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Henderson, David R.; McNab, Robert M.; Rozsas, Tamas

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David R. Henderson, Robert M. McNab, and
Tamas Rozsas

Did Inequality Increase in Transition?

An Analysis of the Transition Countries of Eastern Europe and Central Asia

ABSTRACT: *In the first decade that the former socialist countries of Eastern Europe and Central Asia transitioned toward freer markets, measured income inequality increased. Because this contradicted previous models of inequality, researchers linked the increase in inequality to a supposed equality under socialism and to the process of economic and political liberalization. We show, however, that other factors, including hidden inequalities in the socialist era, can explain democratization's resultant increase in measured income inequality.*

The transition of many countries from socialism to somewhat free economies has been proceeding for almost fifteen years. The debate about whether the transition has increased income inequality remains contentious. Economic freedom has undoubtedly increased in many transition countries, but many remain nostalgic for the certainty and alleged lower inequality of the former regimes. With much apparent support from its citizens, the state of Russia appears to be reasserting its role in its citizens' economic lives and constricting their newfound rights.

This paper examines the apparent changes in income inequality in the East European and Central Asian transition economies to determine whether the increase

David R. Henderson (davidrhenderson1950@gmail.com) is an associate professor of economics at the Graduate School of Business and Public Policy, Naval Postgraduate School, Monterey, CA. Robert M. McNab (rmmcnab@nps.edu) is an associate professor of economics at the Defense Resources Management Institute, Naval Postgraduate School. Tamas Rozsas (tamas.rozsas@gmail.com) is a research fellow at the Hungarian Economic Development Institute, Budapest, Hungary. The views expressed in this paper represent those of the authors and are not official statements of policy of the U.S. government or the Republic of Hungary. The authors would like to thank Kathleen Bailey for her valuable research and editing skills and Rena Henderson for her valuable editing. All remaining errors are the authors'.

is real or spurious.[1] Because nominal wages were compressed, prices set arbitrarily low, and consumption opportunities limited during the socialist period—and because the transition has changed all these factors—it is often thought that transition has increased income inequality. Explorations of the issue, however, have not produced a consensus on the relation between the transition and income inequality. We examine the freeing of economies in the first decade of transition to address two questions: Did income inequality increase during the transition, and to the extent that it did, was it due to the transition to a freer economy or to other factors? To end the suspense, we give our answers briefly here. Although measured income inequality increased during the transition, the measures are so flawed, and so hard to compare over time within a given country, that one cannot be sure that actual inequality increased. Moreover, to the extent that income inequality may have increased, it could well be due to other factors.

Before getting to the issues, though, we must make an important caveat. Simply comparing the inequality levels of the socialist era and the transition era is misleading, even if one could do so in an unbiased way. The reason is that inequality in a socialist regime is much different from and serves a much different function than inequality in a relatively free economy. A large part of the inequality that existed in socialist regimes was due to differences in political power. To be one of the better off, one typically had to be politically well connected, or at a minimum, not a threat to the regime. Geishecker and Haisken-DeNew (2004) find that in the former Soviet Union from 1993 to 1999, there was a 25 percent wage premium associated with having been a member of the Communist Party during the Soviet era. This may not appear to be caused by socialist inequality, but much of it was. The authors find that approximately 40 percent of the wage premium can be explained by higher education and better occupational placement of former Communists. In relatively free economies, however, a large part of the inequality is due to differences in productivity. In such economies, inequality serves a valuable function: Because higher income is a reward for productivity, it motivates people to be more productive, benefiting virtually all of society. By contrast, that people in the Soviet Union were afraid to denounce Stalin for his millions of murders did not make the Soviet people, in general, better off. One could argue that the rewards to those who acquiesced made people worse off: If more people had been willing to denounce Stalin, he would have gotten away with fewer murders. But people in the United States, and not just Bill Gates, are better off because Bill Gates earns his income by giving consumers access to valuable software at a low price. With these distinctions in mind, we can examine the facts about whether inequality has increased in the transition away from socialism.

Literature Review

The consensus in the literature appears to be that democratization and income inequality increased in the initial transition period. On its face, this should not be

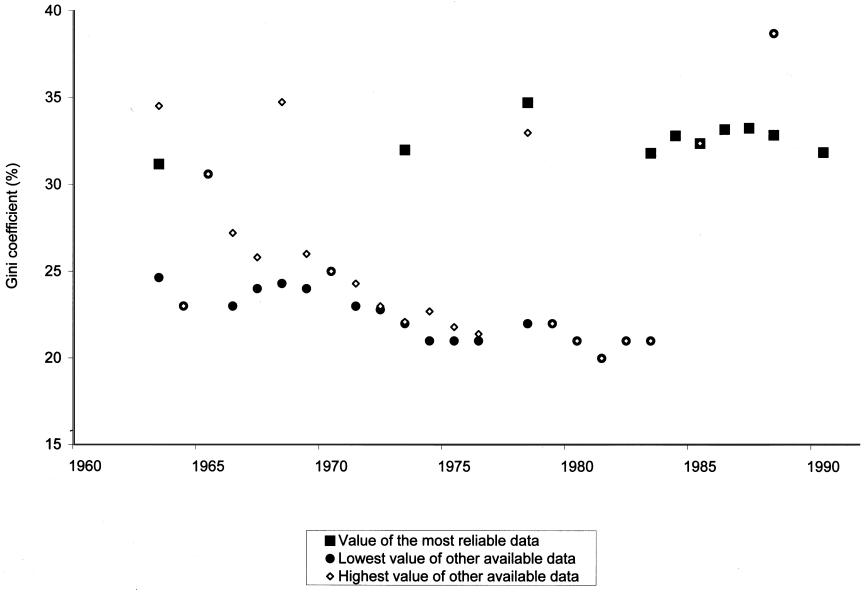
surprising, given that the centerpiece of socialist ideology was equality of income and wealth. Any move away from socialism, therefore, would plausibly result in an increase in income inequality. But plausibility is not enough. Has the existing literature firmly established an increase in inequality due to the transition away from socialism? It has not, as this review of the literature shows.

Several authors suggest that income inequality increased significantly during the early transition period (see, e.g., Deininger and Squire 1996; Mickelwright 1999; Milanovic 1996, 1998, 1999). Even if one ignores the bias in socialist-era income surveys, noted by Milanovic (1996) and discussed below, the reported measures vary significantly depending upon the unit of measure. Deininger and Squire (1996) report two different measures (17.91 and 34.72)[2] of Yugoslavia's 1968 income inequality among its urban population. Both measures are from the same source (Jain 1975), but the authors calculate the lower value on a household basis and the higher on an individual basis. The large variation among different data sets (see Figure 1) suggests, at a minimum, that measurement error is present and such data are suspect.

Milanovic (1996; 1998; 1999) uses socialist-era data to conclude that real average income declined and income inequality increased in the initial transition period. But there are serious problems with the data on the socialist era, as Milanovic (1996) recognizes. As is well known, and as Milanovic admits, top party officials had special subsidies and privileges. He asserts that these privileges were not so great as to make inequality noticeably greater than it appeared in the official data, writing: "[As] anybody who has visited vacation homes previously kept strictly off-limits for all but the top Party brass can testify, their level of comfort and service is below that of an average Holiday Inn" (1996, p. 200). But he fails to note that to people as poor as they were in the Soviet Union and other countries, even to party officials, the Holiday Inn would have been luxurious.[3] Socialist-era income surveys, moreover, deliberately omitted the tails of their income distributions, especially in the Soviet Union.

Much of the other literature on transition, even more recent literature, also relies on suspect socialist-era data. Using these data, Ferreira (1999) argues that Eastern Europe experienced an increase in income inequality in the 1990s. Mickelwright (1999) argues that, based on prior transition data, educational inequality has increased in the transition era. The data show an increase in education expenditures relative to income for top-decile households relative to the bottom, but it does not follow that access to education has become more restrictive for lower-income households. It is more likely that the data reflect the high value that higher-income households put on education, increasing their expenditures as new choices become available. That higher-income households spent their own earnings on education during the transition could imply, all other factors equal, a reduction in inequality. Under socialism, higher-income households, which tended to be politically better connected, did not need to spend their own money on education; instead, they were given higher-quality education by the state. Spending their own money

Figure 1. **Gini Coefficient Values from the Most Reliable Primary Sources and from Secondary Sources** (lowest and highest values) **for Yugoslavia Between 1963 and 1990**



Source: World Bank (1997).

on something the state had previously provided would give them less to spend on other items, creating more equality than otherwise.

Gradstein and Milanovic (2000) argue that an inverse relation appears to exist between democracy and income inequality, with the exception of the East European and former Soviet transitional countries.[4] The process of democratization appears to be slower in countries with higher Gini coefficients, and democratization and inequality also appear to increase throughout the period studied. From this evidence, Gradstein and Milanovic (2000) conclude that socialist values and state intervention limited inequality under socialism. However, the authors fail to examine the effect of potential hidden inequality during socialism (e.g., political privilege, limited access to goods, corruption) on their conclusions.

Rosser et al. (2000) observe an apparent positive correlation between the degree of observed income inequality and the share of the informal economy in gross domestic product (GDP) in the transitional countries. They note, however, that corruption may bias the data in an unknown direction. People who are engaged in the underground economy are unlikely to report their off-the-books income to strangers who survey them; for this reason, Rosser et al. (2000) caution against drawing inferences. Kattuman and Redmond (2001) argue that income inequality

increased from 1987 to 1996 in Hungary. However, when they divide the data into subperiods, their finding is not as compelling. They report no apparent increase in income inequality between 1987 and 1991—including an apparent decrease from 1989 to 1991—followed by a sharp increase in income inequality between 1991 and 1993, followed by negligible growth in income inequality between 1993 and 1996. Medgyesi et al. (2000) report a similar evolution of measured income inequality for Hungary from 1992 to 1996. Instead of a rapid and sustained increase of measured inequality in response to transition, there were increases and decreases in response to changes in the macroeconomic environment.[5] Neither paper explores whether the transition merely revealed hidden inequalities.

Remarkably, none of the reviewed articles employ primary survey data. In many cases, the studies rely on readily available Gini indices compiled from other sources, which are not comparable across countries and over time due to significant variations in sampling and collection methods. Survey methods and income definitions changed fundamentally during transition, and the changes have been so radical that they could account for an apparent change in inequality measurements. In addition, data for the pretransition period are scarce and unreliable. The Soviet-style surveys employed quota rather than random sampling (quota sampling means sampling *x* number of teachers, *y* number of factory workers, *z* number of doctors, etc.). This method reflected socialist ideology rather than statistical rigor. As a result, the data were not representative, and the sample's composition was subject to change over time for a variety of reasons, political or otherwise. Finally, though Henderson et al. (2005) do not directly report on the change in inequality from the socialist era to the transition, they do point out that the inequality data from the socialist era are biased downward because of the high value of the many privileges that politically connected people had.

The consensus in the literature appears to be that democratization and income inequality increased in the initial transition period, but this consensus rests upon the quality of income survey data in the pretransition and immediate transition periods. The state's statistical services conducting the surveys during these periods failed, in many cases, to randomly sample the population and to measure private income or informal-sector activities. Also, they may have deliberately biased the data to meet political objectives. The measurement methods and quality of the data varied significantly across time and countries, casting doubt on the efficacy of panel data comparisons.[6] Simply put, the data underrepresent inequality in the pretransition period and overestimate the increase in the posttransition period (see, e.g., Milanovic 1998, tables A1.5 and A1.6). The potential magnitude of this bias has not been explored in the literature. We do so below.

Effects of the Changing Measurement Methods

Transitioning from a centrally planned to a market-oriented economic system is a complex and dynamic process. The transition's associated changes in ownership

structure, tax systems, and economic control mechanisms, as well as the state's role in the economy, have both quantitative and qualitative effects, and make comparing pretransition to transition economic indices and inequality measurements difficult. Because of the nature of the changes, one cannot provide exact correction factors for inaccuracies inherent in the data. We can, however, summarize the possible effects of changes in measurement methods. We first discuss the difficulties in measuring income inequality and then examine these difficulties in specific countries.

The Difficulties of Measuring Income Inequality

The difficulties involved in measuring income inequality can be grouped into five categories: data, computation, results appraisal, special function forms, and interpretation (Cowell 1995). The first problem is defining what income to measure—that is, which income components to include and which time period to examine. The more complete the measure of income, the more resources are required to carry out the measurement. Because the surveying organizations have limited budgets, the measure of income is less accurate than it could be.

One aspect of the problem of measuring overall income is the problem of income variation, both short and long term. Short-term variations are seasonal or random, and long-term variations depend more on age. The surveys of the former socialist countries of Eastern Europe and Central Asia unfortunately include income of a variable nature—that is, income that included temporary increases from one month to one year (Milanovic 1998), rather than the ideal, which is the person's or family's permanent income. Obviously, temporary changes in income can dramatically influence the measurement of income inequality, though the direction of influence is difficult to ascertain a priori. Many countries also changed the frequency of their income surveys, creating an unknown bias in the data. Countries displaying significant increases in income inequality tended to vary more in survey methods, suggesting that these variations may have influenced the measurement of income inequality.

The second problem is deciding what constitutes income and distinguishing income from wealth. Of eighteen former socialist countries, fifteen had definition-of-income problems before transition and nine have had such problems during the transition (Milanovic 1998). Estimating the value of pretransition in-kind transfers presents a major difficulty due to shortages, irrational prices, and political influence on the distribution of goods and services. Reported income was undoubtedly compressed, creating more apparent equality under socialism, but significant variations in consumption could and did occur due to political rank. Shortages and the ability to queue for goods and services also distorted the linkages between reported income and consumption possibilities, but in a systematic way. Communist Party members were typically in shorter queues and often could get artificially low-priced but high-quality goods that were unavailable to the majority of people. For the transition period, Bird et al. (1998) find a positive correlation between membership

in the Communist Party and the receipt of a telephone for the household. Western readers may take telephones for granted, but people in socialist countries saw telephones as luxuries. Although shortages and queues were systematic in the socialist economies, none of the surveys captured these systematic disparities in access to goods and services.

Compounding the difficulty of measuring income in transition countries are the sizes of the informal, underground, and unofficial economies. The transition has revealed the large amount of economic activity that occurred outside the purview of the state and was not captured in official statistics. Estimates of the informal economy in the countries of the former Soviet Union range between 30 and 60 percent of overall economic activity (Kaufmann and Kaliberda 1996). The extent to which the unofficial economy influences income inequality is unknown (Filer and Hanousek 2002), but the probability is high that accounting for the gains from underground activity would increase actual income inequality under socialism. High-level managers and other politically well-connected people would presumably have had a higher probability than others of being suppliers to the black market, both because they had more access to state goods and because they would have been less likely to be penalized if caught. Because these high-level managers were already in the higher-income category—even higher income after accounting for the value of privileges—the additional income from the black-market economy would have driven their incomes, and thus income inequality, even higher.

The presence of corruption in both the pre- and posttransition periods further increases the difficulty of measuring income inequality. Corruption increases income inequality and poverty to a considerable extent (Gupta et al. 1998): acting like an informal system of taxation, it transfers resources from the politically powerless to those with political or bureaucratic power. Because the latter tend to be higher paid even without corruption, corruption would exacerbate inequality. Yet there is no reliable statistical evidence on the extent of corruption, though anecdotal evidence again suggests that corruption was an integral part of the socialist economies.

Organized crime, when coupled with corrupt activities by public officials, further widens the gap between actual and reported income inequality. Prior to transition, a symbiotic relationship existed between the state and black-market criminals, a relationship that disintegrated with transition as the criminals moved to take control of segments of the economy (Williams 1999). The decrease in the government's power—which, for all its disadvantages, did help to control crime—its failure to be replaced by the rule of law, the capricious nature of government regulation, and the now virtually unlimited access to retail markets[7] have significantly increased the rewards for criminal activity (Millar 1996). Of course, payments to criminal organizations for protection and other services are not captured by income surveys.

The third problem of results appraisal is that the income surveys do not produce a statistically valid sample of the population. Typically, nonrandom sample selection and low response rates with a nonrandom pattern of response result in a nonrepresentative sample of the population, except by very lucky accident. Both factors were present in the pretransition period and may still be present in the posttransi-

Table 1

Income Distribution Statistics for Russia, 1988 and 1993

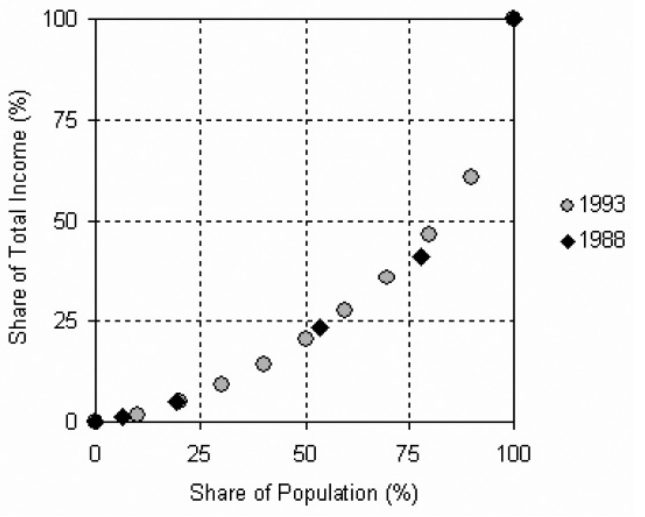
1988		June–September 1993	
Upper bound of gross income (rubles per capita per month)	Percentage of population	Average per capita gross income (rubles per capita per month)	Percentage of population
75	6.3	5,272	10.0
100	13.1	10,441	10.0
150	34.0	13,654	10.0
200	24.6	16,503	10.0
Open	22.0	19,523	10.0
	23,042	10.0	
	27,689	10.0	
	34,795	10.0	
	46,125	10.0	
	126,323	10.0	

Source: Milanovic (1998, table A4.11).

tion period (Filer and Hanousek 2002). Soviet-type family budget surveys, used both in the Soviet Union before its collapse and in many former Soviet republics to this day, are clear examples of nonrandom sample selection. Soviet-type family budget surveys rely on quota sampling rather than a statistically valid method of sampling the population. It is thus highly improbable that the reported measures of income inequality represent reality. We do not know what is being measured or how accurately it is being measured. Thus, we do not know what the reported statistics represent.

To illustrate, Table 1 presents income-distribution data for Russia for 1988 and 1993. Before transition, five income brackets, defined by the upper bound on gross income, were employed to calculate income inequality. The brackets do not contain information on average income, and thus, the third bracket's average income could be between 100 and 150 rubles per capita per month. Using the 1988 data, it is possible to arrive at a much higher level of income inequality pretransition (see Figure 2). Lacking information on average income values for 1988, we can reasonably assume average income values of 45, 80, 140, 190, and 700 rubles, respectively, yielding a calculated Gini coefficient of 48.0, rather than the 23.8 obtained by treating the upper bounds of the income brackets as if they were the averages within the bracket. This doubling of calculated inequality comes about simply by working with reasonable assumptions and using the same data used

Figure 2. **Calculated Points of the Cumulative Income Distribution** (1988–hypothetical and 1993–actual)



to generate the much-lower measure of inequality. According to Table 2, similar calculations for several former Soviet republics, based on hypothetical average incomes displayed in Table 3 for each bracket for 1988, show that six countries out of ten could have higher pretransition inequality than transition inequality and still have the same family budget survey (FBS) results, even assuming that mean incomes based on quota sampling are valid.

Throughout transition, income survey methods have improved dramatically. Four of eighteen transition countries surveyed by Milanovic (1998) had "acceptable"[8] income survey methods, though four other countries continued to rely on pretransition nonrepresentative survey methods. Slovakia, which moved from a representative (that is, statistically random) to a nonrepresentative (that is, statistically nonrandom) sampling methodology, noted a decrease in reported income inequality. The four countries that moved from nonrepresentative to representative sampling methods noted significant increases in reported income inequality, suggesting that some measure of the increase could be due to improved sampling methods. Establishing an estimate of pretransition data bias is unlikely because the alterations in survey methodologies coincided with other dramatic changes in the transition countries.

Effect of Changing Measurement Methods

It is difficult to estimate the bias in pretransitional income-inequality data, given the conditions described above, but we can discuss the evolution of sampling and

Table 2

Pretransition and Transition-Period Gini Coefficients of Former Soviet Republics

	A	B	C
	Gini coefficients		
Country	Published for 1988	Published for a transition year	Calculated for 1988
Belarus[1]	22.8	28.4	33.1
Estonia[1]	23.0	35.4	33.2
Kazakhstan[2]	25.7	32.7	42.0
Kyrgyzstan[2]	26.0	55.3	58.1
Latvia[1]	22.5	21.0	32.2
Lithuania[3]	22.5	37.3	32.2
Moldova[2]	24.1	36.5	39.1
Russia[2]	23.8	48.0	34.6
Ukraine[1]	23.3	47.4	35.3
Turkmenistan[2]	26.4	35.8	57.8

Notes: Data for columns A and B are from Milanovic (1998, tables A4.8–17). [1] Published Gini coefficient value for the transition period is for 1995. [2] Published Gini coefficient value for the transition period is for 1993. [3] Published Gini coefficient value for the transition period is for 1994.

computation methodology across countries and over time. From this discussion, we can then infer the potential effect of these changes on the measured values of income inequality. Table 4 summarizes the main features of pre- and posttransition income statistics employed by Milanvoic (1998) in calculating income inequality indices.

The evidence shows that countries displaying the most significant changes in their reported levels of income inequality also experienced major improvements in their income survey methods. Three countries saw increases in their calculated Gini coefficients greater than twenty percentage points; all three had moved from a Soviet-type family budget survey to a per capita income basis, had an equal population size in each of the income brackets, and had increased the number of income brackets from five to ten. For the three countries reporting the lowest change in the calculated Gini coefficient—excluding, for now, Slovakia, which experienced a decrease in inequality—all three surveyed disposable income pretransition, and two of the three already had equal shares of the population in the income brackets, though all three increased the number of brackets to some extent. Thus, a reasonable explanation of the apparent increase in income inequality is that changes in survey methodologies simply revealed existing disparities in income.

Table 3

Hypothetical Average Incomes for Brackets of FBS Surveys of Former Soviet Republics (rubles per capita per month)

	Income brackets identified by upper bound of gross income					
	75	100	150	200	Open	
Country	Hypothetical average income					Mean income
Belarus	10.0	80.0	110.0	160.0	325.7	156.1
Estonia	10.0	80.0	110.0	160.0	291.7	177.2
Kazakhstan	10.0	80.0	110.0	160.0	391.8	134
Kyrgyzstan	10.0	80.0	110.0	160.0	815.0	103
Latvia	10.0	80.0	110.0	160.0	299.4	171.16
Lithuania	10.0	80.0	110.0	160.0	309.4	164.6
Moldova	10.0	80.0	110.0	160.0	409.0	133.4
Russia	10.0	80.0	110.0	160.0	318.8	158
Ukraine	10.0	80.0	110.0	160.0	361.7	143.8
Turkmenistan	10.0	80.0	110.0	160.0	746.5	104.3

Note: Data for mean income values are from Milanovic (1998, tables A4.8–17). FBS = family budget survey

Table 4

Change in Gini Coefficient and Characteristics of Original Income Distribution Statistics for Eighteen Transition Countries of Eastern Europe and Central Asia

Country	Change in Gini coefficient (percentage points)	Type of income: FBS	Type of income: Average per capita, Gross Income	Type of income: Average per capita, Money Income	Type of income: Average per capita, Disposable Income	Share of population in brackets: Variable	Share of population in brackets: Equal	Number of brackets	Income per: Month	Income per: Year
Kyrgyzstan	29.3	a			b	a	b	10 (5)	a,b	
Russia	24.2	a	b			a	b	10 (5)	a,b	
Ukraine	24.1	a	b			a	b	10 (5)	a,b	
Lithuania	14.8	a		b		a,b		10 (5)	a	
Estonia	12.4	a			b	a,b		10 (5)	a,b	
Moldova	12.4	√[a]				a,b		24 (5)	a,b	
Bulgaria	11.0		a,b			a,b		10 (10)		a
Turkmenistan	9.4	a,b				a,b		17 (5)	a,b	
Latvia	8.5	a			b	a	b	10 (5)	a,b	
Czech Republic	7.2				a,b		a,b	10 (10)	a,b	
Kazakhstan	7.0	a,b				a,b		17 (5)	a,b	
Belarus	5.6	a			b	a	b	10 (5)	a,b	
Romania[c]	5.3		a			a,b		10 (10)	a,b	
Uzbekistan	5.1	a,b				a,b		23 (10)	a,b	
Slovenia	3.6		a		b	a,b		10 (9)		b
Poland	2.8		a		b	a	b	20 (8)	a,b	
Hungary	1.6				a,b	a	b	20 (7)		b
Slovakia	–1.2				a,b	a,b		8 (25)		a

Notes: Data from Milanovic (1998, appendix 4). [a] Pretransition-year characteristics. [b] Transition-year characteristics. [c] No income type specified for the transition year. FBS = family budget survey

Moldova, Bulgaria, and Turkmenistan appear to be the exception to the previously described phenomenon. Despite the large increase in calculated income inequality for these three countries, the Soviet-type family budget survey methodology did not change from pre- to posttransition. As noted previously, the family budget survey relies on quota sampling and lacks information on the tails of the income distribution and, in some cases, on average income per capita within each income bracket; it is thus unlikely to produce accurate results. As these factors are coupled with a turbulent economic environment, one must interpret changes in the income data cautiously. Comparing data over the transition period for Moldova and Turkmenistan also remains difficult, as the number of income brackets increased from five to twenty-four and seventeen, respectively.

Tax reforms also have affected measured inequality during the transition. Major changes in the tax system have not only caused government statisticians to implement new survey methods, but also have led to an incompatibility between the survey results of the pretransition and transition periods. In the pretransition period, wage and payroll taxes were withheld at the enterprise level and individual income taxes were practically unknown in the region. Hidden turnover taxes, which undoubtedly cascaded through the production chain, further distorted the linkages between tax incidence and personal income (Martinez-Vazquez and McNab 2000). Introducing personal income and value-added taxes in the transition countries have made the taxes taken from people more explicit.

The introduction of the personal income tax has affected income inequality measurements in several different ways. First, it has required a change in the definition of income. In the pretransition period, there was little difference between gross and disposable income for the vast majority of workers. Access, not income, typically determined the consumption possibilities of the majority of people in socialist countries. Posttransition, however, the introduction of direct and indirect taxes has created a significant difference between gross and disposable income. As most of the transition countries have introduced some type of progressive income tax, higher-income people now pay a higher percentage of their income in income taxes. Frequent changes in the tax codes of transition countries have made comparing pre- and posttransition income levels even more difficult. The two factors combined—the absence of taxes during the socialist era and the presence of progressive taxes during transition, as well as the fact that the importance of political pull relative to income was greater during the socialist era—means that comparisons between the two eras are almost meaningless.

Another problem with inequality measurements is the effect these policy changes have had on income distribution. Paradoxically, introducing the personal income tax may have decreased the real income inequality of after-tax income and increased the measured income inequality because the measure is based on before-tax income. Personal income tax, paid by individual taxpayers, has reduced the inequality of after-tax income, at least in the short run, and replaced a collective tax calculated from enterprise-level total wages and salaries. The collective

tax did not allow progressive taxation at the individual level and thus not only helped to obscure the disparity in income inequality, but also lowered the cost at the enterprise level. Reducing all employees' wages by 1 percent and increasing top management salaries by the total of this reduction, for example, would not affect the total amount of payroll tax in a company. Doing the same in a personal income tax system, however, would cost more for the individuals in total because marginal tax rates are higher for high-income individuals.

Although the personal income tax has reduced the inequality of disposable (after-tax) income, the reduction may not be included in income surveys for the following main reasons: high marginal tax rates at relatively low income levels; a weak tax administration; and high rates of employer paid social security tax. In Hungary, a person with an annual income of $3,400 in 2000 was in the highest tax bracket, with a marginal tax rate of 40 percent. The upper limit for the lowest marginal tax rate of 20 percent was slightly more than $1,300. People in both brackets also paid an 11 percent social security tax, whereas employers paid an additional 33 percent of the employees' gross income (Republic of Hungary 1995; 1997). Due to both factors—high tax rates for people at all income levels and weak tax enforcement—tax evasion has become prevalent in transition countries, further increasing the share of the unofficial economy. Because people are unlikely to report unofficial income on wage and salary surveys, the data are less meaningful than they might be otherwise.

In sum, methodological changes, even in a stable environment, could yield structural breaks in the data. When coupled with the fundamental changes in statistical offices' missions, roles, and funding, the likelihood of a structural break between pre- and posttransition data is high. Although income inequality may have increased during the initial transition, one cannot determine the magnitude of change due to the factors addressed above. An alternative explanation is that the methodological improvements have revealed the hidden inequalities of the socialist period. Unfortunately, it may be impossible to reconstruct the pretransition data with greater accuracy. We thus caution that, at a minimum, the pretransition data are suspect and, more likely, severely biased in favor of apparent equality.

Other Factors Influencing the Measurement of Income Inequality

For countries in Eastern Europe and Central Asia, at least three factors other than political liberalization and the transition from a centrally planned to a market-oriented economy may have significantly affected variations in income inequality during the transition period. First, all of these countries experienced a significant decline in economic activity at the beginning of the transition process. Second, as many of the transitional countries have moved toward democracy rapidly and peacefully, others have undergone violent political transitions. Third, variations in natural resources, geographical accessibility, and traditional concepts of property also have affected income inequality.

Economic Performance and Income Inequality

During the initial transition, economic performance, according to official statistics, declined dramatically. Among the countries of Eastern Europe and the former Soviet Union, GDPs declined by at least 10 percent for at least one year, and GDPs for all these countries except Poland declined for at least three consecutive years between 1990 and 1998. With the exception of Slovakia, measured income inequality increased, sometimes dramatically, during this initial transition period (see Table 5).

Campos (2001) argues that the East European and Central Asian transition economies remain structurally different from those in the rest of the world due to their legacy of central planning. As with data pertaining to income, Campos (2001) cautions against comparing pre- and posttransition production data. Socialist statistical offices were poorly equipped for the transition because they had focused previously on quantities, such as pounds of butter or tons of steel. Even as these offices struggled to transition themselves, the legal framework for compulsory reporting collapsed. Faced with arbitrary and potentially corrupt tax administrators, firms and individuals had a strong incentive to underreport output, if they reported at all.

Estrin et al. (2001) analyze growth patterns of transition economies from 1970 to 1998, reporting average growth rates from 1971 to 1980, from 1981 to 1990, and from 1991 to 1998. First, for all economies that later transitioned, the average annual growth rate was about 5 percent from 1971 to 1980. Between 1981 and 1990, average annual growth declined to 1.3 percent. In the 1990s, economic activity declined. The region experienced rapid growth in 2001 that appeared to slow again in 2002 (United Nations Economic Commission for Europe 2002). Unlike the pretransition period, however, growth rates varied significantly (Figure 3).

It appears that economic growth had already begun to decline by the time the socialist system collapsed. Therefore, it is likely that the dramatic decline during the transition years has been due to failed economic policies under the socialist system rather than to the transition toward market-oriented economies. Moreover, the dramatic decline during transition suggests that the apparent economic growth of socialist economies before their transition was, in part, due to measurement methods. Because the government measured national economic output in production quantities rather than in values derived from market prices, socialist statistics could indicate a growth in output even if the output's value had actually decreased.

Two important lessons emerge from the above discussion. First, dramatic changes in overall economic performance have affected inequality patterns significantly. Whereas democratization and political liberalization alone could have reduced inequalities in the transition countries, the dramatic decline in economic performance had the opposite effect. Second, and most important, the decline in economic growth had begun before the transition. During the transition, the increase in income inequality has been positively correlated with the decline in per capita GDP; therefore, an increase in income inequality should have been seen well before

Table 5

Changes in Gini Coefficients and PPP-Based Per Capita GDP Values for Selected Transition Economies (percent)

Country	Change in Gini coefficient	Real per capita PPP GDP growth between 1989 and 1995
Belarus	5.6	–37.3
Bulgaria	11.0	–23.8
Czech Republic	7.2	–6.6
Estonia	12.4	–36.6
Hungary	1.6	–14.5
Kazakhstan	7.0	–38.7
Kyrgyzstan	29.3	–49.6
Latvia	8.5	–49.0
Lithuania	14.8	–44.8
Moldova	12.4	–62.4
Poland	2.8	–1.4
Romania	5.3	–15.3
Russia	24.2	–40.4
Slovakia	–1.2	–15.9
Slovenia	3.6	–7.5
Turkmenistan	9.4	–38.2
Ukraine	24.1	–57.3
Uzbekistan	5.1	–16.6

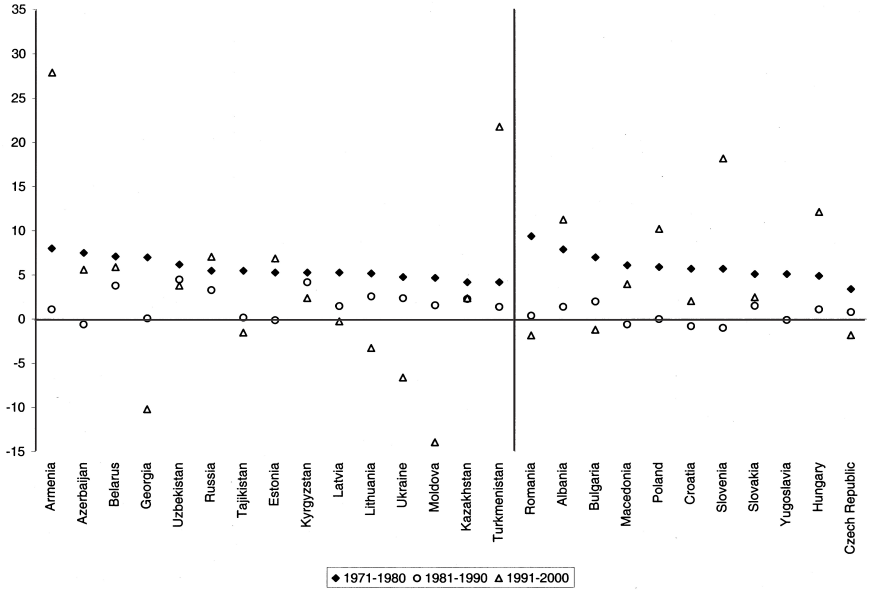
Notes: Data from Campos (2001), table 1 and Milanovic (1998, appendix 4). Per capita PPP GDP values for 1995 are calculated from the values for 1989, using annual growth rates from Campos (2001, table 1).

the transition period. This increase does not appear in the data, most likely due to the factors discussed in the preceding section.

Natural Resource Availability

Natural resources and geography also may have affected the formation of income inequalities. Since the collapse of socialism, natural resources have become more important to the East European and Central Asian transition economies for two reasons. First, the principles used to determine a good's value have changed radically with the end of central planning and the movement to a market economy. In the socialist system, work vested in producing a good was thought to determine its

Figure 3. **Average Growth Rates of Actual and Estimated GDP for Transition Economies Between 1970 and 1998**



Sources: Estrin et al. (2001, table 1); United Nations Economic Commission for Europe (2002).

value. Consequently, natural resources were counted as having no value until they were exploited, and the value attributed to them varied directly with the amount of labor used to exploit them. This absurd method, incidentally, created an artificial incentive to destroy natural resources and, in some cases, harmed human health.[9] Soon after the transition process began, the method changed to evaluating natural resources according to their market value. Second, due to a decline in production, the sales of raw materials and energy sources have totaled a larger portion of the transition economies' economic output.

The majority of the most valuable resources—namely, oil and natural gas deposits—are concentrated around the Caspian Sea in the Caucasian and Central Asian regions. Azerbaijan, Kazakhstan, and Turkmenistan have the largest oil reserves around the Caspian Sea. Russia also has huge deposits of oil and natural gas in both the Caspian region and Siberia. Although the wealth of natural resources could easily foster economic development and improve the living standards of those in the republics, their potential has largely been unrealized, given geographic isolation and authoritarianism. The war over Chechnya's secession in southern Russia has

also hindered development in the Caucasian region. However, Kazakhstan depends on oil extraction, transportation, and processing; this sector accounts for over 16 percent of its GDP and 63 percent of exports. Although Kazakhstan's GDP per capita is expected to rise to over $3,000 in 2005, at least 16 percent of its population remained in poverty in 2004. Poverty rates, however, exceed 27 percent in two oblasts, Atyrau and Kyzylorda, and the country also has some of the lowest social indicators in Europe and Central Asia, such as in access to safe drinking water and the incidence of tuberculosis (World Bank 2004; 2005).

Conclusion

In the past few years, research on transition economies has found an increase in income inequality in the former socialist East European and Central Asian countries coinciding with a parallel liberalization of political and economic life. Studies have isolated the following factors as the main causes of the apparent inequality increase: low inequality in socialist countries due to socialist egalitarian values (Gradstein and Milanovic 2000); higher wage inequality due to the relation in market economies between wages and skill and education (Kattuman and Redmond 2001; Milanovic 1996, 1999); the emergence of the private sector; and the growing share of an unofficial economy (Rosser et al. 2000).

For the following reasons, the apparent increase in income inequality is suspect and requires further analysis: an increase in inequality has occurred parallel to political liberalization, contradicting previous findings in other regions (Gradstein and Milanovic 2000); complaints of poor data quality from many authors (Milanovic 1998; Rosser et al. 2000); overlooked factors (Kattuman and Redmond 2001); and the effect of special circumstances (Ferreira 1999). To assess the validity of the studies' conclusions, we have researched various factors that affect either the level or the measure of income inequality.

We find that the reported negative effect of political liberalization on income inequality is a non sequitur for the following reasons. First, the effect of changing measurement methods, mainly due to the poor characteristics of socialist survey methods and practices, has been grossly underestimated. The bias could be large enough to account for the apparent increase in income inequality. Second, other major factors in addition to political liberalization may have increased income inequality. For this reason, if income inequality truly has increased—which is not at all clear—it is likely to be despite, not because of, political liberalization.

We believe that the question of whether income inequality has increased during the transition is still undecided. Unfortunately, it is impossible to reconstruct the pretransition data with greater accuracy, which is probably why many researchers have accepted the existing results as at least partially valid. The argument that democratization has led to a real increase in income inequality, however, is weak. Research into the hidden inequality in socialism (Henderson et al. 2005) supports

an explanation based on a large uniform bias in the pretransition data toward smaller measured inequality.

Notes

1. This study extends to the following countries: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and Yugoslavia.

2. These are Gini coefficients expressed in percentages. A Gini coefficient of 100 represents complete inequality, with only one person making all the income; a Gini coefficient of 0 represents complete equality.

3. Comparing the value of this privilege with the value of a benefit available for the common people within the same country would have been more appropriate. Unfortunately, as prices did not reflect market values in socialist economies, this comparison is hardly possible.

4. Gradstein and Milanovic (2000) divide the sources they discuss into two groups. The first group includes sources using the expansion of the voting franchise to measure the level of democracy. The authors review the findings of Abrams and Settle (1999), Husted and Kenny (1997), Justman and Gradstein (1999a), Lindert (1994), Lott and Kenny (1999), and Peltzman (1980) in this group. The second group consists of sources conceiving democracy in terms of civil liberties and political rights; Gradstein and Milanovic (2000) review the work of Bollen (1980), Bollen and Grandjean (1981), Bollen and Jackman (1985), Hewitt (1977), Jaggers and Gurr (1995), Justman and Gradstein (1999b), Li et al. (1998), Lundberg and Squire (1999), Muller (1988), Nielsen and Anderson (1995), Rodrik (1999), Simpson (1990), and Sirowy and Inkeles (1990).

5. Medgyesi et al. (2000) report that the Gini coefficient of equalized income rose from 0.278 to 0.316 between 1992–93 and 1994–95 and then stagnated for two years. The Gini coefficient then rose to 0.320 in 1997–98 and 0.343 in 1998–99. This represents a 23 percent increase in measured income inequality.

6. The results are, at best, inconclusive. Milanovic (1998) argues that inequality increased between 1987 and 1993, though in a 1999 paper, he asserts that it fell between 1989 and 1993. When the same data source is employed for Hungary, the results are different. Milanovic (1998) calculates the Gini coefficient for Hungary as 21.0 for 1987 and 22.6 for 1993, whereas Milanovic (1999) reports statistics of 20.7 and 22.9 for 1987 and 1993, respectively. Note how small the change in the Gini coefficient is. Even if the data were comparable, the findings represent only a small increase in inequality.

7. Because retail shops were no longer state owned, it became easier to sell stolen goods.

8. The material in the Milanovic article suggests the term "acceptable" is a somewhat subjective judgment.

9. For example, wells in Sármellék, a village in western Hungary, were polluted by kerosene that filtered in from a nearby airfield of the Soviet air force.

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