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Shock Therapy *versus* Gradualism Reconsidered: Lessons from Transition Economies after 15 Years of Reforms[1]

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This paper starts by separating the transformational recession (reduction of output in most transition economies in the first half of the 1990s) from the process of economic growth (recovery from the transformational recession) in 28 transition economies (including China, Vietnam and Mongolia). It is argued that the former (the collapse of output during transition) can be best explained as adverse supply shock caused mostly by a change in relative prices after their deregulation due to distortions in industrial structure and trade patterns accumulated during the period of central planning, and by the collapse of state institutions during transition period, while the speed of liberalisation, to the extent it was endogenous, that is, determined by political economy factors, had an adverse effect on performance. In contrast, at the recovery stage the ongoing liberalisation starts to affect growth positively, whereas the impact of pre-transition distortions disappears. Institutional capacity and reasonable macroeconomic policy, however, continue to be important prerequisites for successful performance.
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INTRODUCTION

This paper starts by separating the transformational recession (reduction of output in most transition economies in the first half of the 1990s) from the process of economic growth (recovery from the transformational recession). It is argued that the former (the collapse of output during transition) can be best explained as adverse supply shock caused mostly by a change in relative prices after their deregulation due to distortions in industrial structure and trade patterns accumulated during the period of central planning, and by the collapse of state institutions during transition period, while the speed of liberalisation had an adverse effect on performance, if any. In contrast, the latter process (recovery) should be treated as a normal growth process and could be modelled with the tools of conventional growth theory: it could be expected that in the sufficiently long run it would be possible to capitalise on liberalisation due to the increase in factors efficiency that would lead to better performance.

Based on previous literature (see Popov, 2000 for a review), the following framework for explaining the collapse of output during transformational recession is accepted. First, transformational recession was caused by the adverse supply shock that resulted from deregulation of prices and change in relative price ratios that created the need for reallocation of resources due to distortions in the industrial structure and external trade patterns that existed before transition. Second, by another adverse supply shock associated with the collapse of state institutions (understood as the ability of the state to enforce its rules and regulations), which occurred in the late 1980s to early 1990s and which resulted in chaotic transformation through crisis management instead of organised and manageable transition. And third, by poor economic policies, which basically consisted of macroeconomic mismanagement, no matter whether the pursued reforms were gradual or radical. Fast speed of reform *per se* (shock *versus* gradual transition) at the initial stage of transition probably aggravated the reduction of output because immediate deregulation of prices caused the need for restructuring (reallocation of labour and capital) that exceeded the investment potential of the economy.

In the first approximation, economic recession that occurred during transition was associated with the need to reallocate resources in order to correct the industrial structure inherited from centrally planned economy (CPE). These distortions include overmilitarisation and overindustrialisation (resulting in the underdevelopment of the service sector), perverted trade flows among former Soviet republics and Comecon countries, excessively large size and poor specialisation of industrial enterprises and agricultural farms (lack of small enterprises and farms). In most cases, these distortions were more pronounced in former Soviet Union countries (FSU) than in

Eastern Europe (EE), not to speak about China and Vietnam – the larger the distortions, the greater was the reduction of output. Transformational recession, to put in economic terms, was caused by adverse supply shock similar to the one experienced by Western countries after the oil price hikes in 1973 and 1979, and similar to post-war recessions caused by conversion of the defence industries.

The additional reason for the extreme depth and length of the transformational recession was associated with the institutional collapse – here differences between EE countries and FSU are striking. The efficiency of state institutions, understood as the ability of the state to enforce its own rules and regulations, resulted in the inability of the state to perform its traditional functions – to collect taxes and to constrain the shadow economy, to ensure property and contract rights and law and order in general (crime rates and corruption increased dramatically during transition as compared to the communist past). Naturally, poor ability to enforce rules and regulations did not create business climate conducive to growth and resulted in the increased costs for companies.

It is precisely this strong institutional framework that should be held responsible for both – for the success of gradual reforms in China and shock therapy in Vietnam, where strong authoritarian regimes were preserved and CPE institutions were not dismantled before new market institutions were created; and for the relative success of radical reforms in EE countries, especially in Central European countries, where strong democratic regimes and new market institutions emerged quickly. And it is precisely the collapse of strong state institutions that started in the USSR in the late 1980s and continued in the successor states in the 1990s that explains the extreme length, if not the extreme depth of the FSU transformational recession.

What lead to the institutional collapse and could it have been prevented? Using the terminology of political science, it is appropriate to distinguish between strong authoritarian regimes (China and Vietnam and to an extent – Belarus and Uzbekistan), strong democratic regimes (Central European countries) and weak democratic regimes (most FSU and Balkan states). The former two are politically liberal or liberalising, that is, protect individual rights, including those of property and contracts, and create a framework of law and administration, while the latter regimes, although democratic, are politically not so liberal since they lack strong institutions and the ability to enforce law and order (Zakaria, 1997). This gives rise to the phenomenon of 'illiberal democracies' – countries, where competitive elections are introduced before the rule of law is established. While European countries in the 19th century and East Asian countries recently moved from first establishing the rule of law to gradually introducing democratic elections (Hong Kong is the most obvious example of the rule of law without democracy), in Latin

America, Africa and now in CIS countries democratic political systems were introduced in societies without the firm rule of law.

Authoritarian regimes (including communist), while gradually building property rights and institutions, were filling the vacuum in the rule of law *via* authoritarian means. After democratisation occurred and illiberal democracies emerged, they found themselves deprived of old authoritarian instruments to ensure law and order, but without the newly developed democratic mechanisms needed to guarantee property rights, contracts and law and order in general. No surprise, this had a devastating impact on investment climate and output.

There is a clear relationship between the ratio of rule of law index on the eve of transition to democratisation index, on the one hand, and economic performance during transition, on the other. To put it differently, democratisation without strong rule of law, whether one likes it or not, usually leads to the collapse of output. There is a price to pay for early democratisation, that is, introduction of competitive elections of government under the conditions when the major liberal rights (personal freedom and safety, property, contracts, fair trial in court, etc.) are not well established.

Finally, performance was of course affected by economic policy. Given the weak institutional capacity of the state, that is, its poor ability to enforce its own regulations, economic policies could hardly be 'good'. Weak state institutions usually imply populist macroeconomic policies (budget deficits resulting in high indebtedness and/or inflation, overvalued exchange rates), which have devastating impact on output. On the other hand, strong institutional capacity does not lead automatically to responsible economic policies. Examples range from the USSR before it collapsed (periodic outburst of open or hidden inflation) to such post Soviet states as Uzbekistan and Belarus, which seem to have stronger institutional potential than other FSU states, but do not demonstrate higher macroeconomic stability.

Regressions tracing the impact of all mentioned factors are reported in Table 1. If the rule of law and democracy indices (see data section for definitions) are included into the basic regression equation, they have predicted signs (positive impact of the rule of law and negative impact of democracy) and are statistically significant (equation 1), which is consistent with the results obtained for larger sample of countries.[2] The best explanatory

[2] For a larger sample of countries (all developing and developed countries, not only transition economies), the result is that there is a threshold level of the rule of law index: if it is higher than a certain level, democratization affects growth positively, if lower – democratization impedes growth (Polterovich and Popov, 2005). For the regressions reported in Table 1 (to explain changes in output in 1989–1996), averages of rule of law and democracy indices were used for the longer period (1989–1998) to account for the fact that business agents often anticipate changes in business climate that are captured in experts' estimates only later.

Table 1: Regression of change in GDP in 1989–1996 on initial conditions, policy factors and rule of law and democracy indices, robust estimates

Equations, number of observations/variables	1 (*N*=28)	2 (*N*=28)	3 (*N*=28)	4 (*N*=28)	5 (*N*=28)	6 (*N*=28)	7 (*N*=28)
Constant	5.3***	5.4***	5.2***	5.4***	5.4***	5.5***	5.7***
Distortions, % of GDP[a]	−0.005**	−0.005**	−0.003	−0.006**	−0.007***	−0.007***	−0.007***
1987 PPP GDP per capita, % of the US level	−0.009**	−0.006*	−0.007**	−0.007**	−0.009***	−0.008***	−0.008***
War dummy[b]				−0.019[c]	−0.036***	−0.037***	−0.045***
Decline in government revenues as a % of GDP from 1989–1991 to 1993–1996					−0.011***	−0.011***	−0.011***
Liberalisation index			0.05			−0.02	0.03
Log (inflation, % a year, 1990–1995, geometric average)	−0.016***	−0.020***	−0.018***	−0.017***	−0.013***	−0.013***	−0.014***
Rule of law index, average for 1989–1997, %	0.008***						
Democracy index, average for 1990–1998, %	−0.005***						−0.003**
Ratio of the rule of law to democracy index		0.07***	0.07***	0.06***	0.05***	0.05***	
Adjusted R^2, %	82	83	83	85	91	91	90

Dependent variable=log (1996 GDP as a % of 1989 GDP). For China, all indicators are for the period of 1979–1986 or similar.
*, **, ***Significant at 1%, 5% and 10% level, respectively.
[a] Cumulative measure of distortions as a % of GDP equal to the sum of defense 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 (see Popov, 2000 for details).
[b] Equals 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia and Tajikistan and 0 for all other countries.
[c] Significant at 13% level.

power, however, is exhibited by the index that is computed as the ratio of the rule of law index to democracy index: 83% of all variations in output can be explained by only three factors – pre-transition distortions, inflation and rule-of-law-to-democracy index (Table 1, equation 2). If liberalisation variable is added, it turns out to be statistically insignificant and does not improve the goodness of fit (equation 3). At the same time, the ratio of the rule of law to democracy index and the decline in government revenues are not substitutes, but rather complement each other in characterising the process of the institutional decay. These two variables are not correlated and improve the goodness of fit, when included together in the same regression: R^2 increases to 91% (equation 5) – better result than in regressions with either one of these variables. The liberalisation index, when added to the same equation, only deteriorates the goodness of fit, is not statistically significant, and has the 'wrong' sign.

To test the robustness of the results, another year for the end of the transformational recession was chosen – 1998, so the period considered was 1989–1998 (by the end of 1998, the absolute trough was reached in 24 countries out of 26 that experienced the recession). The adjusted R^2 is slightly lower, but the statistical significance of coefficients remains high (with the exception of the initial GDP per capita). The best equation is shown below:

$$\begin{aligned} &Log(Y98/89) \\ &= 5.8 - 0.006DIST - 0.005Ycap87 - 0.39WAR - 0.01GOVREVdecline - 0.17\log INFL - 0.003DEM \\ &\qquad (-2.48) \qquad (-0.09) \qquad (-3.22) \qquad (-2.94) \qquad\qquad (-4.60) \qquad (-1.74) \end{aligned}$$

($N = 28$, adjusted $R^2 = 82\%$, t-statistics in brackets, all variables are shown in the same order as in equation 7 from Table 1 (liberalisation variable is omitted)).

Once again, if liberalisation variable is introduced in this equation, it turns out to be insignificant.

This latter conclusion still remains most controversial – the emerging consensus today, if any, seems to be that performance is largely determined by the institutional capacity (the factor that was overlooked in the earlier debates), but economic liberalisation still matters a great deal (De Melo *et al.*, 1997; Havrylyshyn and van Rooden, 2003). The theoretical argument in favour of the positive impact of liberalisation on performance is quite strong: market economy should be more efficient than the CPE, so there is a 'marketisation dividend' to be reaped, and the faster economic liberalisation occurs, the better should be the performance. However, there are a number of obvious facts that do not fit into the scheme.

First, China – the only country that carried out classical gradual transition (with slow deregulation of prices – dual-track price system) outperformed

impressively all other transition economies, and of course Chinese example is too important to ignore. Second, the comparison of Vietnam and China – two countries that shared a lot of similarities in initial conditions and achieved basically the same results (immediate growth of output without transformational recession), despite different reform strategies. While Chinese reforms are a classical example of gradualism, Vietnamese reformers introduced Polish-style shock therapy treatment (instant deregulation of most prices and introduction of convertibility of dong) even before Poland did, in 1989, and still managed to avoid the reduction of output.[3] Third, differing performance of the FSU states. The champions of liberalisation and stabilisation in the region were definitely Baltic states (cumulative liberalisation index by 1995 – 2.4–2.9), whereas Uzbekistan (with the same index of 1.1) is commonly perceived to be one of the worst procrastinators. But in Uzbekistan, the reduction of output in 1990–1995 totalled only 18% and the economy started to grow again in 1996, while in the Baltics output fell in the early 1990s by 36%–60% and even in 1996, 2 years after the bottom of the recession was reached, was still 31%–58% below the pre-recession maximum.

In 2004–2005, the list of countries that exceeded the pre-recession level of output in 1989 looked very much like a list of procrastinators in terms of economic liberalisation and non-democratic regimes in terms of political liberalisation: in addition to five central European countries and Estonia, there were also Turkmenistan, Uzbekistan, Belarus and Kazakhstan (see Figures 1 and 2),[4] not to speak about China and Vietnam. Thus, the case for gradual, Chinese-type reforms remains very strong and is very much favoured by many academics and policy makers – see Kolodko (2000) for an extensive summary of the debate.

THE HYPOTHESIS – WHY SHOCK THERAPY MAY LEAD TO WORSE PERFORMANCE THAN GRADUAL TRANSITION

There are now quite a number of papers that offer the models explaining why gradual transition may lead to a better performance as compared to the shock therapy – see Popov (2000) and Roland (2000) for a survey. Murphy *et al.*

[3] While Vietnamese industry, excluding constantly and rapidly growing oil production, experienced some downturn in 1989–1990 (−6% in 1989 and 0% in 1990) agricultural growth remained strong, so that GDP growth rates virtually did not fall (5%–6% a year).

[4] Figure 1 is based on GDP indices (2004 as a % of 1989) reported in the EBRD Transition Report 2005, whereas Figure 2 reports chain indices (based on annual growth rates) from the same source. The discrepancies are not that substantial.

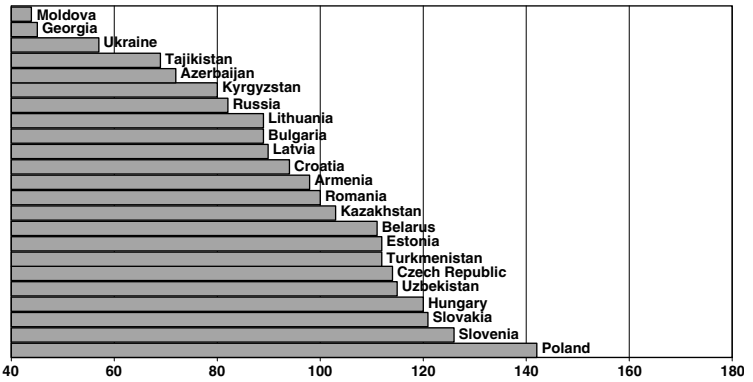

Figure 1: GDP in EE and FSU economies and Mongolia. (GDP in 2004 as a % of 1989).

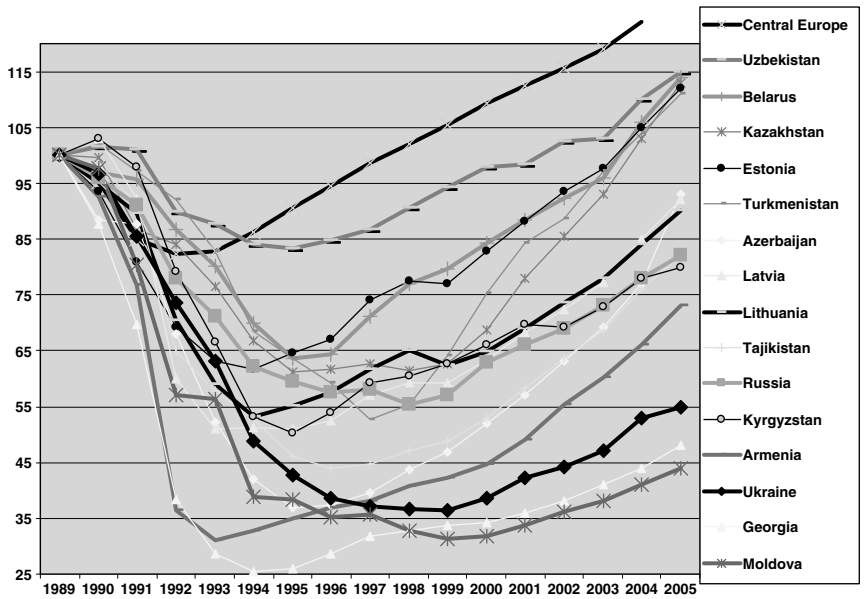

Figure 2: GDP change in FSU economies, 1989 = 100%.

(1992) claimed that, if the weakening state is not able to enforce production quotas under the system of dual pricing, transfer of resources to the private sector with market prices creates bottlenecks and shortages in the state sector, resulting in the fall of total output. Friedman and Johnson (1995) argued that

in the presence of complementarities between government policies and enterprise attributes and convex adjustment costs for enterprises (i.e. costs increasing with the speed of reforms), radical 'big bang' reforms might not necessarily be optimal. It was also argued (Li, 1996) that in the absence of competitive product markets (monopolisation) on the outset of the reforms shock therapy can only lead to the reduction of output, while incremental reforms, such as Chinese-type dual-track pricing system forcing enterprises to meet production quotas, but allowing them to sell above-the-plan output at market prices, may contribute to the expansion of output. Lau *et al*. (1997) showed that if state firms are allowed to choose between market and centrally planned prices (for both – inputs and outputs), then not only the Pareto optimality is guaranteed at the end of the process but also – with the appropriate state allocation of cheap resources and production quotas – it could be ensured that at every stage of the transition process no one is going to be worse off and at least someone is constantly made better off. Blanchard and Kremer (1997) suggested a disorganisation explanation: they assumed that state enterprises make a 'take it or leave it' proposals on prices of resources, that there are costs of finding partners and that production stops, if the critical resource is lacking. Roland and Verdier (1999) also focused on disorganisation and showed that investment and output may fall as a result of immediate price deregulation due to the need to find new partners (disorganisation effect), and that under gradual dual-track price liberalisation, it is possible to avoid this effect. Atkeson and Kehoe (1996) suggested that the increase in unemployment creates a need for higher taxes to finance unemployment insurance payments and that higher taxes depress output.

The problem with these explanations, however, is that although theoretically plausible, they do not seem to capture the basic stylised facts of transition, but at best – only marginal effects. It was neither the disorganisation, nor unemployment insurance payments, nor monopolisation effects that drove output down in transition economies during the transformational recession. As was argued earlier, the nature of the recession was basically an adverse supply shock caused by the change in relative prices. The evidence for all transition economies is in Table 1: the reduction of output by country is well explained by the indicator of distortions in industrial structure and trade patterns (it remains statistically significant no matter what control variables are added). The magnitude of distortions, in turn, determines the change in relative prices, when they are deregulated. As Figure 3 shows, the reduction of output in Russia during the transformational recession was to a large extent structural in nature: industries with the greatest adverse supply shock (deteriorating terms of trade – relative price

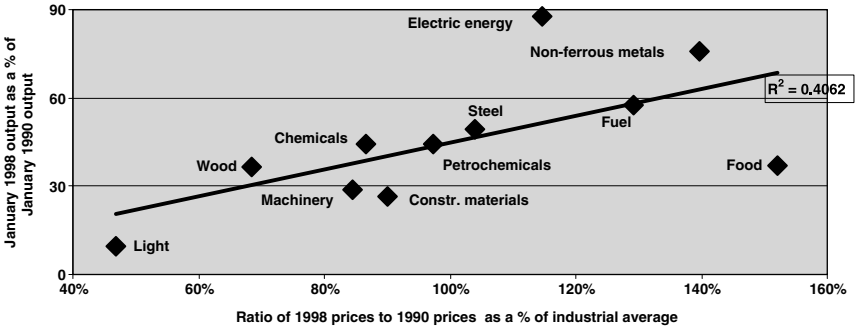

Figure 3: Change in relative prices and output in 1990–1998 in Russian industry.

ratios for outputs and inputs), such as light industry, experienced the largest reduction of output.

The adverse supply shock due to deregulation of prices framework allows to explain the varying impact of economic liberalisation on performance at the recession stage and during economic recovery. Consider a country where deregulation of prices (or elimination of trade tariffs/subsidies) leads to a change in relative price ratios and thus produces an adverse supply shock for at least some industries. Capital should be reallocated from industries facing declining relative prices and profitability to industries with rising relative prices. Assume that 20% of the total output is concentrated in non-competitive industries: this whole sector should disappear either gradually or at once depending on how fast relative prices will change; capital is not homogeneous and cannot be moved to the competitive sector, whereas labour can be reallocated to the competitive sector without costs. Marginal capital productivity in the competitive sector is higher than in the non-competitive and is equal to 1/3. Assume further that all investments go into the competitive sector, and that net investment is equal to 10% of GDP. Under these simple assumptions, we get output trajectories as shown in Figure 4.[5]

[5] Total output consists of output of competitive and non-competitive sectors: $Y_n = (Y_n^C + Y_n^{NC})$ and is equal to 1 or 100% in the initial year. Output in the non-competitive sector in the year n, Y_n^{NC}, is equal to the share of the non-competitive sector in total output in the initial year, NC, multiplied by $(1-\alpha)^n$, where α is the rate of reduction of output in the non-competitive sector determined by the speed of deregulation: $Y_n^{NC} = (1-\alpha)^n * NC$. Output in the competitive sector in the year n is equal to the output of the preceding year, Y_{n-1}^C, plus the increase in output equal to marginal capital productivity, a, multiplied by the share of net investment in GDP, s, multiplied by total output: $Y_n^C = Y_{n-1}^C + a * s * (Y_n^C + Y_n^{NC})$. Solving for total output, we get: $Y_n = \frac{Y_{n-1}^C + (1-\alpha)^n * NC}{1-as}$.

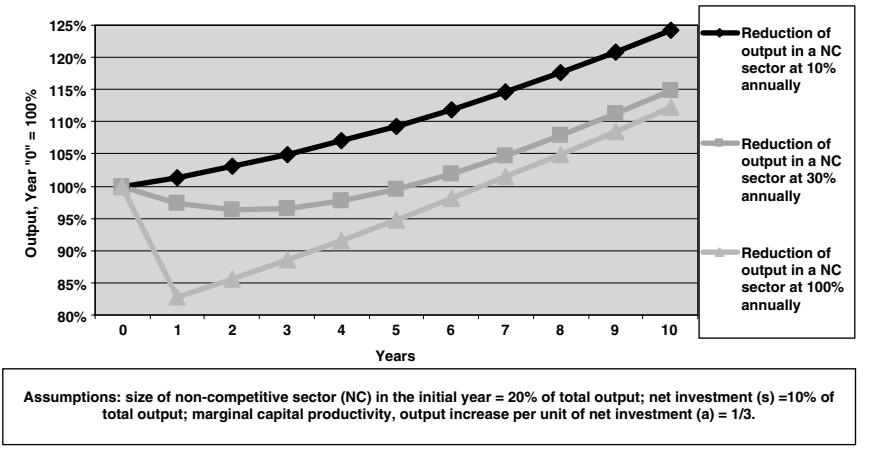

Figure 4: Hypothetical trajectories of output (year '0' = 100%) assuming gradual and instant liberalisation.

If reforms are carried out instantly, then output in the unprofitable sector, accounting, say, for 20% of total output, falls immediately and savings for investment are generated only by the competitive sector, so that it takes 7 years to reach the pre-recession level of output. However, assume that reforms are carried out slowly (gradual price deregulation or elimination of tariffs/subsidies), so that every year output in the non-competitive sector falls by 30%. In this case, transformational recession is milder, and total output recovers by the 5th year.

The best trajectory, of course, is the one with such a speed of deregulation that leads to the reduction of output in the non-competitive sector at a natural rate, that is, as its fixed capital stock retires in the absence of new investment. If the retirement rate of fixed assets in the non-competitive sector is 10%, so that output there falls by 10% annually, there would be no reduction of output at all. On the contrary, growth rates would increase constantly approaching the steady state 3.4% annually by the year 25. The slower rate of deregulation implying a more gradual output reduction in the non-competitive industries would require some investment into supporting capital stock and output in the non-competitive sector. This is clearly a sub-optimal option (if the goal is to achieve highest productivity), since productivity of this investment in non-competitive sector is lower than elsewhere by definition. However, it allows to slow down the speed of restructuring (reallocation of labour force).

The example illustrates that there is a limit to the speed of reallocating capital from non-competitive to competitive industries, which is determined

basically by the net investment/GDP ratio (gross investment minus retirement of capital stock in the competitive industries, since in non-competitive industries the retiring capital stock should not be replaced anyway). It is not reasonable to wipe away output in non-competitive industries faster than capital is being transferred to more efficient industries. If there are other factors of production (labour) that can be transferred faster than capital, there is a trade-off between using labour in non-competitive industries, but with high capital/labour ratios, and transferring this same labour to competitive industries, but without much capital (low capital/labour ratios) for the time being. But the same logic that applies to physical capital could be applied to human capital as well.

Market-type reforms in many post-communist economies created exactly this kind of a bottleneck. Countries that followed shock therapy path found themselves in a supply-side recession that is likely to become a textbook example: an excessive speed of change in relative prices required the magnitude of restructuring that was simply non-achievable with the limited pool of investment. Up to half of their economies was made non-competitive overnight; output in these non-competitive industries was falling for several years and fell in some cases to virtually zero, whereas the growth of output in competitive industries was constrained, among other factors, by the limited investment potential and was not enough to compensate for the output loss in the inefficient sectors (Popov, 2000).[6]

Hence, at least one general conclusion from the study of the experience of transition economies appears to be relevant for the reform process in all countries: provided that reforms create a need for restructuring (reallocation of resources), the speed of reforms should be such that the magnitude of required restructuring does not exceed the investment potential of the economy. In short, the speed of adjustment and restructuring in every economy is limited, if only due to the limited investment potential needed to reallocate capital stock. This is the main rationale for gradual, rather than instant, phasing out of tariff and non-tariff barriers, of subsidies and other

[6] The problem is still there for many transition economies, since many domestic price ratios are quite different from those of the world market. Fuel and energy prices, for instance, in most cases are still way below the world market prices. To cite one example, in Russia electricity tariffs at the end of the 1990s were about 1 US cent per kw-h, whereas in Western and even in Central European countries, they amounted to 10 cents (EBRD, 2001). Meanwhile, the third most important Russian export commodity (after oil and gas) was extremely energy-intensive aluminum, produced out of largely imported bauxite. If Russian electric energy prices are increased to the world level instantly, investment required to create jobs just for the workers of going out of business aluminum smelters and other energy-intensive enterprises may exceed the meager investment potential of the whole national economy.

forms of government support of particular sectors (it took nearly 10 years for the European Economic Community or for NAFTA to abolish tariffs). This is a powerful argument against shock therapy, especially when reforms involved result in a sizable reallocation of resources. For Western countries with low trade barriers, low subsidies, low degree of price controls, etc. even fast, radical reforms are not likely to require restructuring that would exceed the limit of investment potential. But for less developed countries with a lot of distortions in their economies supported by explicit and implicit subsidies, fast removal of these subsidies could easily result in such a need for restructuring that is beyond the ability of the economy due to investment and other constraints.

However, such a reduction of output due to the inability of the economy to adjust rapidly to new price ratios is by no means inevitable, if the deregulation of prices proceeds gradually (or if losses from deteriorating terms of trade for most affected industries are compensated by subsidies). The pace of liberalisation had to be no faster than the ability of the economy to move resources from non-competitive (under the new market price ratios) to competitive industries.

Therefore, it should be expected that regression analysis would reveal the negative relationship between performance and the speed of liberalisation at the stage of the reduction of output and the positive impact of liberalisation on performance at the stage of recovery. It should be also expected that the larger magnitude of distortions in industrial structure and trade patterns would lead to the greater reduction of output during the transformational recession, but would not have much of an impact on performance during the recovery stage (after the non-competitive sector would be shut down completely). In both cases – at the recession stage and in the recovery period – the institutional capacity and the quality of macroeconomic policy should be expected to have a positive impact on performance.

THE DATA

The description of the data and the sources in Table 2 is largely self-explanatory. There is one issue though that deserves a closer scrutiny – the criteria for distinguishing between the recession and recovery periods.

In FSU states (Figure 1), recession started in most cases in 1990 (for Latvia, Kyrgyzstan, Turkmenistan and Uzbekistan – in 1991), whereas the bottom of the recession was reached in 1993–1995 in some countries (Armenia, Belarus, Estonia, Georgia, Latvia, Lithuania, Uzbekistan), but more often later – in 1996–1999 (Moldova and Ukraine were the last countries

Table 2: Description of the data and sources (indicators for China are always for the period 10 years earlier)

Indicator	Comments	Sources
Real GDP change	Recession – 1989–1996; recovery 1995–2003	EBRD (Transition Reports)
Pre-transition distortions	Differences in industrial and external trade structure between centrally planned and market economies	Data and explanations are in Popov (2000)
PPP GDP per capita in 1987		De Melo *et al*. (1996)
War dummy	Equals 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia and Tajikistan and 0 for all other countries	
FSU dummy	Equals 1 for 15 FSU countries and 0 for all other countries	
Decline in government revenues as a % of GDP from 1989–1991 to 1993–1996	Difference between the average share of government revenues in GDP in 1989–1991 and this same average share in 1993–1996	EBRD Transition Reports for FSU and EE countries, Asian Development Bank for China (adjusted as explained in Popov, 2000), Mongolia, Vietnam
Increase in the share of shadow economy in GDP in 1989–1994, pp	Estimates based on electricity consumption – conservative elasticity scenario	Kaufmann and Kaliberda (1996)
Rule of law index, average for 1989–1997, %	The rule of law index is taken from the International Country Risk Guide and calibrated, so that 100% corresponds to the highest possible rule of law	Campos (2000); International Country Risk Guide
Democracy index, average for 1990–1998, %	The democracy index is the average of Freedom House political rights index for 1990–1998, but inverted and calibrated, so that complete democracy coincides with 100%, whereas complete authoritarianism with 0%	Freedom House (http://www.freedomhouse.org/rankings.pdf)
Cumulative economic liberalisation index by 1995[a]	Experts' estimate of the level of liberalisation achieved by 1995 on a 1 to 4.5 scale (highest liberalisation – 4.5 – is in OECD countries)	De Melo *et al*. (1996)
Increase in economic liberalisation index in 1995–2003	The level of index in 2003 minus its level in 1995 (negative sign indicates strengthening of regulations)	EBRD Transition Reports; conservative estimates for China, Vietnam, Mongolia
Annual average inflation in 1990–1995	Log (inflation, % a year, 1990–1995, geometric average)	World Development Indicators

[a] This liberalisation index is constructed as explained earlier in De Melo *et al*. (1996), as the sum of liberalisation 'flows' for 6 years (1989–1994 for all countries, except China, for which the period in 1979–1984). Assuming that before transition the level of liberalisation in communist economies was negligible, the 1995 liberalisation index can be interpreted as the cumulative 'stock' of liberalisation by 1995 or as the total 'flow' of liberalisation in the first 6 years of reforms.

to bottom out in 1999). So, in fact, recession lasted from 3 to 10 years. In East European countries similar variations are observed (Figure 5): recession lasted 2 years in Poland (1990–91), 3–4 years in other Central European

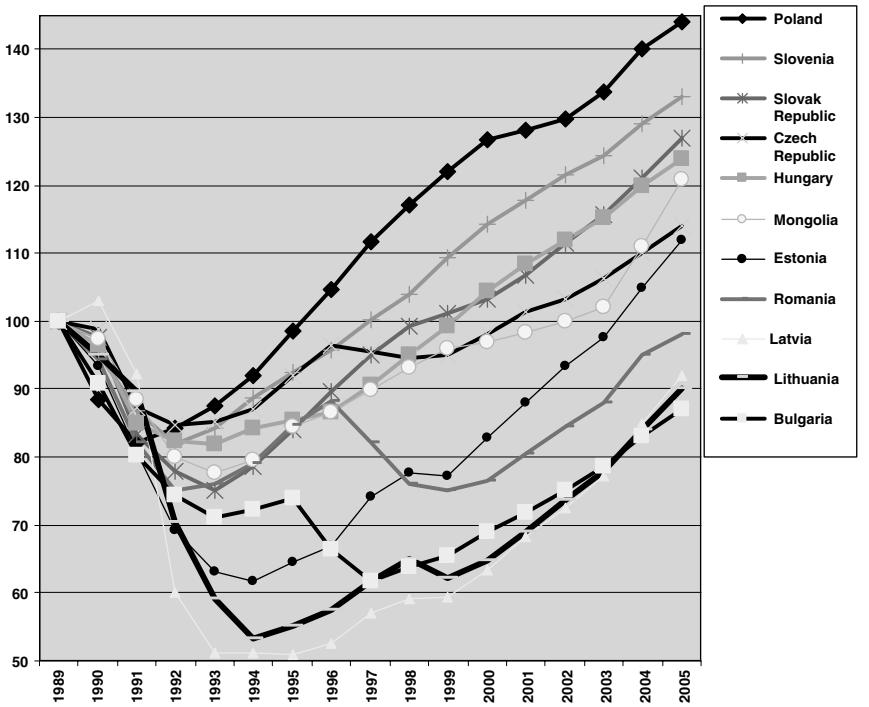

Figure 5: GDP change in East European transition economies and in Mongolia, 1989 = 100%.

countries, 5 years in the Baltic states, 8 and 10 years, respectively, in Bulgaria and Romania. China and Vietnam did not experience any recession – their growth rates for the period of reforms were always positive, whereas in Mongolia recession bottomed out in 1993, like in most East European countries.

To make things even more complicated, in some countries there were interruptions of growth after the recession seemed to have ended. Romania and Bulgaria that experienced currency crises are most notable examples (Figure 5), but similar interruptions occurred in Czech Republic in 1997–1999, in Estonia and Lithuania, Kazakhstan and Russia in 1998. (Figure 5). In most, if not all cases, these growth reversals were caused by poor macroeconomic policy (exchange rate overvaluation) before and during the East Asian (1997) and Russian (1998) currency crisis. These episodes can hardly be treated as the continuation of transformational recession. Considering these reversals as the 'ordinary' (non-transformational) recessions, the average (unweighted) year for the end of recession for 26 countries that experienced downturns associated with deregulation of prices (excluding China and Vietnam) is between 1995 and 1996.

Most authors, while explaining the comparative performance of transition economies, use the most transparent and conventional measure – GDP in the recent year as compared to the pre-recession period (1989 or 1990). There was an attempt to account not only for the varying depth but also for the different length of the recession by computing the integral loss of output (World Bank, 1996), but this measure was never widely accepted. My own calculations (Popov, 1998) show that the cumulative decline in output (from peak to trough), computed as the sum of non-discounted deviations of output for every single year of recession in 1989–1996 period from 1989 level, is very correlated with the conventional measure of performance – 1996 GDP as a % of 1989 GDP (Figure 6).[7]

In view of the above, both measures of the magnitude of recession were used in regressions for 1989–1996 period, and it turned out that there are no major differences in signs and statistical significance of explanatory variables. So, for this paper, 1996 was chosen as the year of the bottom of the recession for 1989–1996 regressions (to capture the declines in output in FSU states). In turn, 1995 was selected as the year that immediately preceded recovery (to capture the new declines in output that occurred in Czech Republic and Bulgaria in 1996–1999 and that were caused most probably by macroeconomic mismanagement, so cannot be treated as the continuation of the transformational recession). To test the robustness of results, the alternative year – 1998 – was chosen as the year of the trough and all regressions were recalculated for the periods of 1989–1998 (recession) and 1998–2005 (recovery) – the results were virtually unchanged (see Introduction and Appendix A).

It remains to be said that all indicators for China are for the period of 10 years earlier (1979–1986) because the market-oriented reforms started in this country in 1979.[8] This approach, however, is also not crucial: Chinese growth was rather even since 1979, so the major results stand, no matter what period is chosen for China. On top of that, if China and Vietnam are excluded from the regressions, the goodness of fit and statistical significance of explanatory variables usually improves. This suggests that there are other factors (export-oriented industrial policy, probably) that contributed to rapid growth of these Asian transition economies and that are not accounted for in regressions,

[7] The cumulative decline of output for many countries is higher than 100% because the output losses for a number of years are summed up. For China and Vietnam, the cumulative decline in output is negative, that is, should be interpreted as cumulative gain in GDP for the period.

[8] In Vietnam, economic reforms started in 1986 ('don moi' course), they resembled very much Gorbachev-type marginal reforms in the same period, and it was not until 1989 that most prices were deregulated that caused some reduction of output in non-oil industry, but not in other sectors, so GDP growth rates did not decline.

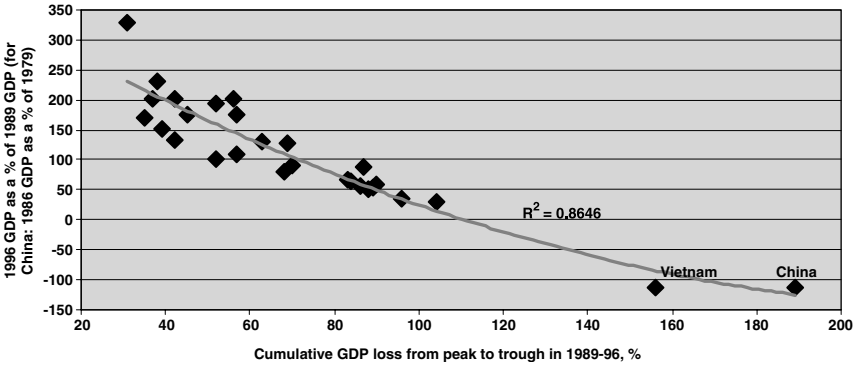

Figure 6: Cumulative GDP loss from peak to trough (%) and 1998 GDP as a % of 1989.

which is a separate story, of course (Polterovich and Popov, 2002; 2004). The point to make here, however, is that the regression results reported in this paper are quite robust to the timing of transformational recession and subsequent recovery, as well as to the inclusion/exclusions of observations on China and Vietnam.

POST-RECESSION RECOVERY

Factors that determine performance in the recovery period, that is, after the transformational recession is over, are somewhat different from the factors affecting performance during transformational recession. First, cumulative levels of liberalisation achieved by 1995 appear to play a positive role at the initial stage of recovery, 1994–1998 (Figure 7). At the subsequent stages, the level of cumulative liberalisation achieved by the mid-1990s does not seem to be important (Figure 8), but the progress in liberalisation (increase in its level during recovery) appears to affect performance positively (Figure 9). This result is confirmed by the regression analysis (Table 3) – in most specifications the increase of liberalisation during the recovery, in 1995–2005, has a positive and significant effect on economic growth (although the level of liberalisation by the mid-1990s is either insignificant or affects growth negatively).[9]

[9] The level of the liberalisation by 1995 is negatively correlated with the increase of the liberalization index in 1995–2003, so both indices cannot be included into the same regression (when both are included, one or both become insignificant).

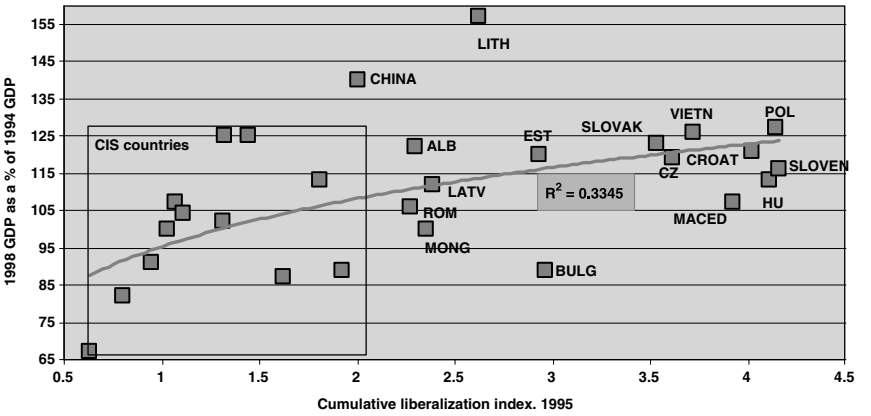

Figure 7: Liberalisation index by 1995 and performance in 1994–1998.

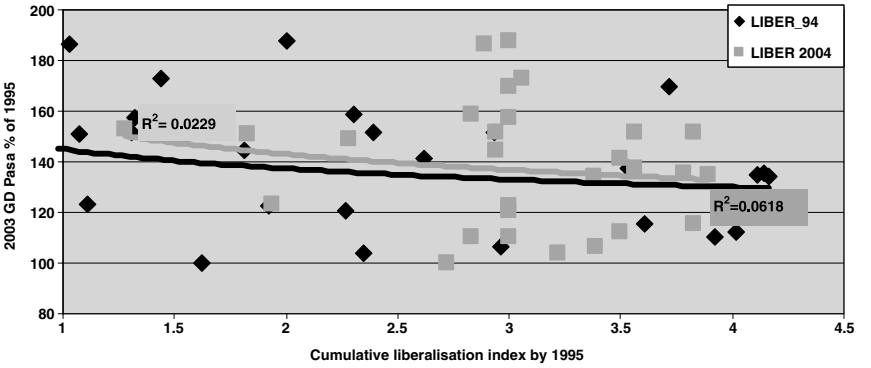

Figure 8: Liberalisation and output change in transition economies in 1995–2003.

Second, pre-transition distortions and pre-transition level of GDP per capita do not play any significant role in explaining performance in the recovery period – the coefficients of these variables are not statistically significant in any of the specifications.[10] The war dummy variable is always significant, but acquires a positive sign (unlike for the recession period, when it was negative), suggesting that countries that suffered from wars in the first part of the 1990s recovered faster in the second half of the decade benefiting from the effects of post-war reconstruction.

[10] This is consistent with the result obtained by Popov (2000) and Godoy and Stiglitz (2004).

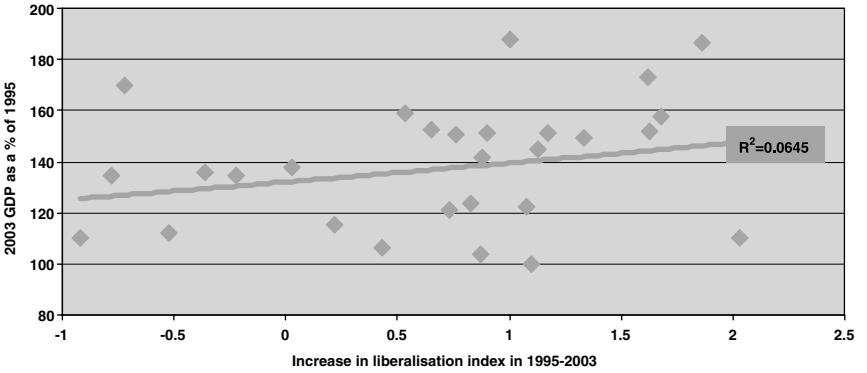

Figure 9: Liberalisation increase and output change in transition economies in 1995–2003.

And finally, third, indicators that determine institutional capacity, such as the rule of law index (positively), the decline in the ratio of government revenues in GDP and democratisation (negatively), continue to affect performance during recovery in the same way they affected performance during the transformational recession.

These results are very consistent with intuition and previous explanations. During the transformational recession, the reduction of output was determined by the magnitude of the pre-transition distortions and by the collapse of institutions, whereas the speed of liberalisation did not have any significant impact on performance. The impact of the speed of liberalisation was very likely negative, if any – rapid deregulation of prices caused an adverse supply shock that was beyond the ability of the economy to reallocate resources. The reason why this negative impact of immediate deregulation of prices does not show up in regressions is that indices of liberalisation only partially reflect the speed of price deregulation and, besides, there was in fact only one country (China) that carried out price deregulation gradually *via* the dual-track price system. The other possible reason is the endogeneity of liberalisation variable – the issue is dealt with in the next section.

During the recovery stage, after the inefficient enterprises were shut down in the course of the transformational recession, the pre-transition distortions do not affect performance any longer, but liberalisation increases start to matter and to pay off. Controlling for the country effects *via* introducing the indicator of previous performance (GDP change in 1989–1996), we get positive correlation between increases in liberaliation and performance in 1995–2005. This result is fully consistent with theory (marketiation dividend), but it is observed only at the stage of recovery, when the decline of the inefficient sectors of the economy comes to a halt.

Table 3: Regression of change in GDP in 1995–2005 on initial conditions, institutional capacity, liberalisation and rule of law and democracy indices, robust estimates

Equations, number of observations/variables	1 (*N*=28)	2 (*N*=28)	3 (*N*=28)	4 (*N*=28)	5 (*N*=28)	6 (*N*=28)
Constant	114***	90***	113***	150***	74***	102***
1996 GDP as a % of 1989 GDP	0.39***	0.59***			0.33**	
			0.58***			
War dummy[a]		38.1***	64.8.4***	41.8**	49.8***	32.5**
Liberalisation index in 1995			−30.4***	−25.3***		
Increase in the liberalisation index in 1995–2003	26.0***	28.3***			29.4***	29.4***
Decline in government revenues as a % of GDP from 1989–1991 to 1993–1996[a]				−1.13***		−1.03***
Rule of law index, average for 1989–1997, %			1.13**	1.86***	1.26***	1.60***
Democracy index, average for 1990–1998, %				−0.070***	−0.073***	−0.099***
Adjusted R^2, %	30	48	52	56	60	63

Dependent variable=2005. GDP as a % of 1995 GDP. For China, all indicators are for the period of 1979–1986 or similar.
, * Significant at 1%, 5% and 10% level, respectively.
[a] Equals 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia and Tajikistan and 0 for all other countries.

And the impact of institutional capacity of the state on performance is the same at both stages – during transformational recession and during the post-recession recovery. Democratiation without rule of law undermines institutional capacity, which has a devastating impact on output (Polterovich and Popov, 2005). This mechanism of the weakening of the institutional capacity in illiberal democracies is only partly associated with the reduction of the size of the state, that is, decline in the share of state revenues in GDP. The other part of the process is the decrease in the efficiency of the provision of the public goods – even controlling for the decline in the ratio of state revenues to GDP, the positive impact of rule of law on growth and the negative impact of democratisation persists.

To test the robustness, another dependent variable was used – GDP in 2003 as a % of 1995 (because at the time of writing 2005 GDP figures were still preliminary, whereas 2004 figures were expected to be revised). The results, however, were virtually unchanged – in all regressions statistical significance of the independent variables remained high. Another robustness test – the use of 1998 as the year of the beginning of the recovery: by this time all countries, except Moldova and Romania, reached the absolute bottom of output for 1989–2005 period. The difference in this case is that the control variable for the output change during the recession period (1989–1996) becomes insignificant and the significance of the war dummy variable falls to 10% level. Equation 5 from Table 3, for instance, takes the following form:

$$
\begin{aligned}
&Y2005/98 \\
&= 118.48 + 17.9WAR - 0.068DEM + 0.82RULEofLAW + 20.95LIBER \\
&\quad (6.77) \quad (1.75) \quad (-3.96) \quad (2.44) \quad (4.43)
\end{aligned}
$$

($N = 28$, adjusted $R^2 = 58\%$, T-statistics in brackets.)

DEALING WITH THE ENDOGENEITY

Many authors (Heybey and Murrell, 1999; Krueger and Ciolko, 1998; Denizer *et al.*, 2001; Godoy and Stiglitz, 2004) have pointed out to the endogeneity of liberalisation variable: not only performance is explained by the speed of liberalisation but also liberalisation itself is a function of performance (if performance is poor, it is more difficult for the government to push market reforms further). Krueger and Ciolko (1998) demonstrated through constructing the instrumental variable (by linking liberalisation to initial

conditions specified only as the pre-transition share of exports in GDP) that the hypothesis of the endogeneity of the liberalisation variable cannot be rejected. If the initial conditions for transformation are worse, then the probability of the deep transformational recession are greater and hence delays in liberalisation are more likely. Godoy and Stiglitz (2004) examined the impact of the speed of privatisation variable on performance: they instrumented this variable using the variables of pre-transition distortions from Popov (2000) and other measures of initial conditions and concluded that, after controlling for the level of privatisation, the *speed* (increment) of privatisation adversely affected growth in the 1990s.

If there is endogeneity in the regressions presented in previous sections, the estimates cannot be considered correct, so it is necessary to resort to 2SLS estimation. Thus, first, the impact of liberalisation on performance during recession (1989–1996) is examined, and later, the impact of the level and change in liberalisation indices on performance during recovery (1995–2003) is analysed. Liberalisation index in 1995 is strongly correlated with the level of democracy in 1990–1998 ($R = 60\%$), while the level of democracy itself is not correlated with GDP growth in 1989–1996 ($R = 5\%$), so liberalisation can be instrumented with the democracy level variable. Economic interpretation of this correlation is rather obvious – it is well established that market-type reforms went hand in hand with democratic reforms in post-communist countries (EBRD, 1999, Chapter 5). The results are presented in Table 4, where the rule of law and democracy indices are used separately (so that the liberalisation index can be instrumented with the democracy level variable). In addition to the rule of law index, the indicator of the increase in the share of shadow economy is used to account for the decline in the institutional capacity of the state. This is the objective measure of state capacity defined as the ability of the government to enforce rules and regulations.[11]

The new result here is that the coefficient of liberalisation level in 1995 is negative and statistically significant in most specifications: the more liberalised was the economy by 1995, the larger was the reduction of GDP in 1989–1996, during the transformational recession. This result is different from the previous regressions: when liberaliation variable was not instrumented, it turned out to be insignificant.

[11] The number of observations in this case is only 17 (lack of data on shadow economy). Because the increase in the share of shadow economy is strongly correlated with the decline in the ratio of government revenues to GDP (Popov, 2000), these two indicators are included into the right-hand side of the equation separately (to avoid multicolinearity).

Table 4: 2SLS robust estimates – regression of change in GDP in 1989–1996 on initial conditions, institutional capacity, liberalisation and rule of law and democracy indices (liberalisation index instrumented with the democracy level variable)

Equations, number of observations/variables	1 (*N*=28)	2 (*N*=28)	3 (*N*=17)	4 (*N*=17)
Constant	6.4***	6.3***	6.0***	6.0***
Pre-transition distortions, % of GDP	−0.01***	−0.02***		−0.004
1987 PPP GDP per capita, % of the US level	−0.007**	−0.01***		
War dummy[a]	−0.045***	−0.029[b]		
Liberalisation index in 1995	−0.018**	−0.039*	−0.019***	−0.019***
Decline in government revenues as a % of GDP from 1989–1991 to 1993–1996	−0.02***	−0.02***		
Log (inflation, % a year, 1990–1995, geometric average)	−1.7***	−0.022***	−.022***	−0.019***
Rule of law index, average for 1989–1997, %		−0.01[c]		
Increase in the share of shadow economy in GDP in 1989–94, pp			−0.02***	−0.015***
R^2, %	86	77	88	90

Dependent variable=Log (1996 GDP as a % of 1989 GDP). For China, all indicators are for the period of 1979–1986 or similar.
*, **, *** Significant at 1%, 5% and 10% level, respectively.
[a] Equals 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia and Tajikistan and 0 for all other countries.
[b] Significant at 12% level.
[c] Significant at 16% level.

Choosing another year for the end of the recession, 1998, and considering the period of 1989–1998, the results (R^2 and T-statistics) worsen somewhat, but still hold. The first equation from Table 4 takes the form:

$$\begin{aligned} &Log(Y98/89) \\ &= 6.76 - 0.41WAR - 0.01DIST - 0.02GOVREVdecline - 0.23Log(INFL) - 0.255LIBER \\ &\quad (11.51)\quad (-3.23)\quad (-2.33)\qquad (-2.58)\qquad (-6.27)\qquad (-2.26) \end{aligned}$$

Liberalisation index by 1995 is instrumented with the democracy index variable. ($N=28$, $R^2=75\%$, T-statistics in brackets.)

Equation 3 from Table 4 takes the following form:

$$\begin{aligned} &Log(Y98/89) \\ &= 6.14 - 0.015SHADecon - 0.23Log(INFL) - 0.21LIBER \\ &\quad (13.62)\quad (-3.36)\qquad\quad (-4.06)\qquad (-2.30) \end{aligned}$$

Liberalisation index by 1995 is instrumented with the democracy index variable. ($N=17$, $R^2=78\%$, T-statistics in brackets.)

If the distortions variable is added to this equation, it turns out to be insignificant (the farther away the year of the bottom of the recession is moved, the more insignificant it is), but the variable characterising the decline in government revenues in the beginning of the 1990s is significant even together with the shadow economy indicator:

$$\begin{aligned} &Log(Y98/89) \\ &= 6.02 - 0.012SHADecon - 0.014GOVREVdecline - 0.21Log(INFL) - 0.18LIBER \\ &\quad (14.94) \quad (-2.95) \qquad\qquad (-1.75) \qquad\qquad (-3.93) \qquad (-2.21) \end{aligned}$$

Liberalisation index by 1995 is instrumented with the democracy index variable. ($N = 17$, $R^2 = 87\%$, T-statistics in brackets).

On the contrary, for the recovery period, instrumentation of the liberalisation variable does not lead to different conclusions, but only strengthens previously obtained results. Here, it is the increase in liberalisation during the recovery that needs to be instrumented, because the level of the liberaliation in 1995, before the recovery, becomes just one of the initial conditions.

Two variables are good candidates for the instruments – the FSU dummy (membership in the FSU) and the preceding level of liberalisation, that is, liberalisation in 1995. Both variables are strongly correlated with increase in liberalisation in 1995–2003 (R is equal to 0.76 and -0.86, respectively), but not correlated with the GDP change in 1995–2003 (R is 0.24 and -0.28), so they could be used as an instrument for the change in the liberalisation index in 1995–2003. The economic interpretation of this correlation is that countries of the FSU, in general, liberalised their economies more slowly than other (East European) transition economies, so that liberalisation index by 1995 was rather low and the bulk of liberalisation occurred later than in EE countries, that is, in 1995–2003; besides, the more liberalised the transition economies by 1995, the shorter the part of the road to achieve full liberalisation. So the relationship between liberalisation stock by 1995 and subsequent liberalisation increment is, as expected, negative. The results are in Table 5 and are no different from those reported in Table 3, describing regressions without the instrumentation of liberalisation change variable: in fact, the coefficient of instrumented liberalisation change variable is higher and no less significant than without instrumentation.

To test the robustness, other periods for the economic recovery were selected (1995–2005 and 1998–2005, figures for 2005 are preliminary). The results are even stronger than before – R^2 and T-statistics are generally better even without the control variable that was used previously – GDP change in 1989–1996 (this latter variable becomes insignificant). For the 1998–2005

Table 5: 2SLS robust estimates – regression of change in GDP in 1995–2003 on initial conditions, institutional capacity, liberalisation and rule of law and democracy indices

Equations, number of observations/variables	1 (*N*=28)	2 (*N*=28)	3 (*N*=28)	4 (*N*=28)
Instruments for liberalisation change in 1995–2003 variable	LIBER95	FSU	LIBER95 and FSU	LIBER95 and FSU
Constant	97.8***	95.8***	97.7***	79.5***
1996 GDP as a % of 1989 GDP				0.18*
War dummy[a]	19.5*	19.8**	19.5*	25.0**
Increase in liberalisation index in 1995–2003	18.2***	19.2**	18.3***	22.9***
Decline in government revenues as a % of GDP from 1989–1991 to 1993–1996	−0.076***	−0.078**	−0.076***	−0.065***
Rule of law index, average for 1989–1997, %	1.24***	1.28***	1.25***	1.13***
Democracy index, average for 1990–1998, %	−0.076***	−0.076***	−0.076***	−0.062***
R^2, %	55	54	55	56

Dependent variable=2003 GDP as a % of 1995. For China, the indicator is for the period 10 years earlier.
*, **, *** Significant at 1%, 5% and 10% level, respectively.
[a] Equals 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia and Tajikistan and 0 for all other countries.

period, the variable characterising the decline in government revenues becomes insignificant as well and the significance of war dummy variable declines (from 5% to 10% level in most regressions). These results are reported in Table 6.

So what needs to be explained is the negative impact of 'liberalization stock', accumulated by 1995, on economic performance in 1989–1996 – this negative impact becomes visible only when liberalisation is instrumented *via* democracy level indicator, whereas without instrumentation this impact is insignificant. The interpretation of this result is quite straightforward. Liberalisation is best explained by the democratisation process (it pushes liberalisation forward) and pre-transition distortions (large distortions force policy-makers to slow down liberalisation because they are afraid of the collapse of output). Democratisation pushes liberalisation forward too much, even accounting for other factors that influence liberalisation, such as the negative impact of pre-transition distortions, so liberalisation, inasmuch as it is determined endogenously, has a negative impact on performance. The impact of residual liberalisation (i.e. inasmuch as it is not determined within the specified model) is positive, but insignificant. Including the residual liberalisation into the right-hand side of the regression equation is equivalent to including actual liberalisation together with democracy variable (see Table 1, equation 7 – liberalisation impact is positive, but insignificant).

Table 6: 2SLS robust estimates – regression of change in GDP in 1995–2005 on initial conditions, institutional capacity, liberalisation and rule of law and democracy indices

Dependent variable	2005 GDP as a % of 1995			2005 GDP as a % of 1998		
equations, number of observations/variables	1 (*N*=28)	1 (*N*=28)	3 (N=28)	4 (*N*=28)	5 (*N*=28)	6 (*N*=28)
Instruments for liberalisation change in 1995–2003 variable	LIBER95	FSU	LIBER95 and FSU	LIBER95	FSU	LIBER95 and FSU
Constant	101.2***	98.6***	101.1***	112.8***	115.1***	112.9***
War dummy[a]	32.6**	32.9**	32.6**	19.3*	18.7*	19.3*
Increase in liberalisation index in 1995–2003	29.8***	31.2***	29.9***	23.3***	22.4***	23.3***
Decline in government revenues as a % of GDP from 1989–1991 to 1993–1996	−1.03***	1.06***	−0.01.03***			
Rule of law index, average for 1989–1997, %	1.61***	1.65***	1.61***	0.90***	0.87***	0.90***
Democracy index, average for 1990–1998, %	−0.099***	−1.00***	−0.099***	−0.070***	−0.069***	−0.070***
R^2, %	63	63	63	63	64	63

For China, the indicator is for the period 10 years earlier.
*, **, *** Significant at 1%, 5% and 10% level, respectively.
[a] Equals 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia and Tajikistan and 0 for all other countries.

The negative impact of fast liberalisation is associated with the rapid decline of the non-competitive industries that is not counterweighed by the rise of competitive sectors. The speed of the transfer of resources from non-competitive to competitive sectors is not infinite, it depends on a flow of new investment, so when fast liberalisation creates a need for restructuring that exceeds the investment potential of the economy, there is a general reduction of output – a typical supply-side recession that could have been avoided with slower pace of liberalisation.

CONCLUDING REMARKS

Differences in performance during the initial stage of transition (transformational recession) depend strongly on the initial conditions – pre-transition levels of GDP per capita and distortions in industrial structure and external trade patterns. The higher the distortions (militarisation, overindustrialisation, 'under-openness' of the economy and the share of perverted trade flows), the worse the performance as measured by the GDP change. And the higher was GDP per capita before transition, the greater were distortions embodied in fixed capital stock, the more difficult it was to overcome these distortions (because more investment was needed) to achieve growth.

By focusing on liberalisation and macroeconomic stabilisation as key policy variables in transition economies, the conventional wisdom overlooked the impact of strong institutions. Accounting for uneven initial conditions sheds new light on the relative importance of various policy factors. Macroeconomic stability continues to matter a great deal – the inclusion of the inflation variable improves goodness of fit, but liberalisation index in the initial period of transition (during the transformational recession that continued in most countries until mid-1990s) does not appear to be important – the coefficient is not statistically significant and in most cases has unexpected sign. On the contrary, changes in the institutional capacity of the state have dramatic impact on performance. It follows that the debate about the speed of the liberalisation (shock therapy *versus* gradualism) was to a large extent misfocused, whereas the crucial importance of strong institutions for good performance was overlooked.

After allowing for differing initial conditions, it turns out that the fall in output in transition economies was associated mostly with poor business environment, resulting from institutional collapse. Liberalisation alone, when it is not complemented with strong institutions, cannot ensure good performance. Institutional capacities, in turn, depend to a large extent on the combination of the rule of law and democracy: the data seem to suggest

that both authoritarian and democratic regimes can have strong rule of law and can deliver efficient institutions, whereas under the weak rule of law, authoritarian regimes do a better job in maintaining efficient institutions than democracies. To put it in a shorter form, the record of illiberal democracies in ensuring institutional capacities is the worst, which predictably has a devastating impact on output.

Moreover, the impact of the speed of liberalisation at the initial stage of transition, that is, during the transformational recession, appears to be negative, if any. To the extent the speed of liberalisation was endogenous, that is, inasmuch as it was determined by political economy forces, pushing it forward (like democratisation) or holding it back (like pre-transition distortions that could have led to the collapse of output during liberalisation and hence frightened policy-makers), it turns out that the impact of liberalisation was negative, rather than positive. The reason for the negative impact is most probably associated with limited ability of the economy to adjust to new price ratios that emerge after rapid liberalisation, and in particular – with investment constraints that do not allow to transfer rapidly capital stock from inefficient to efficient industries and to compensate the fall in output in non-competitive sectors by the rise in competitive sectors.

To conclude, the process of the collapse of output in transition economies is best described by the supply-side recession model, where the key determinants are initial conditions and the strength of institutions, whereas the speed of liberalisation, to the extent it was endogenous, that is, driven by political economy factors, had an adverse effect on performance.

At the recovery stage, liberalisation starts to affect growth positively, whereas the impact of pre-transition distortions disappears. Institutional capacity and macroeconomic policy continue to be important prerequisites for successful performance. Liberalisation, which proceeds much more slowly at the recovery stage (and for some countries is even negative – see Figure 9) influences performance positively because it creates market stimuli without causing rapid collapse of output in inefficient industries, which cannot be compensated fully by the rise of efficient industries due to investment constraints.

To be sure, these factors are not sufficient to explain an 'economic miracle', like in China, which remains an outlier in all regressions. Very rapid growth is virtually always associated with the increase in export/GDP ratio, that is, it is an export-led growth, and it requires export-oriented industrial strategy. The key and most efficient instrument of this export-oriented industrial strategy appears to be undervalued exchange rate that is maintained through accumulation of foreign exchange reserves (Polterovich and Popov, 2002; 2004).

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APPENDIX A. DETERMINING THE YEAR OF THE END OF THE RECESSION AND THE START OF THE RECOVERY

The determination of the exact date of the trough of the downturn and the start of recovery for all 26 countries that experienced transformational recession (China and Vietnam are excluded from the sample) poses some problems. Assigning a specific trough for each and every country is problematic because the cross-country comparison in this case will ignore the length of recession (which lasted from 2 years in Poland to 10 years in Moldova – see Figure A1).

Formal methods to determine a single year for all countries give different results. The unweighted average of GDP indices for 26 countries bottoms out

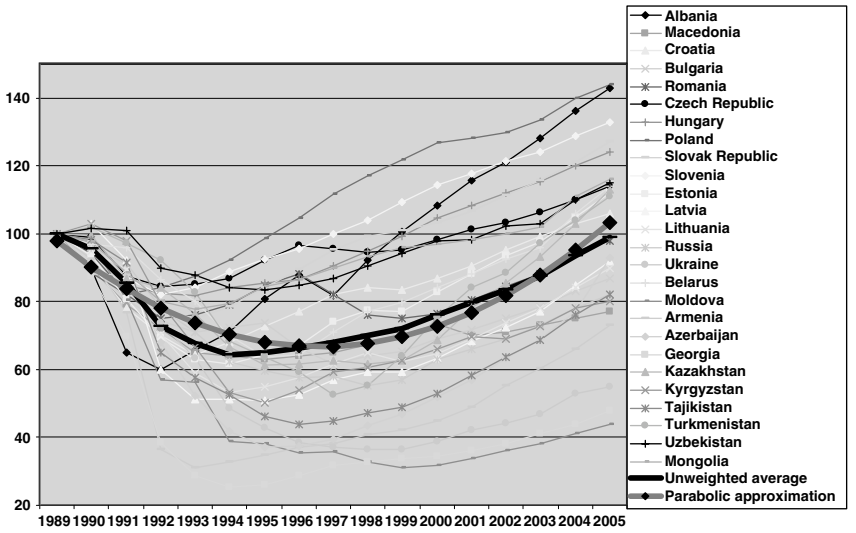

Figure A1: GDP in EE and FSU economies and Mongolia.

in 1994, whereas the parabolic approximation of panel data (GDP by year and by country as a percentage of the 1989 level) determines the year of the bottom of the recession as between 1996 and 1997[12] (Figure 1A). The use of more sophisticated methods of finding the structural break in the series is also questionable: the choice of any single year will overestimate the length of the recession in some countries and/or underestimate the length of the recession in the other.

Hence, the approach chosen in this paper is to use several alternative years of the end of the recession and the start of the recovery and to show that the results hold, no matter which particular year is chosen. For the recession trough 1996 and 1998 were used, so the periods considered were 1989–1996 and 1989–1998. The absolute trough was reached before the end of 1994 in 14 countries out of 26, by the end of 1996 in 21 countries, and by the end of 1998 in 24 countries. For the start of the recovery, the year 1994 was used in the earlier article (Popov, 2000), so the period considered was 1994–1998. In the current article, the years 1995 and 1998 were assumed to be the start of the recovery and three periods were considered – 1995–2003, 1995–2005 and 1998–2005. The results were generally unchanged, but weakened somewhat when the period of recession was stretched forward by 2 years (from 1989–1996 to 1989–1998) and when the period of the beginning of recovery was stretched backwards (from 1998 to 1995). The best results were obtained for the recession period 1989–1996 and for the recovery period 1998–2005, which is quite consistent with intuition.

[12] $\underset{(11.65)}{\text{Output} = 2110067} + \underset{(11.64)}{0.5292629\ (\text{YEAR})^2} - \underset{(-11.64)}{2113.523\ (\text{YEAR})},$
$N = 442$ (17 years and 26 countries), $R^2 = 23$, T-statistics in brackets. FOC allows to determine the exact year of the minimum – it is 1996–1997.