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The Savings Collapse during the Transition in Eastern Europe

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The transition economies of Eastern Europe almost uniformly experienced a precipitous plunge in savings rates—from levels above 30 percent of GDP to levels about half that—early in the transition, before rebounding slightly. Did savings collapse because involuntary savings were eliminated (when goods became available for purchase) or because of a change in equilibrium savings, reflecting the changed economic circumstances and long-term prospects?

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Summary findings

Denizer and Wolf assess the presence and extent of involuntary savings by comparing the predicted savings rates of market economies with those of the pre-transition economies. On balance, predicted savings rates fell short of actual savings rates, especially for the former Soviet Union and the Baltics—providing some support for the notion of excessive pre-transition savings.

Comparing the savings behavior of market economies and transition economies, they found substantial similarities, except for a negative link between savings and GDP growth. As the fastest-growing transition

economies are at the bottom of the adjustment J-curve, the finding is consistent with consumption smoothing.

Finally, they explored whether differences in the extent of economic liberalization affected savings rates in the cross-section of transition economies. They found that liberalization is associated with lower savings, with a one-year lag. To the extent that liberalization is perceived as an indicator of likely future growth, this behavior is consistent with smoothing in the face of a J-curve change in output.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to understand the determinants of savings during the transition to a market economy. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Irina Partola, room H4-346, telephone 202-473-5759, fax 202-522-2751, email address ipartola@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. Cevdet Denizer may be contacted at cdenizer@worldbank.org. August 2000. (13 pages)

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The Savings Collapse during the Transition in Eastern Europe

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1. Introduction

The last decade witnessed wrenching changes in the transition economies of central and eastern Europe. Among the notable puzzling features of the transition has been a precipitous plunge of measured savings rates from pre-transition levels in the thirty-percent range to the low twenties and even teens. This paper examines alternative explanations of this savings collapse.

Definitionally, the plunge can be decomposed into three parts. First, the change due to movements in the determinants of savings. Second, the change due to movements in the equilibrium elasticities of savings with respect to at least some of the determinants. Third, the elimination of dis-equilibrium or “involuntary savings” during the transition from plan to market.

We examine the evidence for all three stories for the European transition economies in the 1989 to 1995 period. We first compute hypothetical “equilibrium” savings rates at the beginning of the sample, based on the assumption that savings elasticities estimated for market economies on comparable development levels can be applied to the transition economies. The difference between the actual rates and these hypothetical equilibrium rates then provides a measure of involuntary savings.

For the latter transition years it is reasonable to assume that price liberalization eliminated any dis-equilibrium savings. Any additional changes in the savings elasticities must thus be due to changes in either the determinants or the elasticities. We compare savings elasticities for transition and market economies and explore the causes for cross-section differences in savings across transition economies.

2. Savings Data during the Transition

The sample includes ten transition economies from eastern and central Europe (Albania, Bulgaria, Croatia, Czech Republic, FYR Macedonia, Poland, Hungary, Romania, Slovak Republic and Slovenia), the three Baltic states (Estonia, Latvia, Lithuania) and the twelve non-Baltic successor states of the Soviet Union (Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Kyrgyz

Republic, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan). Our focus is the ratio of gross domestic savings (GDS) to GDP, with GDS derived residually from the current account deficit and gross domestic investment, using internally consistent World Bank national accounts statistics for all components.

Table 1 reports the gross domestic savings rates and the fiscal deficit. Pre-transition savings rates (1989 for central Europe, 1990-91 for the FSU and the Baltics) were among the highest in international comparison, averaging about thirty percent, before sharply declining to about ten percent in the early transition years, with a slight increase in the latter years.

The savings data for transition economies suffer from two potential problems. First, it is possible, indeed likely, that the national account statistics capture only a subset of activity. If both expenditure and income data are incorrectly measured, the net effect on savings is ambiguous. Second, the nominal data are deflated by price indices that exclude activity in the informal sector. Depending on the extent of the black-market spread, the pre-transition price level is thus understated, and thus savings (and the monetary overhang defined vis a vis the measured price level) are consequently over-stated [Dornbusch and Wolf (2000)].

3. Involuntary Savings

The welfare implications of the collapse of measured savings depends crucially upon whether the pre-transition savings were voluntary and stable; voluntary but driven by expectations of the systemic change --- for example, reflecting the expectation of sharp relative price changes and greater availability of goods --- or involuntary, reflecting binding limits on consumption spending below desired levels. Of these three explanations, the second commands least empirical support: savings rates in socialist were high throughout the 1980s.

Table 1: Savings Rates

	1989	1990	1991	1992	1993	1994	1995
Albania	28.9	12.3	-14.2	-75.8	-38.3	-16.8	-7.8
Bulgaria	31.4	22.0	35.8	18.8	10.7	20.9	24.8
Croatia	NA	NA	2.2	19.5	13.3	12.0	1.4
Czech Republic	30.6	29.9	36.8	27.4	20.2	20.1	20.2
Hungary	29.9	28.0	18.7	14.9	11.2	15.0	18.9
Macedonia	033.0	23.5	11.0	11.9	11.5	4.1	15.0
Poland	42.7	32.8	18.0	16.7	16.5	16.9	18.3
Romania	29.5	20.8	24.1	23.0	24.0	24.9	22.9
Slovakia	28.5	24.2	28.2	24.1	21.8	28.8	31.6
Slovenia	33.0	32.6	27.4	26.5	20.6	22.6	21.3
<i>Average</i>	32	25	19	11	11	15	17
<i>Average GDP growth</i>	0.6	-6.4	-14.0	-7.4	0.1	3.4	4.3
Armenia	38.2	35.8	20.5	-19.8	-3.7	-19.2	-19.9
Azerbaijan	34.7	31.9	39.4	17.0	-3.2	3.4	3.7
Belarus	35.8	29.3	32.9	33.7	21.4	15.6	22.6
Estonia	25.9	22.3	34.5	29.7	23.5	17.8	25.0
Georgia	25.3	24.9	24.9	1.7	-18.9	-32.7	-9.1
Kazakstan	34.7	31.9	39.4	30.2	21.3	12.3	19.6
Kyrgyz Republic	13.1	4.0	14.0	7.9	4.0	14.0	10.0
Latvia	34.7	38.8	43.5	48.1	25.4	19.5	20.0
Lithuania	25.8	25.2	28.5	17.9	14.5	9.4	14.3
Moldova	34.7	31.9	39.4	15.0	-6.0	0.0	-0.0
Russia	34.7	31.9	39.4	38.4	35.0	29.1	25.6
Tajikistan	12.5	13.7	17.3	18.0	-10.9	-0.0	18.1
Turkmenistan	34.7	31.9	39.4	21.0	20.0	14.0	12.0
Ukraine	NA	26.3	28.4	36.4	36.0	19.8	16.8
Uzbekistan	18.2	15.7	23.6	33.8	15.9	24.4	20.0
<i>Average</i>	28.8	26.4	31.0	21.9	11.6	8.5	11.9
<i>Average GDP Growth</i>	2.2	-3.2	-8.4	-23.3	-13.2	-13.6	-3.7

The possibility of involuntary savings in the pre-transition period has been the subject of a lively debate.² Results have differed sharply, reflecting the high evidentiary hurdles that need to be overcome. Involuntary savings can only exist if consumers lack access to any goods or asset market where price movements can equate demand and supply [Dornbusch and Wolf (2000)].³ Consequently, the inability to purchase goods at official prices in official stores, as reflected in queues, is a necessary but not a sufficient condition for the presence of involuntary savings.

We estimate the presence of dis-equilibrium savings indirectly by comparing the actual savings rates in the pre-transition period (defined as 1989 for central Europe, and as 1989-91 for the FSU and the Baltics⁴) with the predicted savings rate for market economies with the same fundamentals as the pre-transition economies. The difference between these predicted equilibrium savings rates and the observed savings rates then provides a measure of the extent of involuntary savings. Specifically, suppose that equilibrium savings for market economies are described by

$$(1) S_{it}^E = X_{it} \beta + u_{it}$$

where i indexes the country, t denotes time and X denotes a set of relevant savings determinants. Under the dual assumption that, first, equation (1) would also have described the socialist economies if they had operated as market economies, and second, that disequilibrium savings in market economies are negligible, an indirect estimate of disequilibrium savings $S_{it}^{D^*}$ can be calculated as:

² See Kornai (1980,1992), Hartwig (1983), Nuti (1986), Alexeev (1988), Davis and Charemza (1989), Quant (1989) Alexeev, Gaddy and Leitzel (1991), Cochrane and Ickes (1991), IMF (1991), Weitzman (1991), Nove (1992), Easterly and Fischer (1994), Bennet and Boycko (1995), for alternative viewpoints on these issues

³ This definition of involuntary savings has no implications for efficiency; it merely requires consumption decisions to be made on the margin without a binding quantity constraint inside the budget constraint.

⁴ The end point is determined by the period of extensive price liberalization.

$$(2) S_{it}^{D^*} = S_{it} - S_{it}^E = S_{it} - X_{it} \beta$$

where S_{it} denotes observed savings. An estimate of desired savings in socialist economies can then be obtained by estimating the coefficient vector β for a cross section of market economies, and combining it with the observed determinants X of the transition economies. The quality of the prediction depends on the accuracy with which the coefficient vector is measured, the transferability of this vector to transition countries, the explanatory power of the included variables and the accuracy with which these variables are measured in both market and transition economies.

The approach requires the use of the same set of variables for both the market and the transition subsamples. Given the underlying hypothesis that the savings behavior in the socialist economies would not have differed markedly from that of other market economies with similar values of the savings determinants if in fact the socialist countries had operated as market economies, we use Edwards' (1996) cross-country regression framework for Latin America as the base for our estimation. Our approach requires all variables used for the cross-country regression to be also available for the socialist economies, eliminating wealth and effective interest rates from the set of explanatory variables used by Edwards (1996). The remaining set includes the dependency ratio, the urbanization ratio, GDP growth, the M2 to GDP ratio, inflation, the change in the terms of trade, per capita GDP and a dummy for military conflict. Table 2 contrasts the predicted voluntary savings rates with the actual savings rates.

With one exception (the Czech Republic) actual savings rates either are substantially above predicted rates (in Bulgaria and Poland and Romania), indicating involuntary savings, or roughly equal to predicted rates (in Hungary and Slovakia). The findings are thus consistent with the presence of involuntary savings in at least some central European countries. For the Baltics and the FSU, the evidence for involuntary savings is quite strong: in thirty of the thirty-four cases, actual savings exceed predicted savings. The gap widens substantially in 1990 and 1991, reflecting not so much a change in actual savings rates but rather a steep decline of predicted rates reflecting adverse terms of trade shocks and the beginning growth collapse. In interpreting these findings, it must be born in mind, however, that the pre-transition savings levels are likely to be upward biased due to the exclusion of black market transaction prices from the official price indices.

Table 3: Actual And Predicted Savings Rates: Pre-Transition

		1989		1989	1990	1991		1989	1990	1991
Actual	Bulgaria	31.4	Estonia	25.9	22.3	34.5	Armenia	38.2	35.8	20.5
Predicted		22.4		24.2	16.0	14.7		25.3	14.7	8.3
Actual	Czech	30.6	Latvia	34.7	38.8	43.5	Azerbaijan	34.7	31.9	39.4
Predicted		39.4		26.6	24.9	15.8		18.7	6.4	16.0
Actual	Hungary	29.9	Lithuania	25.8	25.2	28.5	Belarus	35.8	29.3	32.9
Predicted		29.4		23.9	16.6	11.3		28.0	24.3	23.2
Actual	Poland	42.7					Georgia	25.3	24.9	24.9
Predicted		29.6						25.2	13.1	9.6
Actual	Romania	29.5					Kazakstan	34.7	31.9	39.4
Predicted		23.9						22.3	19.1	7.3
Actual	Slovakia	28.5					Kyrgyz Rep.	13.1	4.0	14.0
Predicted		30.4						14.6	14.4	8.7
Actual							Moldova	---	31.9	39.4
Predicted								---	16.2	4.4
Actual							Russia	34.7	31.9	39.4
Predicted								29.0	23.4	13.7
Actual							Tajikistan	12.5	13.7	17.3
Predicted								15.8	14.0	11.4
Actual							Turkmenistan	34.7	31.9	39.4
Predicted								13.4	12.6	8.4
Actual							Ukraine		26.3	28.4
Predicted									15.7	12.2
							Uzbekistan	18.2	15.7	23.6
								12.0	10.7	8.9
Actual	Central	32.1	Baltics	28.8	28.8	35.5	FSU	28.2	25.8	29.9
Predicted	Europe	29.2		24.9	19.2	14.0	Ex. Baltics	20.4	15.4	11.0
Difference		2.9		3.9	9.6	21.5		7.8	10.4	18.9

4. Savings Determinants in Transition and Non-Transition Economies

The elimination or at least reduction of price controls after 1989 in EE and after 1991 in the FSU [De Melo, Denizer and Gelb (1996)] opened a margin of substitution, eliminating forced savings [Kornai (1992), Welfe (1989), Quant (1989)], primarily through a reduction of the real value of savings through inflation. For the 1990/1-1995 period, the evolution of savings is thus arguably best thought off in terms of changes in desired equilibrium savings. Table 4 begins the exploration of savings in this period by contrasting the savings regression for market economies (underlying the estimation of predicted savings rates reported in table 3) with identical regressions estimated for the transition economies. The first column reports a panel regression for the full sample, the second column drops the year 1989, the third column reports results for the final sample year, and column 4 reports the results for market economies.

Table 4: Savings Rate Regressions for Transition and Market Economies

	Transition 1989-95	Transition 1990-95	Transition 1995	Market
Constant	0.078 (0.67)	0.152 (1.17)	0.683 (2.05)**	7.758 (1.00)
Dependency Ratio	0.031 (0.27)	-0.032 (0.25)	-0.518 (1.63)	-0.175 (2.40)**
Urbanization Ratio	0.070 (0.74)	0.010 (0.10)	-0.420 (1.75)	-0.171 (3.70)**
GDP Growth	-0.213 (2.41)**	-0.263 (2.82)**	-0.664 (1.97)*	0.008 (0.05)
M2/GDP	0.077 (2.15)**	0.076 (1.98)**	0.283 (2.23)**	-0.077 (2.42)**
CPI Inflation	-0.001 (2.79)**	-0.001 (2.60)**	-0.001 (0.23)	0.001 (0.91)
Terms of Trade Change	-0.007 (0.26)	-0.009 (0.31)	0.613 (3.81)**	0.119 (1.82)*
GDP per capita	1.6E-5 (2.46)**	1.37E-5 (1.89)*	-4.2E-6 (0.28)	3.1E-5 (6.57)**
War	-0.200 (6.03)**	-0.214 (6.12)**	-0.229 (3.09)**	-0.099 (1.42)
R ²	0.544	0.55	0.78	0.25
Observations	150	131	22	254
Time Dummies	N	N	N	N

t-statistics in brackets. * and **: significant at the 10% and 5% level.

A comparison of the results suggests both similarities and differences between transition and established market economies, with a tendency towards greater similarity over time. Focussing on the final sample year, the familiar negative link between the dependency and urbanization ratios and savings rates [Edwards (1993, 1995), Bayoumi, Masson and Samiei (1995), Loayza, Schmidt-Hebbel and Serven (1998)] holds across the transition economies. The negative effect of wars and the positive effect of terms of trade growth [Ostry and Reinhart (1992), Bayoumi, Masson and Samiei (1995)] are likewise common for both established market and transition economies.

The empirical literature has had mixed success in establishing a firm link between inflation and savings rates. While the entire transition sample displays a significant negative link, the effect is strongest in the early transition years, indeed, by 1995, the inflation link has become both economically and statistically insignificant. Prior findings for developing economies have tended to find a positive dependence between savings and GDP per capita [Collins (1991), Edwards (1993, 1995), Bayoumi, Masson and Samiei (1995)]. The positive link also holds for the entire transition sample, though it weakens over time, indeed, the coefficient for the 1995 sample is negative, though insignificant.

The most striking differences between established market economies and the transition economies emerge for the M2/GDP ratio and for economic growth. The expected effect of M2/GDP ratio on savings depends on whether it is viewed as a proxy for financial deepening --- suggesting a positive effect --- or as an indicator of borrowing constraints --- suggesting a negative effect. Empirically, most negative and positive effects have been found [Schmidt-Hebbel, Webb and Corsetti (1992), Edwards (1993, 1995), Loayza, Schmidt-Hebbel and Serven (1998)]. For the transition economies the results are unambiguous: both for the entire period, and over individual years, a higher ratio of M2 to GDP has a significant positive association with savings, while we find a negative association for the sample of established market economies.

Results differ similarly for economic growth. Prior research has found growth to be positively associated with savings for developing countries [Collins (1991) Edwards (1993, 1995), Bayoumi, Masson and Samiei (1995)], and we also find a positive, albeit insignificant effect for the

sample of market economies. In sharp contrast, higher growth is associated with lower savings for the transition economies; furthermore, the effect grows over the sample period. The finding may reflect consumption smoothing: the fast growing countries can be found at the bottom of the adjustment J-curve, a substantial part of the growth may thus reflect a re-bounce to prior levels.

5. The Role of Transition Strategy

The transition from plan to market dramatically changed circumstances in the ex-socialist economies and may thus reasonably be expected to have influenced desired savings. From the viewpoint of the precautionary motive for savings, the move from a “cradle to grave” social safety net under socialism to fairly unfettered market economies significantly raised individual income uncertainty; while viewed from a consumption smoothing perspective the transition tilted expected lifetime real income profiles upwards for the better skilled and motivated individuals, but downward for older, less skilled individuals and in particular for individuals receiving income support from the social security system. We next examine whether differences in the degree of liberalization exerted a significant effect on savings in the cross-section of transition economies.

Table 5 reports a set of regressions adding the liberalization index developed by de Melo, Denizer and Gelb (1996) to the standard regression to exploring the link. The index is defined on a zero to one range, and is comprised of three sub-indices measuring the degree of internal liberalization, of external liberalization and of price liberalization. Column 1 adds the current index value and, to allow for lagged effects, the index value of the previous period. While the current level of liberalization is not significantly associated with current savings, greater liberalization in the previous year is associated with a significant and quantitatively very large decline in savings in the current year. To the extent that liberalization became gradually associated with eventual growth, the link is consistent with a smoothing of consumption in the initial phase of the creative destruction engendered J-curve link between reform and output.

Table 5: Savings Rate Regressions for Transition Economies

	1	2	3	4	5	6
Constant	0.258 (2.09)**	0.229 (1.84)*	0.263 (2.14)**	0.274 (2.24)**	0.223 (1.76)*	0.246 (2.02)**
Dependency Ratio	-0.129 (1.07)	-0.137 (1.12)	-0.154 (1.28)	-0.146 (1.22)	-0.082 (0.66)	-0.132 (1.10)
Urbanization Ratio	0.048 (0.49)	0.061 (0.62)	0.085 (0.86)	0.060 (0.62)	0.137 (0.13)	0.070 (0.72)
GDP Growth	-0.063 (0.83)	0.009 (0.86)	-0.094 (1.00)	-0.105 (1.13)	-0.140 (1.44)	-0.084 (0.89)
M2/GDP	0.016 (0.41)	0.002 (0.58)	0.009 (0.23)	0.005 (0.12)	0.036 (0.93)	0.019 (0.52)
CPI Inflation	-0.001 (3.20)**	-0.001 (3.18)**	-0.001 (3.24)**	-0.001 (3.19)**	-0.001 (3.04)**	-0.001 (3.33)**
Terms of Trade Change	-0.013 (0.50)	-0.017 (0.63)	-0.011 (0.43)	-0.013 (0.48)	-0.014 (0.51)	-0.013 (0.48)
GDP per capita	1.7E-5 (2.47)**	1.7E-5 (2.32)**	1.3E-5 (1.85)*	1.4E-5 (2.22)**	1.9E-5 (2.70)**	1.6E-5 (2.40)**
War	-0.201 (6.11)**	-0.195 (5.87)**	-0.202 (6.16)**	-0.198 (6.07)**	-0.205 (6.06)**	-0.205 (6.33)**
Current Liberalization Index	0.020 (0.26)	-0.016 (0.21)				
Lagged Liberalization Index	-0.168 (2.14)**	-0.158 (1.74)*				
Lagged Internal Liberalization			-0.086 (1.33)	-0.127 (4.71)**		
Lagged External Liberalization			-0.089 (1.29)		-0.127 (4.67)**	
Lagged Price Liberalization			0.073 (1.00)			-0.137 (3.33)**
R ²	0.616	0.638	0.627	0.621	0.589	0.620
Observations	131	131	131	131	131	131
Time dummies included?		Yes				

t-statistics in brackets. * and **: significant at the 10% and 5% level.

The aggregate index however does not rule out the alternative possibility that the negative association reflects a faster dissolution of any remaining involuntary savings in the fast reforming countries. Eliminating common annual effects by including time dummies (column 2) changes the sign on the current liberalization index from positive to negative though still insignificant, while having little effect on the significance of the lagged liberalization index.

The last four columns explore differential effects across the three sub-indices capturing the restrictions on domestic market activity, on foreign trade, and the extent of the remaining price controls. Column 3 adds all three indices (all lagged once) to the regression, the remaining columns add one subindex at a time. While the three sub-indices are jointly highly significant, the disaggregation does not noticeably raise the overall explanatory power of the regression; the differences between the three indices are correspondingly muted. In particular, the price liberalization index, arguably a good proxy for the extent of any remaining involuntary savings, does not enter with either differential elasticity or significance.

5. Conclusions

The transition economies of Eastern Europe almost uniformly experienced a severe decline in savings rates from levels above thirty percent of GDP to levels in the teens early in the transition, before slightly rebounding. The savings collapse might be explained by the elimination of involuntary savings or by a change in equilibrium savings reflecting the changed economic circumstances and long term prospects.

We assessed the extent and presence of involuntary savings by computing the predicted savings rates of market economies with the same fundamentals as the pre-transition economies. On balance, predicted savings rates fell short of actual savings rates, particularly for the FSU and the Baltics, providing some support for the notion of excessive pre-transition savings.

Comparing the savings behavior of market economies and transition economies we found substantial similarities, with the notable exception of a negative link between savings and GDP growth. As the fastest growing transition economies can be found at the bottom of the adjustment J-curve, the finding is consistent with consumption smoothing.

Finally, we explored whether differences in the extent of economic liberalization affected savings rates in the cross-section of transition economies. We found this to be the case: greater liberalization is associated with lower savings with a one-year lag. To the extent that liberalization is perceived as an indicator of likely future growth, the behavior is consistent with smoothing in the face of a J-curve output evolution.

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