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**ENTERPRISES IN TRANSITION:  
MACROECONOMIC INFLUENCES ON ENTERPRISE  
DECISION-MAKING AND PERFORMANCE**

**W. Buiter, R. Lago and H. Rey**

## **ABSTRACT**

The paper analyses the theoretical arguments and empirical evidence linking enterprise performance in transition economies to the macroeconomic environment. Macroeconomic instability is traced to the unsustainability of the fiscal-financial and monetary programmes of the state and to regulatory and other failures leading to problems with the solvency of financial institutions. The importance of macroeconomic stability for enterprise performance is documented with a simulation study and by reviewing relevant microeconomic and aggregate empirical evidence from across the world, as well as from the transition economies themselves. Conclusions are reached about the speed of transition, about the synergy between macroeconomic stabilisation and market development and about the creation of institutions for achieving and maintaining macroeconomic stability.

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# **ENTERPRISES IN TRANSITION: MACROECONOMIC INFLUENCES ON ENTERPRISE DECISION-MAKING AND PERFORMANCE**

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## **I. INTRODUCTION AND OVERVIEW**

The main theme of this paper is that macroeconomic stability is a critical precondition for effective enterprise decision making and performance. It is a classic pure public (intermediate) good, both *non-rival*<sup>1</sup> and *non-excludable*<sup>2</sup>. Macroeconomic stability boosts the quantity and quality of investment. In turn, productive investment is one of the key determinants of economic growth and rising living standards. Since the government has a monopoly over the instruments of monetary, fiscal and exchange rate policy and sets the legal and regulatory framework within which economic activity takes place, the provision of macroeconomic stability is a natural responsibility of the government.

There are at least two angles from which one can analyse the effects of macroeconomic instability on enterprise performance. The first concerns economy-wide (and sometimes international or global) systemic failure: the Great Depression of the Thirties and the collapse of central planning across Central and Eastern Europe (henceforth CEEC) and the Former Soviet Union (henceforth FSU) and the subsequent trade and payments disruption constitute prime examples.

The second angle concerns the impact on enterprise performance of a domestic fiscal-financial-monetary policy programme that, at best, is inconsistent with achieving and/or maintaining a low and stable rate of inflation and, at worst, is completely unsustainable. Macroeconomic instability often manifests itself through outright inflationary financing or else through a rising public debt-GDP ratio that is not matched by a rising capacity for generating future primary (non-interest)

government budget surpluses. There is a growing body of empirical evidence (and some recent theoretical research) on the existence of a close link between extreme macroeconomic instability and economic growth (see e.g. Fischer (1991, 1993), Barro (1995), Easterly (1996) and Bruno and Easterly (1996)).

In the CEEC and FSU, the swift and wide-ranging price liberalisation measures with which transition was started and the initial monetary overhang inherited from the central planning era caused a large price *level* shock, recorded in the data as a (temporary) big spike in the rate of inflation. Effective macroeconomic management could have prevented this temporary inflationary surge from being transformed into a sustained increase in the rate of inflation. Some countries, like the former Czechoslovakia, Hungary and Poland were indeed able, through restrictive macroeconomic policies, to prevent what was, fundamentally, a one-off shock to the general price level, from turning into a process of ongoing high inflation. Others were less successful and perpetuated high inflation through their governments' ineffectiveness in controlling the fiscal and monetary accounts. Of course, initial conditions varied widely across countries and influenced subsequent developments.<sup>3</sup>

High inflation, at times even hyperinflation, results when the domestic and international financial markets become unwilling to absorb non-monetary debt in quantities sufficient to finance the public sector's budget deficit. This unwillingness manifests itself through very high real rates of interest on the public debt, shortening maturities and, ultimately, through credit rationing. At that point, the only means through which the government can finance the excess of its financial deficit over the amount it is able to borrow, is domestic credit expansion, that is, monetary financing or seigniorage. Sooner or later, sustained increases in the rate of monetary growth lead to higher inflation: excessive recourse to seigniorage causes a rising inflation tax rate. Nearly ten out of 25 countries in the region have at some point set off on a near-hyperinflationary course.

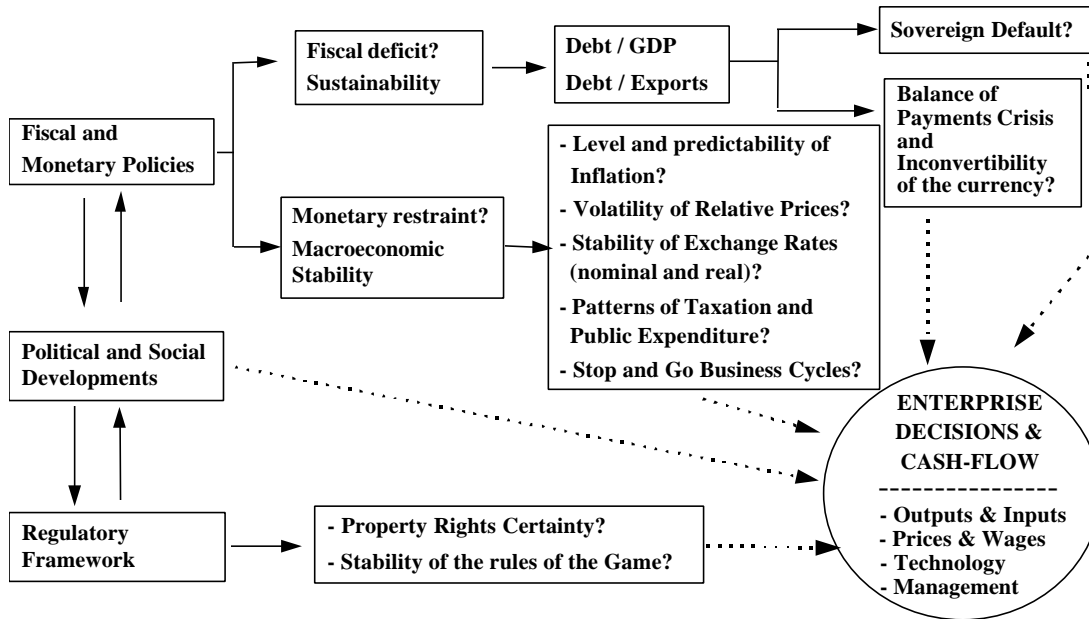
Turning now to enterprises. Technology and skills (including managerial ability and entrepreneurial flair) are clearly essential

ingredients for good enterprise performance, but the macroeconomic environment surrounding the enterprise is no less relevant. Comparable projects and enterprises perform very differently in countries with differing macroeconomic and regulatory policies. If these policies provide stable signals and support low transaction costs the quality of enterprise decisions, and thus the odds of success, improve.

The firm can be viewed as a “nexus of contracts”, both contracts internal to the organisation of the firm itself (i.e. labour and management contracts and implicit or explicit contracts involving the other stakeholders in the firm, including equity owners and creditors etc.), and contracts between the firm and external agents such as suppliers, customers, local and national government agencies and private interest groups with which the firm interacts in the market place or through non-market networks and modes of interaction.<sup>4</sup> The macroeconomic framework — encompassing inflation, taxation, public spending, stability of domestic and international relative prices (including intertemporal relative prices), convertibility etc. — is a factor of fundamental importance for negotiating, interpreting, complying with and enforcing contracts. Chart I.1 provides a bird’s eye view of how the macroeconomic environment conditions enterprise performance.

Chart I-1

THE ENVIRONMENT SURROUNDING ENTERPRISE DECISIONS AND CASH-FLOWS



The paper is organised as follows. In Section II the two main sources of macroeconomic stability, threats to the solvency of the state and to the net worth of the financial sector, are discussed. In Section III a cursory review of the determinants of successful enterprise performance is presented. Special focus is given to the effects of macroeconomic distortions. Section IV focuses quantitatively on the link between enterprise performance and the macroeconomic environment. The results and implications of some simulation studies are reviewed. These simulations compare the financial returns on three stylised EBRD projects — two operating in the internationally exposed sector (an exporting enterprise and an import-competing enterprise) and the other in the non-traded sector, that is the local market, sheltered from international competition — in each of a number of countries in transition. The three projects are technically identical and the enterprises have identical gearing ratios across countries, but the macroeconomic environment faced by the firms differs from country to country. We also emphasise the distinction between so-called greenfield investments and investments in pre-existing, non-traded assets. Some other relevant empirical evidence on the relation between macroeconomic stability and enterprise performance is also reviewed. In Section V, we review the

empirical evidence on the relationship, at the aggregate level, between the strength of macroeconomic reform and the performance of the real economy. Finally, in Section VI some conclusions are drawn on: the speed of transition; the synergy between macrostabilisation and market development; and the institutions required to achieve and preserve a stable macroeconomy.

## II. SOURCES OF MACROECONOMIC INSTABILITY

### A. Solvency of the State

Macroeconomic shocks can originate abroad or at home and within the public sector or the private sector. Macroeconomic management and policy rules, together with private sector decision rules, affect the transmission, amplification or damping of shocks, wherever they may originate. Yet it is fair to say that serious and persistent macroeconomic instability is almost always<sup>5</sup> a reflection of the problems faced by the state in achieving a sustainable non-inflationary fiscal and financial position.<sup>6</sup>

Resources for servicing the outstanding domestic and foreign debt must ultimately come from two sources: primary budget surpluses (that is, current non-interest revenues in excess of current non-interest outlays) and seigniorage (that is, the resources appropriated by the state through the printing of money by the central bank). Monetary growth in excess of the growth rate of real productive capacity will sooner or later result in inflation: seigniorage turns into the inflation tax. The amount of real resources that governments obtain through the inflation tax is limited: as the rate of inflation rises — as the *inflation tax rate* increases — the private sector substitutes for domestic money with domestic and foreign assets (hard currencies) that are better hedges against inflation — the *inflation tax base* decreases. For example in Russia, the share of foreign currency deposits in the banking sector increased from 20 per cent in December 1991 to 50 per cent in March 1993, hovering at that level thereafter. As inflation rises beyond a

threshold, the inflation tax base — the monetary base as a proportion of GDP — declines more than proportionally. The result is that real revenues from inflation decline as the inflation rate explodes.

Inflation has other effects on the public finances as well. First there is the Olivera-Tanzi effect, according to which real tax revenues may decline with high rates of inflation as tax payers delay the settlement of tax liabilities. Since tax liabilities are generally not indexed to inflation or subject to an enforceable interest rate, delaying payment may reduce the real value of payments in a dramatic manner. A similar phenomenon occurs with the payment of electricity and water tariffs owed to public utilities. Indeed, if monthly inflation jumps from, say, 10 to 20 per cent and the average tax (or tariff) collection lag is six months, the tax payer can nearly halve her real burden by settling taxes on the last day of the semester. To protect tax revenues from inflationary erosion, in 1992 the Russian authorities established a system of monthly advance payments for both the VAT and the profit tax.

There are also effects on taxes going in the opposite direction. As the Polish example shows, under conditions of tight compliance and short collection lags, historical cost accounting meant that taxable enterprise profits greatly overstated true profits during the high-inflation episode of 1990. When inflation subsided in 1991, both accounting profits and enterprise tax receipts collapsed (see Schaffer (1992)).

Insolvency of the state can result in hyperinflation. Examples are Russia in 1992, Armenia during 1993, Georgia since 1993 and the Ukraine in 1993. The consequences are devastating. When, at last, the deterioration of the fiscal situation can no longer be denied or ignored (because access to international borrowing has vanished and domestic financial markets are unable or unwilling to absorb additional government debt), the common absence of a coherent stabilisation programme makes a bad situation worse.

It is true that recent evidence supports the view that the swift and decisive stabilisation of a previously highly unstable macroeconomy need not be associated with even a transitory decline

in real economic activity and may indeed boost economic growth in the short run (see Easterly (1996) and Bruno and Easterly (1996)). However, even “at full employment”, stabilisation, with its associated spending cuts and tax increases, is bound to be painful, no matter how well the stabilisation package is designed and implemented. The policy measures governments actually tend to resort to, frequently with the naive intent of forestalling the worst, often turn out to be extremely (and in part unnecessarily) painful for households and firms. Neither the time nor the political will for designing and implementing a coherent stabilisation package are easily found in the near-panic atmosphere of a hyperinflation. The state is often tempted to increase its *arrears* to the private sector, thus creating cash-flow problems for private suppliers and undermining the credibility of the state as the arbiter of contract disputes and the enforcer of the rule of law in economic affairs.

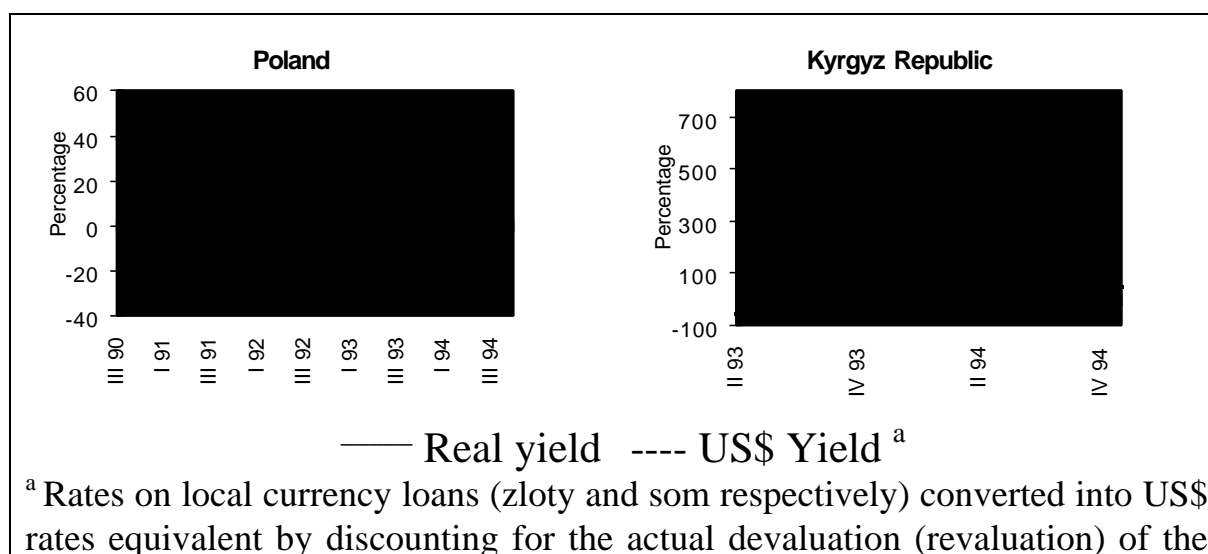
Another emergency measure to cut (or at any rate to postpone) spending is *sequestration* (the withholding by the ministry of finance of previously authorised funds from the spending departments). This has been practised extensively in the Russian Federation during the past couple of years. It may be somewhat less damaging than government arrears for the development of a social consensus on the importance of the rule of law in economic affairs and on the importance of honouring contracts. It is nevertheless a deplorable and costly practice which does not belong in a normal fiscal policy instrumentarium. Emergency taxes are introduced, often in an arbitrary and haphazard manner, without much thought as to their administration nor as regards their incentive and distributional effects. Convertibility restrictions and multiple exchange rates frequently are imposed, damaging international trade and financial transactions, in a (vain) attempt to make scarce foreign exchange go further. Attempts to suppress the symptoms of a real scarcity of loanable funds lead to interest-rate ceilings well below the equilibrium level of interest rates and to the administrative allocation of funds at highly subsidised rates to politically favoured borrowers.

## B. Solvency of Financial Institutions

The financial troubles of enterprises transmit and manifest themselves first as illiquidity, and later often as insolvency of their creditors — in transition economies mainly banks. Government assistance to recapitalise banks as their non-performing loans to ailing borrowers pile up (or to settle inter-enterprise arrears owed to viable firms) puts further strain on already tight state budgets.

Stabilisation itself, even in the absence of significant structural change, is often associated with a build up of bad loans. This is because, as shown in Chart II.1, successful disinflation tends to lead, initially, to very high — and volatile — *ex-post* real interest rates on local currency loans.

**Chart II.1**  
**Real Ex-Post Interest Rates**  
(quarterly rates measured in annual percentage rates)





local currency occurred during the period.
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Clearly, high and volatile real rates are apt to cause financial distress to debtors. High real deposit rates, reflecting the risk premium that needs to be paid to depositors to compensate for the risk of default of the deposit-taking institutions, mirror the high real lending rates charged by these to make up for potential losses stemming from the odds of borrower bankruptcy. Both the stabilisation programme and the risk of its failure contribute to these risk premia. High nominal rates alone — even if real rates were low — can cause cash-flow problems because debtors are forced into accelerated and premature amortisation, in real terms, of their debt, whenever they are not able to add to their borrowing an amount equal to the reduction in the real value of their domestic currency debt due to inflation.

Structural transformation exposes creditors to severe counterparty risk as debtors are faced unexpectedly with adverse developments beyond their control. As key relative prices change, as new competitors erode monopoly profits, as new markets emerge and old ones vanish, previously creditworthy borrowers may become insolvent. All of these stresses and strains are of course present, qualitatively, even in an economy that does not suffer any macroeconomic instability: macroeconomic equilibrium is consistent, in a dynamic, evolving economic system, with a considerable amount of microeconomic flux at the sectoral and individual firm levels. The implementation of stabilisation policies does, however, add quantitatively to the incidence of dislocation, insolvency and bankruptcy. So do structural adjustment policies of the kind pursued in Latin America since the debt crisis of 1981/82.

It is during the transition from plan to market, a process involving macroeconomic stabilisation and structural adjustment on an unprecedented scale, that the problems and risks facing enterprises are most acute. This is obviously true as regards the backlog of loans incurred during the pre-reform era (the so-called balance sheet or *stock problem*). It remains true even now that reform appears to be here to stay. Even competent bankers would

have little evidence on which to base their assessment of the creditworthiness of loan applicants. Few potential borrowers have much of a track record or credit history and for those that do, the past is likely to be a poor guide to the future: what made for enterprise success under central planning may bear little relationship to what is required for effective enterprise performance in a market regime. To compound the problem, oversight of banks by the monetary authorities is initially weak and judiciary procedures to repossess collateral are typically cumbersome. Real estate markets and land registries are typically underdeveloped and the legal and institutional framework for securing mortgages is severely restrictive. Secured transactions in movable property are rare and costly. All this greatly adds to both the cost of starting up a new business, and to the cost of doing business generally. Thus, the second problem of financial intermediation concerns the difficulty encountered by banks (and other lenders) in discriminating between good and bad risks when extending new loans (*the flow problem*).

Furthermore, like any bail-out by the state, recapitalisation of banks — or a clearance of interenterprise arrears involving an element of state subsidy — can give rise to *moral hazard* (why engage in costly appraisal of borrowers if losses will be made up by the silent public partner with the deep pockets?) and *adverse selection* (the selection of projects that are excessively risky from a social point of view, because the bank gets the positive returns in the good states of nature while the state picks up the tab in the bad states of nature). Deposit insurance further encourages lending on excessively risky projects as the banks do not have to worry about bank runs by depositors fearful of bank default. When the banks in question are private, both moral hazard and adverse selection can be reduced by ensuring that the existing owners of the bank lose all their equity before any public sector money goes in. For managers capable of exercising control without significant equity stakes, moral hazard and adverse selection can be countered by the threat of being fired without a golden parachute if the bank performs badly and, to the extent that managerial markets are developing, by the cost of loss of reputation. An idea of the burden to the public treasury of the

bad loan problem is given by the experience of Hungary where some banks have been recapitalised in one way or another every year since 1990. The total injection of public funds from 1992 to 1995 amounts to about 8 per cent of 1994-GDP.<sup>7</sup>

The flow of funds from the state budget to enterprises is often intermediated through the banking sector. If the government bails out insolvent enterprises or banks directly through subsidies, this increases the conventionally measured budget deficit. If instead it instructs the central bank to provide subsidised credit to the enterprise, the subsidy element — the difference between the market rate and the subsidised rate times the amount of the loan — would, in principle, show up in the so-called *quasi-fiscal deficit* of the central bank. A calculation by De Melo, Denizer and Gelb (1996) of the contribution of the quasi-fiscal deficit to the total “true” state budget imbalance is provided in Table II.1. For countries in the early stages of transition the quasi-fiscal deficit has reached as much as four times the conventional fiscal deficit and indeed can make the overall public sector imbalance become as high as 40 per cent of GDP (Kazakhstan 1992) or 33 per cent of GDP (Belarus 1992). As these levels are bound to be beyond the maximum attainable long-run ratio of the inflation tax-to-GDP, they threaten to precipitate countries onto a hyperinflationary path.

**Table II.1**  
**Fiscal and Quasi-Fiscal Deficits for Selected Countries<sup>a</sup>: 1992-**  
**93**  
**(Per cent of GDP)**

	Fiscal Deficits		Central Bank Implicit Subsidy <sup>b</sup>		Total Budget Deficits	
	1992	1993	1992	1993	1992	1993
<b><u>Advanced Transition</u></b> <sup>b</sup>						
Czech Rep	0.5	-0.6	0.3	0.8	0.8	0.2
Slovakia	13.1	7.6	0.3	1.7	13.4	9.3
<b><u>Intermediate Transition</u></b>						
Bulgaria	5.0	11.1	1.3	0.8	6.3	11.9
Estonia	-0.5	1.4	-	0.2	-	1.6
Romania	5.5	1.0	5.9	3.9	11.4	4.9
<b><u>Early Transition</u></b>						
Kazakhstan	7.3	1.2	32.7	-	40.0	-
Belarus	6.4	9.4	26.5	9.3	32.9	18.7
Turkmenistan	10.1	3.6	12.5	21.2	22.6	24.8
Uzbekistan	10.2	8.4	13.1	18.5	23.3	26.9

- a) Quasi-fiscal deficit defined in a narrow sense because it excludes foreign exchange and other losses. Implicit subsidies from the central bank to commercial banks and economy due to difference between the central bank refinancing rate and inflation. Annual figures are averages of quarterly figures.
- b) The other countries of advanced transition, like Hungary and Poland, appear to show negligible central bank interest rate subsidies.

**Source:** De Melo, Denizer and Gelb (1996)

Even harder to estimate than the quasi-fiscal deficit of the central bank is what we shall call the *deferred (contingent) fiscal deficit*. Instead of providing enterprises with explicitly subsidised loans, the central bank could lend to them at market rates, that is, without any explicit subsidy element being provided ex-ante. Nevertheless, both parties to the loan may be perfectly aware that in due course the contractual debt service payments will not be enforced (wholly or partly). What appears to be a loan on market terms is in fact a capital grant.<sup>8</sup> When and how this resource transfer

from the public to the private sector should be recorded in the accounts is a matter of some dispute. Rather than engaging in any 'lending' to the enterprise sector itself, the central bank could encourage commercial banks to do the lending, with the central bank (implicitly) guaranteeing the loans. If this 'guarantee' is called, the central bank would be bailing out a commercial bank which got into trouble because it bailed out a non-viable state enterprise. Until the crisis hits, the deferred fiscal deficit would be hidden in the balance sheets (the non-performing loans) of the commercial bank sector

### **III. MACROECONOMIC STABILITY AS A DETERMINANT OF ENTERPRISE DECISION MAKING AND PERFORMANCE**

#### **A. Sources of Differential Enterprise Performance**

Macroeconomic or economy-wide conditions influence enterprise performance in three ways: (i) through the quantity and quality of the endowment of factors of production in each country; (ii) through the country's market structure and the regulatory and tax environment; (iii) through the stability of the domestic (and the international) macroeconomic environment.

Most transition economies are characterised by a serious imbalance between the availability of physical capital, including infrastructure, which is often obsolete, and of human capital, which tends to be relatively skilled and abundant. While some of the skills specific to the market service sectors (accountancy, auditing, financial expertise, marketing, market-minded public administration etc.) are now in relatively short supply, any short- to medium-run shortages in these areas can be remedied more easily than the shortfall in modern physical plant and equipment. The physical capital deficiency is in general most severe in the countries of the FSU. Hence, raising the rate of capital formation is a *sine qua non*

for sustained growth. The government can contribute to this process by promoting investment in infrastructure. Raising the capital formation rate will, of course, only have the hoped-for productivity effects if the additional capital resources can be allocated to their most profitable uses (in the case of private investment) or to the uses with the highest social rate of return (in the case of public sector capital formation). The underdeveloped state of the domestic financial markets, and of most of the institutions involved in the intermediation process, caps both the private and the social return to investment. Removing these bottlenecks, or at least ensuring that the government itself does not contribute to them through acts of omission or commission, should be a priority for economic policy makers.

Enterprise performance is influenced by the regulatory framework and the structure of product and input markets. Opening up the economy to external competition is the most effective way of exposing internationally tradable sectors, including most of industry, agriculture and the natural resource sectors, to the efficiency-enhancing spur of world competition. In the sheltered sectors not subject to international competition, which include services (banking, transportation, wholesale and retail trade, utilities etc.), government action is required to remove barriers to entry imposed by incumbents trying to increase and/or protect their margins and rents.

The very least any government should do to promote transition is to respect the important ‘negative list’ of things it should not do. The key ‘don’t’ is the injunction not to get in the way of legitimate private initiative through excessive and intrusive regulation, entry-restricting licensing requirements, competition-distorting subsidies or a punitive, arbitrary and unpredictable tax code. More ‘positive’ interventions include the provision of the public good of price stability, that is, of a stable measure of value; the enforcement of private property rights and the rule of law; and the creation of a stable institutional framework for regulation and taxation, conducive to private economic activity. Two aspects of the tax structure faced by enterprises are critical. The first is the quality of the design of the rules — in terms of neutrality, universality and fairness. The second

is the predictability of the rules over time. Enterprises may (up to a point) be able to live with an ‘imperfect’ tax or regulatory system, as long as its incidence and enforcement are systematic, predictable and stable. Governments that ceaselessly design and redesign tax rules impose costly and avoidable uncertainty on firms and markets.

The macroeconomic environment interacts with market structure, regulatory and tax environments to influence the behaviour of enterprises. For instance, a system of collective bargaining — or more generally, the negotiation of and compliance with any contract — that would function well in a low inflation environment can be wholly dysfunctional under high and volatile inflation. The latter creates uncertainty about the real value of any contract. The duration of price, wage and financial contracts tends to shorten with higher inflation and spurious costs in time and effort go into adversarial bargaining sessions.

Another example of how macroeconomic instability undermines the effectiveness of the regulatory and fiscal framework is given by the sharp changes introduced by inflation in the effective rates of taxation (ERT) of capital<sup>9</sup>. The MERT model can be used to illustrate these effects. First, for a specific project, the MERT model generates a multi-period cash flow, on the assumption of a constant general price level. The internal rate of return (IRR) before taxes is calculated for this cash flow. Then the entire relevant set of tax and subsidy policies appropriate to the project is imposed (profit taxes, depreciation allowances, interest deductibility, investment tax credits, tax holidays etc.) on this cash flow. The before-tax cash flow is assumed to be independent of these taxes and subsidies. The after-tax IRR is then calculated. The effective tax rate is the difference between the before-tax and after-tax IRRs, expressed as a percentage of the before-tax IRR.

The exercise is then repeated for some positive rate of inflation. The before-tax real cash flow is assumed to be independent of the rate of inflation. The distortionary effects of inflation come from the fact that the real value of taxes and subsidies will vary with the rate of inflation. The after-tax IRR on the project is therefore different with positive inflation from what it was with zero inflation. This

difference in the after-tax IRRs is the effect of inflation on the marginal effective rate of taxation.

An illustration of how the ERT for a given project (that is, for a given technology, capital structure and relative prices of inputs and outputs), in fact, one financed by the EBRD, varies depending on the country's tax code and inflation rate, is provided in Tables III.1, III.2 and III.3.<sup>10</sup>

**Table III.1**  
**ERT with the Tax Code of Hungary**

Annual Inflation	No collection lags		Collection lag: 6 months	
	Debt-to-equity ratio		Debt-to-equity ratio	
	0	0.5	0	0.5
Baseline: 0%	38%	36%	38%	36%
1998 forecast: 15%	42%	38%	39%	35%
1994 actual: 21%	43%	38%	39%	34%
1990 actual: 33%	45%	38%	39%	33%

**Table III.2**  
**ERT with the Tax Code of Russia**

Annual Inflation	No collection lags		Collection lag: 6 months	
	Debt-to-equity ratio		Debt-to-equity ratio	
	0	0.5	0	0.5
Baseline: 0%	32%	33%	32%	33%
1998 forecast: 15%	38%	35%	32%	30%
1994 actual: 21%	53%	40%	29%	22%
1990 actual: 33%	67%	45%	20%	14%

**Table III.3**  
**Cross Country Comparisons of ERT**

Country	1994 Annual Inflation	Collection Lag (months)	
		0	6
Bulgaria	122%	55%	36%
Czech Republic	11%	51%	49%
Poland	29%	47%	41%
Romania	62%	61%	47%
Slovak Republic	12%	42%	40%
Slovenia	18%	41%	37%
Ukraine	401%	45%	10%



**Note:** Calculations assume a debt-to-equity ratio of 0.5 and full interest deductibility from taxable income for all countries in the table.

These Tables also contain sensitivity analyses of the ERT to inflation, to variations in the debt-equity ratio and to tax collection lags are provided for the tax codes of Hungary and Russia. As shown, the ERT of capital for the project using Russia's tax code can be as low as 32 per cent (with zero inflation) and as high as 67 per cent (with annual inflation at 843 per cent, the 1993 figure, the debt-to-equity ratio at zero and no collection lags). Assuming the same annual inflation rate, 843 per cent, but with a collection lag of six months and a debt-to-equity ratio of 0.5, the ERT drops to 14 per cent. A similar range of variation results across countries. The ERT of the identical project fluctuates from 10 per cent in Ukraine 1994 (assuming a collection lag of six months) and 61 per cent in Romania 1994 (no collection lags). Not surprisingly, the country in which the project in question was indeed successfully carried out (Hungary) is where the ERT displays the narrowest range of variation under the different assumptions, between a low of 33 per cent and a high of 45 per cent. These examples bear out that the real burden imposed by a given tax code clearly is not inflation-neutral. As inflation changes the ERT is subject to countervailing forces that do not cancel out. On the one hand, the historic cost accounting of depreciation allowances and input inventories (first in-first out or FIFO accounting) tends to overstate taxable profits when inflation is high. On the other hand, collection lags and the deductibility from taxable profits of the nominal interest on the debt tend to reduce the tax burden on the firm.

## **B. Macroeconomic Distortions**

It is a robust empirical finding that high inflation is associated with (i) highly variable and uncertain inflation and (ii) high relative price variability and unpredictability. This impairs the effectiveness of the

tax and regulatory environments, as well as that of the price mechanism in signalling changes in relative scarcities requiring a reallocation of resources. High inflation produces a distortion of market signals and results in a worsening of co-ordination among economic agents' decisions. In extreme cases it severely impairs the proper functioning of a decentralised market economy. Unanticipated inflation in addition redistributes real resources from holders of nominally denominated debt instruments towards the issuers of such instruments. With imperfect indexation of tax brackets, benefits and wage contracts, further arbitrary redistributions of wealth and income are associated with imperfectly anticipated inflation. It is this, rather than the esoteric "shoe-leather" and "menu costs" of fully anticipated inflation, that constitutes the true social cost of inflation.<sup>11</sup>

The empirical association between high and volatile inflation results both from features of the price and wage-setting mechanisms and from political economy processes. Inflation is often the visible, monetary manifestation of unresolved social conflict about public spending and its financing. The resolution of such 'wars of attrition' is a highly uncertain process. Both high inflation, and the anticipation of (eventual) fiscal and monetary corrections to control it, increase the uncertainty of the economic environment within which firms make production, employment and investment decisions. Future fiscal measures and realignment of key prices will affect business profitability. Fiscal retrenchment tends to be associated with a cyclical decline in economic activity, employment and real wages and with a nominal and real depreciation of the currency.<sup>12</sup> Stability of macroeconomic policy appears to be a much more important spur to private investment than reductions in statutory tax rates and interest rates of the magnitude that are commonly experienced.<sup>13</sup> The generous tax holidays enacted in the Ukraine during the period of hyperinflation and turmoil (1993—94), including a constitutional provision whereby tax benefits could not be repealed by future legislation, were completely ineffective in attracting foreign investment.<sup>14</sup>

Investment involves the commitment of resources today in anticipation of future, uncertain returns. When a firm acquires a unit of capital today, it can be viewed as engaging in three transactions. First, it acquires a unit of capital that is completely ‘sunk’, that is, neither reversible nor expandable. Second, it acquires a (put) option to sell that unit of capital at a future sale price that may be different from the current price. The value of this put option increases with the uncertainty affecting the returns to the investment and with the future resale price. With completely irreversible investment, the value of the put would be zero. Third, it gives up or extinguishes a (call) option to purchase that unit of capital at a future purchase price that may also be different from the current price, rather than buying it today. Increased uncertainty concerning the returns to the investment increases the value of the call option, as does a lower future purchase price. If future expansion is completely impossible, the value of the call is zero (see Abel, Dixit, Eberly and Pindyck (1995) and Dixit and Pindyck (1994)). As long as the investment is not completely irreversible, the value of the put option increases with the uncertainty surrounding the future returns to the investment, and investment today is encouraged. As long as future expansion is not completely impossible, the value of the call option falls with the uncertainty surrounding the future earnings stream, and investment today is discouraged. Whether *on balance* the response of investment to increased uncertainty is positive or negative is an empirical issue. Regardless of whether investment is expanded or contracted (brought forward or delayed), real economic performance worsens as a result of the increase in uncertainty as the firm (and the economy) is more likely to be stuck with excess or deficient capacity. Recent firm-level empirical evidence for the US suggests that an increase in uncertainty depresses investment (see Leahy and Whited (1996)). The empirical evidence surveyed by Pindyck and Solimano (1993) also suggests that investment is more likely to be delayed and depressed in the aftermath of stabilisation in high inflation countries. If the limited expandability effect dominates the limited reversibility effect (that is, if future expansion is easier than future reversal), it would indeed be rational for investors to exercise

a *wait and see option* (see Dornbusch (1990)). Only when sufficient commitment to the reform process is shown and a track record is established does private investment resume strongly. This may also account for the fact that FDI in the region has been meagre so far and heavily concentrated in the core of central European countries (the Visegrad four). In 1994, total FDI in the 25 countries of operation of EBRD barely reached US\$ 6 billion, a figure roughly comparable to that of Mexico in the same year.

Short-termism in contracts can be an individually rational response to instability. In addition, private markets, for reasons that are not fully understood, often do not fully index the capital value of long-term outstanding debt but do fully index short-term interest rates. In this borrowing environment loans inevitably become very short-term. The long-term financing of investment may be impossible, borrowers are faced continuously with the problem of rolling over their debt and the risk of a credit crunch is ever present. The shortening of wage contracts, particularly those subject to backward-looking indexation to inflation, creates further upward pressure on the inflation rate.<sup>15</sup> High inflation also diverts resources towards privately profitable, but socially unproductive, activities such as hyperactive enterprise financial management and rent seeking. Typically, the financial and public relations managers of enterprises become more senior and better paid than the production, R&D and design managers.

Inflation is neither the only manifestation of macroeconomic instability, nor the only macroeconomic evil distorting enterprise decision-making. Macroeconomic instability affects households through inflation and through the likelihood and duration of unemployment. Even in those countries that have public unemployment insurance<sup>16</sup> programmes, the standard of living of a worker falls sharply when he or she is made redundant. Much of an individual's unemployment and labour income risk is idiosyncratic, that is, specific to the individual rather than general. Idiosyncratic risk is, in principle, diversifiable. Adverse selection and moral hazard problems are the reasons most individual labour income and unemployment risk nevertheless cannot be insured privately<sup>17</sup>.

Unemployment risk does have a common component, however, reflecting economy-wide macroeconomic developments, both cyclical and structural. Since these aggregate or common risks cannot be insured (although the income consequences for the unemployed can be), economic performance can be enhanced only by minimising the shocks that perturb the unemployment rate.

### C. Distributional Aspects of Inflation

The historical record shows that indexation is always imperfect in reality (even in countries with long experience of high inflation such as Brazil). This means that high inflation brings about major redistributions of resources away from domestic currency creditors and towards domestic currency debtors, and more generally from the economically weak and unsophisticated to the agile and well-connected. Table III.4 presents a case study for Russia (1992—93) showing the incidence of ‘inflation taxes and subsidies’ across households, enterprises, the government, other FSU republics, and the financial sector. Households and enterprises are net payers whereas the government, other republics, and the financial sector are net beneficiaries. Regarding enterprises, in general those that pay the inflation tax are productive firms while those who receive the inflation subsidy are often inefficient firms resisting restructuring or closure. Also, since workers’ financial portfolios are largely restricted to transaction cash balances, the inflation tax can quite accurately be viewed as an outright wealth tax on wage earners.

The regressive nature of the inflation tax has been extensively documented in countries with chronic high inflation<sup>18</sup>.

**Table III.4**  
**Losers and Winners with Inflation in Russia (1992—1993)**  
**(per cents of GDP)**

	Gross inflation tax paid	Gross inflation subsidy	Net inflation tax(+)/ Subsidy(-)
Total	30.90%	30.90%	
Households	12.04%		12.04%
Enterprises	18.86%	16.31%	2.55%
Other republics		2.19%	-2.19%
Government (net) of which:		4.07%	-4.07%
on loans (+)		(+ 7.19%)	
on deposits (-)		(- 3.13%)	
Residual (notional monetary system profits)		8.34%	-8.34%

**Source:** Easterly and Vieira da Cunha (1994)

The underlying problem generating macroeconomic instability is the unsustainability of fiscal and financial policies. Occasionally governments are able to “repress” inflation for a while by borrowing heavily, mostly from abroad. For a given budget deficit, governments often confront a short-run trade-off between monetary financing and external borrowing (i.e. a trade-off between lower inflation and a higher deficit in the current account of the balance of payments).<sup>19</sup> As the public debt builds up, however, this strategy eventually leads to a foreign exchange crisis and subsequent high inflation. Enterprise decisions — predicated upon the relative prices and rules prevailing prior to the crisis — may have translated into production processes that are no longer financially viable at the post-crisis relative price configuration. The resulting sunk costs impose heavy dead-weight losses on society. In the aftermath of the Mexican crisis, some analysts feared that a similar collapse might affect Hungary in early 1995. However, the longer average maturity of the Hungarian debt and the swift announcement by the authorities of corrective policy measures allowed the crisis to be dispelled at the time.

#### **IV. EMPIRICAL EVIDENCE: ASSESSING THE EFFECTS OF THE MACROECONOMIC ENVIRONMENT ON ENTERPRISE PERFORMANCE**

##### **A. Simulations of the Financial Performance of Three Stylised Projects Across Several Countries in Transition: Introduction**

In order to analyse the financial performance of projects across different macroeconomic environments, the researcher would ideally like to be able to observe the behaviour during a given period of ‘identical’ projects across a group of countries with different macroeconomic environments. A practical alternative consists of simulating the performance of a common project (or bundle of projects) using the actual historical observations on the key

macroeconomic variables for each of the countries. This is the approach followed here.

An investor (henceforth the *Fund*) is assumed to be interested in the ECU returns to financing ‘identical projects’ in six countries in transition with very different macro-environments. The countries are the Czech Republic, Hungary and Poland (Group 1), Romania (Group 2), Ukraine (Group 3) and Russia (Group 4).

A project is defined by a production technology (linking output with fixed coefficients to intermediate inputs, labour and capital services) and a financial structure (domestic and foreign currency-denominated interest-bearing debt). The period of analysis is 1990-I to 1994-IV. The first project, referred to as the ‘exportable’ project, is calibrated on a chocolate manufacturer. The second project, referred to as the ‘import-competing’ project, is modelled on a bottle manufacturer. The third project, the ‘non-tradable’ project, is a firm providing cargo-transportation services in the national market. Both ‘greenfield’ investments, assumed to be characterised by a common (industry-and country-independent) price of capital and investments in existing assets (which can involve a discount on the price of existing capital) are considered.

The gross return, measured in ECU, on an ECU invested in the equity of industry  $j$ , denoted  $\mathbf{q}_j$ ,  $j = x, m, n$  can be written as in equations (1), (2) and (3) below<sup>2021</sup>. We assume each enterprise is wound up at the end of the period and that the undepreciated part of the capital stock is sold. We also assume that the rate of inflation of capital goods prices is the same as the general domestic rate of inflation. We use the following notation:  $p_{K_j}$  is the price of a unit of

capital in sector  $j$  in terms of the price of the exportable good;  $\mathbf{p}_j$  is the net output per unit of capital in sector  $j$ ;  $\mathbf{a}_{ij}$  is the amount of input  $i$  used per unit of capital in the production of good  $j$ ;  $p_m$  is the relative price of imports to exports;  $p_n$  is the relative price of non-traded goods to exports and  $w$  is the wage in terms of the exportable good;  $i$  is the domestic one-period contractual nominal interest rate;  $\mathbf{p}$  is the domestic rate of inflation,  $i^*$  is the foreign one-period contractual nominal rate of interest;  $\mathbf{d}_j$  is the proportional rate of



depreciation of capital in sector  $j$ ;  $\mathbf{g}$  is the proportional rate of depreciation of the nominal spot exchange rate;  $\mathbf{t}_j$  is the tax (measured in exportables) per unit of capital in sector  $j$ ;  $d_j$  is the ratio of domestic currency debt to capital in sector  $j$  and  $d_j^*$  the ratio of foreign currency debt to capital in sector  $j$ .

$$\mathbf{q}_x = \left( \frac{1}{1-d_x-d_x^*} \right) \left( \begin{array}{l} \frac{1}{pK_k} [\mathbf{p}_x - p_m \mathbf{a}_{mx} - p_n \mathbf{a}_{nx} - w \mathbf{a}_{l_x} - \mathbf{t}_x] \\ -[(1+i^*)d_x^* + \left(\frac{1+i}{1+\mathbf{g}_e}\right)d_x] + (1-d_x) \left(\frac{1+\mathbf{p}}{1+\mathbf{g}}\right) \end{array} \right) \quad (1)$$

$$\mathbf{q}_m = \left( \frac{1}{1-d_m-d_m^*} \right) \left( \begin{array}{l} \frac{1}{pK_m} [-\mathbf{a}_{xm} + p_m \mathbf{p}_m - p_n \mathbf{a}_{nm} - w \mathbf{a}_{l_m} - \mathbf{t}_m] \\ -[(1+i^*)d_m^* + \left(\frac{1+i}{1+\mathbf{g}}\right)d_m] + (1-d_m) \left(\frac{1+\mathbf{p}}{1+\mathbf{g}}\right) \end{array} \right) \quad (2)$$

$$\mathbf{q}_n = \left( \frac{1}{1-d_n-d_n^*} \right) \left( \begin{array}{l} \frac{1}{pK_n} [-\mathbf{a}_{mn} - p_m \mathbf{a}_{mn} + p_n \mathbf{p}_n - w \mathbf{a}_{l_n} - \mathbf{t}_n] \\ -[(1+i^*)d_n^* + \left(\frac{1+i}{1+\mathbf{g}}\right)d_n] + (1-d_n) \left(\frac{1+\mathbf{p}}{1+\mathbf{g}}\right) \end{array} \right) \quad (3)$$

Let  $z_j$  be the resources (per ECU worth of capital) available first for servicing debt and then for paying out to shareholders in sector  $j$ . For instance, in the export sector,

$$z_x = \frac{1}{p_{x_k}} [\mathbf{p}_x - p_m \mathbf{a}_{mx} - p_n \mathbf{a}_{nx} - w \mathbf{a}_{l_x} - \mathbf{t}_x] + (1-d_x) \left(\frac{1+\mathbf{p}}{1+\mathbf{g}}\right)$$

Assume domestic currency debt and ECU debt are of equal seniority. With an uncertain earnings stream, default becomes a possibility and the return on a loan becomes potentially risky. The (gross) rate of return on a domestic currency-denominated loan to sector  $j$ ,  $1+\tilde{i}_j$ , is given by

$$\begin{aligned}
1 + \tilde{i}_j &= 1 + i \quad \text{if } z_j \geq \left(\frac{1+i}{1+g}\right)d_j + (1+i^*)d_j^* \\
&= (1+i) \left( \frac{z_j}{\left(\frac{1+i}{1+g}\right)d_j + (1+i^*)d_j^*} \right) \quad \text{if } 0 \leq z_j \leq \left(\frac{1+i}{1+g}\right)d_j + (1+i^*)d_j^* \\
&= 0 \quad \text{if } z_j \leq 0
\end{aligned} \tag{4}$$

The gross rate of return on an ECU loan to sector  $j$ ,  $1 + \tilde{i}_j^*$ , is given by

$$\begin{aligned}
1 + \tilde{i}_j^* &= 1 + i^* \quad \text{if } z_j \geq \left(\frac{1+i}{1+g}\right)d_j + (1+i^*)d_j^* \\
&= (1+i^*) \left( \frac{z_j}{\left(\frac{1+i}{1+g}\right)d_j + (1+i^*)d_j^*} \right) \quad \text{if } 0 \leq z_j \leq \left(\frac{1+i}{1+g}\right)d_j + (1+i^*)d_j^* \\
&= 0 \quad \text{if } z_j \leq 0
\end{aligned} \tag{5}$$

In what follows we focus on the computation and characterisation of the mean-variance efficient frontier, the set of portfolios with the lowest variance of returns for any given mean return. Other than equity participations in, and domestic and foreign currency loans to, the three sectors in the transition economies under consideration, the only other use of resources by the Fund is investment in safe ECU-denominated loans at a rate  $i^*$ . We report only the results on the composition of the portfolio of risky assets. In addition to the constraint that sum of all investments is equal to the Fund's total resources, we impose a number of further equality and inequality constraints on the portfolio selection of the Fund. These constraints are typical of the constraints imposed by statute or convention on real-world Funds of the kind whose behaviour we are trying to model. They are as follows:

- 1) No short sales of equity.
- 2) Total equity investment not to exceed paid-in capital.
- 3) The Fund can borrow at the local and international risk-free rates. It only lends to transition economy enterprises at the higher contractual rates.
- 4) Total equity investments and loans not to exceed total capital.
- 5) No home currency risk exposure in the loan portfolio.

We simulate the behaviour of three sector-specific investment projects in the historical economic environments of the six transition countries between 1992 and 1994, interpreting the sample moments as estimates of the (conditional) means, variances and covariances of mean-variance portfolio analysis. We first focus on ‘greenfield investments’ so that the price of capital is identical across sectors and countries: if  $i$  is the country index,  $p_{K_{x_i}} = p_{K_{m_i}} = p_{K_{n_i}} = 1$ .

For our greenfield calculations, we assume that during the first period productivity levels in a given industry are the same in all countries. Productivity levels for countries and sectors in subsequent periods are derived endogenously for the remaining periods using both directly available and indirectly derived productivity growth data. We then discuss the case of investment in existing assets, that can trade at a discount or premium.

For a more extensive discussion of the data and the intermediate steps involved in computing the return distributions, see Buiters, Lago and Rey (1997). Lack of data forces us to make the assumption that productivity is the same in the two traded sectors. Both the short run of data and their generally low quality mean that our results are to be taken as illustrative only.

Input-output coefficients (measured as inputs per unit of capital) were extracted from the balance sheets of enterprises of the three sectors as presented in EBRD investment reports. The projects considered are a chocolate producer for the export sector, a bottle manufacturer for the import-competing sector and a transportation company for the non-traded sector. They have no claim to

generality but are consistent with the findings of Lankes and Venables (1996) who state that in their sample export supply projects are “import intensive” and “skilled labour intensive”, the labour bill accounting for 24% of the costs. These coefficients are assumed constant over the period of time considered (1992—1994).

Gearing ratios of approximately 18% for both domestic and foreign currency loans, tax rates of 10% and depreciation rates of 6% were also found in the balance sheets.

**Table IV.1**

Input/Output	Export	Import	Non-traded
Export		0	0
Import	62.48		0.1
Non-traded	2.56	11.18	
Labour	17.15	3.81	10.4

## **B. Returns on Investments**

### ***B.1. Greenfield Investments***

We now estimate returns on greenfield investments. They are shown in Tables IV.2 to IV.5. The returns are gross. The contractual interest rates on foreign currency loans are Libor + 150 for Group 1, Libor + 300 for Groups 2 and 4, Libor + 450 for Group 3. Contractual interest rates on domestic currency loans are domestic bank loan rates as provided by IFS data. Gearing ratios, taxes, input output coefficients, initial productivity levels are the same for all sectors and all countries. Returns differ because of different relative prices and wages, different productivity levels, interest rates, inflation rates and exchange rate movements. They are thus determined by the interaction of the same microstructure and different macroeconomic conditions.

**Table IV.2**

Group 1		
	Expected Return	Standard Deviation
$\theta_x$	1.37	0.21
$\theta_m$	1.09	0.11
$\theta_n$	1.14	0.11
$(1 + \tilde{i}_x)(1 + \mathbf{g})^{-1}$	1.18	0.11
$(1 + \tilde{i}_m)(1 + \mathbf{g})^{-1}$	1.18	0.11
$(1 + \tilde{i}_n)(1 + \mathbf{g})^{-1}$	1.18	0.11
$1 + \tilde{i}_x^*$	1.06	0.01
$1 + \tilde{i}_m^*$	1.06	0.01
$1 + \tilde{i}_n^*$	1.06	0.01

**Table IV.3**

Group 2		
	Expected Return	Standard Deviation
$\theta_x$	1.26	0.34
$\theta_m$	1.05	0.28
$\theta_n$	1.11	0.37
$(1 + \tilde{i}_x)(1 + \mathbf{g})^{-1}$	0.63	0.32
$(1 + \tilde{i}_m)(1 + \mathbf{g})^{-1}$	0.63	0.32
$(1 + \tilde{i}_n)(1 + \mathbf{g})^{-1}$	0.63	0.32
$1 + \tilde{i}_x^*$	1.07	0.01
$1 + \tilde{i}_m^*$	1.07	0.01
$1 + \tilde{i}_n^*$	1.07	0.01

**Table IV.4**

Group 3		
	Expected Return	Standard Deviation
$\theta_x$	0.57	0.55
$\theta_m$	0.85	0.73
$\theta_n$	0.67	0.58
$(1 + \tilde{i}_x)(1 + g)^{-1}$	0.36	0.49
$(1 + \tilde{i}_m)(1 + g)^{-1}$	0.36	0.49
$(1 + \tilde{i}_n)(1 + g)^{-1}$	0.36	0.49
$1 + \tilde{i}_x^*$	0.73	0.63
$1 + \tilde{i}_m^*$	0.73	0.63
$1 + \tilde{i}_n^*$	0.73	0.63

**Table IV.5**

Group 4		
	Expected Return	Standard Deviation
$\theta_x$	0.54	0.48
$\theta_m$	0.85	0.82
$\theta_n$	0.69	0.74
$(1 + \tilde{i}_x)(1 + g)^{-1}$	0.42	0.69
$(1 + \tilde{i}_m)(1 + g)^{-1}$	0.42	0.69
$(1 + \tilde{i}_n)(1 + g)^{-1}$	0.42	0.69
$1 + \tilde{i}_x^*$	0.72	0.62
$1 + \tilde{i}_m^*$	0.72	0.62
$1 + \tilde{i}_n^*$	0.72	0.62

Note that in Group 1 there is no default on any of the loans. In Group 2 there is no default on loans (although the ECU returns on home currency loans are very poor due to very strong exchange rate depreciation). In Group 3 there are defaults on loans and equity<sup>22</sup> in the import-competing and non-traded good sectors.

In Group 4, there are some defaults — on loans and equity — in the three sectors.

The data we have on domestic interest rates are obviously not excessively reliable. When we look for the mean-variance efficient portfolios, we will therefore limit ourselves to equity and foreign currency loans. But it is true that the bad quality of our data on interest rates also affects — more indirectly — our returns on foreign currency loans and equity. Very shaky macroeconomic conditions in Groups 3 and 4, for example, lead to extreme values of the real interest rate and trigger default for some periods and some sectors.

Although the actual figures may not be terribly accurate, the macroeconomic instability they reflect does seem to be genuine. In this respect, our results are quite suggestive. Furthermore, in the Pissarides, Singer and Svejnar (1996) survey, managers tend to rank high interest rates as one of the most serious constraints they face.

From these results, we can see that greenfield investments are generally dominated by investments in Groups 1 and 2: greenfield investments have higher returns in countries which are in a more advanced stage of transition. Nevertheless, returns differ widely by sector. Loans can obviously be risky, either because of default risk (in countries of groups 3 and 4) or because of currency risk.

Lankes and Venables (1996) link greenfield investments to the control mode. Wholly owned subsidiaries of foreign firms are more likely to be greenfield investments and greenfield investments are more likely to occur when foreign investors want complete control of the entire production process of the company. This motive is especially powerful when there is strong emphasis on the quality of the product. Joint ventures are more attractive as a means of providing information about and access to the local market and to mitigate risk<sup>23</sup>. Here we provide an alternative view — based on the influence of macro conditions on micro performance — where greenfield investments tend to be optimal in the countries which are more advanced on the transition path.

## *Optimal Portfolios of Greenfield Investments*

We consider optimal portfolios consisting of risky investments only, that is, safe ECU lending at the rate of interest  $i^*$  is excluded. The available assets are foreign currency loans and equities. We show only the non-dominated part of the mean-variance-efficient frontier. Columns 1 and 2 give the expected return and the standard deviation of the portfolio. In column 3, we show the proportion of the optimal portfolio held in equity and in the other columns we have put the respective contributions of the 4 groups of countries to the optimal portfolio.

**Table IV.6**

Mean-Variance Efficient Portfolios of Greenfield Investments						
Mean returns	Standard deviation	% equity	Group 1	Group 2	Group 3	Group 4
1.075	0.000	39.02	56.28	42.70	0.00	1.02
1.10	0.000	88.32	79.77	17.01	2.53	0.69
1.125	0.000	90.23	78.12	19.72	1.46	0.70
1.15	0.006	100.00	78.45	21.55	0.00	0.00
1.20	0.022	100.00	80.73	19.27	0.00	0.00
1.25	0.070	100.00	93.56	6.44	0.00	0.00
1.30	0.116	100.00	97.50	2.50	0.00	0.00
1.37	0.210	100.00	100.00	0.00	0.00	0.00

The proportion of equity increases as expected return and risk (variance) rise along the mean-variance efficient frontier. The share of equity is equal to 100% for returns higher than 12.5%. For the lowest expected returns (7.5%) and the lowest risk, investing mainly in loans to Groups 1 and 2 is optimal. For expected returns between 10 and 12.5%, it is optimal to invest mostly in Groups 1 and 2 and to diversify risk by small investments in Groups 3 and 4. For a broad range of expected returns (between 15% and 37%), investing primarily in equities of group 1 is optimal, with some significant participation in Group 2. For the highest returns, only investments in equity of Group 1 should be considered. At no level of risk tolerance do greenfield investments in the least advanced transition



economies (Groups 3 and 4) take a significant place in the efficient portfolio. Investment in their debt is usually dominated.

These results would be strengthened if we had taken into account differences in productivity levels across countries for the initial period, as productivity in Group 1 might be taken to be higher than that in the other groups, even in the case of greenfield investments. We only allow for such initial productivity differences in the case of investments in existing assets, considered next.

## ***B.2. Investments in Existing Assets***

We now try to allow for the fact that existing assets can sell at a discount in countries with unfavourable (macro)economic conditions, that is, we allow the  $p_{K_j}$  to differ across countries. Our

estimate of the magnitude of the existing asset price discount is based on the deviation of the country's exchange rate from the OECD's estimate of its PPP exchange rate for 1993. No intra-industry differences in the discounts on these assets can therefore be allowed for. These estimates of the prevailing asset price discount are likely to be subject to wide margins of error. The computations of the optimal portfolios that follow are conditional on these estimates and should therefore be treated with caution. If the projects of a country or group of countries do not succeed in pricing themselves into the optimal portfolio with the asset price discounts we attribute to them, there will always exist (higher) discounts for which these projects will become viable. That indeed is a central message of this paper: if a country has a highly unfavourable macroeconomic environment, it will pay for it through high discounts on the prices of its existing immobile factors.

**Table IV.7**

Discount prices with respect to group 1	
Group	Comparative price level (%)
2	64.78
3	37.37
4	54.82

The least advanced countries on the transition path have the highest discounts on the price of their sunk capital. Therefore, the less advanced on the transition path, the bigger the incentive for investing in existing assets *ceteris paribus*. But here *ceteris paribus* truly does mean holding a lot of other things constant. The existing capital the Fund can invest in is often obsolete, depending on the countries and the sectors. In the Pissarides, Singer and Svejnar (1996) survey, managers in Bulgaria and Russia complain that “capital is old” and claim that this obsolescence is one of the most binding constraints they face. Therefore, while the assumption made thus far, that productivity levels are the same across countries in the initial period, may be suitable for greenfield investments, it is highly questionable when we turn to investments in existing assets. We therefore make a correction for the relative levels of productivity across countries for the initial period. We take average Economy-wide \$PPP GDP per employee to estimate the relative productivity levels at the beginning of the period. We make the assumption that initial productivity differences between countries are the same in the three sectors. Relative to Group 1, we find that Group 2 has an initial level of productivity of 0.42, Group 3 of 0.64 and Group 4 of 0.72.

#### *Returns on Investments in Existing Assets*

The means and standard deviations of returns on equity investments and loans in the three industries for each of the four groups are given below in Tables IV.8 to IV.11.

**Table IV.8**

Group 1		
	Expected Return	Standard Deviation
$\theta_x$	1.37	0.21
$\theta_m$	1.09	0.11
$\theta_n$	1.14	0.11
$(1 + \tilde{i}_x)(1 + g)^{-1}$	1.18	0.11
$(1 + \tilde{i}_m)(1 + g)^{-1}$	1.18	0.11
$(1 + \tilde{i}_n)(1 + g)^{-1}$	1.18	0.11
$1 + \tilde{i}_x^*$	1.06	0.01
$1 + \tilde{i}_m^*$	1.06	0.01
$1 + \tilde{i}_n^*$	1.06	0.01

**Table IV.9**

Group 2		
	Expected Return	Standard Deviation
$\theta_x$	0.72	0.43
$\theta_m$	1.36	0.41
$\theta_n$	1.48	0.50
$(1 + \tilde{i}_x)(1 + g)^{-1}$	0.63	0.32
$(1 + \tilde{i}_n)(1 + g)^{-1}$	0.63	0.32
$(1 + \tilde{i}_x)(1 + g)^{-1}$	0.63	0.32
$1 + \tilde{i}_x^*$	1.07	0.01
$1 + \tilde{i}_m^*$	1.07	0.01
$1 + \tilde{i}_n^*$	1.07	0.01

**Table IV.10**

Group 3		
	Expected Return	Standard Deviation
$\theta_x$	0.88	0.97
$\theta_m$	2.09	1.81
$\theta_n$	1.79	1.56
$(1 + \tilde{i}_x)(1 + g)^{-1}$	0.36	0.49
$(1 + \tilde{i}_m)(1 + g)^{-1}$	0.36	0.49
$(1 + \tilde{i}_n)(1 + g)^{-1}$	0.36	0.49
$1 + \tilde{i}_x^*$	0.73	0.63
$1 + \tilde{i}_m^*$	0.73	0.63
$1 + \tilde{i}_n^*$	0.73	0.63

**Table IV.11**

Group 4		
	Expected Return	Standard Deviation
$\theta_x$	0.95	0.84
$\theta_m$	1.54	1.49
$\theta_n$	1.26	1.34
$(1 + \tilde{i}_x)(1 + g)^{-1}$	0.42	0.69
$(1 + \tilde{i}_m)(1 + g)^{-1}$	0.42	0.69
$(1 + \tilde{i}_n)(1 + g)^{-1}$	0.42	0.69
$1 + \tilde{i}_x^*$	0.72	0.62
$1 + \tilde{i}_m^*$	0.72	0.62
$1 + \tilde{i}_n^*$	0.72	0.62

Group 1 being our benchmark, returns are the same as for greenfield investments.

Investing in existing assets has an impact on the relative profitability ranking of the investments: the high expected return on

equity in the export sector for greenfield investments in Group 2 was linked to the assumed high initial productivity level. With lower initial levels of productivity in the export sector of Group 2, investments in the import-competing and non-traded sectors become relatively more profitable. For Group 2, returns on loans are the same as for greenfield investments.

Investing in equities in Groups 3 and 4 by purchasing pre-existing assets becomes much more profitable and also much riskier than in the case of greenfield investments.

#### *Optimal Portfolios of Existing Assets*

We again consider portfolios consisting of risky investments only. Mean-variance efficient frontiers of portfolios of investments across sectors and across countries have been computed taking into account all the institutional constraints. The assets considered are again foreign currency loans and equities. The results for the mean-variance efficient frontier of portfolios are as follows:

**Table IV.12**

<b>Mean-Variance Efficient Portfolios of Investments in Existing Assets</b>						
Mean returns	Standard deviation	% equity	Group 1	Group 2	Group 3	Group 4
1.075	0.000	55.30	66.28	26.69	3.83	3.20
1.10	0.000	58.54	62.82	30.47	2.72	3.99
1.125	0.000	66.65	61.94	31.28	1.97	4.81
1.15	0.000	73.88	64.63	29.26	1.62	4.48
1.20	0.007	100.00	71.22	24.01	0.00	4.77
1.25	0.031	100.00	82.53	17.47	0.00	0.00
1.30	0.080	100.00	78.12	21.88	0.00	0.00
1.35	0.128	100.00	73.71	26.29	0.00	0.00
1.40	0.175	100.00	0.00	84.97	0.00	15.03
1.45	0.220	100.00	0.00	85.20	0.00	14.80
1.50	0.282	100.00	0.00	82.39	1.79	15.83
1.55	0.402	100.00	0.00	72.62	9.79	17.58
1.60	0.522	100.00	0.00	62.86	17.80	19.34
1.70	0.761	100.00	0.00	43.33	33.82	22.85
1.80	1.001	100.00	0.00	23.81	49.83	26.36
1.90	1.241	100.00	0.00	4.28	65.85	29.87
2.00	1.509	100.00	0.00	0.00	83.57	16.43
2.09	1.810	100.00	0.00	0.00	100.00	0.00

The basic results of risk diversification across countries (and across sectors, although this information does not appear in this table) are as follows. As with greenfield investments, the share of equity in the optimal portfolio increases with the expected return and with risk. For the lowest expected returns (between 7.5% and 20% roughly), it is optimal to invest mainly in loans and equities of Groups 1 and 2 with some minor diversification in Groups 3 and 4. When the expected rate of return exceeds 20% (and is below 35%), it becomes optimal to invest only in equities and primarily in Group 1 but also in Group 2. For expected returns above 35% but below 50%, it is optimal to invest mainly in equity in Group 2 and, to some extent, in Group 4. For expected returns between 50% and 90%, a mixed portfolio of Groups 2, 4 and 3 is optimal, with the importance of equity investments in Group 3 increasing. For the highest expected returns and riskiest investments it is optimal to invest in equities in Groups 3 and 4 only and then, for the highest possible risk, in Group 3 only. We note that, as in the case of greenfield investments, investments in Groups 3 and 4 are dominated for a broad range of expected returns, although they do kick in significantly for the very highest expected returns.

The specific numerical inputs and outputs of this sub-section are to be viewed as illustrative only. The data we used are highly unreliable; we had to make a number of heroic simplifying assumptions to get estimates of some of the variables we needed to apply our approach; and we could perform historical simulations only for a far too restricted number of periods. Nevertheless the framework we use seems to be useful to link the microeconomic performance of firms to their macroeconomic environment and can be expected to give very interesting results when more and better data become available. We also believe that the simulations support the view that the fundamental tools of portfolio theory are applicable to the problem of optimal investment in transition economies.

## C. The Implications

First, the simulations confirm that the influence of the macro economic environment on the performance of projects can be dramatic. Kaufmann (1991) reaches the same conclusion. Table IV.13 summarises his review of a sample of over 1,300 projects financed by the World Bank and IFC over the last half century.

**Table IV.13**  
**Economic Returns of Work Bank and IFC Projects Under Different**  
**Macroeconomic Distortions**  
**(Rates of return in per cent)**

Policy distortion index	All projects	Public projects	Private projects
<i>Fiscal deficit</i> <sup>1</sup>			
High (8% or more)	13.4	13.7	10.7
Low (less than 4%)	17.8	18.1	14.3
<i>Trade restrictiveness</i>			
High	13.2	13.6	9.5
Low	19.0	19.3	17.1
<i>Foreign exchange premium</i>			
High (200% or more)	8.2	7.2	*
Low (less than 20%)	17.7	18.0	15.2
<i>Real interest rate</i>			
Negative	15.0	15.4	11.0
Positive	17.3	17.5	15.6

\* Insufficient number of observations (less than 10) to make inferences.

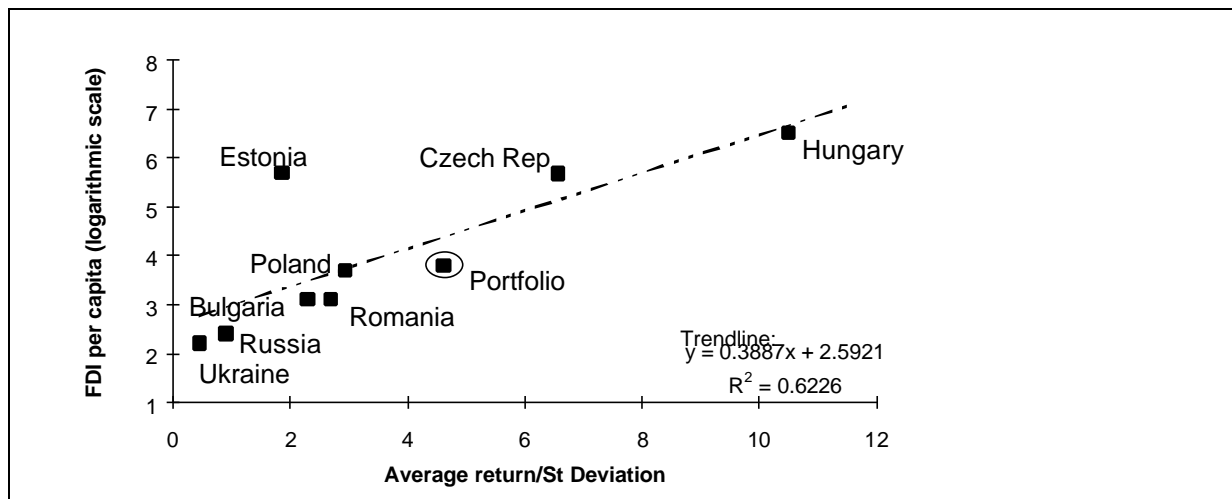
<sup>1</sup> Percentage of GDP

**Source:** World Development Report, The World Bank (1991), page 82.  
 Data originate in Kaufmann (1991).

Second, the view that macroeconomic stability has a powerful effect on enterprise performance is further corroborated by the fact that the countries in transition that have managed to achieve a more stable macroeconomy have also been able to attract larger flows of FDI. Chart IV.1 illustrates this positive correlation by plotting the cumulative FDI *per capita* by country, during 1989—94, against the

ratio of the average return over the standard deviation for each country's portfolio<sup>24</sup>.

**Chart IV.1**  
**Foreign Direct Investment Versus Country Project Performance**



Finally, the huge dispersion of the returns on projects in countries of early transition clearly constrains their bankability through debt instruments. In fact, debt becomes close to equity without the upside potential<sup>25</sup>. By contrast, country equity-portfolios across sectors and, furthermore, equity-portfolios across sectors and countries diversify risks efficiently. The implication may well be that in the early stages of transition the emphasis should be placed on the development of the capital market — through the building-up of efficient stock exchanges and related markets for and sources of longer-term risk capital — while banks specialise in enhancing the economy's payments system and in short-term working capital lending. Only when countries have progressed in their transitions beyond a threshold of macroeconomic stability and structural reform does long-term bank financing of enterprises seem to make sense.



## **V. EMPIRICAL EVIDENCE: ASSESSING THE EFFECTS OF THE MACROECONOMIC ENVIRONMENT ON INVESTMENT AND GROWTH**

### **A. Evidence From Aggregate Data for the Economies in Transition**

In the 25 countries of operations of the EBRD in 1995, there has been a clear relationship between economic performance at the aggregate level and macroeconomic control. As Table V.1 illustrates, those countries which have shown the strongest commitment to reform are also the ones which have simultaneously reduced inflation faster, suffered the smallest GDP and fiscal revenue falls, and witnessed an earlier resumption of growth. The respective medians of all the indicators for each of the three groups of countries depict consistently the better performance of the faster reformers. For example, the median contraction of GDP at the trough for the advanced reformers is about one-quarter whereas that for the early transition countries is about one-half. The same striking result applies to annual inflation, 21 per cent versus 1000 per cent, respectively, in 1994.

**INSERT LANDSCAPE VERSION OF TABLE V.1 HERE**

**Table V.1**  
**PROGRESS IN TRANSITION AND MACROECONOMIC PERFORMANCE**  
 (measured by the median of each group)

	Private Sector GDP share % a/	Score on enterprise restructuring & privatisation a/	Score on markets' liberalisation a/	Score on Banking Reform a/	Government Fiscal balance in 1994 % of GDP d/	Cumulative Decline (1989-93) in Fiscal Revenues % of GDP b/	Annual Inflation Rate %		Ratio of lowest registered GDP to 1989 GDP b/	GDP growth % 1994 a/	Increase in infant mortality rate % c/
							1992	1994			
Advanced transition countries	55	3.5	3.5	3	-2	-5	93	21	76	3	-15
Intermediate transition countries	35	2.5	3.5	2	-7	-20	237	62	65	-7	7
Early transition countries	20	1.5	1.5	1	-9	-18	1364	1000	49	-23	15.6

a/ **Source:** European Bank for Reconstruction and Development (1994), p.18. The qualitative index of reform in columns 2 to 7 ranges from 1 to 4. A western European country would qualify with an index of 5.

b/ **Source:** De Melo, Demizer and Gelb (1995).

c/ **Source:** UNICEF (1994), p.6.

d/ It excludes the Central Bank quasi-fiscal deficits.

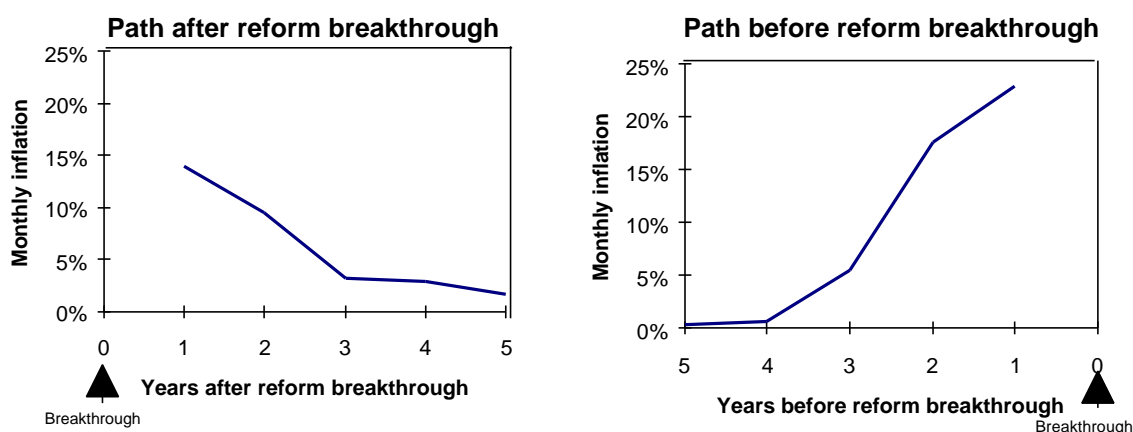
**Note: The groups include:**

- i) Advanced Transition (Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia).
- ii) Intermediate Transition (Albania, Bulgaria, FYR Macedonia, Kyrgyzstan, Romania, Russian Federation).
- iii) Early Transition (Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Moldova, Tajikistan, Turkmenistan, Ukraine, Uzbekistan).

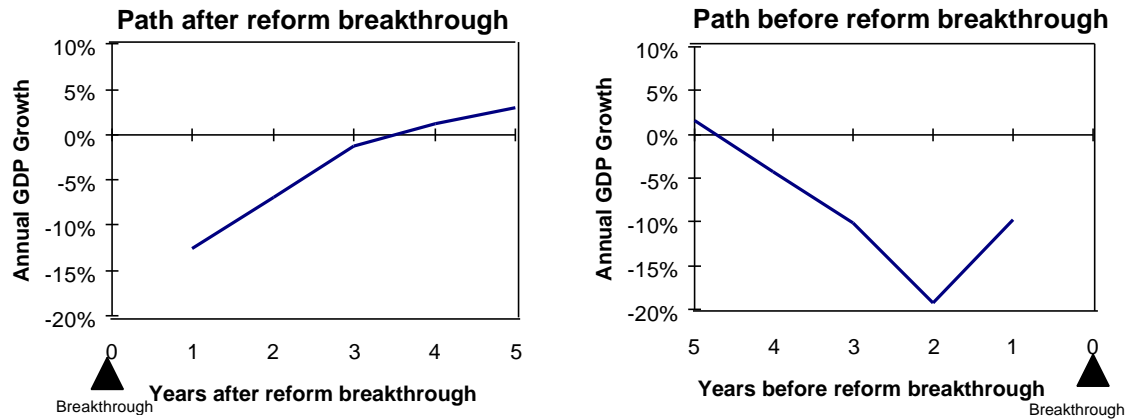
In a recent study, De Melo, Denizer and Gelb (1995) calculate the profiles followed on average by inflation and real growth in countries in transition during the years prior to a reform breakthrough and during the years following that breakthrough. Their results are summarised in Charts V.1 and V.2. Radical reformers suffer an initial fall in real income of about 13 per cent and a jump in inflation to 14 per cent per month during the year following the ‘big bang’; nevertheless, they are able to: (i) resume positive growth four years later; and (ii) control inflation to just below 3 per cent per month during the fifth year. The typical pattern of recovery is one of rapidly expanding private sector activity outweighing the contraction in public enterprise output. A parallel structural change occurs in the sectoral composition of GDP, with the service sector increasing its share of GDP by 10 percentage points and with industry — particularly heavy industry — witnessing a similar drop of its GDP share. By contrast, the countries that postpone reform, although able in the beginning to limit real income losses and to maintain low “official” inflation (typically with the help of price controls), end up in hyperinflation (average rates of inflation of 23 per cent per month) and deep depression (average yearly income losses of about 10 per cent). The countries, particularly those in the FSU, which have seen the greatest economic and social traumas — like increases in age specific mortality rates — are also the ones where macroeconomic control has been lost.

**Chart V.1**

**Prototype Path of Monthly Inflation in Transition Economies Before and After Reform Breakthrough**



**Chart V.2**  
**Prototype Path of Annual Real GDP Growth in Transition Economies**  
**Before and After Reform Breakthrough<sup>a</sup>**



**Source:** De Melo, Denizer and Gelb (1995).

a/ Data for 25 countries of operation of EBRD, plus Mongolia. Results come from an statistical method known as “switching regime regression”. The breakthrough is defined as the year in which a specific country has reached a set of transition indicators ] omparable to those of Poland as of 1990.

Clearly, in assessing these data the different initial political, social, cultural and economic conditions should not be neglected. The countries of the FSU embarked on transition two years later than the CEEC. Furthermore, the diaspora of the former Soviet Republics — the economies of which were tightly integrated and complementary — was a far more traumatic shock than that of the dissolution of the CMEA for the CEEC. Moreover, the latter countries had been functioning market economies until the 1940s, some of them even buoyant performers.<sup>26</sup> In contrast, the Russian economy at the time of the Bolshevik revolution of 1917 was a predominately pre-capitalist, agricultural economy.

## B. Global Evidence on the Relation Between Inflation, Investment and Growth

Low or moderate inflation and limited macroeconomic distortions have indeed been characteristics of fast-growing economies across the world, not merely in the transition economies. Conversely, economies with a poorer growth record have also experienced higher inflation and stronger distortions. Table V.2 bears this out.

**Table V.2**  
**Some Economic Characteristics of Fast and Slow Growers (1960—1989)**

Averages of:	Fast Growers	Slow Growers	t-statistic <sup>a</sup>
Inflation rate	12%	31%	1.7
Black market exchange rate premium	14%	57%	3.8
Investment/GDP	23%	17%	5.2
Export/GDP	32%	23%	2.3

**Source:** Levine and Renelt (1992), Table 2. Sample of 109 countries; fast growers are the 56 countries whose growth rate of *per capita* income exceeds the mean; slow growers are the remaining 53 countries.

Nevertheless, the evidence on the relationship between macroeconomic stability and growth should be interpreted with care. The possibility of two-way causation — and of common third factors causing both — cannot be ruled out, especially at low and moderate rates of inflation. When monthly inflation rates get into double digits there can be little doubt, however, that macroeconomic malfeasance depresses growth and seriously harms allocative efficiency. Referring to the experience of a group of very high inflation, middle income countries, Bruno states:

The fact that growth is systematically higher after a sharp stabilisation is consistent with the finding that very high rates of inflation are definitely harmful to growth. Stabilisation by itself, even before sustainable resumption of investment and long-run growth, improves resource allocation and total factor productivity. (Bruno, 1993.)

On the other hand, at lower rates of inflation (say 15 per cent a year or lower) there is less evidence of any clear pattern of covariation between inflation and growth or between inflation and other observable indices of efficiency, such as total factor productivity. Much of the relevant evidence is surveyed, discussed and extended in Fischer (1993). These conclusions are confirmed in a recent paper by Robert Barro (Barro (1995)), which finds that the empirical evidence from more than 100 countries over a period of 30 years suggests that the adverse effect of inflation on growth is clear only when inflation is high: the estimated coefficient of growth on inflation is statistically significant (albeit small <sup>27</sup>) when inflation averages more than 15 per cent per year. The estimated coefficient of growth on inflation is not statistically significant when inflation averages less than 15 per cent per annum. Thus, in speaking of the damaging effects of inflation on performance, one must be clear that it is the high rates of inflation that are at issue.

A third study, by Pindyck and Solimano (1993) arrives at the result that the volatility of the return on capital has a depressing effect on investment and that this effect is greater for developing countries than for industrial economies. Further, it finds that — after trying a range of indices of political and economic instability as explanatory variables — only inflation seems to be clearly and robustly correlated with the volatility of the return on investments. Consequently, these econometric studies corroborate the more casual empirical evidence presented in Table.V.2.

Recently, Easterly (1996) has presented evidence that supports the view that stabilisations starting from very high initial rates of inflation may actually be expansionary, even in the short run. Output losses are associated with the earlier stage of loss of macroeconomic control when the country's inflation rate explodes.

## **VI. CONCLUSIONS AND POLICY PRESCRIPTIONS**

### **A. Speed of Transition**

A great deal has been debated over the relative merits of radical *versus* gradualist reforms. Favouring the former, Balcerowicz (1993, 1994) has argued that with the arrival of newly elected governments there is a period of ‘extraordinary politics’. Using that period for gradual policies is a bad investment for they are susceptible to be partly reversed, at best, or derailed, at worst, as ‘extraordinary politics’ turns into ‘normal politics’. By contrast others, Aghion and Blanchard (1994) for example, have defended the transitory maintenance of a core of well-designed subsidies (i.e. employment subsidies to selected firms). Their line of argument is that because the necessary reallocation of resources is costly — a ‘big-bang’ will send too many firms into bankruptcy and workers into unemployment. This, in turn, will erode the tax revenue base and put pressure on safety-net public, leading to higher budget deficits and inflation than would have been the case with intelligently designed gradualist policies.

Indeed, the debate is far from concluded. However, as noted above, the evidence with transition so far — particularly in the CEEC — appears to be that radical reformers have been more successful on both the inflation and GDP fronts than the other reformers. A central element in the explanation of this reality is the synergy between micro and macro reforms. Furthermore, the simulations of the returns on the three stylised projects discussed in Section IV support the view that faster macroeconomic reforms mean improved enterprise performance.

### **B. Synergy Between Macrostabilisation and Market Development**

Not only does macroeconomic stability boost enterprise and project performance, it also spurs the development and proper functioning

of the key markets in the economy. As regards the *markets for goods and foreign exchange*; a single illustration helps to make a general point: an exchange rate determined in a foreign exchange market with a freely floating exchange rate can be termed a ‘market rate’, but when the central bank provides public enterprises with subsidised loans to bid for hard currency, this ‘market rate’ can hardly be viewed as indicative of the social scarcity-value of hard currency.

Managers of enterprises can gain a marketable reputation by turning loss-making firms into profitable ones. High inflation and volatile relative prices, however, increase the ratio of noise to signal in the system and, as shown in Section IV, capriciously distort enterprises’ cash flows. This blurs the relationship between good management and enterprise performance (after all, bad results can be due to noisy prices and good results to luck!) and enhances the incentives for self-serving pay-offs.<sup>28</sup>

Both the insider (i.e. Russia) and outsider (i.e. Czech Republic) privatisation models led to some initial degree of insider control. Insofar as soft loans and selective subsidies are perpetuated, workers and management have the option of maximising rents — by decapitalising the firm and/or lobbying for subsidies — rather than selling their equity to outsiders. This tendency is reinforced when the enterprise — rather than the state — provides workers with a whole set of social services as in the FSU. The outcome is a vicious circle. The state cannot afford to take over the safety net because its meagre tax revenues are wasted on subsidies and workers resist selling their equity stakes because, with the divestiture, they would lose access to social services and forsake rents. The result is *labour market immobility*.

The market price of the firm equals the present value of its future cash flows. When stabilisation and economic reform have advanced beyond a threshold the average cash-flows of viable firms improves and the uncertainty surrounding them goes down. Investors become willing and able to pay more for the firms’ equity. By contrast, under half-speed reform programmes there is always an array of possible different stabilisation-liberalisation paths.<sup>29</sup> Each



path implies a different — and not easily predictable — path for the cash-flow of the firm.<sup>30</sup> This uncertainty prompts investors to discount the value of equity. In sum, the persistence of subsidies — coexisting with and causing inflation — lifts the reservation price of the shares held by the insiders and reduces the willingness to pay for them by the outsiders. The *development of a capital market* is thereby hampered.

Although survey results for Poland 1990—1993 indicate that the restructuring of state enterprises was successfully initiated by public sector managers,<sup>31</sup> it is also broadly agreed that in-depth restructuring of enterprises needs effective corporate governance and that the latter is best carried out by private outsiders.<sup>32</sup> As argued above, half-hearted reforms obstruct the take-over of enterprises by outsiders, thus slowing the restructuring process.

### **C. Establishing the Institutions for Macroeconomic Stability**

A key role of the government is to provide the ‘public intermediate good’ of macroeconomic stability. The policies conducive to a stable macroeconomy can only be designed and administered through suitable institutions. The economies in transition, having inherited the ‘wrong’ institutions, need to develop those tailored to a market economy, including the institutions required to perform *inter alia* the following key tasks.

#### *Enforcing Hard Budget Constraints*

Enforcing hard budget constraints is the first rule of a market economy. Without it, liberalising markets, freeing prices and privatising state enterprises is pointless. A hierarchy of hard budget constraints can be visualised. The Government/Central Bank should impose a hard budget constraint on the banking sector, thereby prompting commercial banks to enforce hard budget constraints on their borrowers. Indeed, governments throughout the world are attempting to impose harder budget constraints on themselves by

establishing independent central banks and through constitutional amendments on their ability to borrow, spend and tax.<sup>33</sup>

## *Managing Monetary Targets and/or the Exchange Rate*

This can be done through a conventional central bank or through a currency board. A currency board issues domestic currency only in exchange for convertible currencies at a fixed exchange rate. The whole monetary base is fully-backed by international reserves and is demand driven. Small, very open economies and those prone to fiscal irresponsibility may be advised to go for a currency board. Hong Kong in Asia, Panama and Argentina in Latin America, and more recently Estonia and Lithuania in eastern Europe, have been successful at stabilising inflation with the help of currency boards. One downside of currency boards is that the arrangement precludes the role of lender of last resort in the event of a systemic banking crisis, like the one recently experienced by Latvia with the collapse of the main commercial bank. Whatever the regime, credibility is key: unless a particular institutional arrangement is adopted lastingly and in substance it is unlikely to survive. Independence of the central bank is not strictly necessary but there is evidence that independence helps deliver macroeconomic stability.<sup>34</sup>

## *Banking Supervision*

The supervision and regulation of the financial sector should be a top priority. High real interest rates and changing profitability across enterprises and sectors — both inherent to transition — can, in the absence of strong banking supervision, easily lead to non-performing portfolios. A big portion of the “bad loans” will eventually be absorbed by the state.

## *Tax Administration*

The ability to levy taxes on a broad base, allowing both acceptable marginal rates and revenue levels, is key to the state discharging its obligations effectively and without recourse to the inflation tax. As noted above, for economies in transition the challenge is formidable.

## *Supplying the Social Safety Net*

Shifting the burden of providing the safety net traditionally supplied by state enterprises to the general government constitutes another major fiscal challenge. The government need not supply directly the services it finances. A part can be contracted out to the private sector or the “civil society”/not-for-profit sector. Transition also raises the issue of intergenerational equity. The older generations have shorter time horizons and their opportunity to accumulate wealth bypasses them in favour of skilled and dynamic younger workers and entrepreneurs able to earn high incomes in the private sector. Transition thus enhances the role of the state in effecting intergenerational incomes transfers in a cost-effective way.

The case that loss of macroeconomic control undermines economic performance is surely powerful. Belittling the importance of macroeconomic constraints, as one finds implicitly or explicitly in arguments for some ‘vital’ expenditure, does disservice to both welfare and to the quality of argument. Macroeconomic control is, *par excellence*, central to the role of the state in promoting transition to a market economy.

## ENDNOTES

1. A good or service is non-rival if its use by one agent does not affect its availability to other agents (that is, if the marginal cost of making it available to additional agents is zero).
2. A good or service is non-excludable if it is prohibitively costly to restrict access to it.
3. The former Czechoslovakia already had a tradition of fiscal conservatism while others, like the former Yugoslavia, had experienced high inflation for over a decade, and yet others like the countries of the FSU and Bulgaria showed pervasive repressed inflation — manifested in shortages and an acute monetary overhang. On the external debt front most countries of the region, with the exceptions of Bulgaria, FYR of Macedonia, Hungary, Poland and Russia, started their transitions virtually free from foreign debt. Of the heavily indebted countries only Hungary continued to honour its external debt commitments.
4. See Coase (1937).
5. A (global) systemic failure like the Great Depression is an obvious exception, although even there, government action or inaction at the very least aggravated the situation.
6. The state in this context encompasses the central and local governments, the central bank, and the public enterprises.
7. Note that this happened in an advanced transition country such as Hungary which has a banking code guided by Basle-like adequacy ratios and better bank oversight standards than most other transition countries. Of course, the American Saving and Loan crisis reminds us that large-scale financial shambles are by no means confined to developing countries and transition economies.

8. The grant could be contingent, with full servicing of the debt only waived under specified uncertain circumstances. Option pricing methods would have to be used to value such contingent claims on the government.

9. For a more detailed explanation of the concept of the ERT, see European Bank for Reconstruction and Development (1993), pp.50—51.

10. The country simulations are based on a successful private sector project co-financed by the EBRD in Hungary. The calculations were performed by means of a variant of the soft-ware “Measuring Effective Taxation of Enterprise” (Dunn and Pellecchio (1990)). The information on the specific conventions to calculate tax returns in each country was obtained from the booklet “Taxation in eastern Europe, 1995” (Deloitte, Touche Tohmatsu International (1995)). These conventions include: whether historical cost or replacement cost accounting is used to cost-out input inventories and depreciation allowances; whether interest on debt is deductible from taxable profits; whether or not distributed dividends are subject to taxation; whether losses can be carried over and for how many years.

11. ‘Shoe leather’ refers to frequent trips to the bank so that as little money as possible needs to be held in one’s pocket; ‘menu costs’ refers to the frequent relabelling of prices in restaurants, shops etc.

12. Real depreciation of the currency means a decrease of the relative price of non-traded goods to traded goods.

13. See Pindyck and Solimano (1993).

14. Cumulative FDI *per capita* to Ukraine during 1989—94 was only US\$ 9 *versus* an average of US\$ 44 for the region and a maximum of US\$ 671 for Hungary.

15. Assume that annual inflation is running at 100 per cent and wages are fully adjusted for past inflation every twelve months. If the indexation period were halved to every six months, the inflation rate would have to increase sufficiently to prevent average monthly real wages from rising sharply. See Pazos (1990).

16. The term ‘insurance’ is hardly descriptive. A worker gets paid a contingent benefit (contingent on being unemployed). There is no experience rating for individual workers and only in some countries (like the USA) is there (partial) experience rating for individual firms. Even in the aggregate, there is no necessary (actuarial) link between total contributions (by workers and employers) and total unemployment benefits.

17. Compulsory unemployment insurance can mitigate the adverse selection problem; it does nothing to reduce the moral hazard problem.

18. See Cardoso (1992), Kane and Morisett (1993) and Cardoso *et al* (1995).

19. See Corden (1990).

20.  $x$  denotes exports,  $m$  denotes import-competing and  $n$  denotes non-traded.

21. Strictly speaking, with limited liability the rate of return to equity in sector  $j$  is  $\max \{0, \mathbf{q}_j\}$ . Our simulations allow for this, but we omitted it in the text to avoid unnecessary clutter.

22. ‘Default’ on equity simply means that the net rate of return is negative, or the gross rate of return  $\mathbf{q}_i$  is less than 1.

23. The Lankes-Venables (1996) survey shows that the proportion of greenfield investments in their group I (Czech Rep., Hungary) 38% whereas it is only 32% in their group II and 30% in their group III, which corroborates our results (their groups have been ranked using transition indicators).

24. The means and variances of country return used in Chart IV.1 are from a different (albeit similar in spirit) simulation study than the one considered in Sections IV.A and B. The simulations underlying Chart IV.1 consider only two sectors per country (a traded and a non-traded sector) but include a larger number of countries. Unlike the simulations of Sections IV.A and B, those generating Chart IV.1 include a direct, inflation tax-like adverse effect of inflation on enterprise performance. For details see Buiter and Lago (1996). Note that a proper measure of risk would not be based on the variance, but rather on the covariance of country returns with the returns available elsewhere.

25. The interest rate on loans would have to be priced at high levels, which can cause financial distress for otherwise creditworthy borrowers.

26. The income *per capita* of Czechoslovakia at the time was only about one-third lower than that of France. In these countries the generational memory of the market is still there

27. A 10 percentage points higher average annual inflation rate between 1960 and 1990 was associated with a 0.2 to 0.3 percentage point lower average annual growth rate of real GDP over the same period.

28. This argument also favours the use of tax-based income policies (like the Polish PPWW) so as to prevent the decapitalisation of enterprises.



29. To put it trivially, the price of electricity may be brought in line with, say, cost recovery levels, in one month, one year, two years, or never.

30. Of course there is always the theoretical possibility of a highly credible, coherently designed and consistently implemented gradual programme. However, there are not many successful historical experiences of the kind.

31. Pinto and Van Wijnbergen (1994).

32. Frydman, Grey and Rapaczynski (1996).

33. A recent extreme example of the sort is New Zealand's Fiscal Responsibility Act.

34. It seems that it is *de facto*, rather than *de jure* independence that matters (see Cukierman (1992) and Bruno (1994)).

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## ENDNOTES

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<sup>1</sup> A good or service is non-rival if its use by one agent does not affect its availability to other agents (that is, if the marginal cost of making it available to additional agents is zero).

<sup>2</sup> A good or service is non-excludable if it is prohibitively costly to restrict access to it.

<sup>3</sup> The former Czechoslovakia already had a tradition of fiscal conservatism while others like the former Yugoslavia had experienced high inflation for over a decade and yet others like the countries of the FSU and Bulgaria showed pervasive repressed inflation - manifested in shortages and an acute monetary overhang. On the external debt front, most countries of the region - with the exceptions of Bulgaria, FYR of Macedonia, Hungary, Poland and Russia - started their transitions virtually free from foreign debt. Of the heavily indebted countries only Hungary continued to honour its external debt commitments.

<sup>4</sup> See Coase (1937).

<sup>5</sup> A (global) systemic failure like the Great Depression is an obvious exception, although even there, government action or inaction at the very least aggravated the situation.

<sup>6</sup> The state in this context encompasses the central and local governments, the central bank, and the public enterprises.

<sup>7</sup> Note that this happened in an advanced transition country like Hungary, which has a banking code guided by Basle - like adequacy ratios and better bank oversight standards than most other transition countries. Of course, the American Saving and Loan crisis reminds us that large-scale financial shambles are by no means confined to developing countries and transition economies.

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<sup>8</sup> The grant could be contingent, with full servicing of the debt only waved under specified uncertain circumstances. Option pricing methods would have to be used to value such contingent claims on the government.

<sup>9</sup> For a more detailed explanation of the concept of the ERT, see European Bank for Reconstruction and Development (1993), pp.50-51.

<sup>10</sup> The country simulations are based on a successful private sector project co-financed by the EBRD in Hungary. The calculations were performed by means of a variant of the soft-ware “Measuring Effective Taxation of Enterprise” (Dunn and Pellecchio (1990)). The information on the specific conventions to calculate tax returns in each country was obtained from the booklet “Taxation in eastern Europe, 1995” (Deloitte, Touche Tohmatsu International (1995)). These conventions include: whether historical cost or replacement cost accounting is used to cost-out input inventories and depreciation allowances; whether interest on debt is deductible from taxable profits; whether or not distributed dividends are subject to taxation; whether losses can be carried over and for how many years.

<sup>11</sup> “Shoe leather” refers to frequent trips to the bank so that as little money as possible needs to be held in one’s pocket; “menu costs” refers to the frequent relabelling of prices in restaurants, shops etc.

<sup>12</sup> Real depreciation of the currency means a decrease of the relative price of non-traded goods to traded goods.

<sup>13</sup> See Pindyck and Solimano (1993).



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<sup>14</sup> Cumulative FDI *per capita* to Ukraine during 1989-94 was only US\$ 9 versus an average of US\$ 44 for the region and a maximum of US\$ 671 for Hungary.

<sup>15</sup> Assume that annual inflation is running at 100 per cent and wages are fully adjusted for past inflation every twelve months. If the indexation period were halved to every six months, the inflation rate would have to increase sufficiently to prevent average monthly real wages from rising sharply. See Pazos (1990).

<sup>16</sup> The term “insurance” is hardly descriptive. A worker gets paid a contingent benefit (contingent on being unemployed). There is no experience rating for individual workers and only in some countries (like the USA) is there (partial) experience rating for individual firms. Even in the aggregate, there is no necessary (actuarial) link between total contributions (by workers and employers) and total unemployment benefits.

<sup>17</sup> Compulsory unemployment insurance can mitigate the adverse selection problem; it does nothing to reduce the moral hazard problem.

<sup>18</sup> See Cardoso (1992), Kane and Morisett (1993) and Cardoso *et al* (1995).

<sup>19</sup> See Corden (1990).

<sup>20</sup>  $x$  denotes exports,  $m$  denotes import-competing and  $n$  denotes non-traded.

<sup>21</sup> Strictly speaking, with limited liability, the rate of return to equity in sector  $j$  is  $\max \{0, \mathbf{q}_j\}$ . Our simulations allow for this, but we omitted it in the text to avoid unnecessary clutter.

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<sup>22</sup> “Default” on equity simply means that the net rate of return is negative, or the gross rate of return  $q_i$  is less than 1.

<sup>23</sup> The Lankes-Venables (1996) survey shows that the proportion of greenfield investments in their group I (Czech Rep., Hungary) 38% whereas it is only 32% in their group II and 30% in their group III, which corroborates our results (their groups have been ranked using transition indicators).

<sup>24</sup> The means and variances of country return used in Chart IV.1 are from a different (albeit similar in spirit) simulation study than the one considered in Sections IV.A and B. The simulations underlying Chart IV.1 consider only two sectors per country (a traded and a non-traded sector) but include a larger number of countries. Unlike the simulations of Sections IV.A and B, those generating Chart IV.1 include a direct, inflation tax-like adverse effect of inflation on enterprise performance. For details see Buiter and Lago (1996). Note that a proper measure of risk would not be based on the variance, but rather on the covariance of country returns with the returns available elsewhere.

<sup>25</sup> The interest rate on loans would have to be priced at high levels, which can cause financial distress for otherwise creditworthy borrowers.

<sup>26</sup> The income *per capita* of Czechoslovakia at the time was only about one-third lower than that of France. In these countries the generational memory of the market is still there

<sup>27</sup> A 10 percentage points higher average annual inflation rate between 1960 and 1990 was associated with a 0.2 to 0.3 percentage point lower average annual growth rate of real GDP over the same period.

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<sup>28</sup> This argument also favours the use of tax-based income policies (like the Polish PPWW) so as to prevent the decapitalisation of enterprises.

<sup>29</sup> To put it trivially, the price of electricity may be brought in line with, say, cost recovery levels, in one month, one year, two years, or never.

<sup>30</sup> Of course there is always the theoretical possibility of a highly credible, coherently designed and consistently implemented gradual programme. However, successful historical experiences of the kind are not many.

<sup>31</sup> Pinto and Van Wijnbergen (1994).

<sup>32</sup> Frydman, Grey and Rapaczynski (1996).

<sup>33</sup> A recent extreme example of the sort is New Zealand's Fiscal Responsibility Act.

<sup>34</sup> It seems that it is *de facto*, rather than *de jure* independence that matters (see Cukierman (1992) and Bruno (1994)).