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Research in Progress 13

THE INVESTMENT DECLINE IN TRANSITION ECONOMIES: POLICY VERSUS NON-POLICY FACTORS

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The Investment Decline in Transition Economies: Policy versus Non-Policy Factors

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This study has been prepared within UNU/WIDER research on the Transition Strategies, Alternatives and Outcomes (Economic Theories and Strategies of the Transition), which is co-directed by Professor Giovanni Andrea Cornia and Professor Vladimir Popov.

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ABSTRACT

All centrally planned economies suffered from over-investment. Due to low capital productivity, reasonable growth rates in output could be maintained only with high investment/GDP ratios. Nevertheless, the sharp reduction in investment during transformational recession and its slow growth during subsequent recovery are viewed as negative phenomena, since transition economies offer numerous opportunities to increase output with relatively small targeted investment.

This paper seeks to develop the hypothesis that the performance of aggregate investment during transition is a result of the impact of initial conditions, the external environment and policy-related factors. Strong evidence is found for the argument that the reduction of output and investment observed in most post-communist countries is associated with the supply-side recession, which in turn is linked mostly to the initial conditions, such as the level of development (GDP per capita) and pre-transition disproportions in industrial structure and trade patterns.

However, declines in investment/GDP ratios, i.e more pronounced declines in investment as compared to GDP, may be only partially explained by the initial distortions in trade and in industrial structure. Equally important are such factors as the unfavourable external environment, as measured by changes in the current account balance, and macroeconomic policy developments, as measured by changes in government budget deficits. Predictably, progress in liberalisation does not have any impact on patterns of change in investment. The unexpected result is that investment changes do not seem to depend on rates of inflation.

1. Introduction: review of the literature and goals of the paper

With the exception of China and Vietnam, all former socialist economies have experienced a recession associated with market-type reforms. In East European countries the reduction in output lasted for three or four years and ranged from 20% to 30%, while in some CIS countries output has continued to fall for seven years in a row and is now less than 50% of the pre-downturn level. The decline in investment during the transformational recession has usually been sharper than the decline in output, so that the share of investment in GDP also dropped, as generally happens during 'normal' cyclical recessions[1] (fig. 1).

Given the over-investment in all centrally planned economies (CPEs), the decline in investment/GDP ratios might be considered a desirable development. Indeed, an initial hope was that the transition to the market would allow countries to reap 'the marketization dividend', part of which was expected to come in the form of higher capital productivity that should have allowed economies to support the same growth rates at lower levels of investment. This may be happening already in those East European countries which reached the lowest point of the recession several years ago and which are now enjoying economic recovery. For instance, Poland, the first country in Eastern Europe (EE) and the former Soviet Union (FSU) to step on the road to recovery (the recession bottomed out in 1992), had by 1996 become one of the most rapidly growing European economies despite the relatively low share of investment in GDP of 16-20% in 1993-96, compared to 19-39% in the 1970s and 1980s (IMF 1996).

However, all the relevant literature considers the fall in the share of investment in GDP among transition economies as a negative rather than a positive development. This is hardly surprising, since most transition economies, especially following the transformational recession, exhibit per capita GDPs at the level of low and middle income developing countries and face the pressing need to catch up with the developed world. Economists and policy makers would definitely prefer to reap the benefits of greater capital productivity in the form of higher growth rates with the same high investment/GDP ratios that existed in the CPEs, rather than in the form of moderate growth rates sustained through lower investment/GDP ratios. Besides, the belief is that in the economies in transition there are numerous opportunities to raise output dramatically with relatively small targeted investments in restructuring, and it is disappointing to miss these opportunities by allowing unrestructured capacity to remain idle.[2]

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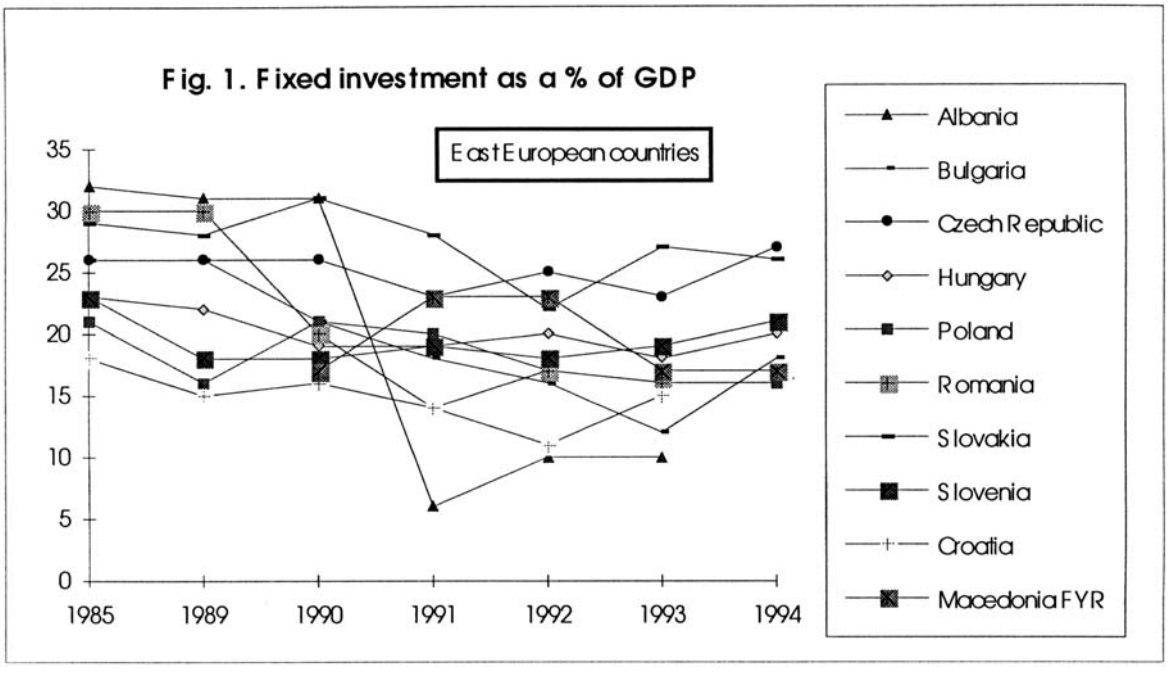
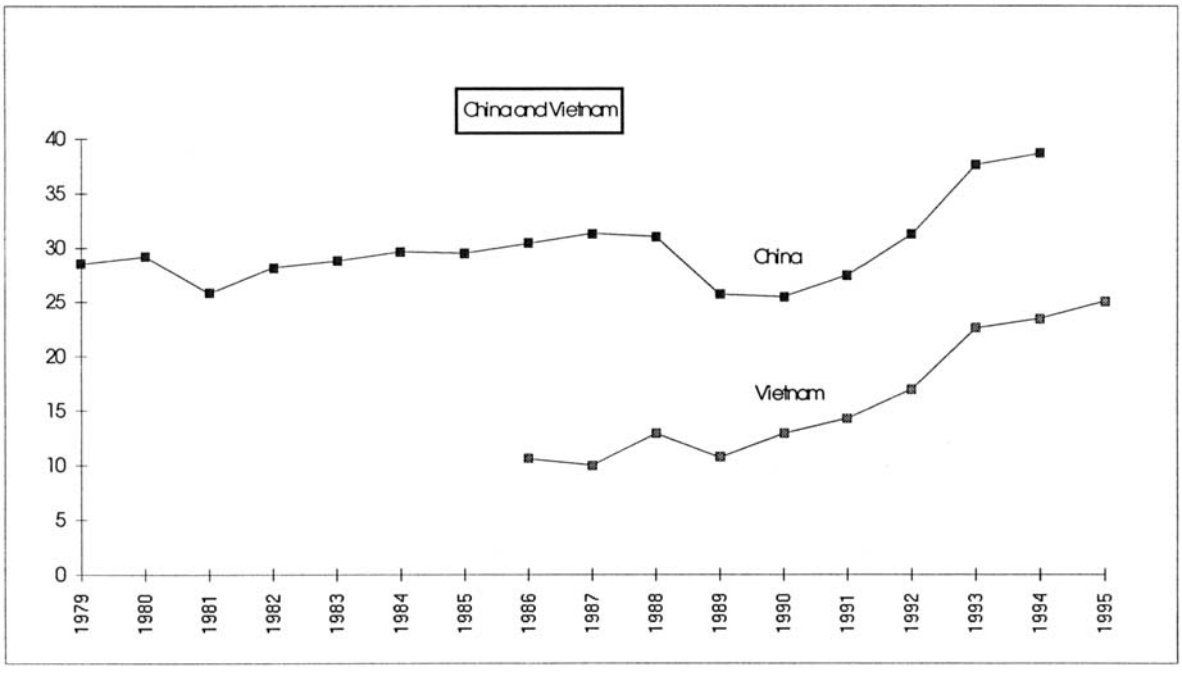
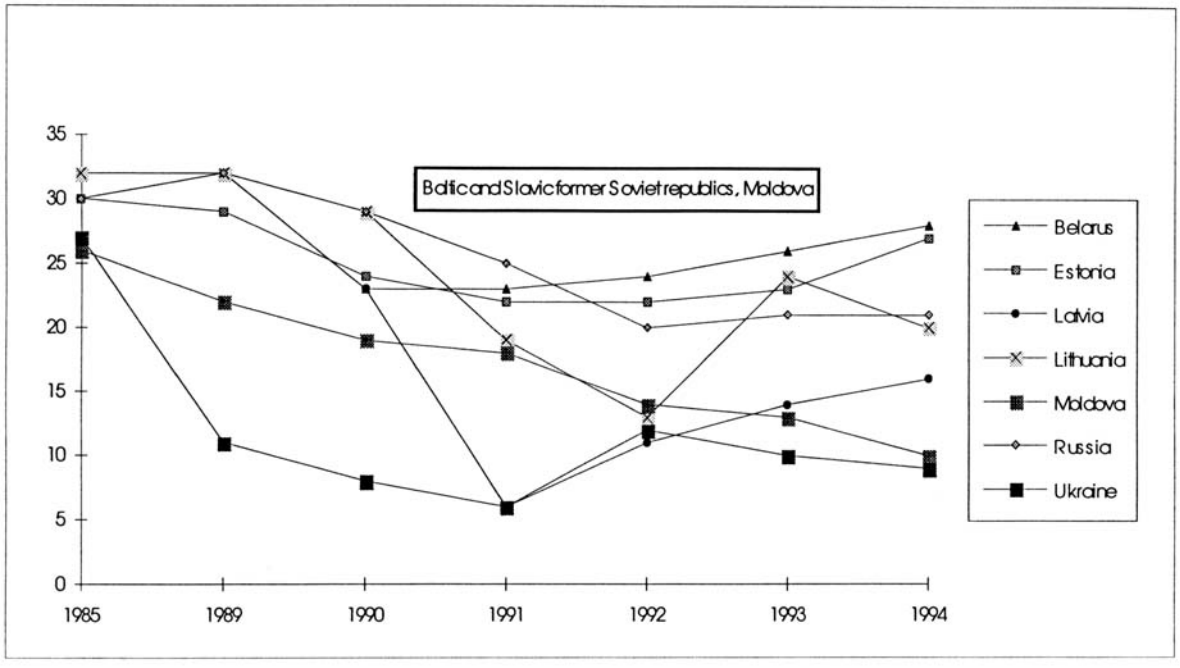
[1] Investment in this paper are defined as investment in fixed capital stock only, without investment in inventories, since the value of the latter is affected strongly by changes in inflation rate. In some transition economies, which experienced the rise in inflation from one digits to quadruple digits, the share of change in inventories in particular years amounted up to 50% of GDP. These numbers obviously reflect the deficiencies of statistics rather than the real changes in the structure of GDP.

[2] The theoretical link between investment and growth is not crystal clear. In the neo-classical growth models based on the production function, the increase in the investment rate, while raising the medium term growth rate, has no long-term effect on the growth rate of output since it is assumed that the acceleration of capital expansion would be neutralised by the diminishing capital returns. However, in recent endogenous growth models, which assume that improvements in technology are not completely disembodied (i.e. require an increase in capital inputs to be implemented), higher investment ratios lead to higher long-term growth rates (see Oxelheim 1996, pages 38-40). The latter models are more consistent with the empirical studies which suggest a strong link between investment/GDP ratios and growth. Besides, the frequent argument is that, in





the unique situation in transition economies, new capital investment may have greater than normal returns because (1) they can complement valuable existing assets, such as human capital, which are now in excess supply, and (2) they can initially enjoy scarcity rents because this would differ from the inherited distorted capital stock in quality and sectoral allocation (EBRD 1995).


Baltic and Slavic former Soviet republics, Moldova
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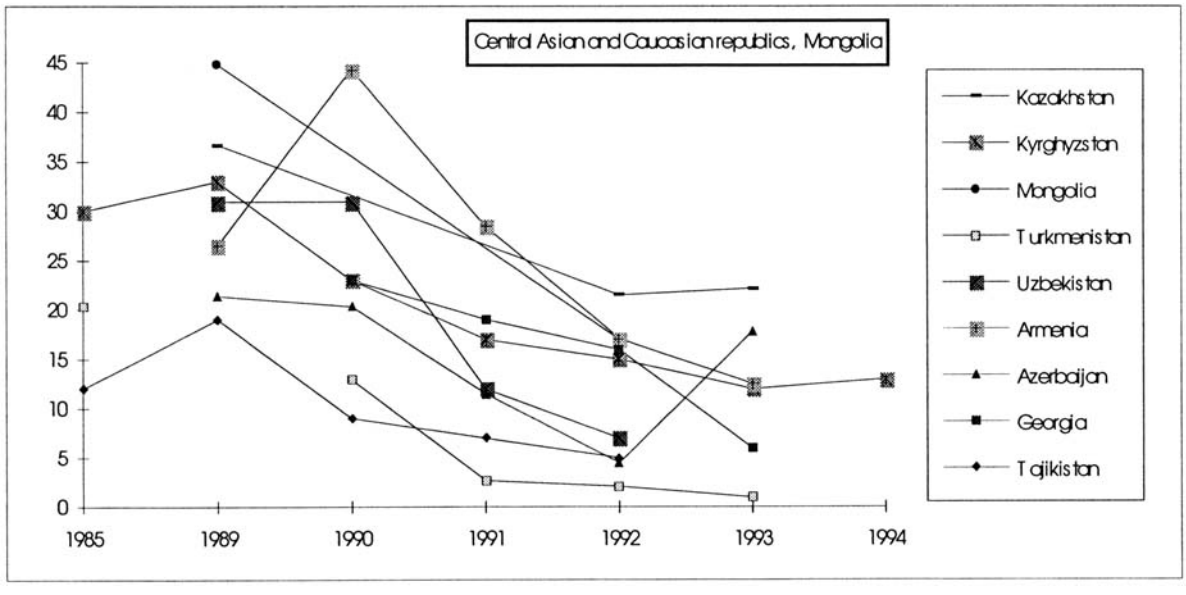
Central Asian and Caucasian republics, Mongolia
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Kazakhstan
Kyrghyzstan
Mongolia
Turkmenistan
Uzbekistan
Armenia
Azerbaijan
Georgia
Tajikistan

During transition, the Chinese and Vietnamese reform experience of a substantial rise in investment/GDP ratios above the levels which existed in the CPEs[3] is in sharp contrast to the decline observed in most other transition economies (table 1A, fig. 1). This rise obviously contributed to the acceleration of growth in China and Vietnam following the reforms.

What are the reasons for the decline in investment and the share of investment in GDP that occurred during transition? Why have the patterns of this decline varied from country to country? How have China and Vietnam managed to avoid the decline? What was the impact of non-policy and policy-related factors, i.e. to what extent was this decline unavoidable and to what extent can it be blamed on mistaken policy?

These questions remain largely unanswered, as do the closely related and more general questions concerning the reasons for the transformational recession and the differing magnitudes in the decline or increase in output during transition.

One view, usually referred to as Keynesian, is that transformational recession was caused by the reduction of demand that occurred during the liberalisation of prices, the introduction of convertibility and the subsequent stabilisation. This approach considers recession as a demand-pull phenomenon and the result of overshooting. It is said to be caused by the demand shock which was generated by the transition to the market and by the restrictions imposed by fiscal and monetary authorities (Amsden, Kochanowicz and Taylor 1994, McKinnon 1994, Sapir 1994). It has been argued, for instance, that the impact of demand-side factors on output decline in Poland has been much more pronounced than the impact of supply-side factors (Rosati 1994).

Investment drops in the framework of this approach are explained by the accelerator mechanism: a reduction in income inevitably generates an even greater reduction in investment since the capital stock has to be adjusted to the new, lower levels of output. Because the capital/output ratio is greater than 1 (in fact it is between 2 and 3), the reduction in output should lead to a corresponding reduction in the capital stock that, as a percentage of GDP, would be higher than the reduction in GDP itself. Hence, the decline in the share of investment in GDP (see Rostowski 1995 for details) widely observed in transition economies.

The demand-side explanation, however, is not completely consistent with some basic stylised facts. While in some EE countries, like Poland, demand-pull factors have played an important role (Kolodko and Nuti 1997), in most transition economies the inflation immediately following price deregulation was by no means insignificant (several hundred percent or more). It was largely of monetary origin and was caused mostly by demand-pull factors rather than cost-push factors. On the one hand, it is doubtful whether inflation at a level above several dozen percent per year can be caused by cost-push factors alone. On the other hand, there is evidence that the rate of the increase in prices (with a lag of several

[3] The share of investment in GDP during the reforms rose by nearly one half in China, from 27% in 1978 to 39% in 1994, whereas in Vietnam it more than doubled in just five years, though from a rather low initial base, from 11% in 1989 to 24-25% in 1994-95 (see table 1A).

months) in transition economies which experienced high inflation was strongly correlated with the rate of change in the money supply, whereas the rate of change in output was not.[4]

Moreover, the changes in investment/GDP ratios in some cases preceded the changes in output during the recession and the subsequent recovery (Albania, Latvia, Lithuania); in other cases these changes occurred simultaneously, and there were even cases in which the sequence of changes was counter-cyclical (Belarus, Macedonia, Poland, see table 1A, fig. 1). These patterns obviously do not conform well with the accelerator theory (EBRD 1995, pp. 71-73). On a sectoral level, in quite a number of instances investment was growing in sectors with declining output, and this, once again, is not completely consistent with the demand-side explanation (see Rostowski 1995; EBRD 1995; Cornia, et al. 1996).

Another view is that the decline in investment and investment/GDP ratios should be attributed to a sharp drop in savings during the transition. In the CPEs, the savings of enterprises were normally very high due to conscious decisions made by planners about profit distribution, while personal savings, though not directly regulated by the planners, were high as well due to so-called forced savings, or monetary overhang, which was substantial in many countries. The dismantling of central planning and the deregulation of prices deprived national governments of the means to control enterprise savings directly and wiped out the previous non-voluntary savings of enterprises and individuals. As a result, savings as a proportion of GDP fell in most countries, and this quite predictably created problems for the financing of investment. In fact, as the available evidence suggests, domestic savings rates are highly correlated with investment/GDP ratios for all countries, including transition economies (Cornia, et al. 1996).

However, some countries (the Visegrad group), by attracting large amounts of foreign funds (including but not restricted to foreign direct investment), managed to limit declines in investment/GDP ratios (they were less pronounced than was the reduction of the share of savings in GDP). Others (Russia and the Baltic States), in contrast, experienced falls in investment/GDP ratios that were relatively greater than the drops in savings due to capital flight (Cornia, et al. 1996). In other words, changes in savings do not always explain changes in investment, and even when they do there is still a need to explain different patterns of change in the savings rate itself.

In addition, savings in the above mentioned model are defined as GDP, minus private and public consumption (i.e. they are equal to investment, plus any surplus on the current account), and do not include that part of private savings used to finance budgetary deficits. In reality, total private savings were usually higher, but a portion of these was absorbed by rising government budget deficits. Since government-financed investment (initially high in all former socialist countries) generally decreased during the transition, growing government budget deficits were used to finance public consumption rather than public investment and simultaneously contributed to the crowding out of private investment. The savings-investment approach thus does not take into account the negative impact of policy-related factors (widening government budget deficits) on investment.

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[4] See (Koen and Marrese 1995) and (Popov 1996) for a discussion of whether the Russian inflation was cost-push or demand-pull.

The explanation suggested in this paper for the decline in investment and investment/GDP ratios is based on the most conventional approach to the transformational recession: it is viewed as a supply-side phenomenon and as a structural adjustment process resulting from the need to overcome disproportions inherited from the CPEs and to reallocate resources in a way compatible with the new market requirements. The supply-side approach is sometimes regarded as a neo-classical one,[5] though it may be more accurately described as a lower common denominator among all transition economists.[6] The supply-side explanation implies that the reallocation of resources (restructuring) due to market imperfections is associated with the temporary loss of output. Thus, the decline in the production of non-competitive enterprises and industries is not offset immediately by an increase in the production of competitive industries and enterprises. Similarly, the investment decline in the former is not counterbalanced by investment increases in the latter due to barriers to capital and labour flows such as poorly developed banking systems and securities markets, uncertain property rights, the lack of easily enforceable and commonly accepted bankruptcy and liquidation procedures, the underdevelopment of land markets, housing markets and labour market infrastructure, and so on.

2. Conceptual framework

The differing performance during transition is associated with two broad groups of factors: so-called objective factors, i.e. mostly the disproportions inherited from the centrally planned economy that need to be dealt with during restructuring, and government economic policy, which may aggravate the recession or help to overcome it.

The current debate focuses on the second group of factors, i.e. on the issue of 'good' or 'bad' economic policy. This is understandable, since the objective factors are beyond the reach of policy makers, at least in the short term. However, there is growing evidence that the uneven performance of transition economies is due not so much to right and wrong policies, but rather to non-policy factors, such as the initial conditions and the external environment. Below we discuss briefly the impact of non-policy and policy-related factors.

Defence expenditure and the need for conversion. This is perhaps one of the most obvious cases of inevitable restructuring leading to the temporary decline of output, though it is not associated with the transition to the market per se, but with a variety of political

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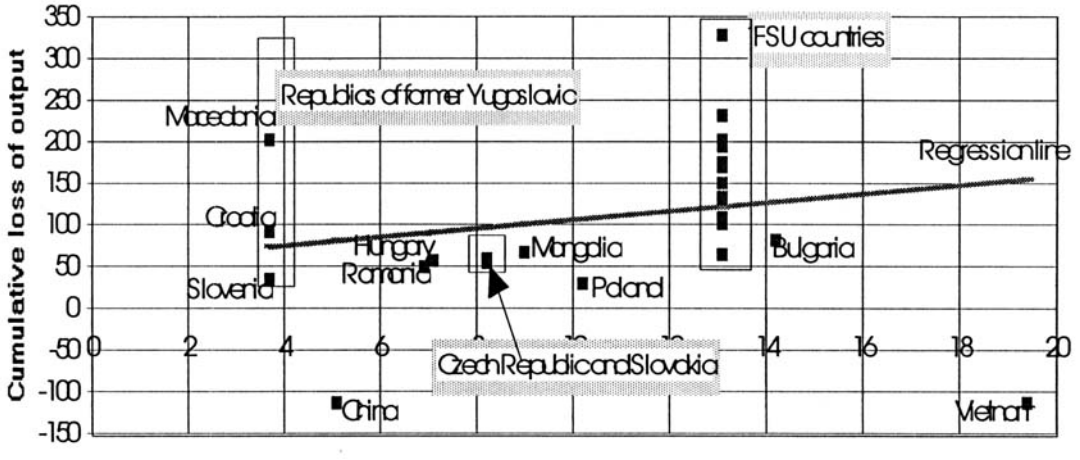
[5] It is argued, for instance (see Ellman 1993), that from the neo-classical perspective transformational recession originates from market imperfections, such as the perverse behaviour of state-owned enterprises and may be aggravated by irresponsible macroeconomic policies (high inflation) and slow structural reforms (such as privatization).

[6] Kornai (1994), for example, puts forward at least five general reasons for the transformational recession:
(1) The need for enterprises to adjust to the replacement of a sellers market by a buyers market causes the reduction of output even when relative prices do not change.
(2) The transformation of the real structure of the economy resulting from the change in relative prices.
(3) The disruption of co-ordination resulting from the transition from bureaucratic to market institutions.
(4) The hardening of the budget constraints of firms, leading to bankruptcies and cuts in output.
(5) The backwardness of the financial sector, posing difficulties for the proper operation of market stimuli.
While some of these factors overlap and others deserve a closer scrutiny and should be broken down into sub-factors, none of them depends on the transitional path chosen and can be eliminated by government policy in the short and medium term.

reasons ranging from overcoming the effects of the cold war to democratisation in the post-communist countries. In one way or another, it seems that in most socialist countries (with the probable exception of the former Yugoslav republics), defence expenditure was abnormally high – higher than it was in similar market economies (fig. 2). The reduction of this expenditure and the resulting conversion of defence enterprises proved to be a harder task than expected: declines in defence output were not offset by increases in non-defence output.

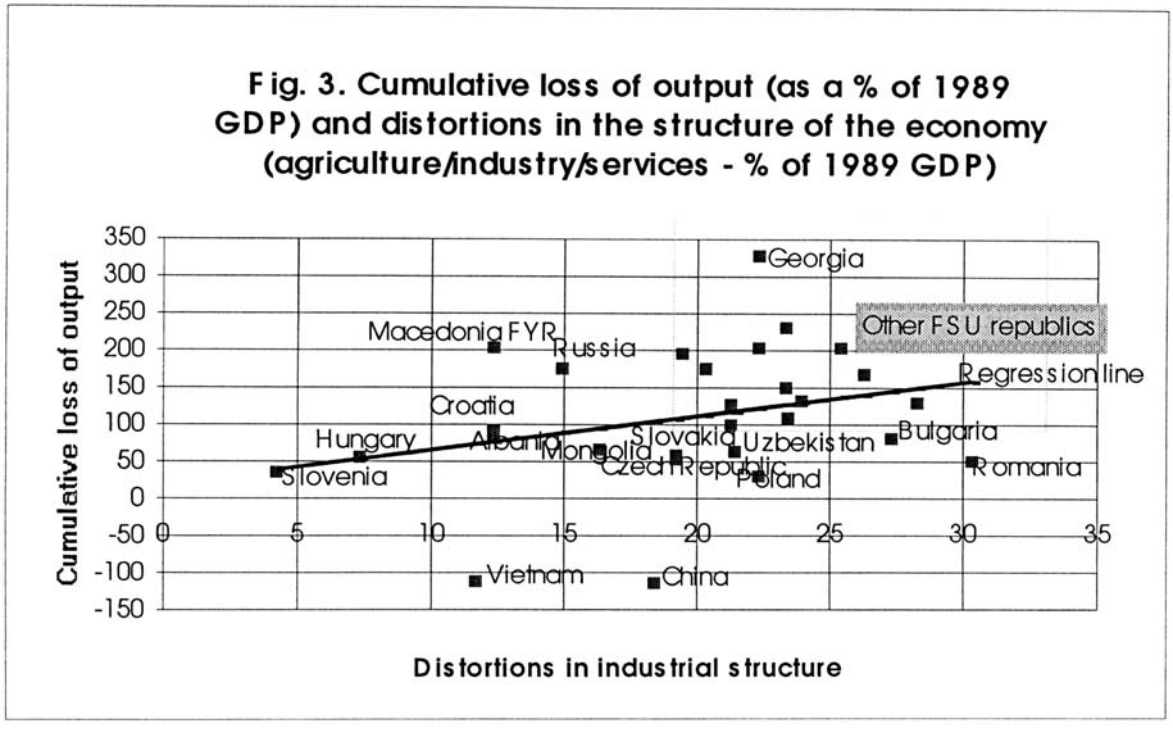
It is reasonable to assume that part of the observed differences in the performance of the former socialist countries during the transition (the magnitude of the decline/increase in output) is explained by the uneven degree of militarisation of these economies on the eve of transition. Though there are obvious problems with the data (defence expenditure was neither reported, nor estimated for the republics of the former Yugoslavia, the USSR and Czechoslovakia), there appears to be a weak correlation between the loss/gain of output immediately after reforms and the level of defence expenditure (fig. 2). Some inconsistencies, however, are striking. Thus, China and Vietnam experienced similar increases in output in the first five years of reforms, though their defence expenditure as a percentage of GDP differed by a factor of three (fig. 2).

Fig. 2. Cumulative loss of output during transformational recession (as a % of pre-recession GDP) and the share of defence expenditure in GDP in 1985, %



Distortions in industrial structure. It is well known that all CPEs were over-industrialised at the expense of the underdevelopment of the service sector, especially the trade and finance sectors. The reallocation of resources from industry to services was one of the major reasons for the transformational recession, and it is logical to assume that differences in the decline of output may be partly attributed to variances in the degree of distortions in industrial structure. As fig. 3 suggests, there is a correlation between the magnitude of the recession and these distortions, measured as deviations in the shares of

industry, agriculture and services in GDP, as compared to 'normal' structure, defined as an average industrial structure for market economies with similar levels of per capita GDP.



The actual distortions were certainly much greater than the calculated deviations suggest because they also existed at a less aggregated level (within the industrial, agricultural and service sectors themselves). In the resource rich countries of the FSU, for instance, there was a huge productivity gap between relatively efficient mining and primary manufacturing and extremely inefficient and overdeveloped machine building (Popov 1996). While the share of industry in GDP in Russia before the transition was not so different from that of other countries, the share of resource industries (fuel, energy, metals) and engineering (machine building) in total industrial output was markedly higher. The data in table 1 show that even in 1993, after unfavourable price and output shifts, the share of engineering was still 20%. In 1990, however, engineering accounted for 46% of employment and 31% of output in the industrial sector, even more than in the most industrialised country of the Eastern bloc, Czechoslovakia (40% and 30%, respectively), and much more than in Poland (32 and 28%, respectively).[7] In contrast, in other republics the share of the machinery and equipment industries in total industrial employment in 1990 was only 38% (less than 30% if Ukraine and Belarus are excluded).

However, because of the difficulties of obtaining comparable data on national industrial structures, we limit ourselves for the time being to the analysis of disproportions at a very aggregated level only.

[7] The comparison is based on national statistics. The share of the machinery and equipment industries in total value added in manufacturing in 1992 was higher than one third only in Malaysia, Thailand, Singapore, and Japan (World Bank 1995, pp.172-3).

Table 1: Share of the industrial sector in GDP and share of resource industries and engineering in total industrial output, %

Country	Share of industry in GDP, 1991	Share of particular industries in total industrial output, 1993	
		Resource industries*	Engineering
Bulgaria	36	23	16
Croatia		**18	**12
Czech Republic	47	30	18
Hungary	29	25	16
Poland	36	29	21
Romania	40	24	19
Slovakia	53	36	16
Slovenia	40		
Estonia	35 (22)	20	9 (8)
Latvia	38	25	16
Lithuania	45	21	12
Belarus	(40)	(25)	(22)
Russia	39 (38)	46 (41)	20 (17)
Kazakhstan	(29)	(54)	(10)
Ukraine	(31)	48 (36)	16 (20)
Uzbekistan	(26)	(33)	(10)

* Fuel, energy, steel, non-ferrous metals.

** 1995.

Source: Economic Commission for Europe (1996); the data in brackets are taken from Statistical Handbook (1995).

External trade distortions. The degree of openness of socialist economies (the share of external trade in GDP) was quite different from the 'norm', i.e. from the degree of openness of market economies of comparable size and GDP per capita (fig. 4). Despite the popular belief, not all socialist economies were that closed. In many of them external trade was relatively larger than it was in similar market economies, if the trade with republics which later became independent states is taken into account. However, even allowing for this portion of domestic trade that became international after the transition, in most countries, including the majority of the former Soviet republics, trade was relatively underdeveloped. Only in the former republics of Yugoslavia and Czechoslovakia, Azerbaijan, Belarus, Hungary and Vietnam were the external trade/GDP ratios before transition significantly (6 to 20% of GDP) higher than they were in comparable market economies.

Other conditions being equal, countries with more well developed foreign trade should be expected to experience smaller reductions in output during transition (and foreign trade liberalisation) since large sectors of these economies were already somewhat exposed to international competition. However, other conditions were by no means equal, and a high degree of trade openness by itself was not always a positive phenomenon because trade flows were often distorted.

The greatest distortions existed in the trade among the former Soviet republics. The prices used in this trade were completely different from those on international markets (resource commodities were underpriced, while finished goods were overpriced). The shift to world market prices in interrepublican trade (immediate for the Baltic States in 1992 and gradual in the CIS in 1992-95) led to the virtual collapse of these trade flows. For Russia, for example, trade with the 'near abroad' decreased from about 13% of GDP in the late 1980s to only 4% in 1995-96 because the republics were not able to finance the trade deficits which emerged after prices approached the world market level.

The distortions in trade flows among socialist countries were much less severe because the prices used were not that different from world market prices. In Comecon, for instance, prices were calculated as a five-year moving average of world market prices. Nevertheless, some degree of distortion was definitely present, especially for non-resource products (so called 'soft goods') since the quality of these goods was usually inferior to that found on the world market. The same applies to part of the domestic trade in non-FSU socialist countries that later became international (trade within former Yugoslavia and Czechoslovakia).

In light of the above, the lack of correlation between the degree of external trade underdevelopment and the magnitude of transformational recession (fig. 5) should not be viewed as surprising since larger trade very often meant nothing more than higher distortions. Likewise, the lack of correlation between the magnitude of the reduction of output and the share of interrepublican trade in FSU countries (or the share of trade with socialist countries for other transition economies – figs. 5, 6) – may only mean that the impact of the greater volume of distorted trade was counterweighted by the greater overall trade openness.

There appears to be some correlation between the magnitude of the recession and the share of total distorted trade in GDP (interrepublican trade for FSU countries + 0.33* trade with socialist countries, including trade between the republics of the former Yugoslavia and Czechoslovakia)[8] - fig. 6. However, there is a good chance that the existence of such a relationship is due only to the fact that in the FSU countries with a greater share of distorted trade the reduction of output was generally larger than it was in EE countries; the correlation within these two groups of countries is weak or absent (fig. 7).

More convincing results may be obtained by linking the magnitude of the recession to the aggregate measure of trade distortions that combines the two indicators mentioned above (underdevelopment of external trade, plus the volume of distorted trade as a % of GDP) – fig. 8. There is a good correlation between these two variables, especially if the extreme cases of Georgia and Macedonia (where output collapse was obviously affected by wars) are excluded.[9]

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[8] The weight of 0.33 for trade with socialist countries has been chosen because it gives best correlation results. The interpretation may be that trade with socialist countries was three times less severely distorted than was trade within the FSU.

[9] Even without excluding these extreme cases, the regression statistics are quite satisfactory:
Output loss = 57 + 2.7 * All trade distortions (N = 28, Adjusted $R^2 = 0.19$, T-statistics in brackets).
(2.25) (2.74)

Fig. 4. Trade distortions and cumulative loss of GDP during transition

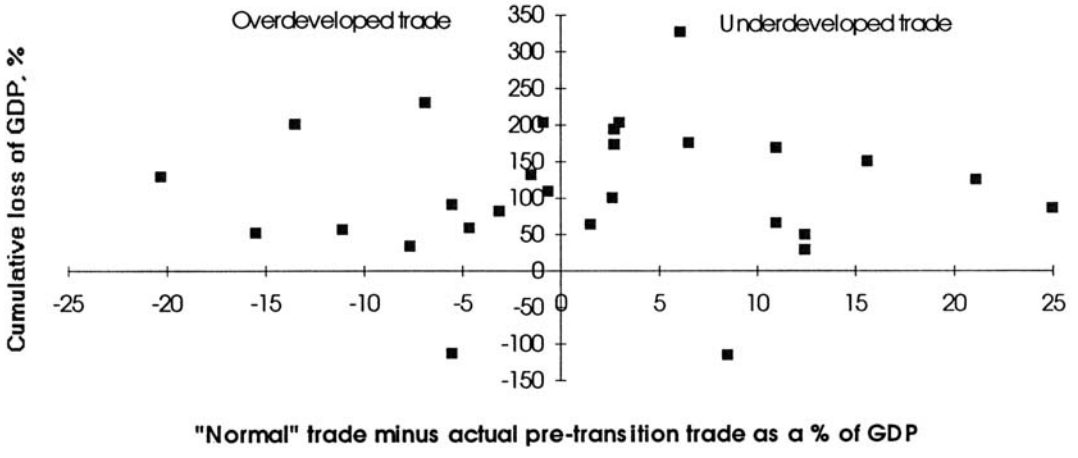


Fig. 5. Cumulative loss of output during transformational recession and the share of interrepublican trade in GDP of former Soviet republics

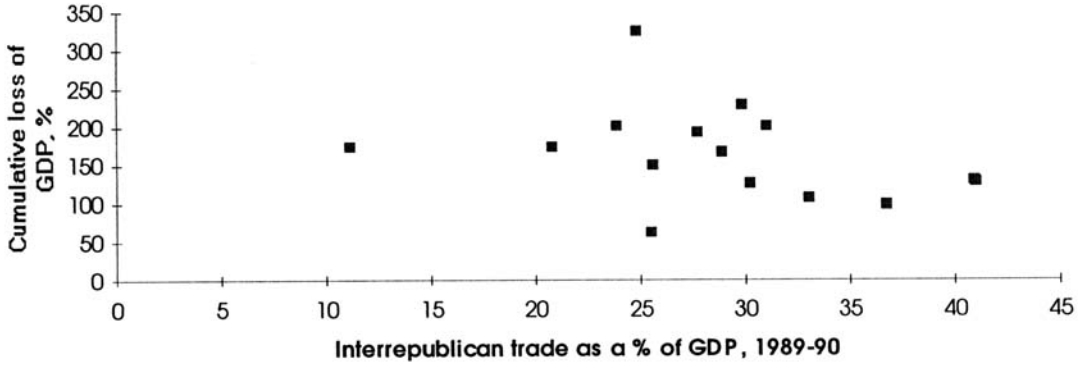


Fig. 6. Cumulative loss of output and trade with socialist countries as a % of GDP

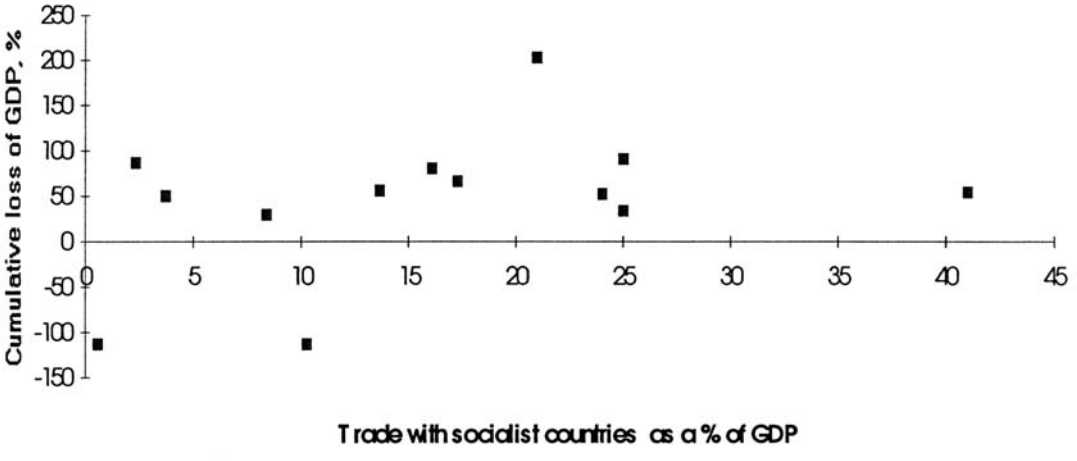
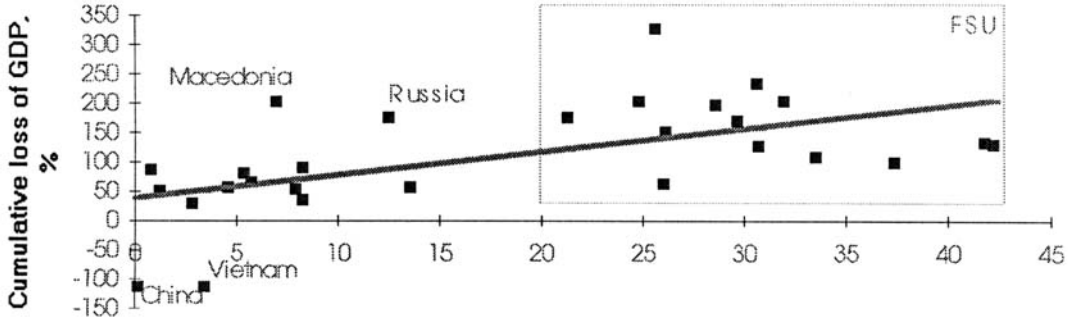


Fig. 7. Cumulative loss of GDP during transition and distorted trade as a % of GDP



Other distortions. These are mostly disproportions created by central planning at the microlevel, for instance, the disproportions associated with the size and specialisation of enterprises. Most enterprises in the CPEs were abnormally large and poorly specialised, they produced a wide variety of goods and services, which were often only distantly related to their mainstream production activities. These distortions resulted from the very nature of central planning: the physical inability of the planners to develop a balanced input/output model for many millions of products and thousands of production units and, hence, their conscious or unconscious attempts to promote grandeur and self-sufficiency at all production levels (Shmelev and Popov 1989). The problem is that these distortions are not easily quantifiable. One possible measure is the size of enterprises. It may be assumed that large enterprises face greater adjustment problems and have to undergo greater restructuring, which in turn leads to a greater reduction of output.

It seems at first glance that there may be evidence to support this hypothesis (fig. 9). Excluding extreme cases (Romania and the former Czechoslovakia), which may be associated with differences in industrial structure and differences in the definition of the 'enterprise', the magnitude of the reduction in output is positively related to the size of production units. However, part of the observed correlation is due to the 'advantages of backwardness effect' discussed below, because the size of the enterprises tends to increase with a higher level of development (GDP per capita) – fig. 10.

The advantages of backwardness. The conventional understanding of this term introduced by Gerschenkron[10] implies that countries with lower levels of economic development (lower GDP per capita) can benefit from the technological achievements and the experience of richer countries through international exchanges and hence may enjoy higher rates of growth that allow them to 'catch up' (converge) with the richer countries. With respect to transition economies, this general argument has an additional dimension. Because of distortions in infrastructure and other fixed capital stock created by decades of central planning, the magnitude of the needed restructuring was greater in the socialist economies with higher capital/output ratios, i.e. a higher level of economic development.

Distortions in industrial structure (militarisation, overindustrialisation, etc.) and distortions at the microlevel (the size and specialisation of enterprises) are more difficult to overcome, if they are embodied in fixed assets, and if these fixed assets are sizeable compared to GDP. It may be argued that in poor agricultural economies the relatively primitive fixed capital stock was less susceptible to distortions and, even if distorted, was not so large in comparison to GDP and investment as it was in more advanced industrialised countries. In the latter, capacity utilisation rates in industry have fallen during the transition to 43-74% (Economic Commission for Europe 1996, p.71; Russian Economic Barometer), i.e. up to half of all capacity became redundant and unusable without restructuring under the new market prices, which emerged after liberalisation. In contrast, in countries at a lower level of development and exhibiting lower capital/output ratios, the redundant capital stock and, hence, the magnitude of the needed restructuring were much smaller and easier to deal with. Because old production capacity was still usable (with no adjustments or perhaps with only minor adjustments), the larger part of investment could be used to create new production capacity and expand the existing production capacity.

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[10] See Blaug (1985).

This interpretation suggests, for instance, that Chinese reformers, in most cases, were not overburdened by the legacy of the CPE in the sense that they were not constrained by distorted infrastructure in industry and especially in agriculture. Chinese agricultural communes with very little fixed capital stock (except land) proved to be much more

Fig. 8. Cumulative loss of GDP during transition and all trade distortions as a % of GDP

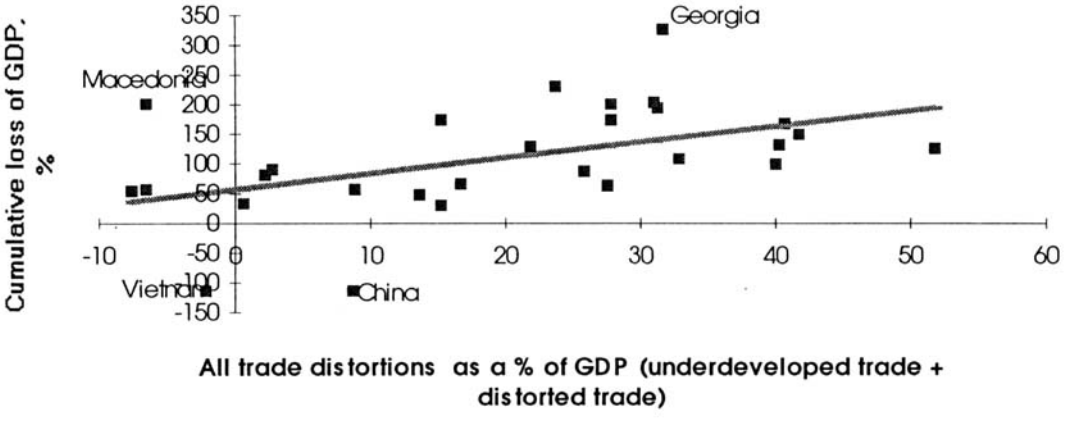
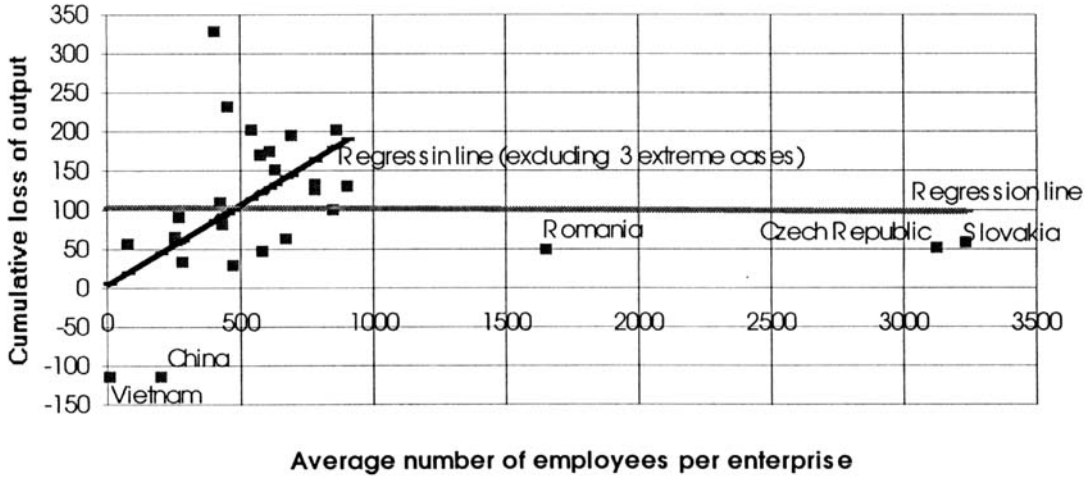


Fig. 9. Cumulative loss of output during transformational recession (as a % of pre-recession GDP) and average size of industrial enterprises in selected transition economies

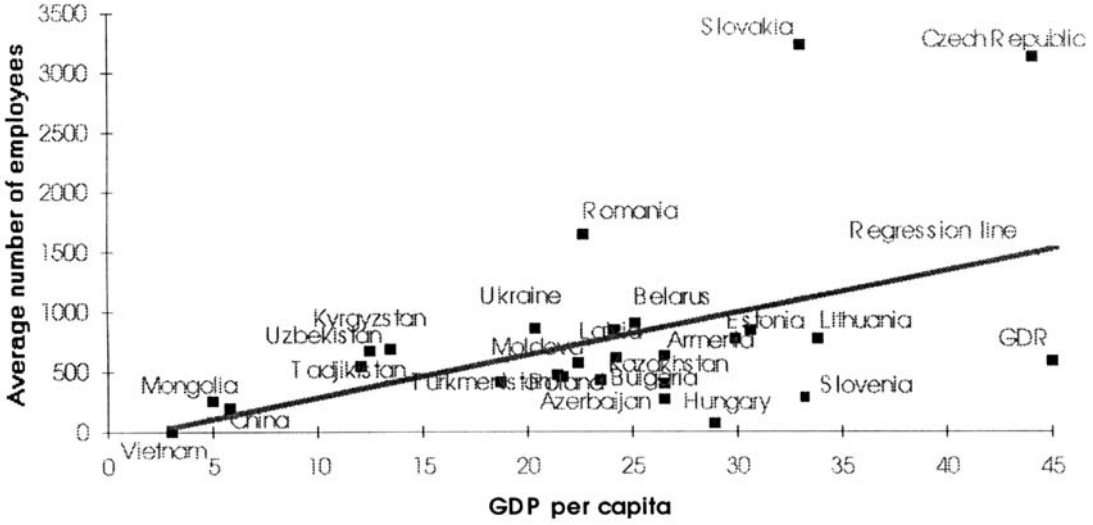


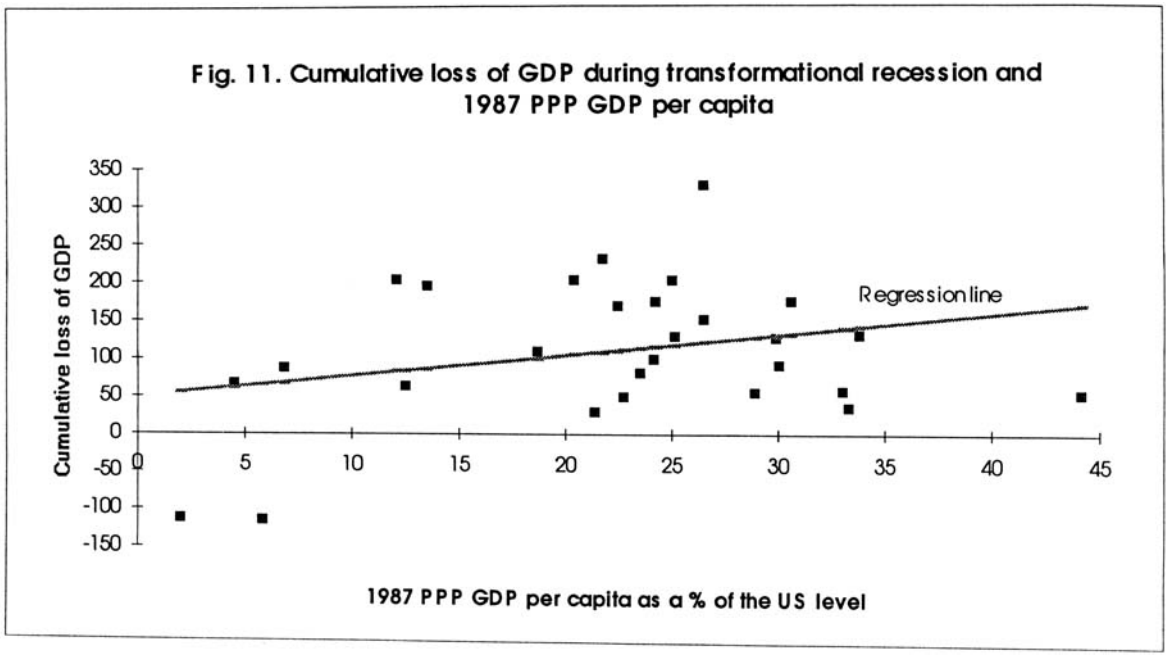
amenable to reform than were Soviet and East European collective and state farms with a huge super-centralised infrastructure poorly suited to family farming, whereas the township and village enterprises, which became the major growth sector of the Chinese economy, emerged mostly from scratch.

This argument is supported by the example of Vietnam, which followed a different reform path (the overnight deregulation of most prices and the unification of multiple and black-market exchange rates in March 1989), but which also managed to avoid transformational recession. It is also partially supported by the example of the two former Soviet Central Asian republics of Uzbekistan and Turkmenistan, which did not enjoy the advantages of backwardness and, thus, failed to avoid transformational recession under the more gradual reforms carried out by authoritarian regimes (table 2A).

On the other hand, it is well known that in China large state enterprises in heavy industry proved to be the bottleneck in the whole reform process. There is a correlation between the share of state enterprises in total output and the rates of economic growth by province: the larger the share of state enterprises in total provincial output, the lower the rates of growth. The East European countries, the Baltic States and, even more Russia and the CIS states, where CPEs existed for a longer time than elsewhere, entered the transition period with huge distortions in fixed capital stock, in contrast to China and Vietnam (and to Albania and Mongolia to some extent).

Fig. 10. Average number of employees per industrial enterprise (1986-91) and PPP GDP per capita as a % of the U.S. level (1987) in selected transition economies





The general picture, however, is somewhat less clear, since there appears to be only weak correlation between cumulative loss of output during recession and the level of GDP per capita (fig. 11).

Policy factors. Usually two crucial quantifiable policy factors are discussed: (1) the general progress in economic reform as measured by the EBRD liberalisation index and (2) the progress in the establishment of a stable macroeconomic environment for reform as measured by the rates of inflation. The central message of the recent 1996 World Development Report 'From Plan to Market' is that liberalisation and stabilisation work: 'consistent policies, combining liberalisation of markets, trade, and new business entry with reasonable price stability, can achieve a great deal - even in countries lacking clear property rights and strong market institutions' (World Bank 1996, p. 142). The evidence is provided by dividing all transition economies into four groups, depending on the degree of liberalisation, and demonstrating that advanced reformers are doing much better in terms of GDP change than are those that lag behind. It is also claimed that ongoing research indicates that these differences in performance continue to hold even if one controls for differences in countries' initial conditions, such as geography, sector structure, or initial macroeconomic imbalances (World Bank 1996, p. 29).

Other recent studies (De Melo, Denizer and Gelb 1995; Aslund, Boone and Johnson 1996) suggest that there is a positive relationship among economic performance (change in output), liberalisation and inflation, so that 'good policies' generally pay off: the advanced reformers – countries with a high liberalisation index and low inflation – normally experienced a relatively mild and short-lived transformational recession and enjoyed more rapid and more sound recovery than did 'inflation-prone procrastinators'.

The problem with these estimates is that the advanced reformers are mostly EE countries, which enjoyed better initial conditions at the start of the reforms (smaller distortions in industrial structure and trade) than did the FSU states. Once dummy variables, allowing for

geographical location and wars, are introduced in the regression equations, it turns out that they have greater explanatory power than do policy factors. The liberalisation index and inflation rates become insignificant once these dummy variables are included (Aslund, Boone and Johnson 1996).

Evaluating the impact of policy and non-policy factors. Preliminary attempts to separate non-policy from policy factors by running multiple regressions produce some statistically satisfactory and economically meaningful results (table 2). Though there is a positive relationship between the magnitude of output decline on the one hand and the liberalisation index and inflation on the other (R^2 = 0.48, equation 1), this disappears virtually completely once variables that characterise objective conditions are factored in. It is noteworthy that about 60% of the variations in the magnitude of the decline of output may be explained by only two dummy variables (both significant at the 1% level) that account for membership in the FSU and for wars (equation 2). It is even more remarkable that the addition of policy variables to the equation does not seem to make any difference: the correlation coefficient increases by only 1 percentage points when inflation is taken into consideration, and it even decreases by 2 percentage point when the liberalisation index is included; to make matters worse, the coefficient of the liberalisation index has the unexpected sign: the greater the liberalisation, the larger the decline of output (table 2, equations 3, 4) .

These results suggest that the usual argument linking the better performance of EE, especially the Central European countries (as compared to the FSU, especially the CIS countries), to better economic policies (greater liberalisation and lower inflation) does not necessarily hold. Indeed, the identification and decomposition of the 'FSU effect' may be carried out more effectively by bringing into the equation not policy variables, but non-policy factors, such as the relative size of the distortions in trade and industrial structure.

To avoid the multicolinearity problem, we have constructed an aggregate indicator of distortions (summing up all the distortions mentioned above, since they are expressed as a % of GDP). Plotting the points on the chart (fig. 12), one sees a fairly strong correlation between aggregate distortions in industrial and trade structure before transition and the subsequent performance during transition, as measured by the GDP change. Among countries with minor aggregate distortions (less than 30% of GDP) are three former Yugoslav republics (Slovenia, Croatia, Macedonia), the Czech and Slovak republics, Hungary, China and Vietnam. All these countries, with the exception of war-affected Macedonia, are doing better than are most other transition economies. On the other hand, among countries with most distorted economies (aggregate distortions of over 50% of GDP) we find all the former Soviet republics, except Russia (where aggregate distortions amounted to only 39% of GDP). In fact, aggregate distortions alone may explain about 17% of output variations during transition (table 2, equation 5) and 30% of variations if the economies affected by war are excluded.

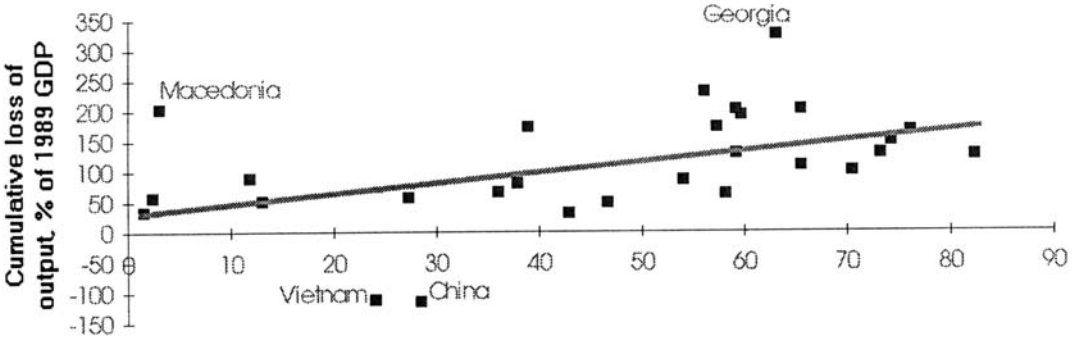
Taking into account the other two non-policy factors characterising the initial conditions, we obtain statistically sound and robust results: over 50% of the variations in performance may be explained by (1) the advantages of backwardness, (2) aggregate distortions, and (3) the war dummy variable (table 2, equation 7).

The addition of the FSU dummy to the equation leads to the absorption of the aggregate distortions variable (the FSU dummy thus plays the role of a proxy for distortions), while the impact of the level of economic development and war remains statistically significant (equation 8). If policy-related variables are added, they turn out to have the predicted signs, but the explanatory power of the regression does not increase very significantly, and the T-statistics deteriorate somewhat (table 2, equations 9-11). To put it differently, the observed differences in performance may be explained *mostly* by the unequal initial conditions, while the role of 'good policy' factors appears to be quite limited.

Investment and output declines. Declines in investment and investment/GDP ratios seem to be linked to the magnitude of the reduction in output. The countries in which recession was deeper and lasted longer experienced a greater fall in the share of investment in GDP (fig. 13). However, the correlation is not very strong,[11] suggesting that the determinants of investment behaviour may be somewhat different from the determinants of output.

[11] R^2 is equal to 0.34; for every 1 percentage point of output loss the share of investment decreases by 0.28% (significant at the 1% level).

Fig. 12. Cumulative decline of output during trasformational recession (as a % of 1989 GDP) and aggregate distortions in industrial structure and external trade before transitions as a % of GDP



Excluding 6 countries affected by wars

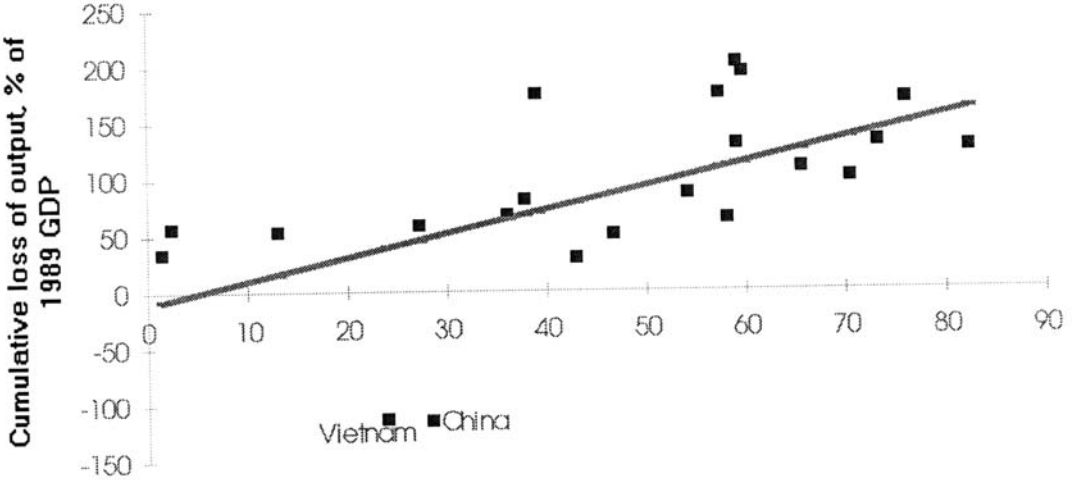


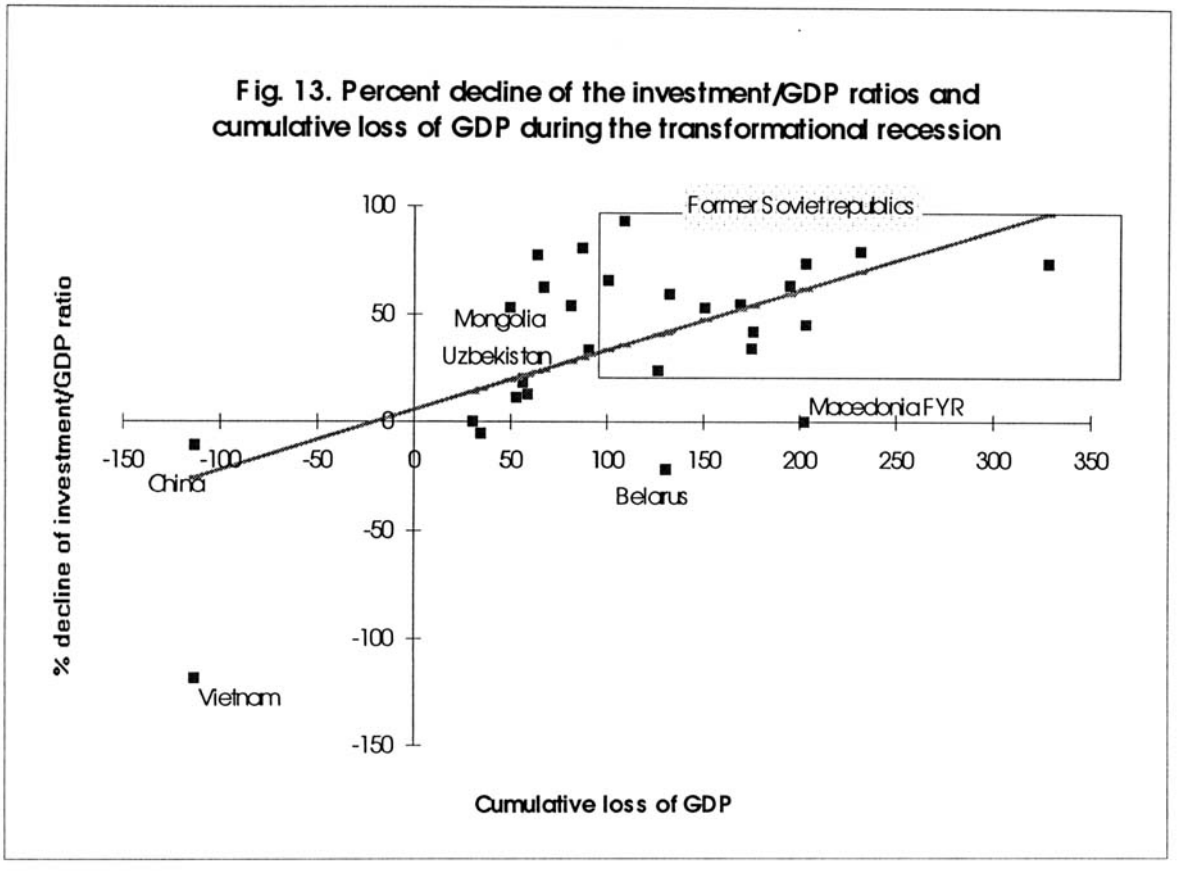
Table 2. Regression of cumulative output loss during transformational recession on non-policy and policy-related factors (T-statistics in brackets)

Equations/ Variables	1	2	3	4	5	6	7	8	9	10	11
Constant	107.17 (2.47)	29.93 (1.71)	19.25 (0.34)	14.14 (0.69)	28.82 (0.82)	-57.68 (-1.12)	-73.52 (-1.74)	-21.91 (-0.49)	43.14 (0.65)	-84.66 (-2.16)	0.47 (0.01)
Distortions, % of GDP*					1.76 (2.58)	1.98 (3.07)	1.98 (3.76)	0.22 (0.24)	0.82 (0.14)	1.64 (3.23)	0.92 (1.30)
1987 PPP GDP per capita, % of the US level						3.43 (2.19)	3.08 (2.41)	2.16 (1.74)	3.96 (3.14)	2.61 (2.17)	3.35 (2.62)
War dummy**	67.94 (1.89)	97.65 (3.43)	97.70 (3.37)	75.61 (2.36)			111.53 (3.70)	95.73 (3.37)	98.81 (3.45)	75.00 (2.33)	74.47 (2.40)
FSU dummy***		110.16 (4.71)	115.90 (3.08)	91.88 (3.48)				99.50 (2.36)			
Liberalisation index	-25.56 (-2.10)		3.22 (0.20)						-34.06 (-2.16)		-24.01 (-1.45)
Inflation, % a year, 1989-94, geometric average	0.25 (2.11)			0.17 (1.41)						0.24 (2.27)	0.17 (1.59)
Adjusted R^2	0.48	0.58	0.56	0.59	0.17	0.28	0.52	0.60	0.58	0.59	0.61

* Cumulative measure of distortions as a % of GDP equal to the sum of defence expenditure (minus 3% regarded as the 'normal' level), deviations in industrial structure and trade openness from the 'normal' level, the share of heavily distorted trade (among the FSU republics) and lightly distorted trade (with socialist countries) taken with a 33% weight.

** Equal to 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia, and Tajikistan and 0 for all other countries.

*** Equal to 1 for 15 former Soviet republics and 0 for all other countries.



3. Patterns and factors of change in investment during transition

Among all the previously discussed variables which influence the dynamics of output, only the indicators of distortions in industrial structure and trade have a certain amount of importance for an explanation of the performance of the share of investment in GDP, whereas other non-policy indicators (GDP per capita, the war dummy) and policy indicators (the liberalisation index and inflation) are not important (table 3). There is a correlation between the performance of investment/GDP ratios during transition and deviations in the share of industry, agriculture and services from the 'normal' level (fig. 14), as well as between investment/GDP ratios and distortions in the share of external trade in GDP (fig. 15).

Such a relationship is not unexpected. In fact it is consistent with the hypothesis of the supply-side recession: the greater the distortions in industrial structure and external trade before transition, the larger the sector of non-competitive enterprises which face difficulties during transition and are forced to cut investment (while competitive sectors are not able to boost investment to compensate for the falls in weak sectors). It is also understandable that the level of economic development does not influence investment/GDP ratios in any systematic way. The advantages of backwardness imply that growth in poorer countries may be achieved with relatively little investment, since the capital stock is less distorted and new investment is not wasted in the correction of the distortions.

Table 3. Regression of change in investment/GDP ratios (as a % of GDP) on non-policy and policy-related factors

Equations/ Variables	1	2	3	4	5	6	7
Constant	-0.23 (-0.07)	-2.67 (-0.47)	-0.01 (-0.00)	0.39 (0.10)	-8.27 (-0.90)	-1.13 (-0.28)	-12.73 (-1.21)
Distortions, % of GDP*	-0.22 (-3.19)	-0.22 (-3.02)	-0.22 (-3.13)	-0.26 (-2.18)	-0.15 (-1.47)	-0.23 (-3.18)	-0.14 (-1.37)
1987 PPP GDP per capita, % of the US level		0.10 (0.56)					
War dummy**			-1.00 (-0.24)				
FSU dummy***				2.46 (0.43)			
Liberalisation index					2.01 (0.95)		2.72 (1.20)
Inflation, % a year, 1989-94, geometric average						0.01 (0.52)	0.12 (0.91)
Adjusted R^2	0.25	0.23	0.23	0.23	0.25	0.23	0.24

* Cumulative measure of distortions as a % of GDP equal to the sum of defence expenditure (minus 3% regarded as 'normal' level), deviations in industrial structure and trade openness from the 'normal' level, the share of heavily distorted trade (among the FSU republics) and lightly distorted trade (with socialist countries) taken with a 33% weight.

** Equal to 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia, and Tajikistan and 0 for all other countries.

*** Equal to 1 for 15 former Soviet republics and 0 for all other countries.

Liberalisation should not necessarily cause increases (or slow down decreases) in investment/GDP ratios, because in the CPEs the share of investment in GDP was abnormally high. Even so, it should be noted that the liberalisation index is strongly correlated with distortions (r = -0.73), so it may well be that part of the impact of liberalisation is 'appropriated' by the indicator of distortions. However, it is more difficult to understand why inflation does not seem to have any impact on the investment/GDP ratios: the deterioration in the investment climate is usually thought to be a major negative consequence of inflation.

In any case, the patterns of change in investment seem to be influenced by factors other than those which explain the magnitude of the transformational recession, since adjusted coefficients of multiple correlation do not rise higher than 25% no matter what grouping of these factors is used (table 3, equations 1-3).

Fig. 14. Change in investment/GDP ratios and distortions in industrial structure, % of GDP

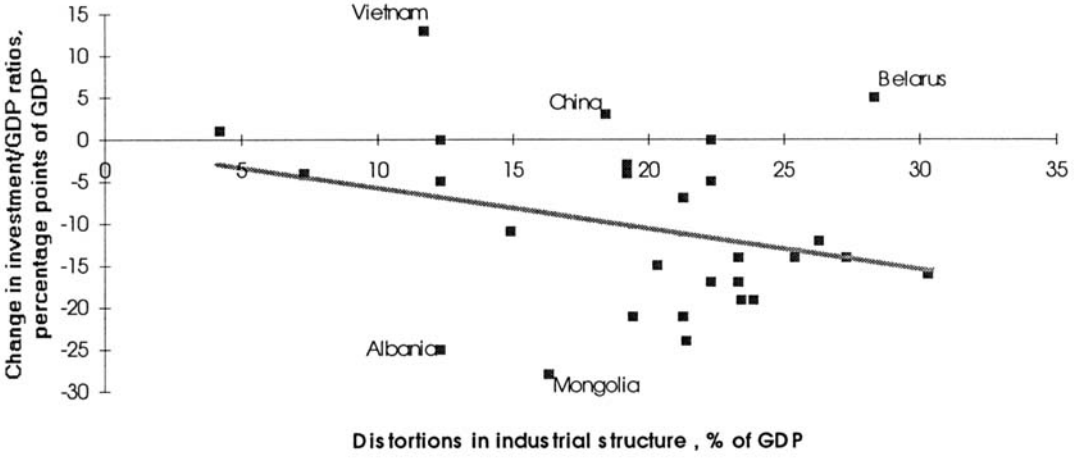
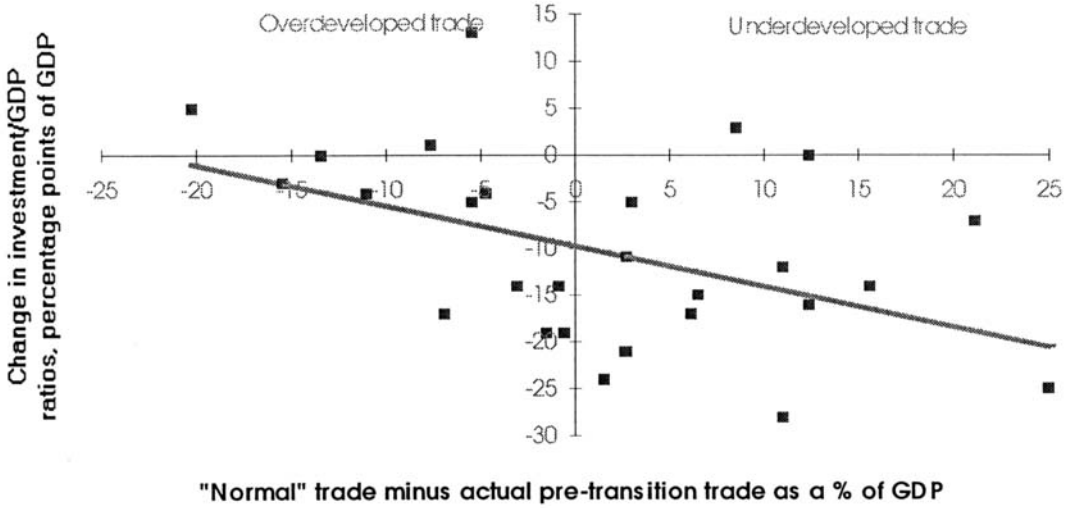


Fig. 15. Change in investment/GDP ratio during transition and trade distortions, % of GDP



We now turn to the examination of two factors which may determine the performance of investment/GDP ratios: changes in the current account balance and changes in government budget deficits. It is assumed that changes in the current account (a deterioration in the current account means that there is an increase in foreign financing) constitute the given external environment of transition economies. These changes may be more or less favourable and offer good or bad opportunities for policy makers in reforming economies to keep the share of investment in GDP at a high level.

If external financing increases (the current account deteriorates), then it is possible to stabilise or even to increase the share of investment in GDP without cutting the share of consumption (private and public).[12] Countries which have managed to take advantage of this possibility are perceived to be good performers (table 4). If external financing declines (the current account improves), then there is no room to maintain previous investment levels without cutting consumption. Hence, countries which have managed to keep the decline in investment within the limits imposed by the drop in foreign financing are regarded as good performers as well. In contrast, those countries in which the fall in investment has been greater than the reduction in external financing or in which the fall has occurred under conditions of expanding external financing are considered bad performers (table 4).

Most FSU republics have had to face an unfavourable external environment. They ran large, but hidden trade deficits when they were part of the USSR and imported fuel and raw materials at below world market prices. As prices started to approach world levels, they had to cut their trade deficits because they could not finance them. Moreover, direct financial transfers to the Central Asian Republics from Moscow came to a halt with the breakdown of the Soviet Union. Only Belarus (which enjoyed preferential treatment), Tajikistan and Georgia (which suffered from wars and from the greatest reduction in output in the FSU) experienced a noticeable increase in external financing. In fact, in the upper part of table 4 (the left hand side of fig. 16, 'unfavourable external balance') are only FSU countries and Mongolia. In contrast, the EE countries, China and Vietnam enjoyed relatively favourable external environments. Their current account balances either did not change much, or deteriorated substantially due to the availability of more external financing.

Overall, it looks as though changes in external financing were important determinants of investment: the better the external environment (worsening of current account), the lower the decline in investment (fig. 16). With the exception of 'outliers' (Albania, Georgia, and Tajikistan, which failed to prevent sharp declines in investment despite sizeable increases in external financing), the correlation coefficient is quite high (r = -0.65).

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[12] Since for the purposes of current analysis investment do not include the change in inventories, but only investment into fixed capital stock, the sum of consumption (private and public), current account, and investment is not equal to GDP, and the discrepancy can be substantial (for instance, for Moldova in 1992 change in stocks of inventories was equal to 44% of GDP). Therefore, when consumption goes down, while current account is stable, investment (in fixed capital stock) should not necessarily increase. In practice, though, as shown below, there is a correlation between changes in current account and investment, and the discrepancy between the dynamics of current account and investment is largely explained by changes in government budget deficit.

A closer look at the differences in investment patterns that are not explained by changes in external financing, or, to put it differently, an identification of the factors behind the 'good' and the 'bad' performance, reveals that changes in the government budget deficit are of crucial importance. The criteria for the identification of good and bad performers – the changes in the share of total consumption – depend to a large extent on changes in the government budget deficit (fig. 17). If the two extreme cases of Armenia and Albania are excluded (the statistics in both cases are not very reliable), the relationship seems to be quite strong. As was argued earlier, this may be the result of cuts in government financed investment and subsidies. For all practical purposes, this means that the increases in budget deficits were effectively used to finance consumption either through cuts in government financed investment, or through the crowding out of private investment.

Indeed, virtually all bad performers experienced noticeable increases in budget deficits during the transition: Hungary and Slovakia in Central Europe, Albania, Bulgaria and Romania in the Balkans, and Armenia, Georgia, Moldova and Tajikistan in the FSU. Only Latvia, Kazakhstan and Russia experienced moderate drops in investment/GDP ratios at the expense of a rising share of consumption without a significant deterioration in budget deficits.

Table 4. Patterns of change in investment/GDP ratios during transition (1989-95)*

1. Unfavourable external environment (change in current account as a % of GDP >5%)							
GOOD PERFORMERS				BAD PERFORMERS			
	Change in the shares of (as a % of GDP):				Change in the shares of (as a % of GDP):		
Country	Investment/ GDP ratio	Current account	Consumption	Country	Investment/ GDP ratio	Current account	Consumption
Azerbaijan	-17	27	-10	Armenia	-14	7	7
Estonia	-7	16	-10	Latvia	-21	9	11
Lithuania	-19	23	3				
Kyrgyzstan	-21	11	-4				
Turkmenistan	-19	20	-1				
Uzbekistan	-24	22	2				
Mongolia	-28	31	-3				
Unweighted average	-19.3	21.4	-3.3	Unweighted average	-17.5	8	9

2. Relatively stable external balance (change in current account as a % of GDP < 5%, but > -5%)							
GOOD PERFORMERS				BAD PERFORMERS			
Change in the shares of (as a % of GDP)				Change in the shares of (as a % of GDP):			
Country	Investment/ GDP ratio	Current account	Consumption	Country	Investment/ GDP ratio	Current account	Consumption
Vietnam	13	0	-12	Bulgaria	-14	-2	16
China (1978-83)	3	-2	-1	Kazakhstan	-15	5	10
Macedonia FYR	0	4	-4	Russia	-11	3	8
Poland	0	-1	1				
Czech Republic	-3	4	-1				
Ukraine	-5	3	2				
Croatia	-5	0	5				
Unweighted average	0	1.1	-1.4	Unweighted average	-13.3	2	11.3

3. Favourable external environment (change in current account as a % of GDP < -5%)							
GOOD PERFORMERS				BAD PERFORMERS			
Change in the shares of (as a % of GDP):				Change in the shares of (as a % of GDP):			
Country	Investment/ GDP ratio	Current account	Consumption	Country	Investment/ GDP ratio	Current account	Consumption
Belarus	5	-10	3	Albania	-25	-34	59
Slovenia	1	-7	6	Georgia	-17	-25	42
				Tajikistan	-14	-24	38
				Romania	-16	-12	28
				Moldova	-12	-6	18
				Hungary	-4	-9	13
				Slovakia	-4	-9	13
Unweighted average	3	-8.5	4.5	Unweighted average	-13.1	-17	30.1

The time frame for most countries is the period of the reduction of the investment/GDP ratio (from the highest to the lowest point) which normally coincides with the period of the reduction of output. For China, 1978-83; for Vietnam, 1989-94; for other countries with a growing share of investment in GDP, the period of transformational recession.

Fig. 16. Changes in the shares of investment and of net external financing in GDP

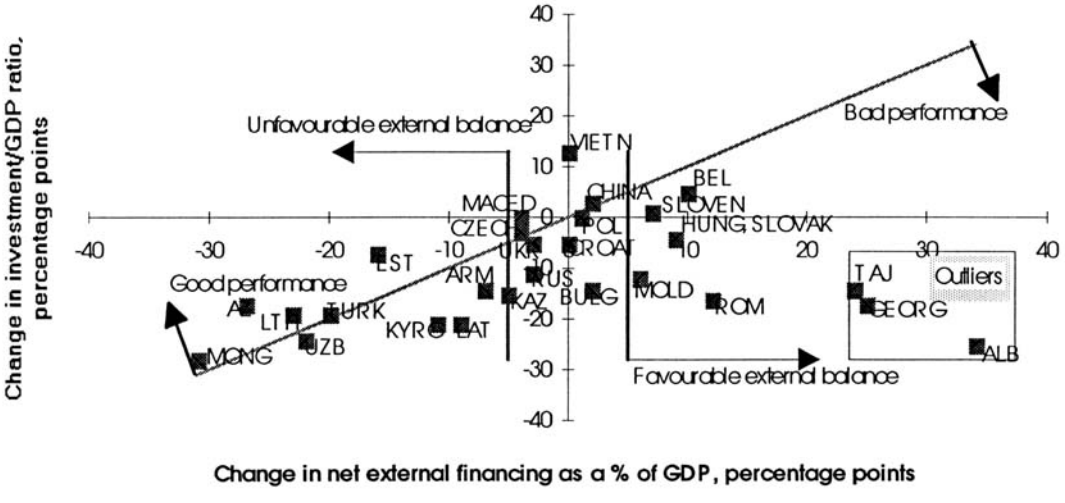
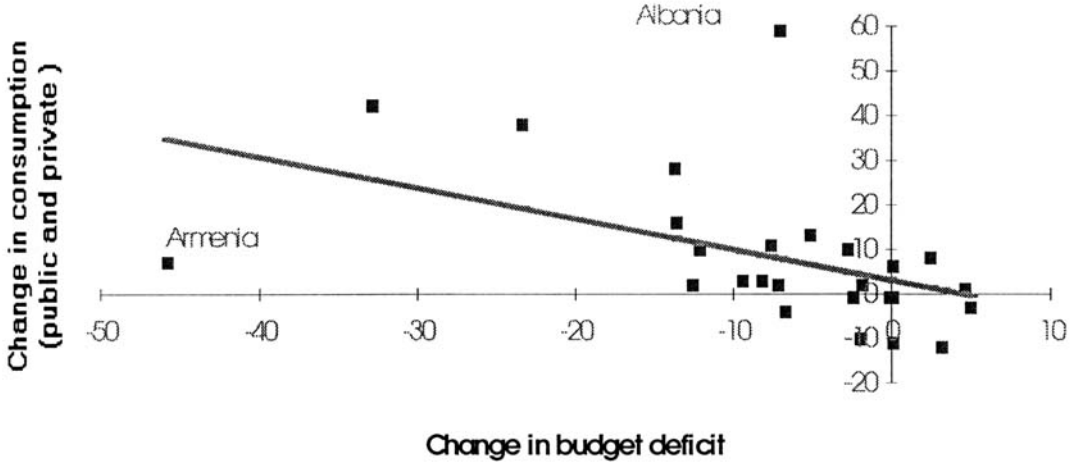


Fig. 17. Change in consumption and in government budget deficit, percentage points of GDP



Among the good performers, all countries except Azerbaijan, Ukraine and Belarus managed to avoid a significant deterioration in budget deficits. It may well be (though we do not yet have statistical evidence) that these three exceptions are associated with large-scale subsidies to support investment, so that expanding government budget deficits were used to support investment, not consumption as in other countries. Perhaps investment (as in Belarus, one of the few economies which managed to raise the investment/GDP ratio during the transition) was supported in the wrong (non-competitive) industries and in the wrong way (investment in the creation of new capacity rather than in the restructuring of existing capacity). This is a separate issue – the impact of investment on restructuring - and is not discussed here.

Putting together non-policy and policy-related factors, we obtain the results summarised in table 5. As was mentioned earlier, initial conditions, such as pre-transition distortions, the

Table 5. Regression of change in investment on change in external financing (current account deficit) and change in government budget deficit (as a % of GDP)

Variables / Equations	1	2	3	4	5
Constant	-0.23 (-0.06)	-0.58 (-0.16)	-1.82 (-0.48)	-4.47 (-2.06)	-4.32 (-2.09)
Distortions, % of GDP*	-0.22 (-3.19)	-0.21 (-2.99)	-0.75 (-0.85)		
Foreign trade 'under-openness'					-0.29 (-1.80)
Change in current account		-0.11 (-1.02)	-0.48 (-3.22)	-0.54 (-4.26)	-0.51 (-4.20)
Change in budget deficit (24 observations, excluding Croatia and Macedonia (no data) and the extreme cases of Albania and Armenia)			0.61 (2.37)	0.73 (3.43)	0.72 (3.57)
Adjusted R^2	0.25	0.25	0.43	0.44	0.49

* Cumulative measure of distortions as a % of GDP equal to the sum of defence expenditure (minus 3% regarded as 'normal' level), deviations in industrial structure and trade openness from the 'normal' level, the share of heavily distorted trade (among the FSU republics) and lightly distorted trade (with socialist countries) taken with a 33% weight.

level of GDP per capita and the impact of war, explain no more than 25% of the variation in investment/GDP ratios (table 3, equations 1-3). Changes in the external environment (the current account) and changes in the budget deficit become statistically significant only if the extreme cases of Albania and Armenia (which look statistically suspicious) are excluded. The best results ($R^2 = 0.49$) are obtained by not taking into account all distortions or even all trade distortions, but by considering only the distortions in relative trade openness (the coefficient of which is significant at the 10% level, while the coefficients of the current account and of the budget deficit are significant at the 1% level, see table 5, equation 5).

It is quite remarkable that the "outliers" in this latest regression (studentized residuals are greater than 2) are not those mentioned earlier (Azerbaijan, Belarus and Ukraine among the good performers and Kazakhstan, Latvia and Russia among the bad performers). It turns out that for these countries the changes in the investment/GDP ratio are satisfactorily explained by the three selected independent variables: the distortions in external trade openness before the transition, the changes in external financing during transition, and the changes in the government budget deficit. The "outliers" turn out to be two good performers, Estonia and Vietnam: the former because it managed to avoid a large drop in the investment/GDP ratio despite the greatest distortions in trade (the openness of the Estonian economy was a good 20 percentage points lower than that of similar market economies) and unfavourable changes in external financing, the latter because it achieved the highest increase in the investment/GDP ratio (13 percentage points) under moderately good (but not good enough for regression) initial conditions , external environment and fiscal policy.

4. Concluding remarks

There is strong evidence that declines in investment and output in post-communist economies during the transition can be interpreted as a supply-side recession caused by the initial distortions in trade and industrial structure (high militarisation, overindustrialisation and underdevelopment of the service sector, 'under-openness' of the economy, the perverse structure of trade among former Soviet republics and among socialist countries): the greater the magnitude of these distortions inherited from the centrally planned economies, the more pronounced the reduction of GDP during the transformational recession.

However, *ceteris paribus,* the low level of economic development (in particular, the lower capital/output ratio) was an asset rather than a liability, since it implied that these distortions were not 'cast in stone', i.e. were not embodied in the fixed capital stock, and, hence, they were easier to overcome. Countries with a low level of pre-transition GDP and low capital/ output ratios, especially in agriculture, like Vietnam and China, needed less investment to ensure the restructuring of their distorted fixed assets; they could use more investment to expand existing capacity and create new capacity, rather than to readjust the existing capacity. This naturally led to better performance, so much so that these countries were able to avoid completely the transformational recession.

Such an interpretation suggests, among other things, that recent research aimed at providing some empirical evidence for the conventional wisdom (greater liberalisation and stabilisation lead to better performance) may not reach this goal by demonstrating that countries, which are more advanced in liberalisation and in fighting inflation are doing better than others. Once the pre-transition initial conditions are taken into account, it turns out that policy factors do not really explain very much. Differences in performance are more effectively explained by uneven initial conditions, not by progress in liberalisation or rates of inflation. This is not to say that policy factors do not matter; however, more accurate and precise research is needed to identify their true impact on economic performance in general and on the magnitude of the transformational recession in particular.

Differences in the patterns of change in output and investment, i.e. changes in investment/GDP ratios, depend much less on initial conditions than do changes in output. They are explained mostly by changes in external financing (current account balance) during transition and by government policies. Among policy factors, the progress in liberalisation (predictably) and the rates of inflation (unexpectedly) do not seem to matter much. What does make a difference is the change in the government budget deficit. The dynamics of the deficit have a great influence on changes in the share of public and private consumption in GDP and, hence, is the crucial determinant of the share of investment.

There is good reason to believe, however, that in some relatively slow reformers (Azerbaijan, Belarus, Ukraine) the government budget deficit was in fact an instrument used to finance investment (through government subsidies), and, hence, increases in the deficit did not result in the expected declines in investment/GDP ratios. Whether this investment contributed to restructuring or not is another issue requiring special examination.

STATISTICAL ANNEX

Table 1A. Fixed investment as a % of GDP

Country	Fixed investment as a % of GDP							Change from peak to trough	
	1985	1989	1990	1991	1992	1993	1994	Percentage points	% decline
Albania	32	31	31	6	10	10	#N/A	-25	80.64516
Belarus	#N/A	#N/A	23	23	24	26	28	5	-21.7
Bulgaria	26	26	21	18	16	12	18	-14	53.84615
China (1978-26.8)	29.5	25.7	25.5	27.5	31.2	37.6	38.6	3	-11
Czech Republic	26	26	26	23	25	23	27	-3	11.53846
Estonia	30	29	24	22	22	23	27	-7	24.13793
Hungary	23	22	19	19	20	18	20	-4	18.18182
Kazakhstan	#N/A	36.7	#N/A	#N/A	21.5	22.2	#N/A	-15	41.66667
Kyrghyzstan	30	33	23	17	15	12	13	-21	63.63636
Latvia	32	32	23	6	11	14	16	-21	65.625
Lithuania	32	32	29	19	13	24	20	-19	59.375
Moldova	26	22	19	18	14	13	10	-12	54.54545
Mongolia	#N/A	44.8	#N/A	#N/A	17	#N/A	#N/A	-28	62.5
Poland	21	16	21	20	17	16	16	0	0
Romania	30	30	20	14	17	16	#N/A	-16	53.33333
Russia	30	32	29	25	20	21	21	-11	34.375
Slovakia	29	28	31	28	22	27	26	-4	12.90323
Slovenia	23	18	18	19	18	19	21	1	-5.55
Turkmenistan	20.4		12.9	2.7	2.1	1	#N/A	-19	93.13725
Ukraine	27	11	8	6	12	10	9	-5	45.45455
Uzbekistan	#N/A	31	31	12	7	#N/A	#N/A	-24	77.41935
Vietnam	10	11	13	14	17	23	24	13	-118.2
Armenia	#N/A	26.5	44.3	28.5	17.1	12.5	#N/A	-14	52.83019
Azerbaijan		21.4	20.3	11.5	4.5	17.8	#N/A	-17	79.43925
Croatia	18	15	16	14	11	15	#N/A	-5	33.33333
Georgia	#N/A	#N/A	23	19	16	6	#N/A	-17	73.91304
Macedonia FYR	#NA	#N/A	17	23	23	17	17	0	0
Tajikistan	12	19	9	7	5	#N/A	#N/A	-14	73.68421

Source: EBRD, 1995; Statistical Handbook, 1995; De Melo, Denizer, Gelb, 1996.

Table 2A. Reduction in output during transformational recession and GDP per capita

COUNTRY	1987-88 PPP GDP per capita, % of the US level	Trough GDP as a % of peak pre-recession GDP	Cumulative loss of output during recession*
Albania	6.8	58.32	87
Belarus	25.1	53.54	130.1
Bulgaria	23.5	72.98	81.46
China	5.8	143.57	-113.66
Czech Republic	44.1	80.03	53.13
Estonia	29.9	63.52	126.69
Hungary	28.9	81.13	56.45
Kazakhstan	24.2	45.46	175.29
Kyrghyzstan	13.5	41.07	194.81
Latvia	24.1	50.83	100.29
Lithuania	33.8	38.94	132.16
Moldova	22.4	38.97	169.12
Mongolia	5	75.25	67.07
Poland	21.4	81.84	30.16
Romania	22.7	74.42	49.8
Russia	30.6	51.70	174.72
Slovakia		76.7	58.4
Slovenia	33.3	83.03	34.6
Turkmenistan	18.7	61.73	108.95
Ukraine	20.4	39.85	202.86
Uzbekistan	12.5	81.24	63.66
Vietnam		140.73	-112.86
Armenia	26.5	33.77	150.73
Azerbaijan	21.7	33.87	231.47
Croatia		69.08	90.44
Georgia		17.1	328.1
Macedonia FYR		53.05	202.36
Tajikistan	12.1	40.04	203.02

* Cumulative loss of GDP during transformational recession is calculated as the sum of the deviations of the GDP during each year of recession from the 1989 GDP (assuming that the 1989 GDP is equal to 100%). For Vietnam, the sum of the deviations in the GDP for each year (1990-94) from the 1989 GDP; for China, the same for the period 1979-84.

Source: World Bank, 1996; De Melo, Denizer and Gelb 1996.

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