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Growth, income distribution and well-being in transition countries[1]

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Abstract

We apply several well-being measures that combine average income with a measure of inequality to international and intertemporal comparisons of well-being in transition countries. Our well-being measures drastically change the impression of levels and changes in well-being compared to a traditional reliance on income measures. Due to low inequality and moderate income levels, socialist countries enjoyed relatively high levels of economic well-being. In the transition process, rising inequality and falling incomes have led to a dramatic absolute decline in well-being and a considerable drop in relative well-being vis-à-vis non-transition countries. We also find a close correlation between income losses and inequality increases. While the transition has been successful in expanding political and civil rights, our indicators suggest that most transition countries are still below the level of economic well-being of the late 1980s.

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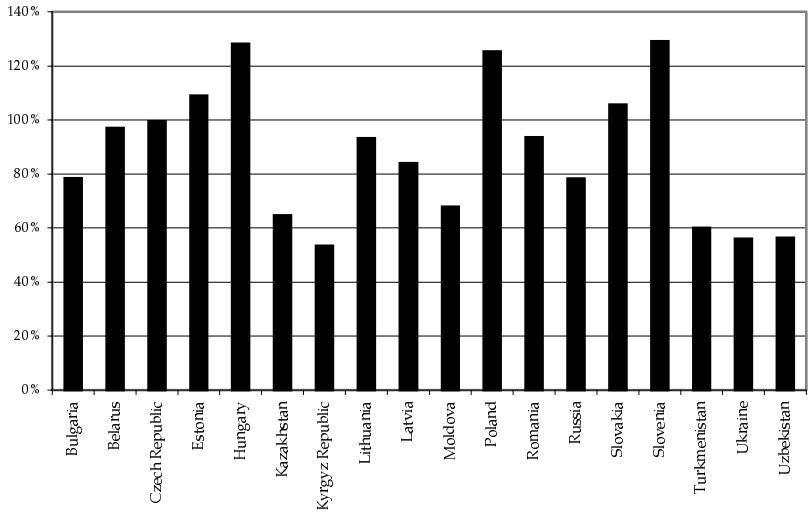
1. Introduction

It is well known that many transition countries[2] suffered from severe contractions in income levels. While in some countries, the economies have recently stabilized and returned to positive income growth, in others the contraction has continued to this day. By 1998, only five countries had managed to surpass the per capita income level they had in 1988 (see Figure 1); many are still between 20–50 per cent below that level. In fact, Milanovic (1998) demonstrates that the income losses suffered by many transition countries are higher and more persistent than they were during the Great Depression in the Western capitalist world.

Figure 1. Real per capita income ratio, 1999 to 1988



Source: World Bank (1999, 2000).
Note: For 1988, income data were not available for Moldova, Russia and Slovenia. We use data for 1986, 1990 and 1992, respectively.

At the same time, income inequality has increased in most transition economies, a subject that has also received considerable attention in the literature (e.g., Milanovic, 1998; Atkinson and Micklewright, 1992; Flemming and Micklewright, 2000; Klasen, 1994a). The economic welfare implications of these

[2] We will focus our attention on the transition countries of Eastern Europe and the former Soviet Union. Countries such as China, Vietnam and Laos are not included in the analysis, although we will draw on China for comparative purposes.

two developments, declining incomes and rising inequality, have been studied much less. A broad range of philosophical approaches to the measurement of welfare (ranging from utilitarianism with some very reasonable assumptions about utility functions to Rawlsian reasoning or Sen's capability approach) would suggest that, *ceteris paribus*, rising income inequality reduces aggregate well-being. In fact, there exists a range of measures for well-being that make use of this insight and combines mean income with some measure of income inequality to arrive at better measures of economic welfare than average income alone (e.g., Atkinson, 1970; Sen, 1982; Dagum, 1990; Jenkins, 1997). This paper applies these combined indicators of mean income and its distribution to arrive at a more accurate summary assessment of levels and changes in well-being in transition countries.

We find that the measures that include income inequality in the assessment of well-being have a significant influence on absolute levels of well-being and comparisons of well-being between transition countries and comparable middle-income countries. Prior to the transition, moderate income levels and low inequality translated into fairly high levels of well-being as measured by our indicators. The nature of income inequality in socialist countries also differed from that of other countries and was characterized by particularly high income shares of the poorest quintile. After the transition, reduced income levels and much higher inequality have led to a dramatic worsening in ranking of most transition countries. This decline is much more pronounced for most successor states of the Soviet Union than for Central and Eastern European countries. Moreover, deteriorations in well-being are understated using income measures alone. Once worsening inequality is considered, the well-being losses in transition countries are much larger. In that context, we note that there appears to be a positive correlation between the income loss and the deterioration of inequality. Thus our indicators generally accentuate the difference between the poor economic performers who often had sharply rising inequality and the better economic performers who tended to have more moderate increases in inequality. Finally, there appears to be fairly close agreement between our measure of well-being and other indicators of human development that go beyond the focus on income (see also Klasen, 1994a). In contrast, indicators of political and civil liberties have improved dramatically and are thus at variance with the changes in economic well-being we observe in transition countries.

The paper is organized as follows: the next section discusses the theoretical issues involved in comparing well-being across space and time. Section 3 discusses the measures of well-being used in this paper. Section 4 presents the data, Section 5 contains the results for the international analysis, Section 6 describes the results from sensitivity analyses, Section 7 presents comparisons across time, and Section 8 concludes.

2. The theory of well-being and real-income comparisons

Despite a long history, the theory of well-being comparisons across space and time continues to be beset with conceptual and practical problems. Ever since it became evident that social choice theory was not yielding acceptable[3] procedures for making comparative or intertemporal social welfare judgements, social welfare judgements have been based on axiomatic approaches to welfare measurement. Those are based on a conceptualization of what constitutes welfare and the subsequent derivation of an indicator that, under certain stated assumptions, can adequately measure the chosen concept.

Applying such measures to comparisons across space and time generates additional conceptual problems, which are discussed in detail in Sen (1982, 1984).[4] In practice, the most commonly used indicator for welfare comparisons across space and time is real per capita income. It can be derived from utilitarian welfare economics assuming identical cardinal utility functions that are linear in income, equal distributions of incomes, or an 'optimal' income distribution in the sense that keeps the 'ethical worth of each person's marginal dollar equal' (Samuelson, 1947, p.21).[5] All three sets of assumptions are beset with problems. In particular, ignoring the impact of income distribution on well-being, which is inherent in all three sets of assumptions, is particularly unpalatable. In fact, both theoretical considerations (e.g., declining marginal utility of income derived from convex preferences) as well as empirical observations (e.g., about risk aversion and insurance) clearly suggest that the existing distribution of incomes is not 'optimal' from a social welfare point of view and that utility functions are not linear in income or consumption. Instead, these considerations point to concave utility functions, i.e., that inequality reduces aggregate welfare, as the marginal utility of income among the poor is much higher than among the rich.[6]

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[3] Acceptable is meant in the sense of obeying minimal requirements such as the four conditions stated by Arrow in his famous impossibility result (Arrow, 1963).

[4] See Grün and Klasen (2000) for a summary of these issues. Moreover, the comparability of prices throws up another problem, namely of the appropriate exchange rate for international well-being comparisons. Until recently, most real-income comparisons were based on official exchange rates despite the knowledge that they are often distorted. In recent years, the International Comparison of Prices Project has generated purchasing power parity estimates of GDP and GNP based on international prices that try to address this particular shortcoming. While this should deal with the problem in theory, a number of uncertainties are involved with the practicalities of these calculations (see below). Purchasing Power Parity approaches should also lead to improved estimates of GNP and GDP in pre-transition economies where the domestic prices were substantially different from prices in market economies. At the same time, such comparisons will still have to face the problem of different product quality between socialist and capitalist economies, which might lead to an overstatement of incomes in socialist countries. For a discussion see Summers and Heston (1991).

[5] For a full discussion of these assumptions and their shortcomings, refer to Grün and Klasen (2000).

[6] This is inherent also in the approach taken by Graaf (1957) and Sen (1982) who treat the same good going to two different people as two different goods and thus explicitly do away with the distinction between size and distribution of income as the 'welfare depends on them both'. (Sen, 1982).

Non-utilitarian views of welfare would also suggest that income inequality reduces aggregate well-being. For example, Sen's capability approach which calls for a maximization of people's capability to function (e.g., the capability to be healthy, well-nourished, adequately housed, etc.) also exhibits declining marginal returns in the income space.[7] Similarly, application of Rawlsian principles would also suggest that welfare is higher in societies where inequality is lower (Rawls, 1971).[8]

One approach that may improve upon the welfare content of real income comparisons is therefore to jettison this neglect of income distribution and incorporate the notion of declining marginal welfare returns of income. Each of the measures proposed in the next section does precisely this in slightly different ways.

Before turning to this issue, however, it may be useful to consider one explicit objection to the incorporation of distributional issues in an assessment of well-being. In particular, it may be argued that redistributions reduce the long-term growth potential of an economy so that there may be a trade-off between higher well-being associated with lower inequality today and lower well-being associated with the subsequently reduced economic growth. While such dynamic considerations go beyond the scope of this analysis and would, in any case, require the inclusion of other dynamic issues (e.g., the role of savings and of depreciation of human, natural, and physical capital in the long-term well-being of nations), there is a growing consensus that this trade-off between equity and growth does not, in fact, exist. In fact, if anything, the debate has recently shifted in the opposite direction suggesting that high initial inequality *lowers* subsequent growth prospects (e.g., Deininger and Squire, 1998a; Alesina and Rodrik, 1994; Clarke, 1995; Persson and Tabellini, 1994; Klasen, 1999). While these findings are still tentative and subject to some debate,[9] they suggest that the older claim, that high inequality is essential for high subsequent economic growth, does not seem to be borne out by the weight of the evidence (see also Klasen, 1994b).

3. The well-being measures used

In this section we describe some measures that jointly consider per capita income and its distribution. All share the feature that they can be summarized by the following formula:

[7] For example, there appears to be a concave relationship between income and life expectancy, and income and educational achievement. For a discussion, see Klasen (1994b).

[8] In the lexicographic version of the maximin principle, only the position of the worst off is relevant; if one generalizes, one would get a continuous declining marginal valuation of income. For details see Klasen (1994b).

[9] See, for example, Lundberg and Squire (1999) and Forbes (2000).

$$W = \mu(1 - I), where\ 0 \leq I \leq 1$$

Welfare, W, is a function of mean income μ, reduced by a measure of inequality I. Thus inequality adjusts mean income downward to reflect the welfare loss associated with the (unequal) distribution of that mean income. We will consider several measures that differ not only in the intensity of the 'welfare penalty' they impose but also (implicitly) in the penalty they impose for different *types* of inequality.

The first measure considered is proposed by Sen (1982) and incorporates inequality through the Gini coefficient. This Sen measure can be stated as:

$$S = \mu(1-G)$$

where μ is the mean income and G is the Gini coefficient.

The Sen measure can be derived by replacing Samuelson's problematic 'optimal distribution' assumption by the assumption of 'rank order weighting' (Sen, 1982). Individual incomes will be weighted according to their rank in the income distribution (with the richest receiving rank 1 and thus the lowest weight for her income). It can also be derived from a utility function where individuals consider not only their own incomes, but the entire income distribution, particularly the number of people with incomes below or above one's own (Dagum, 1990). Thus preferences are assumed to be interdependent which accords well with recent empirical findings (e.g., Easterlin, 1995).

A variant of this measure was proposed by Dagum (1990):

$$D = \frac{\mu(1-G)}{1+G} = \mu(1-\frac{2G}{1+G}).$$

Clearly, the Dagum measure is a more extreme version of the Sen measure as the denominator imposes an additional penalty for inequality. The Dagum measure can also be based on interdependent preferences and additionally implies that people receive a further welfare penalty from the people ahead of them in their income distribution.[10]

In addition, we consider two versions of the Atkinson welfare measure. The Atkinson measure was developed as an indicator of inequality that explicitly considers the welfare loss associated with inequality in the measure (Atkinson, 1970). But one can equally well use the way the welfare loss is calculated, the equally distributed equivalent income (EDEA), as the welfare measure itself.[11] This equally distributed equivalent income is the amount of income that, if distributed equally, would yield the same welfare as the actual mean income and

[10] See Dagum (1990) for a derivation and justification of this measure.

[11] This has been done, for example, by UNDP in deriving the gender-related development index (UNDP, 1995) and by Jenkins (1997) to examine changes in well-being over time in the UK.

its present (unequal) distribution. The general form of this measure is:[12]

$$A2 = EDEA2 = \left[\frac{1}{N} \sum_{i=1}^{N} x_i^{1-\varepsilon} \right]^{\frac{1}{1-\varepsilon}}$$

This measure depends crucially on the exponent ε, the aversion to inequality factor. The higher ε, the higher is the penalty for inequality. We consider two cases, $\varepsilon=2$ (A2), and $\varepsilon=1$ (A1). In the latter case, the general form of the Atkinson measure is not defined and for this case the measure changes to:

$$ln(A1) = ln(EDEA1) = \frac{1}{N} \sum_{i=1}^{N} ln(x_i)$$

The Atkinson measures can be derived from social welfare functions that are additively separable functions of individual incomes. Thus they are based on individualistic utility functions where people only care about their own incomes. Inequality reduces welfare in this formulation as the utility functions considered are concave for all ε greater than 0. All the measures exhibit constant relative risk aversion. The $\varepsilon=1$ has the additional property of being based on a constant elasticity utility function, suggesting that a percentage increase in income is valued the same regardless of its recipient, which has considerable intuitive appeal. While clearly $\varepsilon=2$ penalizes inequality more than $\varepsilon=1$ and is thus based on declining elasticity of income, the underlying assumption, that at twice the level of income, a percentage increase in income is valued half as much as at the lower level of income, also appears to be within the range of reasonable assumptions. Such penalties of inequality are still consistent with findings from the micro-literature on utility and risk.[13] While the Atkinson measures are typically based on individual incomes, our N refers to income quintiles in the international analysis and income deciles in the intertemporal analysis, the only information we have available for the analysis.

Before turning to the data and the results, it is important to briefly discuss the most important differences between the measures.[14] First, the Gini-based and Atkinson measures respond differently to equal-sized income transfers at different points in the income distribution. While all measures are consistent with

[12] Also this measure satisfies the general form $W = \mu(1 - I)$ where $I = 1 - A/\mu$. See Atkinson (1970).

[13] Most of the non-utilitarian theories suggested above would, in fact, likely require considerably higher inequality aversion. A strict interpretation of Rawls' lexicographic maximin principle would require ε to be infinite (see also Atkinson, 1970).

[14] For a more extensive discussion of these issues, refer to Atkinson (1970), Blackorby and Donaldson (1978) and Dagum (1990).

the Dalton principle of transfers,[15] the Atkinson measures also obey 'transfer sensitivity', which means that an equal sized transfer will have a larger impact on inequality (and thus on welfare) if it happens around the poorer sections of the income distribution than if it happens around richer sections (Sen, 1997).

In contrast, the largest impact of an equal sized transfer using the Gini coefficient will be among the mode of the income distribution, i.e., among middle income groups as these transfers will have the largest impact on the rank of the people affected by the transfer and thus the weights attached to their incomes (see Atkinson, 1970; Blackorby and Donaldson, 1978). While there is some justification for this (if income comparisons with others are very important, shifts in income that have a large impact on the ranking should be weighted heavily), most analysts see this as an undesirable property of the Gini-based measures.[16]

Second, the Atkinson measures are sub-group consistent and thus imply that any increase in the income of a sub-group (or a reduction in inequality of that sub-group) will, *ceteris paribus*, raise aggregate welfare. In contrast, an increase of income accruing to the richest could actually lower aggregate welfare in the Gini-based measures as the increase in mean income can be more than offset by the increase in inequality. For our purposes it will suffice to note that the Gini-based measures penalize inequality more if middle income groups are hurt the most, while the Atkinson measure will penalize more if the poorest are hurt the most by inequality.

We will use these measures in three different ways. First, we will simply calculate how much the incorporation of inequality reduces our measure of well-being by presenting the ratio of inequality-adjusted to unadjusted per capita income. Second, we will examine to what extent the incorporation of inequality changes the well-being ranking of countries. Here, we will compare transition countries with a set of comparable countries from Europe and the developing world.[17] Third, we will study to what extent the inclusion of inequality in the well-being measure will affect our impression of *changes* in well-being in selected transition countries.[18]

[15] The Dalton principle of transfers states that the value of an inequality measure must fall as a result of a transfer from a richer person to a poorer person which does not reverse their position in the income ranking.

[16] For a discussion, see Sen (1997).

[17] These countries include Spain and Portugal, the countries in Western Europe that were quite similar in income levels prior to the transition, as well as most middle-income developing countries, which now have similar income levels to transition economies. We also include China for comparative purposes.

[18] See Jenkins (1997) and Klasen (1994b) for similar applications of these measures to examine changes in well-being over time in Britain and the US, respectively.

4. The data

For most of the analysis, we rely on two different cross-country datasets. As we want to compare our results to standard real income comparisons, we also use per capita Gross National Product as the basis of our mean income comparison.[19] Those income data are PPP adjusted per capita incomes primarily based on the World Bank's World Development Indicators (World Bank, 1999). As we focus on the transition period, we will concentrate on the period from 1988 to 1995.

Information about income distribution is not as readily available. For data on transition countries for the years 1988 and 1995, we rely on the dataset produced by Milanovic (1998). While this dataset is clearly not beyond reproach (see below), it is custom-made for the analysis of inequality trends in transition countries, and is therefore likely to be the most consistent available secondary data source.[20] It also specifically takes note of the problem of the many boundary changes and has retroactively calculated income distribution statistics for the entities that became independent during the transition (e.g., it provides data for income distribution in Belarus in 1988 when it was still part of the Soviet Union to allow a comparison with Belarus in 1995).

There is a range of questions associated with the reliability of the data used. First, there is the question of the reliability of income distribution data in socialist (i.e., pre-transition) economies, and its compatibility with income distribution information in Western countries. This issue is addressed in detail in Atkinson and Micklewright (1992) and Flemming and Micklewright (2000) who find that the data on inequality of household incomes in most Central and Eastern European countries were of no worse quality than comparable data in Western countries. In the Soviet Union, the data were somewhat less reliable, particularly due to a problematic sampling frame. Regarding the compatibility of income distribution data in socialist and Western countries, there are questions as to whether the income distribution data in socialist countries understate true inequality as they ignore the effect of sizeable in-kind transfers and do not account for pervasive problems of rationing and possibly unequal access to goods by different groups of the population. Both studies find, however, that in-kind earnings were not significantly more important in socialist countries than

[19] GNP is preferred to GDP as an indicator of the welfare of a country, as the former includes factor incomes from abroad of the domestic population which presumably raises the welfare of the population, while it excludes factor income earned by people living abroad which is not relevant for the welfare of the population in the country. We are aware that GNP is subject to well-known omissions especially regarding the underground and illegal economy, domestic production, and intertemporal issues such as ignoring environmental decay or the role of savings in well-being. It may be the case that high pollution and environmental decay, combined with high rates of savings, ensure that GNP overstated welfare in socialist countries more than elsewhere. On the other hand, the (often tolerated) underground economy was also very large which would be a bias in the opposite direction.

[20] In contrast to many other data sources, it reports not only Gini coefficients but also decile and quintile shares for each observation which allows us to calculate the Atkinson measures.

elsewhere, and were not generally more unequally distributed. The effect of rationing also was not invariably understating income inequality so that they conclude that no strong case can be made that income distribution data from socialist countries systematically understate true inequality, when compared with Western data (Atkinson and Micklewright, 1992; Flemming and Micklewright, 2000; Milanovic, 1998).[21]

Regarding post-transition data, different questions emerge. One is the reliability of income distribution information in transition countries, given that the survey instruments had to be adapted considerably and might not be able to adequately capture the changing composition of incomes. While this may be a problem in some countries, most observers agree that the reliability of income data in Eastern European transition countries has not changed for the worse, and has improved in some countries, notably where new survey instruments were developed or the existing ones reformed (see Flemming and Micklewright, 2000; Milanovic, 1998).[22]

Another problem is the time period on which income data and thus the Gini coefficients for the post-transition years are based on. Unfortunately, for this period, annual data were only available in nine countries, and therefore the calculations have to rely on semi-annually, quarterly, and even monthly income data (Milanovic, 1998). Gini coefficients based on shorter periods in time will overestimate inequality, because fluctuations in income cannot be smoothed out that easily over shorter time periods. Finally, post-transition data, as reported in Milanovic (1998)[23] are mostly based on disposable income while pre-transition data reported are mostly based on gross incomes. This should not, however, greatly affect the comparability as personal taxes (the most important difference between gross and disposable incomes) were small in socialist countries.[24]

Milanovic (1998) considers these and other problems of compatibility and concludes that the net result appears to be that increases in inequality after the

[21] The effect of rationing and poor product quality might also have an influence on comparisons of per capita incomes between socialist and capitalist countries. One might argue that the same level of per capita income generates more well-being in the West as one can spend this income without having to face rationing and products of poor quality. The size of this potential bias is hard to quantify. In contrast, socialist countries provided a range of well-being relevant public goods (education, health care, etc) at low or zero out-of-pocket costs to individuals which might offset this bias (Klasen, 1994a; Sen, 1991).

[22] At the same time, there are new problems that have appeared, compared to pre-transition countries. One is increasing refusal rates, particularly among richer households. Milanovic (1998) also notes that earnings are no longer validated using enterprise records as was frequently done in socialist countries.

[23] In many cases, Milanovic did not have access to the microdata themselves but only to published grouped data and was therefore dependent on the definition provided in the published data. This is a clear shortcoming of the Milanovic dataset.

[24] Moreover, no adjustments are made for economies of scale or adult equivalents, but all data are presented in per capita magnitudes. In pre-transition countries, this can be justified since housing, the most important source of economies of scale, was heavily subsidized and thus played an unimportant role in the expenditure patterns of households. This heavy subsidy for housing is still present in a number of countries, though much less so than previously. See Flemming and Micklewright (2000) and Atkinson and Micklewright (1992) for a discussion.

transition might be somewhat overestimated in Poland, the Czech Republic, Hungary, Romania, Russia, the Baltic Republics, Belarus, Ukraine, and the Kyrgyz Republic, while there is likely to be no or an unclear bias in Slovakia, Slovenia, Bulgaria, Moldova, Kazakhstan, Turkmenistan and Uzbekistan. Moreover, the general sense is that inequality data in post-transition countries are fairly comparable with inequality information in Western countries, especially since now the surveys share very similar strengths and weaknesses as those in Western countries (Flemming and Micklewright, 2000).[25] We will partly address these issues of compatibility in the sensitivity analysis where we compare the data we used with other available sources of inequality data.

A final problem might emerge with the approach of using benchmark years for comparisons of well-being. While in most non-transition countries inequality appears to have been fairly stable over short periods of time (Deininger and Squire, 1998b), this is not the case in transition countries. Since inequality changed a lot during the transition, it will matter which year is chosen as a pre- and post-transition benchmark (Flemming and Micklewright, 2000). Milanovic chose 1987, 1988, 1989 as the pre-transition benchmark and 1993, 1994, or 1995 as the post-transition benchmark, where the individual year chosen is dictated by data availability and consistency across the two time periods. With the exception of the Czech Republic and Slovakia, all available information on trends in inequality over time (see Flemming and Micklewright, 2000 and also Appendix 2) suggests that the post-transition years included in Milanovic are from years where the biggest increases in inequality have already happened; after those years, most studies find only small further increases.[26] To the extent that inequality has increased further after the benchmark years chosen, this will counter the bias (mentioned above) of an apparent overestimate in the increase in inequality in several transition countries.

For comparable developing countries, we rely on the well-known Deininger and Squire dataset (1996), which provides information about Gini coefficients and quintiles shares for more than 100 countries at irregular intervals. Unfortunately, the data are not based on consistent definitions of the income used and the economic unit considered and has been criticized for that and other shortcomings

[25] This is particularly the case for the countries where the surveys have been reformed or new instruments developed.

[26] In the case of the Czech Republic and Slovakia, Milanovic has chosen problematic post-transition datasets. As he strictly wanted to stick to the 1993–95 window for post-transition data, he did not use the 1992 microcensus results for the Czech and Slovak Federated Republic which would have been a consistent and reliable source. Instead he relies on the problematic Institute of Sociology Survey in the Czech Republic, which overestimates inequality in 1993, and a family budget survey for Slovakia in 1993 that is not fully representative and ends up underestimating true inequality. We also use these data as we want to use 1993 as the benchmark. The microcensus estimates suggest that inequality rose modestly between 1988 and 1992, continued to rise from 1992 to 1996 but at a faster pace, and that the differences between levels and trends in inequality between the two republics remained small. For further discussion and other estimates, see the sensitivity analysis below and Garner and Terrell (1998), Garner (2001) and Vecernik (1996).

by Atkinson and Brandolini (1999). In the sensitivity analysis, we will address this issue and use a regression-based approach to generate a more consistent data source. This will also allow us to address the problem of different income definitions in pre- and post-transition countries.[27]

5. International analysis

Table 1 shows our rankings for 33 countries in 1988, which is the pre-transition benchmark year. The first two columns report per capita incomes, using exchange rates and PPP-adjusted estimates,[28] respectively. As expected, there are large differences between exchange rate based estimates of real incomes and PPP estimates, with the discrepancy being largest among poorer countries.[29] The next two columns show the Atkinson measure with $\varepsilon=1$ and the Sen measure, both exhibiting a comparatively 'mild' well-being penalty for inequality. The last two are the Atkinson with $\varepsilon=2$ and the Dagum measures with a more heavy implied well-being penalty for inequality.

Well-being falls drastically when inequality is included in the measures. Using the Atkinson $\varepsilon=1$ or $\varepsilon=2$ measure, well-being falls by 5–65 per cent; it is reduced by 20–73 per cent in the Dagum and Sen measures. Existing inequality thus leads to major reductions in measured well-being. Brazil and Panama lose most, once inequality is considered. Well-being using the Dagum measure is 72 per cent below the level it would have been had their per capita income been equally distributed!

Because of low income inequality, the pre-transition socialist countries attract by far the smallest penalty for inequality of all countries considered. Well-being is reduced by less than 10 per cent in the Atkinson ($\varepsilon=1$) and 'only' up to 44 per cent in the Dagum measure. As a result, all Eastern European countries and all successor states (to be) of the Soviet Union improve their rank in 1988 when inequality is considered. For example, the Ukraine has rank 22 in the PPP adjusted income per capita measure and improves to rank 17 in the Atkinson ($\varepsilon=2$) and Dagum measures.

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[27] As Gini coefficients are collected only irregularly, there was sometimes no Gini-coefficient for the benchmark year. In these cases, we use the exact year for the income estimate while using the nearest available Gini coefficient under the (implicit) assumption that changes in income distribution between adjacent years are typically smaller than changes in mean income. For details, please refer to Grün and Klasen (2000).

[28] We use the PPP-adjusted mean income published by the World Bank (World Bank, 1999). A comparison of these estimates to the PPP-adjusted per capita income provided by the Penn World Tables 5.6 (NBER, 2000) suggests that adjusting incomes to reflect PPP is subject to a considerable margin of error and can therefore affect the ranking of countries. For a third of the countries, the adjustments lead to similar results. However, countries like China, Indonesia, Thailand, Malaysia and Bulgaria look a lot richer when using the Penn World Tables than when the adjustment is based on the World Bank PPPs, while the reverse appears to be the case for most Latin American countries, the Philippines and Portugal.

[29] This discrepancy is related to the systematic undervaluation of the non-traded sectors in poor countries (Summers and Heston, 1991).

The differences in inequality lead to a number of interesting rank reversals in the inequality-adjusted measures. For example, Panama is seven ranks ahead of the Kyrgyz Republic in the income measure, but is nine and twelve ranks behind the Kyrgyz Republic in the Dagum and Atkinson (ε=2) measures, respectively. Unequal Brazil falls below more equal Moldova, and, at the upper end, Portugal is surpassed by Slovenia and Slovakia when the well-being measures include the distribution of income.

The pattern of inequality in the socialist countries also appears to be different from the pattern of inequality observed elsewhere. Table 3 shows that the socialist countries, while having lower inequality throughout the income distribution, have particularly high shares of income accruing to the poorest quintile. They are close to, and often above, ten per cent while they are much lower in comparable countries. The comparison between Spain, on the one hand, and Russia, Bulgaria and Ukraine on the other is instructive. Despite having similar Gini coefficients, the socialist countries have higher income shares among the poorest quintile. At the same time, they also have higher income shares accruing to the richest than in Spain, while the middle income groups do worse. Since, as discussed above, the Gini-based measure metes out a higher penalty for inequality in the middle income groups, while the Atkinson measure places the largest weight on income inequality among the poorest groups and the least on income inequality among richer groups, we would expect that the socialist countries do relatively better with the Atkinson measures than the Gini-based measures. This is indeed the case as shown in Tables 1 and 3. In Table 1 we see that in all socialist countries the inequality-adjusted income using the Atkinson (ε=2) measure is much higher than in the Sen measure; in contrast, in all Latin American and some Asian countries the reverse is the case. As a result, the socialist countries do particularly well in the ranking using the Atkinson (ε=2) measure, while the Latin American countries, with their tiny income shares accruing to the poorest, fare particularly badly (see also Figure 2).

This difference can also be seen in Table 3 where we simply subtract the inequality-adjusted income shares (the inequality-adjusted income as a share of the unadjusted per capita income as reported in the last two columns in Table 1) using the Atkinson (ε=2) and the Dagum measure. In socialist countries this difference is always larger than 20 percentage points suggesting that well-being in these countries appears a lot larger using the Atkinson measure than the Gini-based Dagum measure. This is to say that the Dagum measure suggests that well-being in socialist countries is reduced by more than 20 percentage points more due to the prevailing inequality than the Atkinson measure would imply. In most other countries this difference is much smaller. In some Latin American countries, it is negligible.

Thus our impression of well-being in pre-transition socialist countries depends to a considerable extent on whether we believe transfer sensitivity, which attaches a higher weight to transfers among the poor than to equal-sized transfers among the rich, is a desirable property or not. If we do, which most observers support

(e.g., Atkinson, 1970; Blackorby and Donaldson, 1978), we use the Atkinson measures and reward the socialist countries for their high income shares accruing to the poorest; if we do not, as supported by Dagum (1990) and Sen (1997), we punish them for the comparatively low income shares among middle income groups. Thus, these seemingly technical differences in assumptions underlying the different well-being measures play a significant role in the comparative assessment of well-being in socialist countries.

Table 2 examines the same 33 countries for 1995, our benchmark year for countries having undergone a (sometimes still incomplete) transition to a market economy. The inequality-adjusted measures continue to be much lower than the income measure suggesting that inequality continues to have a big impact on well-being. Brazil and Colombia continue to suffer from the largest reductions in well-being which are also now larger than previously, suggesting not only high but worsening inequality.

Regarding transition economies, several important observations emerge. First, due to sharply declining incomes in many transition countries, and increasing incomes elsewhere, most transition countries slip in the income ranking. While six of the ten richest (in terms of PPP income) economies in 1988 were pre-transition socialist countries, only three remain in the top 10 in 1995. Conversely, instead of two there are now six transition countries among the poorest ten. This slippage in rank is largest for the successor states of the Soviet Union. Russia slips ten ranks, Ukraine eight, Turkmenistan eight, and Kazakhstan twelve ranks. In contrast, the Central European countries witness the least worsening in ranks.

Second, it is no longer invariably the case that the transition countries improve their rank once inequality is considered. While this is still the case for the majority of European transition countries and the Baltic Republics, it is no longer the case for many successor states of the former Soviet Union. Due to sharply increased inequality, Russia now worsens its rank, once inequality is considered. The same is true for the Ukraine, and the Kyrgyz Republic, while some of the other ex-Soviet States now merely maintain their rank once inequality is considered. Thus, we find that a consideration of inequality continues to improve the impression of relative well-being in most transition countries with the exception of several of the former Soviet States. Moreover, due to rising inequality virtually everywhere, the improvement in rank is now smaller than previously.

Third, because of falling incomes and rising inequality, the rank reversals between transition countries and comparable countries have changed considerably. While inequality in transition countries is still far below the levels of inequality in some developing countries, notably those from Latin America, rising inequality ensures that the differences in rank are no longer as large as before. Instead of being seven ranks ahead of the Kyrgyz Republic in 1988 in per capita incomes, Panama is now 23 ranks ahead. Once inequality is considered, Panama now remains fifteen ranks, and six ranks ahead in the Dagum and Atkinson ($\varepsilon=2$) measure, respectively (see also Figure 2). China also manages to surpass a number of transition countries for the first time in 1995, indicating that the

transition there appears to have been quite successful in increasing incomes and in stemming the rise in inequality. Similarly, Brazil remains far ahead of Moldova, even if inequality is considered, and the Czech Republic and Slovakia are no longer able to surpass Portugal even if inequality is considered. Only Slovenia, which has experienced a comparatively small increase in inequality, is able to surpass Portugal and occupy rank two in the Dagum and Atkinson (ε=2) measures.

Fourth, the difference in the kind of inequality between some transition countries and comparable countries is also now much reduced. Table 3 shows that a considerable share of the increase in inequality has appeared in the form of declining income shares to the poorest quintile, whose income shares in several transition countries are now similar to non-transition countries. As a result, comparisons of Tables 2 and 3 show that the many transition countries with rising inequality are experiencing larger reductions when the Atkinson measure is used compared to when the Gini-based measures are used. For example, in the Ukraine, using the Atkinson measure (ε=2), the inequality-adjusted share is reduced from 85.5 per cent to 51.4 per cent between 1988 and 1995; in the Dagum measure, the reduction is considerably smaller, from 62.2 per cent to 35.7 per cent. As a result, the difference between the Atkinson (ε=2) and the Dagum measure is no longer invariably much larger in transition countries than elsewhere. Indeed, there are a number of countries where the difference is now similar to non-transition countries (see Table 3). At the same time, the differences remain large in the Central European countries where there was little increase in inequality and the income shares of the poorest quintile remained above 10 per cent.

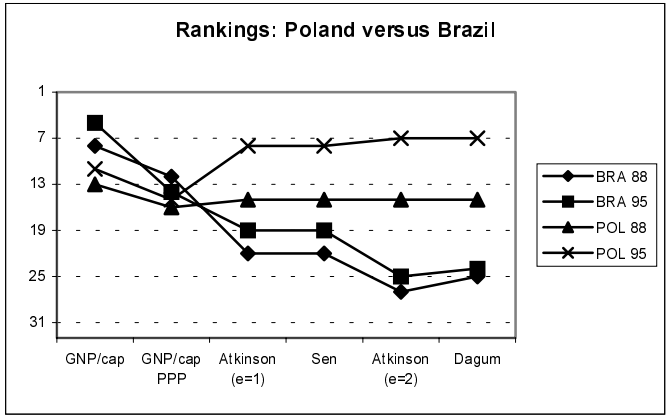
Figure 2 nicely summarizes some of the findings from this section by making several bilateral comparisons of well-being rankings in 1988 and 1995 using the different measures. The Ukraine-Indonesia comparison shows how plummeting incomes and rising inequality can worsen the comparison with a country which had rapidly rising incomes and stable inequality. In 1988, the Ukraine had higher income levels; considering inequality increased the distance to Indonesia further. In 1995, the Ukraine has a much lower income rank, and the difference becomes even larger when inequality is considered.[30] Similar changes occur in the comparison between Panama and the Kyrgyz Republic.

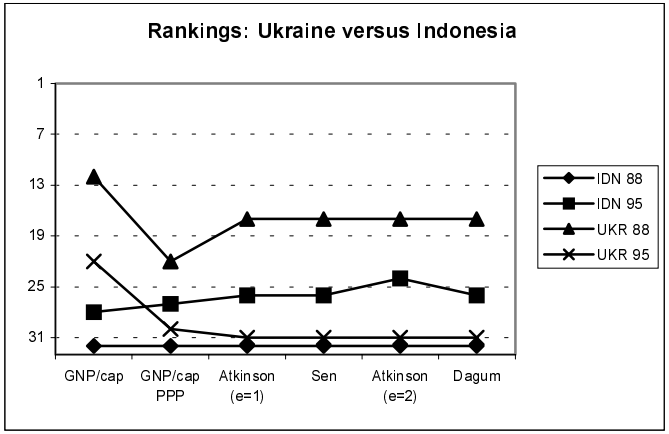
On the other hand, the comparisons between Poland and Brazil show that despite falling incomes, Poland manages to have a higher rank in the inequality-adjusted measures in 1995 since its inequality has risen by much less and remains far below that of Brazil. The same holds for Romania and Thailand where Romania manages to stay ahead of Thailand due to its still much lower inequality.[31]

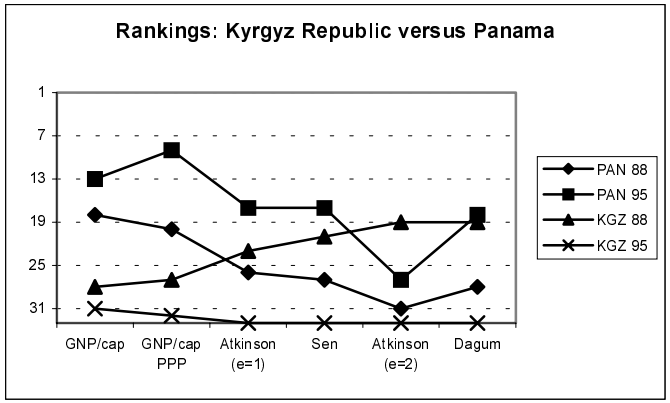
[30] The improvement in Indonesia in the inequality-adjusted measures is not due to falling inequality in Indonesia, but due to rising inequality in all the transition countries.

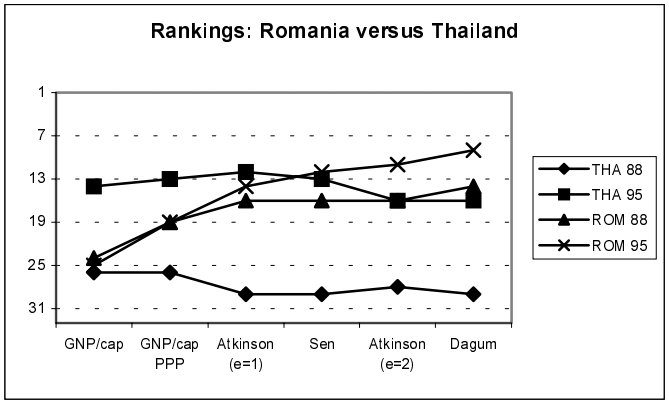
[31] Romania and Poland both improve in the ranking between 1988 and 1995, no matter which indicator is used. This is not due to improving well-being there, but smaller declines in well-being in these two countries compared to other transition countries.

Figure 2. Bilateral comparisons of rankings: transition versus non-transition countries









6. Sensitivity analysis

In the sensitivity analysis, we consider to what extent our results are driven by inconsistencies in the income definition and the particular data series used. To deal with the first issue, we regress the reported Gini coefficients on the income definition (expenditure, net income, unknown income, or gross income, the excluded category), and the reference unit considered (unknown, household, or person, the excluded category).[32] The regressions (available upon request) suggest that the data definition does indeed have an effect on the Gini coefficient and that the difference between gross and net income is largely a phenomenon of OECD countries, as one would expect (Atkinson and Brandolini, 1999). We then adjust the Gini coefficients based on the coefficients from these regressions and thereby base all these adjusted Ginis on disposable income per person.

The ranking of countries is not greatly affected when we use these revised Gini coefficients. Using the Sen measure, hardly any rankings change. Using the Dagum measure, there are more significant variations. However, there is more persistence than change. In 1995, the year when most changes occur, 21 countries' rankings remain the same, eight countries change by one rank, and four countries change ranks by more than one position.[33]

Second, we compared our data with income inequality data from other sources. Appendix 2 provides an overview. For the socialist period, we compare the Milanovic (1998) data used here with data presented in Atkinson and Micklewright (1992) and Flemming and Micklewright (2000). According to these data sources, which are based on similar income definitions, inequality has been slightly higher in most socialist countries. The differences to the Milanovic data are the largest for the Baltic States. Nevertheless, the differences remain modest and both datasets suggest that income inequality in socialist countries was considerably below the levels prevailing in the countries we are comparing them with.

Considering the post-transition period we can contrast the data we used with another expenditure-based measure also taken from Milanovic (1998) and two other data sources (Flemming and Micklewright, 2000 and Garner, 2001), respectively. In contrast to the pre-transition period, the differences to our data are generally small and go in both directions. Using expenditures per capita, there are only minor differences, except for the Kyrgyz Republic. Here the Gini coefficient based on expenditures is 12 percentage points below that using income data. Applying this lower inequality measure would somewhat improve the

[32] For the regression we include all data on income distribution available by the two Deininger and Squire datasets as well as from The World Income Inequality Database (Wider, 1999). Following suggestions from Atkinson and Brandolini (1999), we do not restrict the regression to the 'accept' series in the Deininger and Squire dataset. This enables us to get several observations per country at the same time, which should improve our ability to identify the reference unit and income definition effects. For details, please refer to Grün and Klasen (2000).

[33] The most significant change is a worsening of four ranks by Mexico.

ranking of the Kyrgyz Republic in our inequality-adjusted measures. It would not, however, change the result of a dramatic worsening in rank.

The few data points provided by Flemming and Micklewright (2000) are in general also similar to the ones we have used. Only for Russia, the Gini coefficient is significantly lower by 10 percentage points. But this lower Gini-coefficient is based on a problematic data source, the old budget survey that suffered from many deficiencies. When examining the data source most used for inequality assessments in post-transition Russia (the Russian Longitudinal Monitoring Survey), this Gini varies from 0.43 in 1992 and 0.48 in 1996, quite similar to the figure we used (which is based on that survey, see Milanovic, 1998). Moreover, despite these differences, both data sources point to a dramatic worsening of inequality in Russia in the early 1990s.

The data for the Czech Republic and Slovakia are somewhat different to the ones we used. In particular, the increase in inequality in the Czech Republic appears to have been more gradual than suggested in our data,[34] and the reported decline in inequality in Slovakia between 1989 and 1993 is not found in the alternative data we use, which finds a moderate increase in inequality similar to the one observed in the Czech Republic. But also here the rankings do not change as a result of using the revised data.

This sensitivity analysis suggests that few of the basic results on the large absolute impact of inequality and the change in ranks as a result of it reported are meaningfully affected by using different datasets.[35] In particular, it remains the case that the combination of falling incomes and rising inequality leads to a dramatic worsening of rank for most transition countries, particularly among the successor states of the Soviet Union.

7. Comparisons across time

The discussion in Section 5 has already shown that in many transition countries, inequality has changed considerably for the worse. In contrast, among non-transition countries, it appears that there is also a great deal of stability in inequality measures.[36] Thus for most non-transition countries, the growth rates in the inequality-adjusted measures of well-being will not differ greatly from the growth rate in per-capita incomes.

In transition countries, however, income growth seriously biases our view of changes in well-being. Per capita income losses in the first few years (from 1988 to 1995) already amount to between 5 per cent in Poland to some 55 per cent in

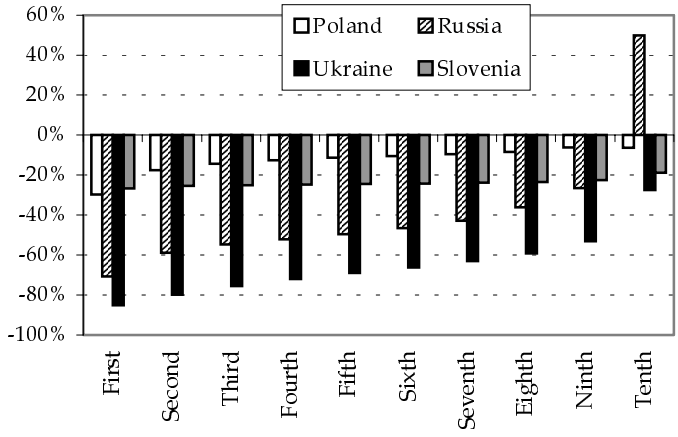
[34] The level of inequality reported in 1993 in our data appears only to have been reached in 1996 according to the more reliable microcensus estimates.

[35] There is, however, some support for Milanovic's (1998) contention that his data slightly overstate the increase in inequality in transition countries.

[36] See Deininger and Squire (1998b) and Lundberg and Squire (1999).

Ukraine and Turkmenistan. But rising inequality ensures that these losses are distributed very unevenly among the population. Figure 3 shows dramatic differences in income growth by decile in selected countries. In Russia, the poorest decile suffered a 70 per cent drop in real incomes, while the richest decile actually gained nearly 50 per cent. Similar differences exist in the Ukraine although here all deciles lose, but the rich much less than the poor. In Poland, a country with a lower income loss, the differences in income losses among the deciles are much smaller although the rich lose less than the poor; in Slovenia, the moderate income losses are spread out fairly evenly among the deciles.

Figure 3. Growth of real income per decile (local currencies), 1988–95

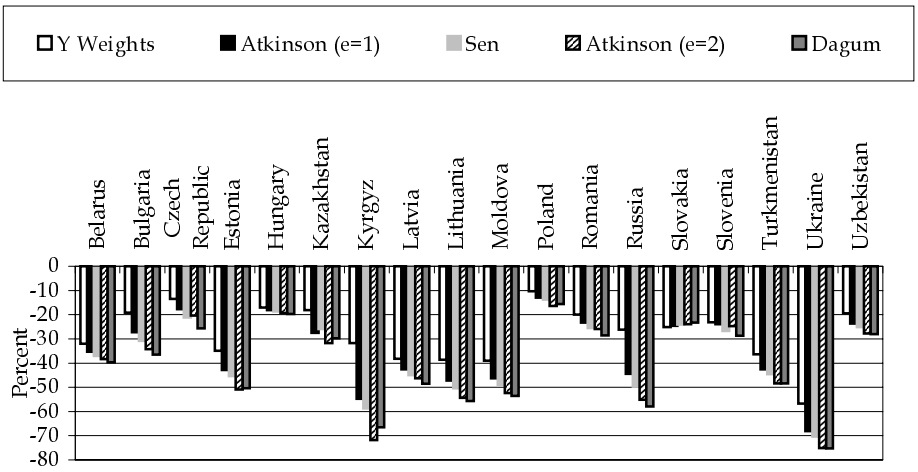


Source: Milanovic (1998) including country data sheets provided by Milanovic.

Using our measures, this rising inequality further reduces well-being between the pre-and post-transition benchmark years, in some countries by considerable amounts. Figure 4 shows the combined effect of income drops and rising inequality on our inequality-adjusted well-being measures. For example, the already severe income losses in Russia of some 43 per cent translate, combined with the rising inequality, to well-being losses of 55–68 per cent, depending on the measure chosen. In the Ukraine, the income loss of 55 per cent combines with rising inequality to a well-being loss of 68–75 per cent. Similar dramatic differences between income losses and well-being losses exist in Moldova, Estonia, Latvia and the Kyrgyz Republic. Once again, we see that in Central Europe, things are not nearly as bad. Income losses are smaller, and the rise in inequality was more modest. As a result, well-being losses are not so different

from income losses in Hungary, Poland or Slovenia.[37] As these countries experienced considerable income growth between our post-transition benchmark years (1993–95) and 1999 (see Figure 1), they are the only transition countries that have possibly been able to surpass the level of well-being they enjoyed in 1988.[38]

Figure 4. Well-being losses in transition countries, 1988–95



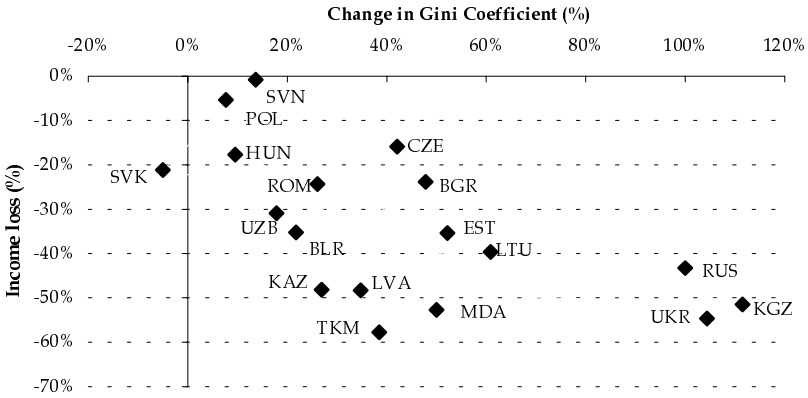
Note: The Atkinson measures are calculated using decile shares. There are slightly different time periods used, depending on data availability in Milanovic (1998). See Appendix 2 for details.

In fact, there appears to be an interesting correlation between the per capita income losses and the changes in inequality. In Figure 5 it appears that the countries with the smallest income losses between 1988 and 1995 also experienced the smallest increase in inequality; conversely, those with the largest income losses experienced the largest increase in the Gini coefficient. As a result, an incorporation of inequality magnifies the already large differences in per capita growth rates between countries.

[37] Slovakia is the only country where our impression of changes in well-being changes for the better once the (slightly) declining inequality is included. But as shown above, this slight decline is likely to be due to inconsistent data. Other data point to a slight increase over the same time period.

[38] Since we do not have more recent data on inequality we cannot tell whether this income growth was accompanied by further increases in inequality. Assuming that inequality has not changed between the benchmark years and 1999, Poland and Hungary have surpassed the level of well-being enjoyed in the late 1980s, regardless of the indicator used. Using more recent indicators of inequality in Slovakia suggests that they have not been able to reach the level of pre-transition well-being; since the pre-transition income data for Slovenia are from 1992, it is difficult to tell whether they have surpassed the level of well-being they enjoyed in 1988.

Figure 5. Income loss and inequality change, 1988–95



Notes: In this figure, we rely on the Milanovic (1998) data used throughout this paper. Replacing the problematic inequality data for Slovakia for the post-transition period with the data presented in Appendix 2, moves the Slovakia observation to the right as it realises a 30 per cent increase in the Gini coefficient (rather than the alleged fall). However, the correlation coefficients between income loss and change in Gini coefficient are very large and significant (and similar at around –0.61) regardless of which data point we use for Slovakia.

This correlation may be related to progress in transition itself. The EBRD's transition index (EBRD, 2000) suggests that in the countries where transition has been fastest, income losses have been least (see Table 6). *A fortiori*, this would also mean that in the countries where transition has been fastest, the rise in inequality has been the smallest. There could be causal linkages here. In particular, slow transition might mean that the transition process has been captured and delayed by old elites who are able to slow the move towards a competitive market economy and enrich themselves in the process. In contrast, the poor lose out as they depend on state resources (pensions, social benefits, etc) that are falling and becoming more unequal in countries where transition is slow and the resulting ability of the state to get a secure revenue base from taxation is low (see Flemming and Micklewright, 2000; Milanovic, 1998).[39]

[39] For example, insider privatization, little progress in restructuring and competition, combined with the inability of the state to raise sufficient revenue to pay for pensions and other social commitments appear to have lead to a combination of poor progress in transition, large income losses, and large increases in

But this correlation is far from perfect. For example, in the Baltic Republics, the transition index suggests good progress, while income losses have been very severe and the rise in inequality has also been large. Similarly, Belarus and the Central Asian Republics show the least progress in transition, but they do not have the largest income losses nor, on average, the fastest increases in inequality.[40] It is beyond the scope of this paper to investigate these issues in detail.[41] The large differences in the experiences of transition countries suggest, however, that large income losses and large increases in inequality are not the inevitable fate of transition economies. Apparently, there is considerable scope for economic policy to influence both developments, an issue that deserves further investigation. In particular, the apparent linkage between income loss and inequality increases deserves scrutiny as this has a compound effect on well-being.

Table 4 also shows that non-economic social indicators of well-being support this impression of a general deterioration in well-being (see also Klasen, 1994a; UNICEF, 1993; UNDP, 1996). Compared to a rising trend elsewhere in the world and in comparable middle-income countries, Table 4 shows that life expectancy dropped for both males and females in Kazakhstan, Russia and Ukraine, while it fell only for males in the Baltic Republics. But the deteriorations appear smaller than one might expect given the disastrous drops in our economic well-being indicators. Also, they do not extend to all countries; in most Central European countries, life expectancy continued to rise, albeit at a slower pace than previously.[42] The fact that the social indicators have deteriorated less than

income inequality in Russia. As a result of these developments, the wage distribution became a lot more unequal and highly dependent on the sector of the economy, non-wage private income made up a sharply increasing share of total income, and social transfers became much more unequal. For a discussion, see Milanovic (1998) and Flemming and Micklewright (2000).

[40] Milanovic (1998) classifies countries by the amount of compensation they provide to people negatively affected by the transition process. He defines 'non-compensators' as countries where losses in the share of wage income are not offset by increases in social transfers, 'compensators' where a fair amount of 'offset' has taken place, and 'populists' where all sources of population income increased as a share of GDP. The first group includes the Czech Republic, Estonia, Moldova, Romania, Russia, Slovakia and Ukraine; the second group includes Belarus, Bulgaria, Latvia and Lithuania; and the third group is comprised of Hungary, Poland and Slovenia. He finds that the increase in Gini was largest among the non-compensators but this is entirely dependent on the inclusion of Russia and Ukraine (Milanovic, 1998). It appears that his classification is much more heterogeneous than the correlation between income growth and inequality increases presented in Figure 5.

[41] One pattern appearing in the data is that there might be an inverse U-shape in the relationship between transition and inequality. Those countries which have hardly begun a transition, such as Belarus and some of the Central Asian Republics, have, by maintaining the status quo, been able to avoid the increase in inequality; in some countries, this apparently came at the expense of large drops in income. Those that have undertaken a slow and incomplete transition (e.g., Russia, Ukraine) have suffered the largest income losses and the biggest increases in inequality, while those that have undertaken a rapid transition (e.g., Poland, Hungary, Czech Republic) have managed to keep income losses and increases in inequality fairly low. This pattern merits further analysis.

[42] With regard to under five mortality, the picture looks brighter which suggests that much of the deterioration in life expectancy has to do with increases in adult mortality. See Cornia and Paniciccia (2000) for a discussion.

incomes and inequality might point to the success of efforts to protect social services in most countries, as well as to non-linearities in the relationship between economic well-being and social measures of well-being.[43]

When it comes to indicators of political and civil liberties, however, the picture looks very different. Now most transition countries show large improvements, which run counter to the income, inequality and human development indicators. While four transition countries (Belarus and several Central Asian states) remain unfree, ten are now considered free, and another four partly free; this is a vast improvement over the situation in the late 1980's (see also Sen, 1991).

8. Conclusion

In this paper, we have investigated how inequality-adjusted indicators of well-being would change our impression of well-being in transition countries before and during the transition process. We did this by comparing transition countries with comparable non-transition countries and investigating intertemporal changes in well-being in transition countries. Before summarizing our main results, one should point out that the findings should be treated with some caution. While our well-being measures are likely to be an improvement over the exclusive reliance on per capita incomes, they are far from perfect measures of well-being in general, or even economic well-being. Our measures still suffer from most of the drawbacks of GNP per capita as a welfare measure and only correct for the well-being impact of one of its central shortcomings, the neglect of income distribution.[44] The differences between the four measures show that the incorporation of inequality can yield a range of estimates that are far from identical. Finally, we have to contend with imperfect data and issues of compatibility across countries and across time which are a particular concern for comparisons across the transition process.

Bearing these reservations in mind, our main results are the following: First, it is theoretically justified and empirically important to adjust incomes by the amount of inequality to arrive at more meaningful measures of economic well-being. Applying these measures indicates that inequality can have a sizeable impact on well-being.

Second, combined with their moderate income levels, the comparatively low inequality in socialist countries ensured fairly high levels of well-being. In the transition process, well-being has been eroded by falling incomes and by rising inequality. This has worsened the comparative position of transition countries.

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[43] For example, there appears to be a logarithmic relationship between per capita incomes and life expectancy which would suggest that at fairly high levels of per capita incomes, even a sharp reduction in income will only reduce life expectancy by a few years. See Klasen (1994b).

[44] See Osberg and Sharpe (2000) for a more ambitious approach to the measurement of economic well-being in OECD countries.

Third, low inequality in socialist countries was characterized by particularly high income shares of the poorest quintile. The transition has brought disproportionate losses to this group in most countries so that the nature of inequality in many transition countries is now similar to non-transition states.

Fourth, there are great differences in the performance of transition countries. In particular, there appears to be a close correlation between income losses and increases in inequality. As a result, an inclusion of inequality accentuates the differences in well-being between the countries with comparatively small income losses and those with large ones. This suggests that neither the large income losses nor the huge increase in inequality experienced in some countries were inevitable features of the transition process. Some countries managed to transform themselves with minor income losses and little increase in inequality. The reasons for this different performance should be investigated further, given its huge implication for well-being.

Finally, it remains the case that the political transformation in most of the former socialist countries has been a great success. Before the transformation, political and civil liberties were low and they have improved hugely in the last ten years. In contrast, in terms of our indicators of measured economic well-being, the transition has to date not been a success. With the exception of Hungary and Poland, ten years of economic transformation have not been able to restore economic well-being, as measured by our indicators, to the levels enjoyed at the end of the socialist period.

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Tables

Table 1. Welfare measures, 1988

Rank	GNP/cap[a] (exchange rate)		GNP/cap[b] (PPP)		Atkinson (ε=1)[c] (% of GNP/cap, PPP)		Sen[c] (% of GNP/cap, PPP)		Atkinson (ε=2)[c] (% of GNP/cap, PPP)		Dagum[c] (% of GNP/cap, PPP)	
33	333	CHN	1617	CHN	83.0	CHN	65.1	CHN	68.2	CHN	48.3	CHN
32	646	IDN	2115	IDN	85.5	IDN	68.0	IDN	74.3	IDN	51.5	IDN
31	1016	PHL	3110	JAM	75.8	JAM	56.8	JAM	30.8	PAN	39.7	JAM
30	1328	UZB	3322	MDA[d]	72.9	PHL	54.3	PHL	59.0	JAM	37.2	PHL
29	1345	JAM	3372	PHL	68.8	THA	52.6	THA	56.0	PHL	35.7	THA
28	1411	KGZ	3546	UZB	91.8	MDA	57.2	PER	49.3	THA	27.8	PAN
27	1596	MDA[d]	3981	KGZ	89.2	UZB	43.5	PAN	35.3	BRA	40.1	PER
26	1635	THA	3981	THA	56.1	PAN	75.9	MDA	51.8	MYS	34.8	MYS
25	1702	COL	4230	PER	76.9	PER	51.7	MYS	61.9	PER	28.1	BRA
24	1784	ROM	4902	MYS	70.1	MYS	71.8	UZB	46.0	COL	32.3	COL
23	1860	BGR	4927	TKM	90.9	KGZ	48.8	COL	84.4	MDA	56.0	UZB
22	2110	CRI	5362	UKR	57.0	BRA	43.8	BRA	79.8	UZB	61.2	MDA
21	2121	TKM	5549	CRI	66.4	COL	74.0	KGZ	54.8	CRI	29.0	MEX
20	2226	KAZ	5723	PAN	74.3	CRI	58.0	CRI	40.9	MEX	40.8	CRI
19	2247	PER	5761	ROM	90.7	TKM	45.0	MEX	83.4	KGZ	58.7	KGZ

Table 1 (continued). Welfare measures 1988

Rank	GNP/cap[a] (exchange rate)		GNP/cap[b] (PPP)		Atkinson (ε=1)[c] (% of GNP/cap, PPP)		Sen[c] (% of GNP/cap, PPP)		Atkinson (ε=2)[c] (% of GNP/cap, PPP)		Dagum[c] (% of GNP/cap, PPP)	
18	2348	PAN	5810	COL	61.9	MEX	73.6	TKM	83.0	TKM	58.2	TKM
17	2575	BLR	5985	BGR	92.5	UKR	76.7	UKR	85.5	UKR	62.2	UKR
16	2671	MYS	6022	POL	92.3	ROM	76.7	ROM	85.0	ROM	37.8	VEN
15	2873	LTU	6246	LTU	91.0	POL	74.4	POL	83.0	POL	59.2	POL
14	2904	MEX	6420	BLR	92.6	BGR	76.7	BGR	54.6	VEN	62.2	ROM
13	3035	POL	6507	KAZ	93.0	LTU	74.3	KAZ	86.1	BGR	62.2	BGR
12	3388	UKR	6569	BRA	90.7	KAZ	77.5	LTU	82.3	KAZ	59.1	KAZ
11	3563	VEN	6756	LVA	92.8	BLR	77.2	BLR	86.6	LTU	63.3	LTU
10	3882	SVK	6855	EST	92.9	LVA	54.8	VEN	86.1	BLR	62.9	BLR
9	3895	RUS[d]	7552	MEX	92.3	EST	77.5	LVA	86.2	LVA	63.3	LVA
8	4410	BRA	7739	RUS[d]	73.0	VEN	77.0	EST	85.1	EST	62.6	EST
7	4526	LVA	7813	HUN	92.0	RUS	76.2	RUS	84.5	RUS	61.6	RUS
6	4694	EST	8871	SVK	94.0	HUN	79.0	HUN	88.6	HUN	65.3	HUN
5	4773	HUN	9344	VEN	94.7	SVK	80.5	SVK	64.2	PRT	46.2	PRT
4	5482	CZE	11148	SVN[d]	80.6	PRT	63.2	PRT	89.8	SVK	67.4	SVK
3	8272	SVN[d]	11459	PRT	92.4	SVN	78.5	SVN	85.6	SVN	64.6	SVN
2	8580	PRT	11795	CZE	94.7	CZE	80.6	CZE	89.8	CZE	67.5	CZE
1	12327	ESP	13848	ESP	91.5	ESP	75.6	ESP	83.4	ESP	60.7	ESP

Notes: a): Data taken from World Bank (1999), measuring GNP / cap, constant 1995 US-Dollars.
b): Data taken from World Bank (1999), measuring GNP / cap, PPP adjusted, constant 1995 US-Dollars. The rankings are based on the absolute values of the well-being indicator (the ratio reported in columns 3-6 multiplied with the PPP income in column 2).
c): The Atkinson (ε=1, ε=2), Sen and Dagum measures are presented as the ratio of respective adjusted income to unadjusted PPP income (column two).
d): Income data of Moldova (MDA) from 1986, Russia (RUS) from 1990, and Slovenia (SVN) from 1992.

Table 2. Welfare measures, 1995

Rank	GNP/cap[a] (exchange rate)		GNP/cap[b] (PPP)		Atkinson (ε=1)[c] (% of GNP/cap, PPP)		Sen[c] (% of GNP/cap, PPP)		Atkinson (ε=2)[c] (% of GNP/cap, PPP)		Dagum[c] (% of GNP/cap, PPP)	
33	572	CHN	1570	MDA	62.4	KGZ	44.7	KGZ	38.5	KGZ	28.8	KGZ
32	700	MDA	1930	KGZ	81.5	MDA	63.5	MDA	66.7	MDA	46.5	MDA
31	727	KGZ	2080	TKM	69.8	UKR	52.6	UKR	51.4	UKR	35.7	UKR
30	954	TKM	2430	UKR	82.4	TKM	64.2	TKM	68.4	TKM	47.3	TKM
29	979	UZB	2450	UZB	84.6	UZB	62.2	CHN	64.8	CHN	45.1	CHN
28	992	IDN	2620	CHN	80.7	CHN	66.7	UZB	71.9	UZB	50.0	UZB
27	1085	PHL	3050	IDN	75.4	PHL	56.2	PHL	30.4	PAN	39.1	PHL
26	1229	KAZ	3360	JAM	84.9	IDN	65.8	IDN	59.7	PHL	49.1	IDN
25	1438	ROM	3370	KAZ	81.2	JAM	62.1	JAM	33.2	BRA	45.0	JAM
24	1509	BGR	3380	PHL	85.3	KAZ	67.3	KAZ	73.9	IDN	25.0	BRA
23	1550	JAM	3490	LVA	87.0	LVA	52.0	RUS	67.5	JAM	35.1	RUS
22	1639	UKR	3770	LTU	81.0	LTU	55.1	PER	55.4	PER	38.1	PER
21	1778	BLR	4160	BLR	73.5	PER	62.7	LTU	54.2	RUS	50.7	KAZ
20	1850	LTU	4280	PER	71.6	RUS	69.0	LVA	73.0	KAZ	45.7	LTU
19	2021	COL	4360	ROM	54.8	BRA	40.0	BRA	66.0	LTU	27.2	COL

Table 2 (continued). Welfare measures, 1995

Rank	GNP/cap[a] (exchange rate)		GNP/cap[b] (PPP)		Atkinson (ε=1)[c] (% of GNP/cap, PPP)		Sen[c] (% of GNP/cap, PPP)		Atkinson (ε=2)[c] (% of GNP/cap, PPP)		Dagum[c] (% of GNP/cap, PPP)	
18	2304	RUS	4390	RUS	82.2	EST	42.8	COL	39.5	COL	27.5	PAN
17	2428	PER	4430	EST	55.7	PAN	43.2	PAN	76.1	LVA	52.7	LVA
16	2494	LVA	4560	BGR	88.9	BLR	64.6	EST	44.7	THA	32.0	THA
15	2613	CRI	5700	POL	84.1	BGR	71.6	BLR	67.1	EST	47.7	EST
14	2771	THA	6080	BRA	88.7	ROM	65.7	BGR	49.7	CRI	48.9	BGR
13	2875	PAN	6340	THA	60.1	COL	48.5	THA	71.1	BGR	55.8	BLR
12	2994	MEX	6430	HUN	64.4	THA	71.4	ROM	79.2	BLR	36.1	CRI
11	3058	POL	6440	CRI	70.1	CRI	53.0	CRI	79.0	ROM	34.7	MYS
10	3230	EST	6480	COL	69.8	MYS	51.5	MYS	48.3	MEX	33.1	MEX
9	3261	SVK	6580	PAN	67.6	MEX	49.7	MEX	51.1	MYS	55.5	ROM
8	3452	VEN	6940	MYS	88.6	POL	71.6	POL	51.6	VEN	36.2	VEN
7	4032	MYS	6990	SVK	93.0	HUN	53.2	VEN	78.5	POL	55.8	POL
6	4191	HUN	7300	MEX	71.0	VEN	77.4	HUN	86.5	HUN	63.1	HUN
5	4349	BRA	8490	VEN	95.4	SVK	81.7	SVK	91.2	SVK	69.1	SVK
4	4916	CZE	9920	CZE	90.7	CZE	73.4	CZE	83.3	CZE	58.0	CZE
3	9526	SVN	11060	SVN	91.4	SVN	74.9	SVN	67.5	PRT	47.5	PRT
2	10450	PRT	13100	PRT	82.7	PRT	64.4	PRT	84.0	SVN	59.9	SVN
1	14145	ESP	14910	ESP	85.6	ESP	67.5	ESP	73.5	ESP	51.0	ESP

Notes: For definition of columns, see notes a–c in Table 1.

Table 3. The nature of inequality in transition and non-transition countries 1988, 1995

Country	1988			1995		
	Gini coefficient	Income share of poorest quintile (%)	Atkinson (ε=2) – Dagum (%)	Gini coefficient	Income share of poorest quintile (%)	Atkinson (ε=2) – Dagum (%)
Bulgaria	23.3[c]	10.63	23.9	34.3[c]	7.11	22.2
Belarus	22.8[c]	10.48	23.3	28.4[c]	8.70	23.4
Brazil	56.2[a]	2.70	7.2	60.1[b]	2.48	8.3
China	34.9[a]	6.60	20.0	37.8[a]	6.02	19.7
Colombia	51.2[a]	3.70	13.7	57.2[b]	3.10	12.3
Costa Rica	42.0[a]	4.40	13.9	47.0[b]	3.99	13.6
Czech Republic	19.4[c]	11.92	22.3	26.6[c]	10.50	25.3
Spain	24.4[a]	9.49	22.7	32.5[b]	7.54	22.6
Estonia	23.0[c]	9.99	22.5	35.4[c]	6.13	19.4
Hungary	21.0[c]	11.42	23.3	22.6[c]	10.62	23.4
Indonesia	32.0[a]	7.99	22.8	34.2[b]	8.37	24.9
Jamaica	43.2[a]	5.41	19.3	37.9[a]	6.82	22.4
Kazakhstan	25.7[c]	9.47	23.2	32.7[c]	7.49	22.3
Kyrgyz Republic	26.0[c]	10.57	24.7	55.3[c]	2.69	9.7
Lithuania	22.5[c]	10.64	23.3	37.3[c]	6.21	20.4
Latvia	22.5[c]	10.44	22.9	31.0[c]	8.04	23.4
Moldova	24.1[c]	9.96	23.2	36.5[c]	6.38	20.2

Table 3 (continued). The nature of inequality in transition and non-transition countries 1988, 1995

Country	1988			1995		
	Gini coefficient	Income share of poorest quintile (%)	Atkinson (ε=2) – Dagum (%)	Gini coefficient	Income share of poorest quintile (%)	Atkinson (ε=2) – Dagum (%)
Mexico	55.0[a]	3.20	11.8	50.3[a]	4.13	15.2
Malaysia	48.4[a]	4.58	16.9	48.5[b]	4.45	16.4
Panama	56.5[a]	2.00	3.0	56.8[b]	1.97	2.9
Peru	42.8[a]	6.20	21.8	44.9[a]	4.88	17.4
Philippines	45.7[a]	5.20	18.7	43.8[b]	5.85	20.6
Poland	25.6[c]	9.71	23.8	28.4[c]	8.37	22.7
Portugal	36.8[a]	5.70	17.9	35.6[a]	6.14	20.0
Romania	23.3[c]	9.97	22.8	28.6[c]	8.74	23.5
Russia	23.8[c]	9.91	22.9	48.0[c]	4.86	19.1
Slovakia	19.5[c]	11.89	22.4	18.3[c]	12.55	22.2
Slovenia	21.5[c]	10.49	21.0	25.1[c]	10.10	24.1
Thailand	47.4[a]	4.10	13.6	51.5[a]	3.70	12.7
Turkmenistan	26.4[c]	10.50	24.8	35.8[c]	6.70	21.2
Ukraine	23.3[c]	10.31	23.3	47.4[c]	4.27	15.7
Uzbekistan	28.2[c]	8.97	23.8	33.3[c]	7.28	21.9
Venezuela	45.2[a]	4.73	16.8	46.8[b]	4.33	15.4

Notes: Columns three and six indicate the absolute difference in percentage points of PPP per capita income between the Atkinson (ε=2) and the Dagum measure expressed in percentages (column 5 minus column 6 in Table 1 and Table 2, respectively).

a): Gini coefficient from Deininger-Squire dataset (1996). Income concept is mostly gross income per person.

b): Gini coefficient from updated Deininger-Squire dataset (1998b). Income concept is mostly gross income per person.

c): Gini coefficient from Milanovic (1998). Income concept for the year 1988 is mostly gross per capita income: for 1995 it is disposable income per capita.

Table 4. Changes in social indicators in transition countries

Country	Life expectancy in years				Mortality rate[a]		School enrolment[b]		Transition index[c]		Freedom House Index[d]	
	1988		1998		1989	1998	1989	1993	1994	1997	1988–89	1999–00
	Female	Male	Female	Male								
Bulgaria	75[e]	68[e]	75	67	18	15	77	70	2.5	2.8	7, 7 NF	2, 3 F
Belarus	76	67	74	63	15	14	98	91	1.7	1.4	6, 5 NF[h]	6, 6 NF
Czech Republic	75	68	78	71	12	6	93	92	3.5	3.5	7, 6 NF[i]	1, 2 F
Estonia	75	67	75	64	19	12	126	94	3.3	3.4	6, 5 NF[h]	1, 2 F
Hungary	74	66	75	66	18	12	75	94	3.3	3.7	5, 4 PF	1, 2 F
Kazakhstan	73	65	70	59	–	29	101	92	1.7	2.7	6, 5 NF[h]	6, 5 NF
Kyrgyz Republic	70[e]	62[e]	71	63	47	41	102	90	2.8	2.8	6, 5 NF[h]	5, 5 PF
Lithuania	77	68	77	67	14	12	95	81	3.0	3.1	6, 5 NF[h]	1, 2 F
Latvia	75	66	76	64	15	19	97	87	2.8	3.2	6, 5 NF[h]	1, 2 F
Moldova	71	64	70	63	–	22	83	84	2.2	2.6	6, 5 NF[h]	2, 4 PF
Poland	76	67	77	69	22	11	82	94	3.3	3.4	5, 5 PF	1, 2 F
Romania	72	67	73	66	35	25	101	79	2.7	2.7	7, 7 NF	2, 2 F
Russia	74	65	73	61	22	20	95	87	2.7	3.0	6, 5 NF[h]	4, 5 PF
Slovakia	76	67	77	69	16	10	–	89	3.3	3.3	7, 6 NF[i]	1, 2 F

Table 4 (continued). Changes in social indicators in transition countries

Country	Life expectancy in years				Mortality rate[a]		School enrolment[b]		Transition index[c]		Freedom House Index[d]	
	1988		1998		1989	1998	1989	1993	1994	1997	1988–89	1999–00
	Female	Male	Female	Male								
Slovenia	76[e]	68[e]	79	71	10	7	90	90	3.2	3.2	2, 3 F[g]	1, 2 F
Turkmenistan	69	62	70	63	–	44	–	–	1.2	1.5	6, 5 NF[h]	7, 7 NF
Ukraine	75	66	73	62	–	17	95	91	1.3	2.4	6, 5 NF[h]	3, 4 PF
Uzbekistan	71	66	73	66	–	29	101	94	2.0	2.0	6, 5 NF[h]	7, 6 NF
World	67[e]	63[e]	69	65	–	75	54	62	–	–	–	–
Latin-America & Caribbean	70[e]	64[e]	73	67	–	38	48	49	–	–	–	–
High Income	79[e]	72[e]	81	75	–	6	94	105	–	–	–	–
Middle Income	70[e]	65[e]	72	67	51[f]	38	55	60	–	–	–	–

Notes: All data are taken from World Bank 1999, except for life expectancy data and mortality rates of 1998. Those are from World Bank 2000. Data on Transition Index and Freedom House Index are available on http://www.ebrd.org and http://www.freedomhouse.org, respectively.

a): Measures the under five mortality rate per 1000 live births in per cent.

b): Measures gross secondary enrolment rate in per cent.

c): Composite index considering various dimensions of transition, including price liberalization, privatization, restructuring, competition policy, and reform of financial institutions.

d): The characters representing scores are, from left to right, political rights, civil liberties, and freedom status. Each of the first two is measured on a one-to-seven scale, with one representing the highest degree of freedom and seven the lowest. 'F', 'PF', and 'NF' respectively stand for 'free', 'partly free', and 'not free'.

e): 1987.

f): 1990.

g): 1991–92.

h): This rating is for the Soviet Union.

i): This rating is for Czechoslovakia.

Appendix I

Country acronyms

BGR	Bulgaria	**MYS**	Malaysia
BLR	Belarus	**PAN**	Panama
BRA	Brazil	**PER**	Peru
CHN	China	**PHL**	Philippines
COL	Colombia	**POL**	Poland
CRI	Costa Rica	**PRT**	Portugal
CZE	Czech Republic	**ROM**	Romania
ESP	Spain	**RUS**	Russian Federation
EST	Estonia	**SVK**	Slovak Republic
HUN	Hungary	**SVN**	Slovenia
JAM	Jamaica	**THA**	Thailand
KAZ	Kazakhstan	**TKM**	Turkmenistan
KGZ	Kyrgyz Republic	**UKR**	Ukraine
LTU	Lithuania	**UZB**	Uzbekistan
MDA	Moldova	**VEN**	Venezuela
MEX	Mexico		

Appendix 2

Comparing Gini coefficients from different data sources

Country	Pre-transition period[a]			Post-transition period[b]		
Bulgaria	1989 (23.3)	-	-	1993 (34.3)	-	-
Belarus	1988 (22.8)	1989 (23.8)	1989 (23)	1995 (28.4)	1995 (30)	-
Czech Republic	1988 (19.4)	-	1989 (20)	1993 (26.6)	-	1996 (25.8)[c]
Estonia	1988 (23.0)	1989 (29.9)	1989 (28)	1995 (35.4)	1995 (31)	-
Hungary	1987 (21.0)	1987 (24.4)	-	1993 (22.6)	1993 (27)	1995 (24.2)
Kazakhstan	1988 (25.7)	1989 (28.9)	-	1993 (32.7)	-	-
Kyrgyz Republic	1988 (26.0)	1989 (28.7)	1989 (27)	1993 (55.3)	1993 (43)	-
Lithuania	1988 (22.5)	1989 (27.8)	1989 (26)	1994 (37.3)	-	-
Latvia	1988 (22.5)	1989 (27.4)	1989 (26)	1995 (31.0)	-	-
Moldova	1988 (24.1)	1989 (25.8)	1989 (25)	1993 (36.5)	-	-
Poland	1987 (25.6)	1989 (26.8)	-	1993 (28.4)	1993 (31)	1995 (32.1)
Romania	1989 (23.3)	-	-	1994 (28.6)	1994 (33)	-
Russia	1988 (23.8)	1989 (27.8)	1989 (27)	1993 (48.0)	1993 (50)	1995 (38.1)[c]
Slovakia	1988 (19.5)	-	-	1993 (18.3)	-	1996 (26.2)[d]
Slovenia	1987 (21.5)	-	-	1993 (25.1)	-	-
Turkmenistan	1988 (26.4)	1989 (30.7)	1989 (28)	1993 (35.8)	-	-
Ukraine	1988 (23.3)	1989 (23.5)	1989 (23)	1995 (47.4)	1995 (44)	-
Uzbekistan	1989 (28.2)	1989 (30.4)	1989 (28)	1993 (33.3)	-	-

Notes: Gini coefficients are in parentheses. Columns one and four show the data and years used throughout the analysis for the pre- and post-transition period, respectively. The other columns show data from alternative sources.

a): Gini coefficients in column one are from Milanovic (1998) (mostly gross per capita income), column two from Atkinson, Micklewright (1992) (individual distribution of household per capita income), column three from Flemming, Micklewright (2000) (individual distribution of per capita household income). Flemming and Micklewright (2000) use the data from Atkinson and Micklewright (1992), but apply a slightly different procedure for calculating the Ginis.

b): Gini coefficients in columns one and two are from Milanovic (1998) (disposable income and expenditures per capita, respectively), column three from Flemming, Micklewright (2000) (distribution of individuals per capita income) with one exception (see note d).

c): There are other data sources available as well. In the case of the Czech Republic, Flemming and Micklewright provide data from the microcensus and the budget survey, respectively. Microcensus data are shown here. These Gini coefficients are higher for the period covered (1988–1997) in Flemming, Micklewright (2000). Ginis derived from the budget survey are not continuously available, but jump in 1993. In the case of Russia, the Gini computed from the *Family Budget Survey* is shown here, but data from the *Russia Longitudinal Monitoring Survey* are also presented in Flemming, Micklewright (2000). Milanovic also use this data source, and according to that survey, Gini coefficients in Russia are significantly higher.

d): Garner (2001) produced Gini coefficients using net monetary income and three different equivalence scales for Slovakia for the year 1996. These Ginis are based on *1996 Household Microcensus* data and are considerably higher compared to the data used by Milanovic. The result shown here is in per capita terms.