

Global Income Inequality

Beliefs, facts and unresolved issues

Arne Melchior

Introduction

Global income inequality is perhaps the most important policy challenge facing the world at present. While there is full agreement about the seriousness of the problem, there is in fact considerable controversy about its development over time. This article attempt to shed light on the question: Has global inequality increased or decreased?

The issue is important for policy; anti-globalisation campaigners frequently argue that globalisation leads to ever-increasing inequality, both within and between nations. The protesters are, however, not alone when maintaining that global inequality has risen; prominent international organisations have also contributed to this perception—especially concerning inequality *between countries*. A recent World Trade Organisation publication states that: “It is an empirical fact that the income gap between poor and rich countries has increased in recent decades” (Nordström, 2000, p.3). In the *World Development Report 2000*, it was suggested that “... income inequality between countries has increased sharply over the past 40 years” (World Bank, 2000, p.51).¹ The United Nations Development Programme said in its 1999 *Human Development Report*: “Inequality between countries has ... increased” (UNDP, 1999, p.3). The United Nations Conference on Trade and Development did the same in

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¹ The statement is based on a comparison between the 20 richest and the 20 poorest countries of the world in 1960 and 1995; see also footnote 16.

1997: “Income divergence and increasing divergence in the world’s population has been a persistent feature” (UNCTAD, 1997, p.80).

Are these statements true? This article argues that they are generally not. According to most plausible indicators, income inequality *between countries* has on the whole declined since the late 1960s. If inequality *within countries* is also taken into account, current evidence suggests that the trend was similar for long parts of the period, but not for the period around 1990.

Hence when discussing global inequality, it is important to be clear about whether we compare nations or persons. When we focus on income gaps between nations, based on their average income per capita, inequality within nations is not accounted for. *International inequality*—based on country comparisons—is therefore lower than *world inter-personal inequality*. This article mainly attempts to shed light on international inequality, but also adds some remarks on how the picture may change when inequality within countries is also included.

While Milanovic (2001) has argued that world inter-personal inequality is the important issue and that international inequality is of less interest, good reasons remain for studying income gaps between nations:

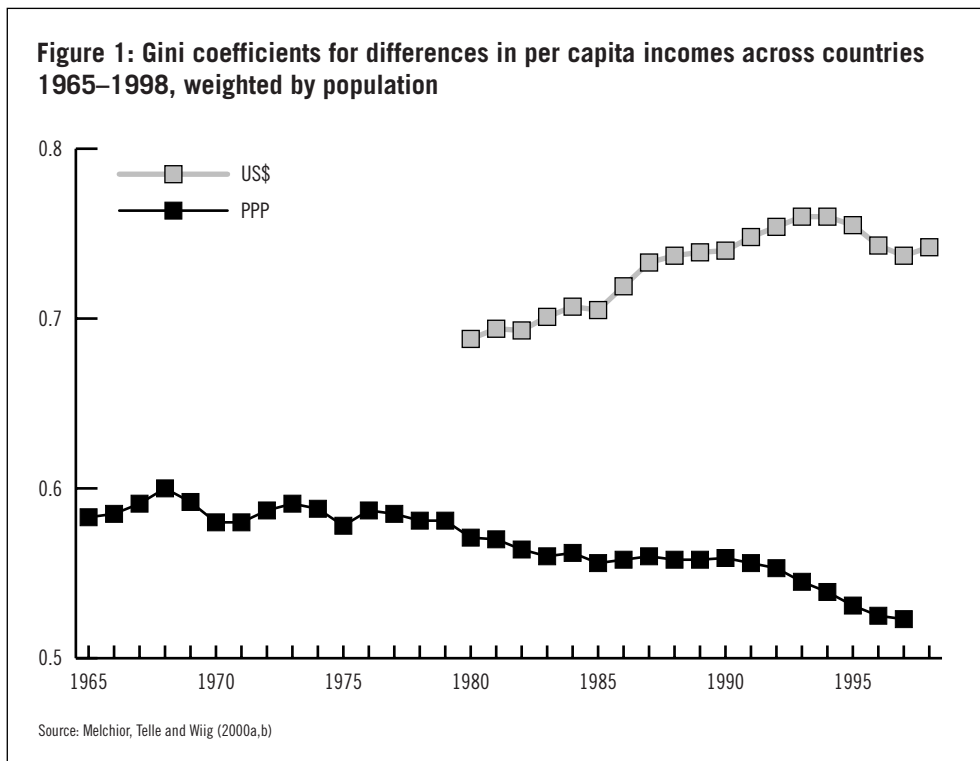
- The international debate, as well as former research, has to a large extent focused on international inequality. Hence it matters to obtain a precise analysis of international inequality.
- Due to the large income gaps in the world economy, inequality between countries accounts for a large share of ‘overall’ (inter-personal) inequality. The picture would be rather different if we, for example, compared US states. There, inter-state differences would be modest compared to inequality within states. Since this composition is opposite for global comparisons including rich and poor countries, international inequality may still be a useful indicator.
- A third reason for studying international inequality is that data are more easily available. Although the supply of data on inequality within nations has improved greatly over the last decade, such data are still in short supply. While household surveys now exist for many countries, no such surveys cannot be provided for earlier decades. For comparisons over time, international inequality will remain a useful indicator.

So even if it is of great interest to obtain more knowledge on world inter-personal income distribution, international inequality remains an important research topic.

International inequality: trends during 1962–1997

As a point of departure for the discussion, Figure 1 shows *Gini coefficients* for international income inequality from Melchior, Telle and Wiig (2000a,b).²

It is now widely accepted that cross-country income comparisons should be based on measures that adjust for differences in price levels between countries; so-called Purchasing Power Parity (PPP) data. The lower curve



² For an explanation of the Gini coefficient, see, for example, Sen (1997) or Cowell (1995). This measure varies between zero (complete equality) and an upper bound close to one (if one agent holds all income).

is based on such data,³ and show that *international income inequality has declined more or less continuously since the late 1960s*. The main reason for this is that in some poor and populous countries, mainly in Asia, per capita income has grown faster than in the richest countries.⁴ A number of other developing countries have grown slower and thus contributed to more inequality. Many of these countries are small, however, and in a population-weighted measure the fast-growing poor countries dominate. This result is supported by other studies, covering varying time periods (Sprout and Weaver, 1992; Schultz, 1998; Firebaugh, 1999; Boltho and Toniolo, 1999; Milanovic, 2001).⁵ So while most studies suggest that inequality increased during the 1950s and early 1960s, the trend has been the opposite for the later three decades.

Taking into account the economic misery in sub-Saharan Africa after 1980, the economic decline and increasing inequality in post-communist Eastern Europe, the bleak economic performance of some countries in South Asia, and the modest economic growth in Latin America in parts of the period, the result shown above may seem surprising. While a single-number measure of inequality such as the Gini coefficient certainly does not tell the whole story, it confirms that in spite of slow growth in some of the poor countries, significant achievements have been obtained in terms of narrowing income gaps. According to this result, general statements telling that international inequality has unambiguously and continuously increased, are incorrect. The international institutions that have broadcasted this message in the past should revise their manuscripts.

Is it all due to China?

As observed by Melchior, Telle and Wiig (2000a, b), and Melchior and Telle (2001), the decline in international inequality disappears if China is

³ The PPP set contains data for 115 countries, they are based on Penn World Tables 5.6, and were obtained from the World Bank. The starting point of 1965 was chosen based on considerations of data coverage and data quality. The PPP data do not include the former Soviet Union. The exchange rate based set underlying the upper curve contains 136 countries including the former Soviet Union (using an aggregate for the former Soviet republics for later years). Data problems related to the Soviet Union is the reason why a shorter series was chosen for the latter data set. For details, see Melchior, Telle and Wiig (2000b, 37).

⁴ The Gini coefficient is also affected by changes in population shares; the declining US share of the world population thus contributes to less inequality (Melchior, Telle and Wiig, 2000b).

⁵ Boltho and Toniolo (1999) used a data set with 49 countries for selected years during the period 1940–1998, and found that inequality increased until 1980 whereafter it declined. The difference compared to other results (concerning inequality during the 1970s) may be due to more limited data coverage for this period.

Table 1: Per capita income growth—averages for different country groups

	Average per capita income (PPP\$)			Average annual growth in per capita income (%)			Share of world population (%)		
	1965	1981	1997	1965–	1981–	1965–	1965	1981	1997
				1981	1997	1997			
China	577	966	2387	3.27	5.82	4.54	22	22	21
India	751	908	1624	1.19	3.70	2.44	15	16	17
Poorest	629	1095	1349	3.52	1.31	2.41	11	13	15
Second poorest	1436	2550	3634	3.65	2.24	2.94	14	15	16
Intermediate	3730	7221	9407	4.21	1.67	2.93	8	8	7
Richest	8983	12716	15997	2.20	1.45	1.82	14	12	11
Sample	2497	3523	4618	2.16	1.72	1.94	84	85	86

Source: Calculations based on the PPP dataset described in footnote 3.

removed from the sample. In that case, the Gini coefficient has not changed much during the period. With its current population of more than 1.2 billion people, China strongly influences the inequality measure. In spite of this, it is not true that the result is ‘all due to China’. Another way of stating it is to say that even without China, poor countries on average grew at par with the richest countries. Behind this average, there are evidently successes as well as failures. In Table 1, we show the development for different country groups in the world income distribution, with China and India kept separately, and other groups formed on the basis of their income levels in 1965. The poorest group includes 31 countries with per capita incomes of less than 1000 PPP\$ in 1965, the second poorest group 39 countries (1000–2000 PPP\$), the intermediate group 22 countries (2000–5000 PPP\$), and the richest group 21 countries (above 5000 PPP\$).⁶ In the table, the period 1965–1997 is split in two. The dividing year 1981 is chosen in order to capture slower growth in Latin America and Africa after 1980.⁷

⁶ By using groups with constant membership over time, we may show that within each group, including the poorest ones, some countries grew fast and others slowly. As will be demonstrated later, the picture is different if we use groups with changing membership over time, such as the countries comprising a certain part of the income distribution at each point in time.

⁷ Arguments could be provided for more periods, for example reflecting the oil crisis during the 1970s, or the deterioration in Eastern Europe after the late 1980s, but this has been avoided in order to limit the amount of detail.

If growth rates are compared to those of the richest group, all other groups, as well as India and China, grew on average faster during the period as a whole. Behind these averages, there is considerable heterogeneity. Within the poorest group, eight countries out of 34 (with Indonesia as the most important one) grew faster than the richest countries, while five countries had declining incomes. Within the second poorest group, 20 out of 39 countries grew faster than the richest group during the whole period, while 9 had declining income levels. Among the 20, we find many of the success stories of East and South East Asia (including South Korea, Singapore, Taiwan, Malaysia and Thailand), but also countries in Africa (Egypt, Tunisia, Algeria, Morocco, the Republic of Congo) and South America (Brazil, Colombia, Ecuador).⁸

With the exceptions of India and China, all groups experienced slowing growth during the second half of the period. During the second half of the period, the poorest group fell behind, but accelerated growth in China and India promoted global income convergence. During 1981–97, 13 countries in the poorest group, mostly in Africa, had falling per capita incomes. While 12 countries in the second group still grew faster than the richest group, 19 countries now experienced declining incomes. 10 out of these 19 were in Africa, but even Latin American countries (Paraguay, Honduras, Ecuador, Bolivia, Guatemala) featured on this list.

Table 1 and the underlying data thus show that a number of countries that were poor in 1965, contributed to international income convergence during the period as a whole. While it is undoubtedly true that large countries such as China have a strong influence on the Gini coefficient, the others, taken together, also matter strongly. On the other hand, this club of countries catching up shrunk during the latter half of the period, when global income convergence was more strongly influenced by accelerating growth in China and India. During the last half of the period, there were also more countries falling behind and experiencing falling income levels. The latter half of the period was hence characterised by more divergence among the poorer countries.

⁸ It should be observed that some of the Asian countries mentioned here grew so fast that towards the end of the period, they became rich enough that their further growth contributed to more international inequality. This does not apply to China, India and Indonesia, which remained below the 'threshold level' above which a country's growth contributed to more inequality.

As shown in Table 1, the data set used here covers 84%–86% of the world population. How could the remaining 14%–16% influence the picture? A large number of small developing countries are missing. As demonstrated by Maddison (2001, p.129), many of these grew slower than the world average during 1973–98. It is likely that the inclusion of all these countries could modify somewhat the overall trend towards income convergence. To what extent this is the case is an issue for further research. As indicated by Melchior, Telle and Wiig (2000b, p.40), the omission of the former Soviet Union is not likely to have a major impact.

In spite of a considerable degree of heterogeneity among poor countries in terms of income growth, the overall measure of inequality indicates convergence. A major reason for this is that countries are weighted by the size of their populations. As demonstrated by Milanovic (2001), a measure where each country has the same weight shows divergence instead of convergence. Hence it may be asked: Is it appropriate that large countries have so much influence on the inequality measure? Our answer is: yes, if the purpose is to describe the international income distribution, it does not make sense to let observations count equally even if one of them is a thousand times larger than the other. If, on the other hand, the purpose is to analyse how characteristics of each country influence income growth, as in ‘conditional’ growth regressions (see, for example, Barro, 1997), it may be appropriate to let each country count equally. When the purpose is to measure or describe the income distribution, this approach seems less appropriate.⁹

Are the PPP data reliable?

The result on declining international income inequality crucially depends on the use of PPP data, rather than simply converting national income data into dollars at official exchange rates. The upper curve in Figure 1 shows how international income inequality developed if exchange-rate-based data are applied, for the period 1980–98. Until the early 1990s there was divergence. Towards the end of the period, the trend was reversed. The divergence until the early 1990s is confirmed by other studies, which also show that if exchange rate based data are used, inequality increased from

⁹ The use of unweighted regressions is, apparently, a reason why the WTO study referred to in the introduction concludes that income divergence has occurred (Ben-David, 2000, p.15).

1960 to 1980 (Schultz, 1999; Korzeniewicz and Moran, 1997). The statements about inequality made by the UNDP and UNCTAD, referred to in the introduction, are based on such data.¹⁰

In what data should we believe; PPP exchange-rate-based? Conceptually, it seems clear that PPP data should be applied. Price levels vary considerable across countries, and it is generally true that poor countries have lower price levels (see, for example, Rogoff, 1996). Since we are interested in comparing real incomes, price differences should be taken into account. As demonstrated by Figure 1, the extent of inequality is exaggerated when price differences are not accounted for. Furthermore, changes in exchange rate regimes may influence such data. This may be important for the analysis of changes over time; many developing countries have had overvalued exchange rates (thus increasing their income levels measured in dollars), and the elimination of such practices may possibly contribute to explaining why such data indicate income divergence until around 1990.

The problem, though, is that in spite of a considerable effort during more than three decades in order to create reliable PPP data, there are still numerous questions and uncertainties related to them. The basic building blocks behind PPP data are price surveys for a selection of commodities, undertaken in individual countries as part of the ICP (International Comparison Project), initiated by the United Nations in 1968. These 'benchmark studies' have mostly been undertaken at 5-year intervals, with country coverage starting at 10 countries in 1970 (see, for example, United Nations 1994, p.11) and increasing to more than 100 at present.

In order to proceed from the benchmark studies to the final PPP data set, a specific methodology is required in order to construct the numbers. Since the consumption shares for individual products are endogenous, a consistent theoretical approach should be applied in order to the aggregation. The Penn World Tables, that constitute the basis for data used here, and which has been widely applied in studies on inequality and growth, are based on a specific methodology called the Geary-Khamis approach (for an explanation, see, for example, Neary, 2000 or Ahmad, 1994). The method lacks a solid theoretical justification and has been criticised by

¹⁰ Although 'forgotten' in the *Human Development Report 1999*, figures from the UNDP suggest a decline in between-country inequality from 1995 to 1997 (compare UNDP, 1998, p.29 and UNDP, 1999, pp.3 and 36).

some theorists (for a discussion, see Neary, 2000).¹¹ In fact, all the currently applied methods have their weaknesses.

As a consequence, various PPP estimates exist and these may differ considerably. Heston and Summers (1996, p.22) conclude that “among rich countries comparisons are likely to be correct within say 5–10 percent; comparisons of poor countries with rich ones may be subject to errors twice as great”. Neary (2000) also concludes that PPP estimates based on the Geary-Khamis method underestimate the extent of inequality; according to his estimates the Gini coefficient is around 2% lower than with the ‘ideal’ index. On the other hand, we know that exaggeration of inequality is much stronger with exchange rate based data than the underestimation implied by currently available PPP estimates. This constitutes in itself an argument for sticking to PPP data, even if we are aware of their problems.

Another problem with PPP data concerns their coverage and the changes over time. Given the gradually evolving country coverage of benchmark studies, a considerable amount of extrapolation based on national accounts data has been used in order to fill in the whole time series for more than 100 countries.¹² For example, data on real GDP growth based on national accounts may be used to fill in gaps in the PPP time series for GDP. Besides, it is also the case that the inclusion of new countries influences the PPP estimates for every country (see, for example, Ahmad, 1994, for a survey of these issues). If time series are extended back in time for new countries, it will e.g. affect growth rates for other countries between previous years. Neary (2000, p.41) suggests that since the available PPP estimates may compress inequality too much, one should be careful when using them to draw conclusions about convergence. It is, however, not clear that this weakness of PPP data in cross-country comparisons also carries over to changes over time. It is possible that this is the case, but further research is needed in order to draw a firm conclusion.

One possible reason why PPP data might give an incorrect picture of changes over time, could be related to changes in relative prices within different countries. It is an established fact that poor countries have, in

¹¹ Neary (2000, p.39) concludes that the Geary-Khamis approach is a satisfactory approximation if goods are not close substitutes. Other methods, used by for example the EU and the OECD, work better if goods are substitutes.

¹² See Nuxoll (1994) for a description of the procedures applied.

relative terms, higher prices for investment goods. If changes in relative prices over time are not adequately captured when constructing PPP data, growth rate estimates might be biased and the bias might be correlated with income levels. Existing research suggests that some bias may exist but that the problem is not severe. Nuxoll (1994) compared growth rates based from the Penn World Tables with growth rates based on national accounts for 1960–1985, and found that PPP growth rates were overestimated for countries that grew slowly. This effect was, however, not correlated with initial income levels; so there was no statistically significant bias in terms of under- or overestimating growth for poor countries. Dowrick and Quiggin (1997) demonstrate, using data for OECD countries covering 1950–1990, that data from the Penn World Tables tend to understate the extent of true GDP convergence, compared to an ‘ideal’ index that better accounts for relative price changes. They conclude that PPP data exhibit some bias, that this bias has been reduced over time as prices within the OECD area have converged, and that the bias does not lead to a systematic overstating of income convergence. More research, covering data for more countries and including the period after 1985, is needed in order to obtain a more complete picture. Observe also from Figure 1 that trends after 1993 coincide for PPP and exchange rate based data, so for this period there is no discrepancy to explain.

On the whole, research seems to suggest that PPP data should be used with some caution when drawing conclusions about time trends. Caution does not, however, imply that such data should not be applied. On the contrary, these data are conceptually the proper ones to use when analysing income inequality. Furthermore, possible bias in the direction of compressing income inequality with PPP data is likely to be much smaller than the bias in the opposite direction inherent in exchange-rate-based data. PPP data are also more closely correlated with non-income data on consumption (see, for example, United Nations, 2000) and living standards than exchange-rate-based figures. In fact, inter-country convergence is even more impressive when we instead of income data consider, for example, life expectancy or the ‘Human Development Index’ of the UNDP (see Melchior, Telle and Wiig, 2000b, Chapter 4). So far, it has not been proven that time trends based on PPP data are less reliable than those based on exchange rate conversion. For these reasons, it seems justified to rely more on PPP data when examining international income

inequality. More research should be done in order to explain the differences between results based on the different types of data, and estimates on income convergence based on exchange rates are in this context also of interest.

The UNDP has been criticised for its use of exchange-rate-based data when drawing conclusions about inter-country inequality. A group appointed by the United Nations Statistical Commission describes the analysis of international income inequality in the *Human Development Report 1999* (based on exchange rate conversion) as a “material error” that leaves “the reader with a fundamentally distorted picture of the phenomenon being described” (United Nations, 2000, p.28).

Is the Gini coefficient a satisfactory measure of inequality?

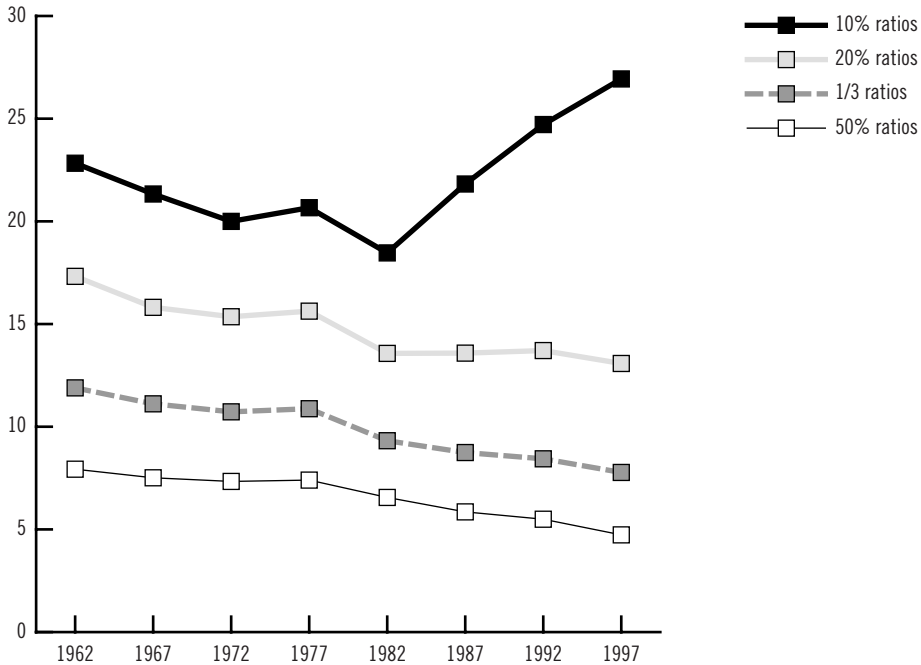
While Figure 1 showed Gini coefficients, there exist alternative measures that might have been applied. The various measures have their strengths and weaknesses, and none of them are completely ‘neutral’ in the sense that they just ‘describe the facts’.¹³ As demonstrated above, a number of poor countries have fallen behind, in spite of the overall income convergence. Could it be the case that other measures give more weight to these countries, and show another trend?

A simple type of measure that is frequently applied in discussions about inequality is to compare average incomes in the richest and poorest groups of countries. We thus rank countries according to their average per capita incomes, and calculate population-weighted average per capita incomes in the top and bottom groups. We may, for example, compare the top and bottom 10%, 20%, one-third or half. Figure 2 shows that the trend over time depends on the size of the groups that are compared.¹⁴

¹³ For a more detailed discussion of the weighting properties of the Gini coefficient in this context, see Melchior and Telle (2001).

¹⁴ Data source: The same PPP data as described in footnote 3, except that the set has been extended back to 1962 in order to provide five-year intervals, and the number of countries included is, due to missing data, reduced to 112. Since the cumulative population shares never hit, e.g., 0.1 or 0.9 exactly, the ‘borderline’ countries were given population weights to adjust for this. So, for example, if the first countries had a combined population share of 9% while the next had a population share of 2%, this last country was given a population share of 1% in order to calculate the 10% group income average.

Figure 2: Ratios between average per capita incomes (PPP\$) in the groups of richest and poorest countries, with varying shares of the world population for the country groups



Using PPP data, the income gap has thus declined over time if we compare the top and bottom fifth,¹⁵ third or half, while it increased after 1982 if we compare the top and bottom decile. Even if average income increased by 60% for the poorest 10% group from 1962 to 1997, the rich group grew faster so that inequality increased. The poor economic performance of several developing countries after 1980, particularly but not only in Africa, explains why this happened. If we had compared for example the 5% richest with the 5% poorest, the increase in inequality would surely have been even greater, since the poorest group would then be even more influenced by countries with declining per capita incomes

¹⁵ A similar measure has been applied by the UNDP in various editions of its *Human Development Report*, but with exchange-rate-based data they obtain the opposite conclusion. With exchange rate data, this ratio also shows declining inequality from 1993 onwards. As noted above, UNDP figures indicate declining inequality from 1995 to 1997; however this was not mentioned in the *Human Development Report 1999*.

during the period.¹⁶ Observe also that ratios of this kind do not necessarily tell ‘how the poor fared’, since memberships in the top and bottom groups change over time: China was (partly) in the poorest 10% in 1962, while India joined it in 1982, and both these countries have had solid growth over the whole period. As discussed with reference to Table 1, this applies to a number of countries that were among the poorest in 1962.

The slow growth in a number of poor countries certainly contributed to more inequality. Since many of these countries are small and have a low share of world income, they do not influence the population-weighted Gini coefficient so strongly. Since a country’s influence on the index increases with its income level (except for those close to the threshold level mentioned in footnote 8), the Gini coefficient will be more strongly affected by countries at intermediate income levels, but below the threshold level (e.g. China towards the end of the period), and by rich countries above the threshold level.

The Gini coefficient is a plausible measure of inequality that satisfies many of the properties one might wish from an inequality index (see, for example Sen, 1997, Chapter 2; or Cowell, 1995; or Cowell, 2000). However, some researchers have argued, on welfare grounds, that one might wish to use a measure that gives more weight to the poor. One such measure is the Atkinson index, which takes the form

$$A = 1 - \left[\sum_i \left(\frac{y_i}{\mu} \right)^{1-\varepsilon} s_i \right]^{1/(1-\varepsilon)} \quad \varepsilon \geq 0$$

Here y_i is the average per capita income of country i , μ is the (population-weighted) world average per capita income, s_i is the share of each country in the world population (or the population in the sample covered), and ε is a parameter that determines what weight is given to income changes at different income levels. High (low) values of ε implies that more weight is given to changes in the lower (higher) part of the distribution. With ε in

¹⁶ The statements in the *World Development Report 2000/2001* concerning inequality between countries are supported by calculations of this kind. Here, the average income levels of the 20 poorest and richest countries in 1960 (excluding China) and 1995 are compared. The group of poor countries had a share of the world population of around 6% in both years.



the order of 1 or somewhat lower, we obtain an inequality measure close to the Gini coefficient in terms of weighting (Atkinson 1982, p.29), while $\epsilon = 2$ gives a measure with very high ‘inequality aversion’ or concern for changes in the lower end of the distribution (see, for example Hussain and Zhuang, 2000). Figure 3 shows Atkinson indices with four different values of ϵ ; ranging from 0.5 to an extreme of 5, using the data set described in footnote 14, with PPP\$ incomes per capita for 112 countries.

The figure shows that even with rather high inequality aversion ($\epsilon = 2$), international inequality declined during the period. This applies also for lower values, as we would expect. Only with extremely high inequality aversion ($\epsilon = 2.62$), inequality is unchanged from 1962 to 1997, and for higher values inequality increases. Observe also that in this case ($\epsilon = 5$), most of the increase in inequality occurs after 1987 (compare Table 1).

While there is really no objective way of deciding what is the appropriate value of ϵ , we may observe that within the range for ϵ normally applied in studies using the Atkinson index, inequality has declined throughout the period.

A related issue is what welfare implications we derive from saying that inequality has declined. There is a huge literature discussing how inequality measures are related to welfare (see, for example Sen, 1997; or Cowell,

2000). In our case, we are stuck with the fact that there was a decline in per capita incomes for some poor countries.¹⁷ This implies that it is difficult to draw unambiguous welfare conclusions: The world has become a better place for many, but not for all. Constructing a ‘world welfare function’, that tells us exactly how to compare growth in Asia versus decline in Africa, will hardly improve our knowledge so much. This does not imply, however, that we cannot say anything about inequality. It is fair to conclude that inequality between countries has declined, even if some countries are worse off.

Within-country inequality

As noted in the introduction, measures of international inequality neglect the extent of inequality within countries, by using data on average per capita incomes for each country. For the assessment of global inequality, the extent of within-country inequality also matters.

In general, total inequality will increase when we take intra-country inequality into account—since the implicit assumption when using average per capita incomes is that all persons in each country have the same incomes. Some inequality measures can be nicely decomposed so that overall inequality is the sum of between-country inequality and similar indices of inequality within each country.¹⁸ It is then evident that the larger inequality is between countries, the larger contribution this component will have to overall inequality. If we, for example, compare states in the US, or OECD countries, which have relatively similar average incomes, we would expect that the between-group component has a relatively low share. For global comparisons, however, there are vast income gaps between rich and poor countries, and the degree of overlap between income distributions in rich and poor countries is limited. Because of this, between-country inequality constitutes a high share of the total global inequality. This is also suggested by existing studies; Sprout and Weaver (1992, p.253), for example, found that Gini coefficients for the overall world income distribution were in the range of 0.58–0.64, while between-country Gini coefficients were in the range 0.48–0.52. The change over

¹⁷ For more discussion on welfare issues, see Melchior and Telle (2001).

¹⁸ The ‘generalised entropy index’ is a convenient tool for this purpose, see, for example, Hussain and Zhuang (2000).

time was also similar in the two cases. Their results thus suggested that the between-country component constitutes a dominant share (more than 80%, if we compare the Gini coefficients directly) of overall global inequality. A similar result, that inter-country inequality explains about 80% of global inequality, was obtained by Korzeniewicz and Moran (1997). They concluded that the between-country distribution of world income is an appropriate indicator of world inequality.

Nevertheless, it remains clear that intra-country inequality constitutes a significant part of global inequality. Furthermore, it is possible that this component may change over time. Could it change so much that global inter-personal inequality has increased over time, even if between-country inequality has declined? The results of Sprout and Weaver (1992) suggested that this is not the case; including the within-country component of inequality did not change the time trend in worldwide inequality from 1960 to 1987. Quah (2000, p.7) states that “inequality within countries has certainly changed through time. But the magnitude of those variations is dwarfed by that of changes in per capita incomes due to aggregate economic growth.”

While reliable data on within-country inequality have been limited until recently, the situation is now changing—even if major data gaps still remain. Using data on income inequality in 49 countries, Li, Squire and Zou (1998) concluded that while the level of inequality varied considerably across countries, the extent of inequality within each country was relatively stable over time. This renders it less likely that changes in within-country inequality might reverse the development over time in worldwide inequality, compared to measures that only take the between-country component into account.

Available data also suggest that there is no massive trend in the direction of more within-country inequality everywhere: For the 80 countries covered by the data set compiled by Deininger and Squire (1996), inequality increased for approximately one half and decreased for the other half. Changes over time also vary considerably within regions and income groups. As noted above, significant time trends are generally weak. There are some exceptions, though, Li, Squire and Zou (1998) found significant time trends during 1947–94 for 7 countries, of which 5 moved in the direction of increased inequality. Also in this case, the different size of countries should be accounted for, and increased inequality

within large countries is hence more important. An important case is China, where the transition from the former non-market economy has led to a considerable increase in inequality; the Gini coefficient increased from 28% in 1981 to 38% in 1995.¹⁹ Due to its size, China weighs heavily in global inequality measures, and the development of within-country inequality in China is therefore of special interest. While most studies suggest that economic growth in China during recent decades on the whole has benefited the poor and led to a dramatic reduction in poverty (World Bank, 1997, Yao, 2000, World Bank, 2000), it is of interest to observe that the development has varied over time. Yao (2000) distinguishes between three phases: 1978–84, when rapid rural income growth with stable inequality led to a strong reduction in poverty; 1985–91, with slower growth, rising inequality and an increase in poverty; and rapid growth during the 1990s which reduced poverty to the 1984 level and below.

This development in China is relevant for the interpretation of the study of Milanovic (1999), who found that world inter-personal inequality (including inter- and intra-country inequality) increased from 63 in 1988 to 66 in 1993, measured by the Gini coefficient. Rising rural-urban inequality in China is stated to be one of the major reasons for this. The results of Yao (2000) suggest that this period is not representative for the longer-term development in China. According to Milanovic (see also Milanovic, 2001), the increased inequality is also due to the development in South Asia. In this context, it may also be observed that the growth rate in per capita income for India in 1988–1993 was much lower than for a longer time period.²⁰ This is another reason why the results of Milanovic may not be representative for a longer time period. Nevertheless, these results are interesting.

The results of Milanovic were obtained from a new data set based on household surveys covering 91 countries. These data provide a new source of information that may be very useful for the study of inequality. On the other hand, we cannot expect to get new surveys back to the 1960s, so we shall have to continue to rely on other data for studies of inequality over a longer time period. Furthermore, the household survey data also have

¹⁹ Based on World Bank (1997), which is again based on official Chinese statistics. Another estimate is provided by Deininger and Squire (1997), who suggest that China's Gini coefficient increased from 0.32 in 1980 to 0.38 in 1992.

²⁰ India's annual growth rate in per capita GDP (PPP) was 1.9% in 1988–1993, and, as shown in Table 1, 3.7% in 1981–1997.

their problems; a number of discrepancies compared to data from national accounts are difficult to explain.²¹ If PPP income levels based on national accounts are used, while still using the income distribution within countries from the survey data, the increase in world inter-personal inequality from 1988 to 1993 shrinks to 1.5% (Milanovic, 2001, p.50).

In this context, it should be observed that GDP per capita includes public consumption (including education and health services) and non-disbursed corporate profits (which may be invested); items which are important but generally not reflected in survey data on household income or expenditure (see Milanovic, 1999). Valid arguments could be provided for including such components in global income comparisons, and this is another reason why income gaps across countries, and not only between persons, are of interest. The poor countries that have grown fast, have e.g. rapidly expanded their education systems. Income measures that do not reflect this, may underestimate forces towards convergence.

On the whole, there is no doubt that inequality within countries is important for the study of global inequality. In spite of the results of Milanovic for 1988–93, however, we do not yet have evidence telling that the long-term trends in ‘overall’ global inequality differ radically from the results based on inter-country comparisons. Some research supports this conclusion regarding the period until the late 1980s. More research is needed to obtain a more complete picture. Increased inequality within large countries such as China and (to a lesser extent) India pulls in the direction of more income divergence, or less convergence.

Conclusion

While it is widely believed that international inequality has continuously increased, current evidence suggests that as a general statement, this is false. It is true that a long list of poor countries, particularly though not only in Africa, have experienced slow growth or even falling incomes during recent decades. The gap between these countries and the rest of the world has certainly widened. But it is also true that a significant number of

²¹ If we, for example, compare national growth rates from the data set used by Milanovic with national accounting data, based on local currency, there are a number of discrepancies for some important countries. The data set used by Milanovic is available on www.worldbank.org/research/transition. Data based on national accounts may, for example, be obtained from *World Development Indicators 1999*, from the World Bank. In order to avoid excessive detail, the figures are not reported.

poor or formerly poor countries, including the world's two most populous countries, China and India, as well as other large developing countries, particularly but not only in Asia, have grown faster than the richest group of nations. When international inequality is appropriately measured, on the basis of purchasing power parity (adjusting for different price levels) rather than official exchange rates, and countries are weighted according to the size of their populations, plausible measures of international inequality indicate that income convergence has taken place since the late 1960s.

If inequality within nations is also included in the measurement of global income gaps, current evidence suggests that the trend until the late 1980s was similar to the one obtained by comparing nations. Even if one study suggests that a reversal of the trend towards convergence occurred in 1988–93, it has not been confirmed that this applies to a longer time period. So far, there are not strong reasons to believe that the long-term trend over the last decades should be very different when inequality within countries is also taken into account.

While there are good reasons to apply PPP data, the limitations of such data should be acknowledged, and further research should be undertaken in order to explain why the results based on different data differ so much. In this sense, the results should be interpreted with some caution even if we accept them as the best evidence available at the moment.

In spite of reduced inter-country inequality, it remains true that the income gaps in the world economy are enormous, and that inequality and poverty are major problems that still wait for their solution. In order to attack poverty and inequality, we need a reliable assessment of the development and its causes. A wrong perception will not help us to develop the right policies.

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