so there may be valuation problems associated with its reserve inflows. Kazakhstan (for which only one year of data (1994) is available), passes the plausibility test because of a reported 6.9 percent of GDP quasi-fiscal deficit in 1994—the only quasi-fiscal deficit reported by the Fund for any year and any country. The Kyrgyz Republic also reports large and wild reserve flows. Reserve valuation problems may again have contributed to some pretty wild dce(1) numbers. For Lithuania, dce(2) exceeded the deficit in 1993, and for the Ukraine dce(1) exceeded the deficit in 1994.

Both quasi-fiscal deficits and contingent deferred fiscal deficits are likely to be important in many of the FSU countries, and in Romania and Bulgaria. Even the advanced transition economies (the Baltic republics, the Czech Republic, Hungary, Poland, and the Slovak Republic) are no exception, as the contingent claims on the government represented by likely insolvencies in the financial sector should be allowed for in any medium-term fiscal-financial strategy. The absence of any quantitative information on such current and future contingent claims on the public purse makes it very hard, if not impossible, to perform a meaningful analysis of the sustainability of the fiscal-financial-monetary program. What follows assumes that unreported quasi-fiscal deficits and contingent deferred fiscal deficits are indeed zero. That assumption is likely to be wide off the mark in many cases.

### **Real Growth Rates and Real Interest Rates**

Two key ingredients in the sustainability analysis framework outlined in Section II are future growth rates of real GDP and the future real interest rate on domestic government debt. In the hope (but not the expectation) that the past can be a guide to the future, figures on the realized magnitudes of these two variables are presented in Table 5.

Whatever one may think of the quality of the real growth figures as indicators of the actual behavior of the real economy in the past, it is clear that they are bound to be very poor guides to future real growth. The *ex post* real interest rates recorded in Table 5, should also be taken with a pinch of salt, as a guide to either past or future. With the exception of the last year or so for Bulgaria, Hungary, the Czech Republic, Poland, and the Slovak Republic, such nominal interest rates as are reported are unlikely to represent the marginal cost of voluntary domestic lending to the government. More important, the *ex post* real interest rates recorded in Table 5 are, again with the 5 exceptions already mentioned, likely to be extremely poor guides to the *ex ante* real cost of future voluntary domestic government borrowing in the countries concerned.

## Debts, Deficits, and Primary Surpluses

Subject to all the aforementioned qualifications, we can now pull together those key ingredients of a fiscal sustainability analysis that are available. I was unable to obtain data on the debt of the consolidated general government and central bank. The data in Tables 6 and 7 refer only to general government debt (even then there are some lacunae). This can clearly lead to distortions from the point of view of the sustainability analysis outlined in Section II of the paper. In Hungary, for instance, a large part of the general government debt is owed to the central bank. The debt of the consolidated general government and central bank therefore looks quite different (particularly in terms of the breakdown between domestic and foreign debt) from that of the general government sector. Moreover, while much of the general government debt is at preferential rates, interest rates on the consolidated debt are close to market levels, reflecting the larger share of external debt in the consolidated debt. I recognize the problem, but cannot remedy it with the data available to me.

Considering first the six East-European countries, we find a wide variety of circumstances, as can be seen from Table 6.

Bulgaria is extremely highly indebted, with a debt-GDP ratio at the end of 1994 or 165 percent, more than two thirds of which is external debt. During 1994, however, Bulgaria managed a primary surplus of 7.0 percent of GDP. If there are no hidden quasi-fiscal and contingent deferred fiscal deficits, the 7.0 percent of GDP primary surplus would, if maintained indefinitely, be consistent with long-run solvency as long as the long-run real interest rate does not exceed the long-run growth rate of real GDP by more than 4.2 percent per annum. Clearly, a permanent 7 percent of GDP primary surplus would be a first in the history of mankind. If Bulgaria could extract 3 percent of GDP in seigniorage in the long-run, the picture looks slightly less unrealistic. In addition one could hope for a long-run real growth rate of about 4 to 5 percent per year and an annual long-run real interest rate of no more than 6 to 7 percent. Under these conditions the required primary surplus plus seigniorage would be between 1.65 and 4.95 percent of GDP, which may not be infeasible. Finally, on the basis of the data up to the beginning of 1995, Bulgaria looked a likely candidate for some serious external debt restructuring, which would further improve its medium- and long-term fiscal-financial position. This has indeed happened subsequently.

For the Czech Republic, I only have central government debt. Unless provincial and local governments and the various off-budget funds greatly inflate the total, Czech government debt is tiny (at 15.6 percent of GDP for the central government in 1994). Its 1994 primary surplus is also tiny (0.1 percent of GDP) but that is hardly worrying. The Czech Republic also satisfies the Maastricht debt and deficit criteria (general government gross debt no more than 60 percent of GDP and the general government financial deficit no more than 3 percent of GDP). In 1995 and 1996, there has been some slippage in Czech fiscal control: despite a



booming economy, the general government deficit rose by more than two percentage points of GDP.

With the exception of Bulgaria (prior to its external debt restructuring), Hungary may well be in the worst fiscal shape of any of the 6 East-European countries. With a high debt-to-GDP ratio of 88.4 percent in 1994 and a small primary surplus of 0.4 percent of GDP in that year, it would have to hope for a very favorable constellation of low real interest rates and high growth rates of real GDP to make a continuation of the current primary surplus performance consistent with long-run solvency. Hungary satisfies neither the Maastricht debt criterion nor, with a general government deficit of 6.3 percent of GDP in 1994, the Maastricht deficit criterion.

Poland, with a debt-to-GDP ratio in 1994 of 78.5 percent and a primary surplus of 1.5 percent of GDP appears to be in better fiscal shape than Hungary. With a deficit of 2.5 percent of GDP it also satisfies the Maastricht deficit criterion. As its debt-GDP ratio appears to be declining quite rapidly, it might be entitled to "Irish" treatment as regards the interpretation of the Maastricht debt criterion.

Romania exited from Communism with a negligible debt-GDP ratio. At the end of 1994 its debt-GDP ratio of 21.1 percent and its primary surplus of 0.3 percent do not suggest any solvency problems. The only qualification has to be the possibility of a hidden quasi-fiscal and contingent deferred fiscal deficit. Romania satisfies both the debt and the deficit criteria of Maastricht.

The Slovak Republic has a low but rapidly rising debt-GDP ratio, which stands at 36.4 percent of GDP at the end of 1994. The primary surplus of 2.9 percent of GDP and the deficit of 1.4 percent of GDP for 1994 suggest the absence of any solvency problems. Both the debt and the deficit criteria of Maastricht were met at the end of 1994.

Turning to the six FSU countries, it is clear from Table 7 that the only one with a serious debt problem at the end of 1994, is the Russian Federation. The Russian debt is mainly external, much of it accounted for by inherited USSR debt (approximately US\$70 billion when the USSR collapsed in 1991). Putting together the figures on the Russian debt with the large primary deficits (8.21 percent of GDP in 1994), it is clear that even if Russia continues to extract as much as 5.0 percent of GDP in seigniorage (which seems unlikely), the country is insolvent without either a significant reduction in the primary deficit or a major write-down in the external debt. The true situation is actually likely to be worse than represented in Table 7, as it is assumed that there is no quasi-fiscal or contingent deferred fiscal deficit, which is certainly incorrect in the case of the Russian Federation.

Russia's recent successes in rescheduling and renegotiating her external debt have certainly helped improve the rather dismal picture as of the end of 1994, when the total external debt stood at US\$119.9 billion. In November 1995, the London Club of commercial bank creditors rescheduled debts totaling US\$25.5 billion over 25 years. In April 1996, the Paris Club of bilateral creditor nations agreed to reschedule the repayment of \$40 billion of debts over 25 years. The Paris Club deal involves a six-year grace period on the repayment of principal and is likely to save billions of dollars in debt repayments in the short term. I have not been able to find an estimate of its total effect on the present discounted value of all future debt obligations. Together with the recently signed agreement with the IMF for US\$10 billion in loans over three years, the external cash flow constraints on the Russian economy have certainly been relaxed somewhat in the short term.

The Ukraine is the only other FSU country with a non-negligible external debt (at 28.7 percent of GDP in 1994). In view of its large primary deficit, it is clear that only a major reduction in the primary deficit can restore solvency in the Ukraine. It certainly won't be possible to continue to extract the 1994 level of 11 percent of GDP in seigniorage, and even a complete write-down of the external debt would not save much more than 2 percent of GDP in interest payments in the long run. While there ought to be some scope for reducing general government expenditure (at 52.9 percent of GDP in 1994 and estimated to have been around 46 percent of GDP in 1995), it is hard to see how the Ukraine will be able to manage without a sizable inflow of external resources.

As far as I can tell, the internal public debt of the FSU countries was small at the end of 1994, although for most of them the entry under internal debt was "Not Available" rather than "Negligible". In a number of FSU countries, notably Russia, issuance of Treasury Bills was growing rapidly. The Russian domestic TB market is segmented from the external one, and considerably higher rates of return are available to domestic TB holders.

Subject to the "quasi-fiscal and contingent deferred fiscal deficit" qualification, the public finances of Estonia look very sound, while one has to withhold judgment on Lithuania until it becomes clear whether its recent primary deficit is likely to be temporary or permanent.

Kazakhstan appears to be in rather bad shape and the Kyrgyz Republic in very bad shape, even if no (further) quasi-fiscal and contingent deferred fiscal horrors are uncovered. Neither of these countries has any sizable external debt to write down or (apparently) any internal debt. Both countries have tax revenue levels that are already dangerously low. Again it is difficult to see a feasible fiscal-financial-monetary program for these two countries that does not involve a large inward transfer of external resources.

#### IV. SOME SPECIAL FISCAL ISSUES ENCOUNTERED BY TRANSITION ECONOMIES

A closer look at the expenditure and revenue figures for the twelve countries under consideration prompts the following eight reflections.

##### A. The Collapse of Government Revenues in Some Recent Transition Economies

A startling fact is the collapse of government (especially central government) revenues in some of the countries that have only recently initiated their transitions and that have not yet succeeded in achieving macroeconomic stabilization. Tax revenues as a share of GDP are falling to levels associated with the most underdeveloped countries in the world.

As Table 8 makes clear, Kazakhstan and the Kyrgyz Republic are firmly in this position. Lithuania too appears to be raising too little general government revenue and the Russian Federation is also rapidly approaching the danger zone. In October 1996, the IMF threatened to suspend loan disbursements to Russia, because of a spectacular failure to meet the tax revenue conditionality. Surprisingly, if the data are to be believed, general government revenues appear to be holding up rather well in the Ukraine. This may simply reflect the fact that the general government sector still includes much of the state enterprise sector, as privatization has been lagging behind badly in that country. Another candidate explanation is that the figures are wrong. Among the Eastern European countries, only Romania seems to be heading for a dangerously low level of government revenue. Of course, the *structure* of government revenues leaves much to be desired in most transition economies, from the point of view of allocative efficiency, administrative simplicity and distributive justice.

It seems unlikely that even the barest nightwatchman duties of the state can be discharged adequately with tax revenues restricted to 17 percent of GDP. The very survival of the state is put at risk by very low tax revenues. In the revenue-deficient countries, the first priority of the state should be to strengthen its tax revenue bases and improve the tax collection effort.

The proximate cause of the increase in public sector financial deficits has been a dramatic decline in public sector current revenues, especially in the central government sector. There have also been significant cuts in public spending in most countries (often in consumer subsidies (food, household energy, housing), enterprise subsidies and in public infrastructure investment, but not by enough to match the decline in revenues and prevent the emergence of unsustainable financial deficits.

The decline in revenues can be attributed in part to a decline in the traditional tax bases and in part to a decline in the government's ability to extract revenue from any given base. The decline in the traditional tax bases, mainly taxes on turnover and enterprise profits, mirrors the sharp decline in output that has occurred, without exception, in the early years of the

transition. In several of the East European countries the cumulative (measured) output decline over the period 1990–1992 ranged between 20 and 40 percent. Even if the recorded output decline overstates the true decline in real GDP (because of an under-recording of output in the “new private sector”, and especially in the private service industries), the GDP of the traditional sectors (largely the (former) state enterprise sector) is a more appropriate indicator of the traditional tax bases, especially for the enterprise profits tax.

Equally important has been the weakening, and in some cases the virtual collapse, of the government’s institutional and administrative capacity for collecting such key traditional revenues as the business profits tax. Under central planning, the tax on state enterprise profits was effectively a business withholding tax. With the government setting input and output prices, the tax authorities had direct knowledge of and access to state enterprise profits. Transferring these profits to the center was essentially a simple accounting transaction, effected through the mono-bank system. With privatization, the break-up of the state mono-bank system and price liberalization, the information available to the center concerning the profitability of the former state enterprises worsened dramatically and the administrative capacity for transferring profits from the enterprises to the centre weakened and in some cases virtually vanished. Much of the new private sector falls outside the net of the enterprise profit tax altogether. Tax compliance is generally poor. Avoidance and evasion are rife.

The common tolerance for poor tax compliance is boosted by the frequently arbitrary nature of assessments and by the many distortions in the tax system that make for frequent inefficiencies and inequities. For instance, high inflation in Poland in 1990 (586 percent per annum) combined with historic cost accounting and the taxation of inventory revaluation profits, meant that accounting profits for tax purposes wildly overstated true profits (measured, say, on a cash-flow basis). This provided the government with a (strictly temporary) revenue boost and saddled the enterprise sector with a sometimes crippling tax burden. The next year, inflation declined (to 70 percent at an annual rate) and with it the revenues from the enterprise profit tax disappeared (see Schaffer [1992]).

Turnover taxes too became harder to collect as wholesale and retail trade were privatized and became more difficult targets for the revenue authorities.

Attempts are being made to enhance the revenue-raising capacity of the transition economies. As regards the enterprise profits taxes, attempts have been made to re-establish fiscal control over the former state enterprises and to bring the new private sector inside the enterprise tax net for the first time. The turnover taxes are being supplemented (or replaced) by value added taxes. With a narrow base and shot through with exemptions and zero ratings, the revenues raised by the value added tax have frequently been disappointing.

The seriousness of the problems that arise when the central government cannot secure adequate revenues to perform its essential functions becomes apparent when we consider the

history of the demise of the former Yugoslav Republic. The refusal of some of the key Republics to adequately fund the Federal government, and the inability of the Federal government to raise revenues in recalcitrant republics without their cooperation was the death knell of the Federal state. While the dynamics of disintegration of public administration and collapse of the capacity to tax are complicated, there can be no doubt that the capacity to tax is a defining characteristic of a viable state.

### **B. The Premature Adoption of OECD Spending Patterns by the Advanced Transition Economies**

A second striking fact is that a number of the more advanced transition economies appear to be settling on a level and composition of public spending that resembles that of the advanced OECD countries. Table 9 contains some illustrative figures.

The Czech Republic, Hungary, Poland, and the Slovak Republic all appear to be stuck with levels of general government spending that are unsustainably high. This is so even where it is possible to secure non-inflationary financing for these expenditures. The distortions and disincentives associated with raising fifty percent or more of GDP in current revenues are bound to be formidable in these still relatively poor and capital-deficient economies. Hungary appears to be in especially bad shape from this point of view, with an almost Swedish-size general government spending program. It is doubtful that with level of productivity and productive efficiency still well below that of the advanced OECD countries, even the advanced transition economies can support an advanced OECD-style welfare state and supply of public goods and services.<sup>28</sup> The fact that these countries also tend to have an OECD-type demographic structure (a rapidly greying population) makes the problem even worse.

Bulgaria too appears to have general government spending at an unsustainably high level. Its spending certainly exceeds its capacity for non-inflationary financing. Unlike the other countries included in Table 9, however, general government spending in Bulgaria appears to be on a downward path (as a proportion of GDP).

Of the FSU countries, only Russia and (especially) the Ukraine appear to be in need of significant further reductions in the share of general government spending in GDP.

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<sup>28</sup>When the current advanced OECD countries had the levels of per capita income achieved now by the advanced transition economies, their public spending shares were considerably below those achieved currently by the advanced transition economies.

### **C. Fiscal Federalism**

When we consider the transition economies with a Federal structure, it often is unclear whether the main problem is the Federal (Central) government withholding essential (and officially agreed upon) resources from the lower-tier authorities or the lower-tier authorities (ab)using their proximity to the key tax bases to control and appropriate revenue resources that should go to the Central authorities. In support of the former view, it is clear that the Central authorities have delegated to the lower-tier authorities many functions and spending obligations that were previously centralized. Frequently such mandated tasks and spending obligations have not been adequately funded, either through direct transfers from the center (revenue sharing) or by giving the lower-tier authorities additional revenue bases. In support of the latter view, the experience of the Russian Federation shows that despite the constitutional position of the main tax collection administrations as agents of the Federal government, the lower-tier authorities appear to be able to withhold considerable amounts of revenues from reaching the center.

In addition to the official political Federal structure of the Russian Federation there appears to be an informal industrial Federal structure which allows certain resource-based revenue-rich industries (especially oil and natural gas) to act like states-within-the state. Regaining the ability to enforce constitutionally adopted tax laws, rules and regulations throughout the entire domain of the state should be a top priority for the Federal government.

### **D. Revenue Tariffs**

The revenue implications of trade reform measures should never be ignored. International trade taxes are relatively easy to administer. Replacing non-auctioned quotas by auctioned quotas or preferably by tariffs is always a good idea. While there is no unambiguous theoretical efficiency case for uniformity of tariff rates in traditional international trade theory and public finance, there is a strong case for uniform *ad valorem* tariff rates without exemptions once we allow for administration, collection or enforcement costs and for the rent-seeking behavior and corruption encouraged by multiple tariff rates and exemptions. Smuggling of course will always be a problem with any non-zero tariff.

Transition economies should not be encouraged to cut their tariffs to levels below, say, 15 percent, unless adequate alternative revenue sources or additional spending cuts can be identified. Romania appears to be an example of a country where import tariffs were brought down too rapidly from the point of view of the government's revenue needs.

### **E. Fiscal Aspects of Privatization**

Privatization of state enterprises reduces the information base available to the tax authorities and weakens or eliminates its traditional administrative apparatus for collecting the taxes. When banks have been privatized and bank supervision and regulation have been ineffective, another important source of information for the tax authorities has been lost. This appears to be an especially acute problem in the Russian Federation.

Governments can collect revenues from privatization in two ways. First, they can raise revenues by selling the ownership claims to the state enterprises. Second, they can tax the privatized enterprises after privatization. This can be done even if the enterprises are (partly) foreign-owned, if source-based capital income or profits taxes (say in the form of a withholding tax) are imposed.<sup>29</sup> Clearly, the amount of revenue raised from the initial sale of the assets is not independent of the buyers' assessment of what the future tax regime is going to be. Since governments have only a very limited capacity to commit themselves not to impose future taxes, any time-consistent policy will involve lower initial privatization revenues and greater reliance on future taxation than would be optimal if governments could make credible commitments to future tax levels.

Privatization can also affect the expenditure side of the government budget, if privatized enterprises are less effective lobbyists for government subsidies than their state-owned predecessors.

### **F. The Shifting of Social Expenditures from the Former State Enterprise Sector to the General Government**

Under central planning, state enterprises fulfil a number of functions performed by the general government sector in market economies. These include the provision of public consumption goods and services to their employees, public investment and the provision of part of the social safety net. As the transition proceeds, some of these functions are transferred from the (former) state enterprises to the general government. Others are abandoned by the (former) state enterprises without being taken over by the general government sector.

Transferring social expenditure responsibility from the (former) state enterprises to the general government can create serious revenue problems for the general government: it was considerably easier for the pre-transition state enterprises to earmark and mobilize some of their own resources to discharge these social obligations than it is for the post-transition

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<sup>29</sup>Taxing the profits of (partly) foreign-owned enterprises will of course be subject to the usual transfer-pricing problems.

general government sector to raise tax revenues in an efficient and equitable manner to provide an adequate social safety net.

### G. Sequestration and “Current Arrears”

Sequestration (the withholding from the spending departments by the Ministry of Finance of previously authorized funds) should be the means of public expenditure control of last resort, as its occurrence is *prima facie* evidence that normal budgetary processes and procedures have broken down. Sequestration impacts on government procurement, on government wage and salary payments and on the transfer payments and benefits side of the budget.

Sequestration need not necessarily lead to arrears by the government to non-government suppliers of current goods and services and to recipients of government transfer payments, but it will do so if the spending departments had entered into contracts (or other quasi-contractual arrangements) on the basis of their previously authorized budgets. Public sector wage, salary and pension arrears (henceforth *current* arrears) have occurred in the Russian Federation, were reduced in the run-up to the Presidential elections, but appear to have increased again since then. Such current arrears should be viewed as seriously as arrears on the internal or external debt of the government, as they too represent the moral (and sometimes the legal) equivalent of a breach of contract. Furthermore, salary arrears to the armed forces create the risk of mutiny, which does not appear to be good politics.

The Fund has, in my view, taken too relaxed a view of sequestration and current arrears in the past, especially in the Russian Federation. In mitigation, it has to be admitted that, in the case of the Russian Federation, the notion of “previously authorized funds” has often been very ambiguous, with ministries, lower level government agencies, high ranking officials (including the President) claiming the authority to authorize budgetary funds—independent of the Ministry of Finance, or the approved budget (if and when that existed). If such is indeed the case, the rectification of both anomalies (anarchic budgetary appropriation authorization procedures and sequestration/current arrears) should be an essential component of the conditionality attached to any Fund program.

### H. The Appreciation of the Real Exchange Rate and the Cost of External Borrowing<sup>30</sup>

The real domestic resource cost of foreign borrowing (that is the real interest cost measured in domestic GDP units),  $r^f$ , equals the foreign nominal rate of interest paid on the external debt,  $i^*$ , plus the proportional rate of nominal exchange rate depreciation minus the domestic rate of inflation, that is,

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<sup>30</sup>In this section no attention is paid to the distinction between ex post and ex ante rates of return, as this is not relevant to the point made. I do not recommend this as a general rule of thumb.



$$r^f \equiv \frac{(1+i^*)(1+\epsilon)}{1+\pi} - 1$$

Equivalently, the real domestic resource cost of foreign borrowing can be viewed as equaling the foreign real rate of interest (the cost of foreign borrowing in terms of foreign GDP units),  $r^*$ , plus the proportional rate of real exchange rate depreciation,  $\gamma$ , that is,

$$r^f = (1+r^*)(1+\gamma) - 1$$

Thus, given the world real rate of interest, real exchange rate appreciation (a decline in  $\gamma$ ) reduces the domestic real resource cost of foreign borrowing. Following the massive real depreciations experienced by many of the transition economies in the very early phases of their transition, many are now experiencing a strong (albeit volatile) trend appreciation of their real exchange rates, which reduces the cost of borrowing abroad (see e.g., Halpern and Wyplosz [1995] and Buiters and Lago [1995]).

If there is perfect international financial capital mobility and uncovered nominal interest rate parity prevails, that is, the domestic nominal interest rate equals the foreign nominal interest rate plus the proportional rate of nominal exchange rate depreciation, then the real domestic resource cost of borrowing abroad is equal to the real resource cost of borrowing at home. In a financially small open economy with takes the foreign real interest  $r^*$  as parametric, an appreciation of the real exchange rate therefore reduces the domestic real rate of interest.

In the reality faced by most transition economies, the domestic currency cost of foreign borrowing differs from the domestic nominal rate of interest not just because of the existence of an exchange risk premium (which can of course be negative) but also because of capital market segmentation due to capital controls, exchange controls and other administrative and fiscal interventions in the free international flow of financial capital. Nevertheless, unless the domestic financial market is completely cut-off from the international financial system, one would expect the expectation of an appreciation of the real exchange rate to lower not just the real cost of foreign borrowing but also the domestic real rate of interest.

## V. CONCLUSION: SOME GENERAL LESSONS

I summarize my main conclusions and recommendations as a number of propositions, grouped under three headings: 'data', 'fiscal policy design' and 'other'. For reasons of space, not all conclusions and recommendations could be developed and motivated in the body of the paper. They are nevertheless presented here both because I consider them important and because they are likely to resonate with those familiar with the area and its circumstances.

## A. Data

**Proposition 1.** For many of the FSU countries and for some of the East-European countries, the minimal data set required to evaluate the sustainability of the fiscal-financial- monetary policy stance is not available. From the officially available data on the general government financial deficit and on the general government primary deficit, it is often virtually impossible to interpret the economic significance of the magnitudes of these financial balances, of variations in them or of differences (across countries) between them. Under these conditions, policy evaluation and advice can only be based on (informed) guesswork.

**Proposition 2.** The fundamental accounting unit that Fund programs and data collection should focus on is the consolidated general government and central bank. The consolidated balance sheet, (augmented)<sup>31</sup> financial deficit and (augmented) primary deficit of this sector are the fundamental building block of any medium-term or long-term sustainability analysis. Whatever the formal status of the central bank, it is essential to recognize it and treat it as a key financial and (quasi-)fiscal agent of the government.

**Proposition 3.** All quasi-fiscal activities of the consolidated general government and central bank sector should be identified as such, and the tax or subsidy equivalents of these activities should be recorded in the accounts. This is essential as much for the proper assessment of the allocative implications of the budget as for a proper interpretation of the financial position of the government.

**Proposition 4.** A practical way of estimating the augmented financial deficit of the consolidated general government and central bank referred to in Proposition 2, is to add the conventional financial deficit of the general government, the conventional financial deficit of the central bank and the net increase in the amount of credit extended by the central bank to all sectors other than the general government. The assumption underlying this, that credit extended by the central bank to all sectors other than the general government is quasi-fiscal in nature, that is, constitutes *de facto* grants and subsidies, seems reasonable in the context of the most transition economies.

**Proposition 5.** In order to adopt a longer-term perspective on the government's finances it is necessary to make explicit estimates of the contingent deferred fiscal deficit of the general government, the (contingent) future claims on the resources of the central bank and the Treasury stored (and often hidden) in the balance sheets of state enterprises and of nongovernment financial and nonfinancial enterprises.

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<sup>31</sup>“Augmented” means inclusive of quasi-fiscal transactions.

**Proposition 6.** In order to adopt a longer-term perspective on the government's finances, a systematic attempt must be made to identify and value its most important contingent assets and liabilities.

**Proposition 7.** All IMF documents should include only interest rates that are properly compounded.

This may seem a trivial point, but the failure to observe this convention invites unnecessary confusion and misinterpretation, especially during episodes of high inflation.

**Proposition 8.** Data on the stocks of internal and external government debt (including arrears) should be collected and published as a matter of routine. This includes information on maturity structure, currency composition, interest rates, grace periods and other key features of the debt contracts (fixed rate, variable rate, bullet, etc.).

**Proposition 9.** Data on the stocks of external assets and liabilities of the nation as a whole (government, private sector and state enterprise sector) should be collected and published as a matter of routine. The Fund should make estimates of the external assets of the private sector (including those representing past capital flight) and evaluate the degree to which these assets (or their earnings) are (potentially) part of the tax base. The longer term fiscal consequences of capital flight are as important as their short-term balance of payments and exchange rate implications.

**Proposition 10.** The Fund should maintain a centralized fiscal-financial-monetary data base which is updated after every mission and Article IV consultation. The Fund is the obvious agency to provide this public good. Adequate resources should be allocated to this key activity.

## **B. Fiscal Policy Design**

**Proposition 11.** The imposition of hard budget constraints on enterprises is a prerequisite for macroeconomic stabilization. The imposition by the central bank and the Ministry of Finance of hard budget constraints on the commercial banks is a prerequisite for the imposition of hard budget constraints by banks on nonfinancial enterprises.

**Proposition 12.** In the advanced transition economies (the Czech Republic, Hungary, Poland, and the Slovak Republic), the dominant public finance problem seems to be the pursuit of a level and structure of public spending more commonly associated with the advanced West-European industrial countries. The productivity levels achieved in these four countries would appear to be too low to support a West-European-style welfare state.

**Proposition 13.** In early transition economies like Kazakhstan and the Kyrgyz Republic, but also in Lithuania, the primary public finance problem seems to be a drastic decline in the Government's ability to raise tax revenues. The same problem appears to be emerging in the Russian Federation. Surprisingly, the data suggest that this is not (yet) a problem in Ukraine. When a government cannot tax to finance the essential functions of a modern state, not just the survival of the Government but that of the State itself is threatened.

**Proposition 14.** No structural reform measure (such as trade reform and privatization) should ever be implemented without considering its implications for public revenues and expenditures.

**Proposition 15.** Given the limited amount of administrative capacity found in many transition economies, the importance of keeping taxes simple and administratively easy to collect is central. This means, for instance, that a VAT levied and collected at each of the intermediate stages, which brings with it complicated and extensive need for record keeping by businesses and the need for extensive record-keeping and cross-checking by the tax officials, should not be recommended automatically to any transition economy.<sup>32</sup> If a VAT is deemed desirable, it may be preferable to levy and collect it at a single (final) stage, like a retail sales tax on final consumption (see McLure [1992] and Tait [1992]).<sup>33</sup>

**Proposition 16.** Tax exemptions undermine revenues, stimulate rent-seeking and corruption and are likely to distort the allocation of resources.

The fiscal history of the Russian Federation provides ample confirmation of the truth of this proposition.

**Proposition 17.** Exemptions from import duties (and indeed virtually every deviation from a uniform ad valorem tariff rate on all imports ) stimulate rent-seeking and corruption and are likely to distort the allocation of resources.

The history of customs administration and revenues of the Russian Federation provides ample confirmation of the truth of this proposition.

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<sup>32</sup>Indeed the VAT operated in the OECD countries too has been shown to have high administrative costs (to the tax department) and high compliance costs for businesses trying to carry out the obligations of calculating and paying the tax (see e.g., Cnossen [1994]).

<sup>33</sup>Estonia's tax reform of 1992 and 1993 contained strong elements of tax simplification, by reducing exemptions, and by simplifying rates. In 1994 the personal income tax changed to a flat rate of 26 percent (the same as the corporate income tax rate), with an exemption (or allowance) at the lower end.

**Proposition 18.** Sequestration and internal current arrears should be viewed with equal seriousness as arrears on internal and external debt.

**Proposition 19.** If further sustained real exchange rate appreciation can be anticipated for many transition economies, foreign borrowing (denominated in hard currencies) will tend to be cheaper in real terms than domestic borrowing.

Table 1. Seigniorage in 6 East-European Countries 1/

	1991	1992	1993	1994	Average
Bulgaria: $\sigma$	-1.03	7.81	2.51	5.55	3.71
$\pi$	338.8	79.4	63.8	121.9	131.3
h	22.9	14.81	15.19	9.69	15.65
$\pi h$	77.59	11.76	9.69	11.81	27.71
Czech Rep.: $\sigma$			-0.02	3.11	1.55
$\pi$			18.75	9.70	14.13
h			11.93	9.94	10.63
$\pi h$			2.12	0.96	1.54
Hungary: $\sigma^*$	2.26	2.14	1.45	0.91	1.69
	10.70	3.06	3.43	3.67	5.22
$\pi$	31.01	24.69	21.13	21.23	24.45
h*	9.25	9.77	9.88	9.25	9.54
	21.00	26.91	24.87	23.11	23.97
$\pi h^*$	2.87	2.41	2.09	1.96	2.33
	6.51	6.64	5.25	4.91	5.83
Poland: $\sigma$	3.12	2.77	1.54	1.70	2.28
$\pi$	60.33	44.43	37.69	29.39	42.52
h	9.60	9.02	8.70	7.43	8.69
$\pi h$	5.79	4.01	3.28	2.18	3.69
Romania: $\sigma$	1.37	4.17	3.49	4.04	3.27
$\pi$	222.80	199.21	295.48	61.74	180.35
h	14.69	5.90	3.05	2.67	6.58
$\pi h$	32.73	11.75	9.01	1.65	11.87
Slovak Rep.: $\sigma$			-1.03	3.85	1.41
$\pi$			25.00	11.66	18.14
h			9.48	11.95	10.72
$\pi h$			2.37	1.39	1.94

$\sigma$ : Seigniorage (percent of GDP);  $\pi$ : Inflation rate (CPI) (annual percentage rate).

h: Money base (bop) (percent of GDP);  $\pi h$ : inflation tax (percent of GDP).

Average is over years for which seigniorage figures are given.

\* first figure based on domestic currency in circulation only; second figure based on monetary base including bank reserves with the central bank.

1/ I did not include the interest foregone measure, as reliable interest data did not seem to be available.

Table 2. Seigniorage in 6 FSU Countries 1/

	1991	1992	1993	1994	Average
Estonia: $\sigma$			9.38	1.28	5.33
$\pi$			35.72	41.58	38.62
h			8.38	11.11	9.75
$\pi h$			2.99	4.62	3.76
Kazakhstan: $\sigma$				5.95	5.95
$\pi$		3050.00	2167.57	1160.26	1160.26
h				0.87	0.87
$\pi h$				10.09	10.09
Kyrgyz Rep.: $\sigma$		15.78	6.45	5.06	9.10
$\pi$		1264.00	1366.28	87.15	620.68
h		3.12	2.68	4.84	3.55
$\pi h$		39.43	36.62	4.22	22.03
Lithuania: $\sigma$			5.80	3.15	4.48
$\pi$		1163.50	188.85	44.95	104.62
h			3.40	5.08	4.24
$\pi h$			6.42	2.28	4.44
Russian Fed.: $\sigma$		20.88	11.16	6.14	12.73
$\pi$		2501.39	841.62	202.68	805.08
h		1.94	2.63	3.55	2.71
$\pi h$		48.53	22.13	7.19	21.82
Ukraine: $\sigma$		14.00	17.13	11.03	14.05
$\pi$		1860.00	10104.01	408.03	2065.90
h		1.08	0.40	2.37	1.28
$\pi h$		20.08	40.42	9.67	26.44

$\sigma$ : Seigniorage (percent of GDP).

$\pi$ : Inflation rate (CPI) (annual percentage rate).

h: Money base (bop) (percent of GDP).

$\pi h$ : inflation tax (percent of GDP).

The average is over years for which seigniorage figures are given.

1/ I did not include the interest foregone measure, as reliable interest data did not seem to be available.

Table 3. Dce and financial deficits in 6 East European Countries

(In percent of GDP)

		1991	1992	1993	1994
Bulgaria	$\sigma$	-1.03	7.81	2.51	5.55
	dce(1) 1/	0.06	2.84	5.39	5.13
	dce(2) 2/	2.70	4.58	5.45	7.91
	deficit	14.66	15.04	15.72	7.03
Czech Rep.	$\sigma$			-0.02	3.11
	dce			-5.0	-2.5
	deficit			-0.56	1.29
Hungary	$\sigma$	10.70	3.06	3.43	3.67
	dce(1) 3/	2.15	2.17	-2.66	2.72
	dce(2)	2.54	5.10	-3.42	5.27
	deficit	1.70	5.40	6.80	6.30
Poland	$\sigma$	3.12	2.77	1.54	1.70
	dce(1)	4.84	0.85	0.80	-0.98
	dce(2)	4.69	2.20	1.34	0.48
	deficit	6.66	6.63	2.89	2.46
Romania	$\sigma$	1.37	4.17	3.49	4.04
	dce	5.28	6.07	3.69	1.92
	deficit	-0.50	4.60	0.10	1.07
	dce-deficit	5.78	1.47	3.59	1.85
Slovak Rep.	$\sigma$			-1.03	3.85
	dce			-1.9	-6.0
	deficit			7.60	1.40

$\sigma$ : seigniorage as a percentage of GDP.

dce(i): Domestic credit expansion as a percentage of GDP, based on international reserve accumulation measure i, i=1,2.

deficit: general government financial deficit as a percentage of GDP.

1/ Based on change in NIR.

2/ Based on change in NFA.

3/ Based on change in NIR, but including valuation changes due to exchange rate movements.



Table 4. Dce and financial deficits in 6 FSU Countries

(Percent of GDP)

		1991	1992	1993	1994
Estonia	$\sigma$			9.38	1.28
	dce(1)			-152.39	-10.11
	dce(2)			NA	NA
	deficit			0.7	1.4
Kazakhstan	$\sigma$			NA	5.95
	dce(1)			NA	4.26
	dce(2)			NA	5.17
	deficit			NA	6.55*
Kyrgyz Rep.	$\sigma$		15.78	6.45	5.06
	dce(1)			27.16	-40.05
	dce(2)			NA	NA
	deficit			13.50	8.40
Lithuania	$\sigma$			5.80	3.15
	dce(1)			NA	3.43
	dce(2)			3.98	3.26
	deficit			-0.60	4.40
Russian Fed.	$\sigma$		20.88	11.16	6.14
	dce(1)		NA	7.31	6.07
	dce(2)		NA	NA	NA
	deficit		29.36	8.13	11.46
Ukraine	$\sigma$		14.00	17.13	11.03
	dce(1)		NA	NA	10.35
	dce(2)		NA	NA	NA
	deficit	14.10	30.40	10.10	8.60

$\sigma$ : seigniorage as a percentage of GDP.

dce(i): Domestic credit expansion as a percentage of GDP, based on international reserve accumulation measure i, i=1,2.

deficit: general government financial deficit as a percentage of GDP.

\* General government deficit of -0.30 percent of GDP plus quasi-fiscal deficit of 6.90 percent of GDP.

Table 5. Real Growth Rates and Real Interest Rates in 12 Transition Economies

(Percent per year)

		1991	1992	1993	1994*	1995**
Bulgaria	g	-11.7	-7.3	-2.4	1.4	2.5
	r	NA	NA	-5.4	-20.7	NA
Czech	g	-14.2	-6.4	-0.9	2.6	4
	r	NA	NA	-6.9	0.4	NA
Hungary	g	-11.9	-3.0	-0.9	2	3
	r	1.4	3.2	-0.5	2.2	NA
Poland	g	-7.6	2.6	3.8	5.0	5.5
	r	-1.0	-2.1	-2.1	2.0	NA
Romania	g	-12.9	-10.0	1.3	3.4	4
	r	NA	NA	-47.8	75.5	NA
Slovak Rep.	g	-14.5	-7.0	-4.1	4.8	5
	r	NA	NA	-7.9	4.2	NA
Estonia	g	-11	-21.6	-8.4	3	4
	r	NA	NA	-7.7	-16.6	NA
Kazakstan	g	-13	-12	-12	-25	-12
	r	NA	-95.1	-86.8	-33.8	NA
Kyrgyz Rep.	g	-5	-25	-16	-27	-5
	r	NA	NA	NA	NA	NA
Lithuania	g	-13.1	-33.7	-24.2	1.7	5
	r	NA	NA	-21.5	13.8	NA
Russian Fed.	g	-13	-19	-12	-15	-4
	r	NA	NA	NA	NA	NA
Ukraine	g	-12	-17	-17	-23	-5
	r	NA	NA	NA	NA	NA

\* estimate.

\*\* projection.

Source: GDP growth rates: Transition Report 1995, EBRD.

Real interest rates: own calculations based on IMF data.

Table 6. Debts, Deficits and Primary Surpluses in 6 East-European Countries

(Percent of GDP)

		1991	1992	1993	1994
Bulgaria	debt: tot.	230.9	178.9	172.2	165.9
	dom.	33.5	30.6	35.5	50.2
	ext.	197.4	148.4	136.7	115.7
	deficit	14.7	15.4	15.7	7.0
	prim. sur.	3.2	0.9	-1.5	7.0
Czech Rep.	debt*: tot.		20.3	17.4	15.6
	dom.		11.3	9.5	9.1
	ext.		8.9	8.0	6.5
	deficit		2.2	-0.6	1.3
	prim. sur.		-1.2	2.2	0.1
Hungary	debt: tot.	75.9	80.7	91.2	88.4
	dom.	4.8	4.6	5.8	5.6
	ext.	71.1	76.1	85.4	82.8
	deficit	1.7	5.4	6.8	6.3
	prim. sur.	2.1	0.5	-2.0	0.4
Poland	debt: tot.	81.5	85.2	85.8	78.5
	dom.	15.7	21.1	22.9	22.6
	ext.	65.8	64.1	63.0	55.9
	deficit	6.7	6.7	2.9	2.5
	prim. sur.	-5.1	-3.4	0.5	1.5
Romania	debt: tot.	2.9	12.2	23.0	21.1
	dom.	0.0	0.5	12.9	3.6
	ext.	2.9	11.7	10.1	17.53
	deficit	-0.5	4.6	0.1	1.1
	prim. sur.	0.54	4.4	0.9	0.3
Slovak Rep.	debt: tot.		22.7	25.1	36.4
	dom.		2.4	2.7	10.2
	ext.		20.4	22.4	26.2
	deficit		12.8	7.6	1.4
	prim. sur.		-11.6	-4.2	2.9

\* Central government only.

Table 7. Debts, Deficits, and Primary Surpluses in 6 FSU Countries

(Percent of GDP)

private		1991	1992	1993	1994
Estonia	debt: tot.	NA	NA	NA	NA
	dom.	NA	NA	NA	NA
	ext.	NA	0.2	0.4	NA
	deficit	-5.2	0.3	0.7	1.4
	prim. sur.	5.2	-0.3	-0.6	-1.1
Kazakhstan	debt*: tot.	NA	NA	NA	NA
	dom.	NA	NA	NA	NA
	ext.	NA	NA	36.9	16.3
	deficit*	7.9	7.3	3.7	6.6**
	prim. sur.	NA	NA	NA	NA
Kyrgyz Rep.	debt: tot.	NA	NA	37.7	NA
	dom.	NA	NA	9.1	NA
	ext.	NA	NA	28.6	NA
	deficit	-4.6	13.5	13.5	8.4
	prim. sur.	4.6	-13.5	-13.1	NA
Lithuania	debt: tot.	NA	NA	NA	NA
	dom.	NA	NA	NA	NA
	ext.	16.6	11.4	9.8	7.9
	deficit	-4.8	-0.7	-0.6	4.4
	prim. sur.	4.8	0.7	0.6	-4.3
Russian Fed.	debt: tot.	84.9	198.9	74.8	82.3
	dom.	76.9	18.2	10.9	14.78
	ext.	8.0	180.7	63.90	67.56
	deficit	NA	29.4	8.1	11.5
	prim. sur.	NA	-18.9	-5.6	-8.21
Ukraine	debt: tot.	NA	NA	NA	NA
	dom.	NA	NA	NA	NA
	ext.	NA	17.2	12.1	28.7
	deficit	NA	NA	NA	NA
	prim. sur.	-14.1	-30.40	-10.1	-8.6

\*Cash.

\*\* Including the quasi-fiscal deficit of the central bank.

Table 8. General Government Revenues in some Transition Economies

(Percent of GDP)

	1991	1992	1993	1994	1995* estimate
Kazakhstan	25.0	24.6	19.8	17.1	16.0
Kyrgyz Republic	35.7	12.7	23.3	21.6	14.5**
Lithuania	41.4	32.1	28.5	24.5	22.4
Russian Federation	NA	41.7	37.8	33.3	
Ukraine	36.5	41.5	41.1	44.3	41.3***
Romania	39.3	37.6	33.6	32.5	33.5

\* Source: EBRD Transition Report Update, April 1996.

\*\* Government expenditure and net lending plus government balance.

\*\*\* State budget revenue.

Table 9. General Government Spending in Some Transition Economies

(Percent of GDP)

	1991	1992	1993	1994	1995* estimate
Bulgaria	55.1	53.4	50.9	45.0	45.3
Czech Republic		49.6	50.1	50.7	na
Hungary	53.6	60.6	63.3	59.2	56.1
Poland	48.9	50.4	50.5	48.9	na
Slovak Republic		62.6	55.7	52.8	53
Russian Federation		71.3	45.9	44.7	na
Ukraine	50.6	71.9	51.2	52.9	45.4**

\* Source: EBRD Transition Report Update, April 1996.

\*\* State budget expenditure.

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