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# *A Conceptual Primer on the Currents and Trends in Inequality*

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## **Introduction**

Most studies on inequality are either an attempt to explain theoretically, to assess empirically, or to find policy solutions to patterns and trends in the distribution of resources among agents in a particular environment. Attempts are often made to interpret the empirical findings as causes or consequences of other phenomena (e.g. economic performance, poverty). My initial objective in this paper is to clarify the types of 'inequality' that have traditionally been studied, the main theories behind each type of inequality, and the major findings — as well as the numerous and crucial questions left unanswered — in the literature on inequality and distributional issues. In particular, the links with economic performance and poverty reduction are stressed, in order to place observed trends into a more general context of economic development.

The rest of the discussion focuses on the results from the more recent works on inequality in two settings: international (i.e. across countries), and world (i.e. across world citizens). In particular, the world distribution of income appears to disclose new relevant findings as not only individual economies, but also their citizens become increasingly integrated in the global system. After briefly introducing the concept of inequality and discussing the importance of its definition, I review the major theoretical, empirical, and policy-related findings in the economic development of inequality literature, focusing the analysis on world inequality.

## **The concept of inequality**

A general definition for inequality is the *size of the relative differences in resource endowments among units that belong to a particular environment*. This definition allows for a wide array of possibilities in the analysis of inequality. The dynamics of its elements (size, resource endowments, units, and environments) are discussed in the following.

The 'size of relative differences' in endowments can be measured statistically in numerous ways. The most commonly used are the Gini

coefficient, the 90/10 decile ratio, and Theil's coefficient. Depending on what is being tested, each summary measure of inequality will yield different results, shedding light on a particular aspect of the distributional pattern. If the analysis focuses on what happens in the middle sectors of the distribution, then the Gini coefficient may be an appropriate indicator.<sup>1</sup> On the contrary, comparing Lorenz Curves for two years may help give a more detailed picture of the change in relative resource allocation between the two points in time across individuals.<sup>2</sup>

The 'resource endowment' on which inequality is to be measured can be monetary (e.g. wages, earnings, income, consumption, production, wealth) or non-monetary (e.g. education, health, political rights). Owing to their increasing availability and quantitative nature, monetary variables are widely used in the analysis of inequality at the risk of over-simplifying and sometimes distorting the reality being studied.<sup>3</sup> Further complications from using monetary variables may arise from the type of income or expenditure being measured (net or gross), whether including property incomes and cash transfers, whether using equivalence elasticities to account for economies of scale (and, if doing so, whether using single-parameter or multi-parameter equivalence adjustments).

When using monetary figures, another important caveat is the 'unit of measurement' used. Since the relative values of currencies vary with time and across space, in panel studies (i.e. involving longitudinal and cross-country data) both dimensions will have to be adjusted for. Constant-base figures account for inflation dynamics across time. These figures should also be adjusted for differences in value of one currency in comparison with another: this can be done using exchange rates, or purchasing power parity rates. The common procedure for exchange rate adjustment is to convert all national figures into US\$ according to the relevant exchange rate. Increasing availability of Purchasing Power Parity (PPP) rates allows their use as an alternative cross-country adjustment factor.<sup>4</sup>

One final aspect linked to the resource endowment that will only be mentioned briefly here is the accuracy of the original data sources in reflecting the actual population being examined. In particular, the problem arises when intra-national income or expenditure inequality is analyzed. One common source of distortion is the under-reporting at the tails of the distribution of income. Despite the fact that methods exist to correct for this problem, this is often ignored in the empirical analysis, where corrected results and uncorrected survey results are stacked together. Despite their flaws, household income surveys remain the essential tool for analyzing, among other things, the distribution of resources.

One caveat that should receive more attention is the observation period in which the resources are measured. A shorter period (hour, day, week, or month) for measurement of, say, income is better, since the respondent remembers better and with more precision the information. However, a shorter period of time may reflect transitory income shocks, which may add noise to the data.

Going back to the original definition of inequality, another common

origin of confusion is the ‘unit’ of reference in the calculation of resource distribution. When analyzing a country’s distribution of resources — typically Living Standards Measurement Surveys<sup>5</sup> — commonly used units are individuals, families, or households. Some surveys specifically select individual income recipients or spending units.<sup>6</sup> This, however, is not always the case since, as we will see, entire nations are used as units of reference when measuring international inequality. These analyses usually rely on some proxy of national or domestic per-capita material well-being, like product per capita, or the Summers and Heston  $SL_{POP}$  (total consumption less military expenditures, on a per-capita basis).<sup>7</sup>

Related to the previous point is the ‘environment’ used as a frame of reference where the units of reference coexist for the inequality analysis. Examples of environments can be particular socio-demographic, socio-economic, political, or ethnic groups.<sup>8</sup> More commonly, the frame of reference is an entire population in a geographically defined area — a country or a region. Even the world can be the background of the investigation. Not surprisingly, the larger the setting, the more difficult the comparisons among individuals and the availability of data for the exercise.

Each point already discussed adds a new dimension to the level of complexity involved in the analyses of inequality across time and space. Furthermore, the probability of conceptual or statistical error and the likeliness of misinterpretation of the results by the author or the reader increase whenever details on the ‘how’, ‘what’, ‘among who’, and ‘where’ components of the analysis are not clearly stated and homogeneously used.

## **Theories and evidence of inequality**

With a better understanding of the various possible ways to interpret inequality, and the perils in the use and interpretation of the results, I now discuss three specific combinations of elements taken from the earlier definition of inequality. These were chosen since they represent the three primary trends of analysis of inequality.

- *Intra-National Inequality*. A traditional approach that assesses inequality of money income (or expenditure), generally measured by the Gini coefficient, among individuals (or households), within specific countries.
- *International Inequality*. Inequality of Gross Domestic Product (GDP) or Gross National Product (GNP) (or some other national aggregate of well being) per capita, measured by some dispersion factor (or through regression analysis) among nations, within regions or large groups of countries.
- *World Inequality*. Inequality of income (or expenditure), using various inequality measures traditionally used for intra-national inequality, among individuals or households, carried out with the world as the environment or frame of reference.

A clear and explicit definition of the particular form of inequality to be estimated is thus the necessary initial step towards the formalization of a

theory or its empirical test. In addition to the analysis of trends in inequality in a certain country, region, or in the world, most of the literature focuses on the empirical explanation of these trends. In the following sections, I summarize the main work carried out on both issues.

## **Intra-national inequality**

### *Inequality as an outcome*

Until a few decades ago, the norm was to consider the level of inequality among individuals from the same country an outcome of other endogenous variables. Within-country distribution patterns and their change were invariably seen as a result of the 'stage of development' of the country. This development literature was based on Simon Kuznet's classic economic development theory, where the development process is characterized by an inverted U-shaped inequality pattern. According to this theory, a country faces increasing inequality during the initial fast-growth stages of development, and will only later experience improvements in the distribution of its resources. This occurs due to the initial shift from low-income, low-inequality agriculture to high-income, medium-inequality industrial production. Furthermore, in the beginning phase, only a few can save and contribute to the accumulation of capital. In the long run, after the creation of necessary institutional structures, the deepening of the development process, and the establishment of an urban population, a nation can perform efficiently and, at the same time, reduce its asset disparities. Nicholas Kaldor suggested initial inequality as a necessary condition for growth, assuming as a key to the economic take-off the higher propensity to save among the wealthy.<sup>9</sup>

One crucial element that has allowed more accurate empirical questioning of foundations of the Kuznets trade-off has been the availability of high-quality datasets.<sup>10</sup> Studies based on newly available quality data have invalidated empirically the Kuznets trade-off between growth and inequality in poorer countries. Using a newly assembled cross-country database, Bruno and colleagues found no sign that growth has any systematic impact on inequality.<sup>11</sup>

### *Inequality as a growth deterrent*

Studies examining the relationship in the causal direction opposite to that envisioned by Kuznets (from income inequality to growth) have found a negative impact of initial inequality on economic performance.<sup>12</sup>

In fact, it may be that the causality runs in both directions, making inequality a determinant as well as a consequence of a country's performance. Beyond doubt, the way in which assets are distributed across individuals can have an impact on the effectiveness of development policies through various channels. Galor and Zeira (1993) incorporated inequality in a macroeconomic model and pointed out how capital market imperfections and indivisibilities in investment in human capital have an impact on output both in the short and the long run.

Persson and Tabellini (1994), Alesina and Rodrik (1994), and Benabou (1997), among others, advanced more sophisticated political economy explanations for the negative impact of high initial inequality on growth performance. The political economy of income distribution is now generally accepted, making inequality a key element of countries' long-term prosperity. Birdsall (2000) summarizes the three major links:.

- Inequality inhibits design and implementation of efficient social policy, triggering bad economic policies — with ill effects on growth, human development and poverty reduction. This effect rests on the median-voter theorem: with higher inequality, the median voter's income is lower than the mean income, increasing public preference for more drastic — and most of the time distortionary — redistributive fiscal policies.<sup>13</sup> These in turn may lead to sub-optimal economic performance.
- Income inequality may undermine equality in civic, social, and political life; it may also generate its own self-justifying political tolerance, suggesting self-perpetuating high inequality equilibrium. Inequality may cause political instability, social conflict, and increased levels of violence and crime.<sup>14</sup> These, in turn, can divert investments from the economy or reduce the capacity of the government to hamper crises, as pointed out in Rodrik (1997).
- By hampering growth, high levels of inequality can slow down poverty reduction, which in turn can inhibit economic performance triggering a vicious circle. Due to their lower levels of education, insurance, and access to financial resources, less endowed sectors of the population are constrained as a consequence of inequality. Where capital markets are imperfect and a large number of people are disadvantaged in absolute and relative terms, thwarted productive potential at the individual level hinders aggregate potential production. Similarly, as noted in Banerjee and Newman (1993), those at the top of the distribution may take advantage of their privileged situation by taking less risk and not investing their wealth as they would in an optimal state.

### *Asset inequality: the missing link?*

At the empirical level, no consensus has yet been reached over the significance, and in some cases the sign, of the effect of inequality on growth. While the initial evidence tended to support the negative link between income inequality and growth, more recent studies have confuted those findings, proving evidence of insignificant or positive effects of income inequality on economic growth, in some ways resuscitating the buried Kuznets trade-off. The use of panel data and of econometric methods for their analysis may have been a major reason behind the disappearance (or weakening) of the negative correlation between inequality and growth.<sup>15</sup>

Some of the doubts and mixed findings arise from the variable used to proxy inequality, i.e. the definition of the resource endowments to be used. The widely used, maybe due to wide availability, income or expenditure

variables may be only capturing a portion of the picture, or they may be distorting the initial theory. After all, the economic theories behind the assumption that more inequality hinders growth are intuitively based on households' 'access' to assets (*ex ante*), and not on their 'availability' of disposable income (*ex post*). Birdsall and Londoño (1997) were among the first to explore this channel. They find that, after introducing initial inequality of assets (land and human capital) in the right-hand side of the growth equation, this appears to have a strong negative impact on growth — with a negative skew towards the poor. At the same time, income inequality becomes insignificant on growth in their models. In a more recent paper, Deininger and Olinto (2000) find the same strong negative impact of initial land inequality on growth, as well as the neutralization of the income inequality variable.<sup>16</sup>

While in general the variable used to assess the level of inequality in a country is income, other variables such as expenditure, wealth, land, education and, in some cases, health could be considered. The policy implications of these findings are very relevant, since they divert attention from redistributive targeted fiscal policy, suggesting instead efforts to carry on structural redistribution of land and capital.

### *Trends in intra-national inequality*

Many intra-national inequality comparative studies have been conducted, covering various groups of countries. For Latin America, Székely and Londoño introduced a large number of cross-country comparable income inequality figures, covering the 1970–1995 period.<sup>17</sup> This set is a good complement to the World Income Inequality Database, which thoroughly integrates national and *ad hoc* data with the already large Deininger and Squire database.<sup>18</sup> For developing countries, data availability and accuracy are both still limited, even though many efforts are being made to make data more reliable and accessible.

Indeed, the pattern that inequality of income or assets has followed in the past decades in many developed countries has put distributional imbalances back in the policy agenda. Inequality is indeed increasing at worrying paces in some of them. It is, however, undeniable that, as an already developed country grows, the elements for reducing inequality increase. It is at this stage that the role of governments and institutions is crucial to give to all socioeconomic groups the opportunity to benefit from the economy's prosperity. Li, Squire and Zou have denied any significant evidence of an increasing income inequality trend since the end of the 1940s, indicating the importance of growth in poverty alleviation, *vis-à-vis* distribution of assets, that, on aggregate, does not seem to have a significant impact.<sup>19</sup>

A landmark study by Atkinson and other workers on inequality trends in developed countries — for which more and better data are available compared with developing countries — raised a red flag on the deteriorating distributional patterns in most OECD nations from the 1970s into the end of the 1980s.<sup>20</sup> These were confirmed in a more recent study by Gottschalk and Smeeding, covering 17 advanced industrialized countries from 1979 to

TABLE 1. Inequality in Advanced Industrialized Countries, 1979-1990s

| Country       | Period  | Inequality change* (initial year = 100) |
|---------------|---------|---|
| UK            | 1979-95 | 133.1                                   |
| Sweden        | 1979-94 | 128.4                                   |
| Netherlands   | 1979-94 | 117.3                                   |
| Japan         | 1979-93 | 112.5                                   |
| Denmark       | 1981-90 | 111.4                                   |
| Taiwan        | 1979-95 | 111.2                                   |
| United States | 1979-96 | 110.7                                   |
| Germany       | 1979-95 | 108.3                                   |
| France        | 1979-94 | 108.2                                   |
| Norway        | 1979-95 | 107.6                                   |
| Australia     | 1981-90 | 107.3                                   |
| Switzerland   | 1982-92 | 106.3                                   |
| Iceland       | 1979-92 | 100.6                                   |
| Canada        | 1979-95 | 100.6                                   |
| Finland       | 1979-94 | 98.6                                    |
| Ireland       | 1980-94 | 98.3                                    |
| Italy         | 1979-95 | 95.6                                    |

\*Change in the income Gini coefficient.

1995.<sup>21</sup> Despite the great heterogeneity in the levels recorded across countries, increasing inequality seems to be the norm (Table 1).

The Gottschalk and Smeeding study indicates that inequality has increased dramatically — over 10 percentage-point increases in the Gini coefficient — in the UK, but also in the Sweden, the Netherlands, Japan, Denmark, Taiwan, and the US. Germany, France, Norway, Australia, and Switzerland also experienced increases of over 6 percentage points. Finland, Ireland, and Italy are cases of reduction in inequality. The authors suggest that many of the changes since the beginning of the 1980s are offsetting gains in equity previously made in the 1960s and 1970s. As suggested by Cornia, the end of the 1970s is the point in time where most of the policies start converging towards a common model.<sup>22</sup> This may explain the dominant trend of increasing distributional stress.

A recently released study by Forster on 21 OECD member countries between the mid-1970s and mid-1990s — a longer period than that observed by Gottschalk and Smeeding (1999) — depicts a milder increase in household disposable income inequality.<sup>23</sup> The largest and more generalized increases occur after the mid-1980s. The author draws attention towards the large increase in market-income inequality, which does not translate into disposable income inequality due to redistributive systems. Not only the shares of benefits going to lower incomes among the working-age population increased in great majority of countries, but also the share of these transfers within the incomes of poorer adults increased virtually everywhere.

In another work, Atkinson reviews possible explanations for this pattern of diverging — and, on average, of increasing — income inequality during

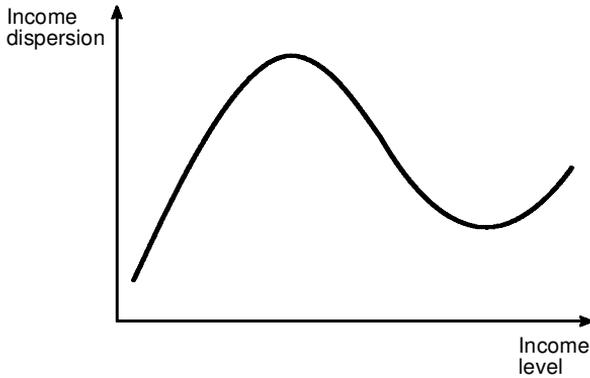


FIGURE 1. A new Kuznets (N-shaped) curve?

the 1980s and 1990s in advanced industrialized countries. The gap is increasing not only among unskilled and skilled wage earners, but also among the median earners and the high earners. This is where not only levels of individuals' earnings matter, but also the level that is acceptable within the 'social code.' Government policies play a major role for correcting these skews, although more intrinsic in each society (and possibly more influential) are sociological characteristics of each country (i.e. social norms) that governments can still influence.<sup>24</sup> In those countries where social norms are strong and established (e.g. labor-corporate-government contractual agreements, welfare-state systems of tax-and-transfer to counteract unemployment-driven inequality), income distribution has been deteriorating only mildly if at all. According to Atkinson, the new Kuznets curve (no more inverse-u but 'N' shaped) in many developed countries is clearly observable in some countries, but is not inevitable (see a stylized version in Fig. 1).

Birdsall *et al.* (2000) extend the analysis to other parts of the world. They select 30 developed, transitional, and Latin-American countries, for which survey data is available in at least two points in time (1980s and 1990s). Even though their sample does not cover all world regions, some valuable conclusions have been drawn. Inequality and polarization measures have, on average, decreased from high levels in Latin America, have quickly increased in transitional economies, while more mixed results are found in the Advanced Industrialized Countries (AIC) sample.<sup>25</sup> The results suggest a generalized convergence towards an 'intermediate level' of intra-national inequality: downwards from above for the poorer ones, upward from below for the transitional ones.

These results are supported by a study of 'inequality convergence' carried out by Ravallion. Despite the limited size of his sample, reduced for strict comparability reasons, he concludes that there is robust evidence in support of convergence toward medium inequality, probably driven by generalized policy convergence around the world. As will be evident later, Ravallion's conclusions are essential to understand the global trends in inequality as well as the trends in global inequality.<sup>26</sup>

## Currents and Trends in Inequality

TABLE 2. Inequality in the 1980s and the 1990s

| Country                        | Change |       |      | Country                            | Change |       |      |
|--------------------------------|--------|-------|------|------------------------------------|--------|-------|------|
|                                | 1980s  | 1990s | (%)  |                                    | 1980s  | 1990s | (%)  |
| <i>Europe and Central Asia</i> | 23.3   | 31.5  | 34.4 | <i>Latin America and Caribbean</i> | 49.0   | 49.8  | 1.5  |
| Belarus                        | 23.0   | 28.0  | 22   | Bahamas                            | 44.4   | 43.0  | -3   |
| Bulgaria                       | 23.0   | 24.0  | 4    | Brazil                             | 57.6   | 60.9  | 6    |
| Czech Republic                 | 19.0   | 27.0  | 42   | Chile                              | 55.6   | 56.5  | 2    |
| Czechoslovakia                 | 21.1   | 24.6  | 16   | Colombia                           | 48.3   | 49.3  | 2    |
| Estonia                        | 23.0   | 25.0  | 9    | Costa Rica                         | 46.3   | 46.8  | 1    |
| Hungary                        | 21.0   | 23.0  | 10   | Dominican Republic                 | 46.9   | 49.0  | 5    |
| Kazakhstan                     | 26.0   | 33.0  | 27   | Honduras                           | 59.9   | 55.5  | -7   |
| Kyrgyz Republic                | 26.0   | 55.0  | 112  | Jamaica                            | 43.4   | 39.8  | -8   |
| Latvia                         | 23.0   | 31.0  | 35   | Mexico                             | 44.9   | 47.6  | 6    |
| Lithuania                      | 23.0   | 27.0  | 17   | Panama                             | 52.1   | 57.4  | 10   |
| Moldova                        | 24.0   | 36.0  | 50   | Peru                               | 42.8   | 44.9  | 5    |
| Poland                         | 24.6   | 28.3  | 15   | Venezuela                          | 46.0   | 46.3  | 1    |
| Romania                        | 23.0   | 29.0  | 26   | <i>Other OECD countries</i>        | 30.9   | 31.5  | 0    |
| Russia                         | 24.0   | 48.0  | 100  | Belgium                            | 26.4   | 26.9  | 2    |
| Slovak Republic                | 20.0   | 19.0  | -5   | Luxembourg                         | 23.8   | 23.7  | 0    |
| Slovenia                       | 22.0   | 25.0  | 14   | New Zealand                        | 35.3   | 40.2  | 14   |
| Turkmenistan                   | 26.0   | 36.0  | 38   | Portugal                           | 36.8   | 36.2  | -2   |
| Ukraine                        | 23.0   | 47.0  | 104  | Spain                              | 32.1   | 30.6  | -5   |
| Uzbekistan                     | 28.0   | 33.0  | 18   | <i>Middle East, North Africa</i>   | 37.9   | 37.7  | -0.5 |
| <i>East Asia and Pacific</i>   | 38.0   | 40.0  | 5.5  | Israel                             | 30.9   | 30.5  | -1   |
| China                          | 30.4   | 35.0  | 15   | Jordan                             | 38.5   | 40.7  | 6    |
| Hong Kong                      | 41.5   | 45.0  | 8    | Morocco                            | 39.2   | 39.2  | 0    |
| Indonesia                      | 33.4   | 32.4  | -3   | Tunisia                            | 43.0   | 40.2  | -6   |
| Philippines                    | 46.1   | 45.0  | -2   | <i>Sub-Saharan Africa</i>          | 41.9   | 42.3  | 0.6  |
| Taiwan                         | 29.1   | 30.5  | 5    | Ethiopia                           | 41.0   | 44.5  | 9    |
| Thailand                       | 47.3   | 51.8  | 10   | Ghana                              | 36.3   | 33.9  | -7   |
| <i>South Asia</i>              | 34.2   | 33.1  | -2.8 | Lesotho                            | 56.0   | 57.0  | 2    |
| Bangladesh                     | 36.9   | 34.9  | -5   | Mauritius                          | 39.4   | 36.7  | -7   |
| India                          | 31.5   | 31.4  | 0    | Nigeria                            | 37.0   | 39.3  | 6    |

Gini coefficients are shown.

Source: Kanbur and Lustig (1999).

Kanbur and Lustig (1999) analyze selected data for a sample of over 60 countries from around the world between the 1980s and the 1990s, and also find very mixed evidence in terms of inequality trends.<sup>27</sup> The uncontested result is the sharp increase in Eastern Europe and Central Asia by an average of over 8 points in the Gini coefficient (Table 2).

In a study by Cornia, evidence is made available against the findings by Li, Squire and Zou, re-confirming a trend of increasing intra-national income inequality since the 1970s (after a period of decline since the 1950s) in several of the 77 nations analyzed in his study.<sup>28</sup> His findings of increasing intra-national inequality trends across countries are weakened when transition economies are taken out of the picture. He, however, systematically discusses inequality trends by region since World War II, pointing out how, among advanced industrialized countries, inequality has increased on average (we already know this from evidence discussed so far).

The trend highlighted by Cornia is initially driven by the pioneers (the US, UK, New Zealand, and Australia), followed by the Scandinavian countries and the Netherlands, and very recently France and Finland. In Asia, China inverted a trend of decreasing inequality in the 1980s, after which polarization started to increase at an accelerating rate. In the same study, Cornia advanced some explanations for these patterns, among which shifts towards skill-intensive technologies and market liberalization appear to be the key factors.<sup>29</sup> His major policy recommendation stems from the awareness that inequality is a major obstacle to the introduction of anti-poverty programs. It is therefore essential to combat both inequality and poverty. Only then can the benefits from growth be channeled to everyone, including the very poorest. This work is relevant for understanding what happened in the longer run to regional trends in inequality.

### *Growth, inequality, and poverty: some accounting examples*

In line with the analysis made by Cornia, it is worth observing the impact that income inequality has on absolute income poverty as it interacts with growth. For a given level of average income or expenditure, a country is poorer if its resources are less evenly distributed. Consequently, three key measures of well-being become intimately interconnected: income, poverty, and inequality.<sup>30</sup> Equivalent efforts to improve income levels, and thus growth, will not have the same desired impact on poverty alleviation, unless the distribution of income is taken into account in the formula. Income poverty is a net result of a growth effect and a distributional one, as well as a residual or interaction element  $E$  that comprises all the determinants of income poverty not captured by the previous two variables.<sup>31</sup>

$$\Delta\text{Poverty} = \Delta\text{Inequality} - \text{Growth} + E \quad (1)$$

As an exercise to demonstrate the dynamic interaction among these variables, I use a simple yet powerful technique of ‘developing economics accounting’: the Datt–Ravallion decomposition technique. This allows one to compare the evolution of ‘actual’ poverty levels — estimated using actual income and inequality levels for the same year — to those obtained by holding one of the two components (income or inequality) constant.<sup>32</sup> The power of the exercise lies in the possibility to run a sensitivity (or ‘what if’) analysis so as to simulate poverty trends maintaining 1980 levels of either mean income or inequality.

This methodology works as follows. For a country, we have two points in time, 1 and 2, with different income distribution vectors (e.g. Lorenz curve information on income shares by percentile),  $\mathbf{L}_1, \mathbf{L}_2$ , and different mean levels,  $y_1, y_2$ . Using these and assuming a constant poverty line,  $z$ , we can compute the poverty rates for the two periods,  $P(z/y_1, \mathbf{L}_1)$  and  $P(z/y_2, \mathbf{L}_2)$ .<sup>33</sup> Similarly, we can calculate the poverty rate that would have occurred if, say, mean income had not changed and only distribution had, i.e.  $P(z/y_1, \mathbf{L}_2)$ .<sup>34</sup> The difference between  $P(z/y_2, \mathbf{L}_1)$  and  $P(z/y_1, \mathbf{L}_1)$  is the ‘growth component’, since it solely captures the change in poverty driven by an increase in

mean income. On the contrary, the variation from  $P(z/y_1, \mathbf{L}_1)$  and  $P(z/y_1, \mathbf{L}_2)$  can be interpreted as the change in poverty rate explained by the mere change in distribution: the 'redistributive component'.<sup>35</sup> In summary, the change in poverty from time 1 to time 2 as an extension of equation (1) is:

$$\begin{aligned}
 P(z/y_2, \mathbf{L}_2) - P(z/y_1, \mathbf{L}_1) &= [P(z/y_2, \mathbf{L}_1) - P(z/y_1, \mathbf{L}_1)] \\
 &\quad + [P(z/y_1, \mathbf{L}_2) - P(z/y_1, \mathbf{L}_1)] + E
 \end{aligned}
 \tag{2}$$

The rather abstract accounting exercise described can be reproduced into a series of adjacent time periods. This way, the growth and redistributive factors can be tracked across time for each country. I analyze the evolution of income and inequality and their estimated impact on poverty from the 1980s to the 1990s in various developing countries.<sup>36</sup> High-quality income or expenditure distribution data for most years between 1980 and 1997 are available for those countries selected. Figure 2 shows the results for Brazil and Indonesia. The two start from very different inequality conditions, with Brazil much more unequal than Indonesia. Throughout the period observed, Indonesia experienced rapid growth; a monotonic trend with an average rate of 5.1. Brazil's product per capita was stagnant, averaging an annual rate of change of 0.4%. Inequality levels increased in Brazil, where the Gini coefficient stayed above 0.55, ending at 0.59 in 1996. In Indonesia, the Gini ranged from 0.32 to 0.36 with lower levels in the intermediate years, approximating a U-shaped pattern.

The results indicate that, without the growth, rates actually experienced after 1980 Indonesia's poverty rate would have remained roughly at the same level of 1980 throughout the entire period. In reality this was halved, as shown if I use the actual growth rate to estimate poverty. Income distribution evidently was not a significant factor in the steep decline in poverty levels. Its consistently low levels explain this finding. Brazil, on the contrary, presents a case of inequality-driven poverty. The poverty rate would have decreased by 10% had inequality remained at its 1980 level (see Fig. 2). The Brazilian case shows how growth is a key element for poverty reduction, yet an insufficient one, especially if as modest as the one experienced by Brazil. Growth is a more effective poverty-reducing mechanism when inequality is low, as in the case of Indonesia, or declining. Increasing inequality and sluggish growth, inevitably bring about increased poverty.<sup>37</sup>

More examples of poverty decomposition show different dynamic patterns of the impact of income inequality and levels on income poverty rates. In Figure 3, the results for Nigeria and Mexico are presented (respectively, 1986-1997 and 1984-1996), showing very different trends. Nigeria has experienced a period of increasing income poverty, driven by both increasing inequality and decelerating rate of growth. Had inequality remained at its 1986 levels, poverty would have decreased — a case of inequality-driven poverty, similar to the Brazilian one. Similarly, in Mexico, inequality has been the main poverty driver. Had this remained at its initial 1984 level, poverty would have slightly decreased.

Figure 4 shows the results for two transitional economies between

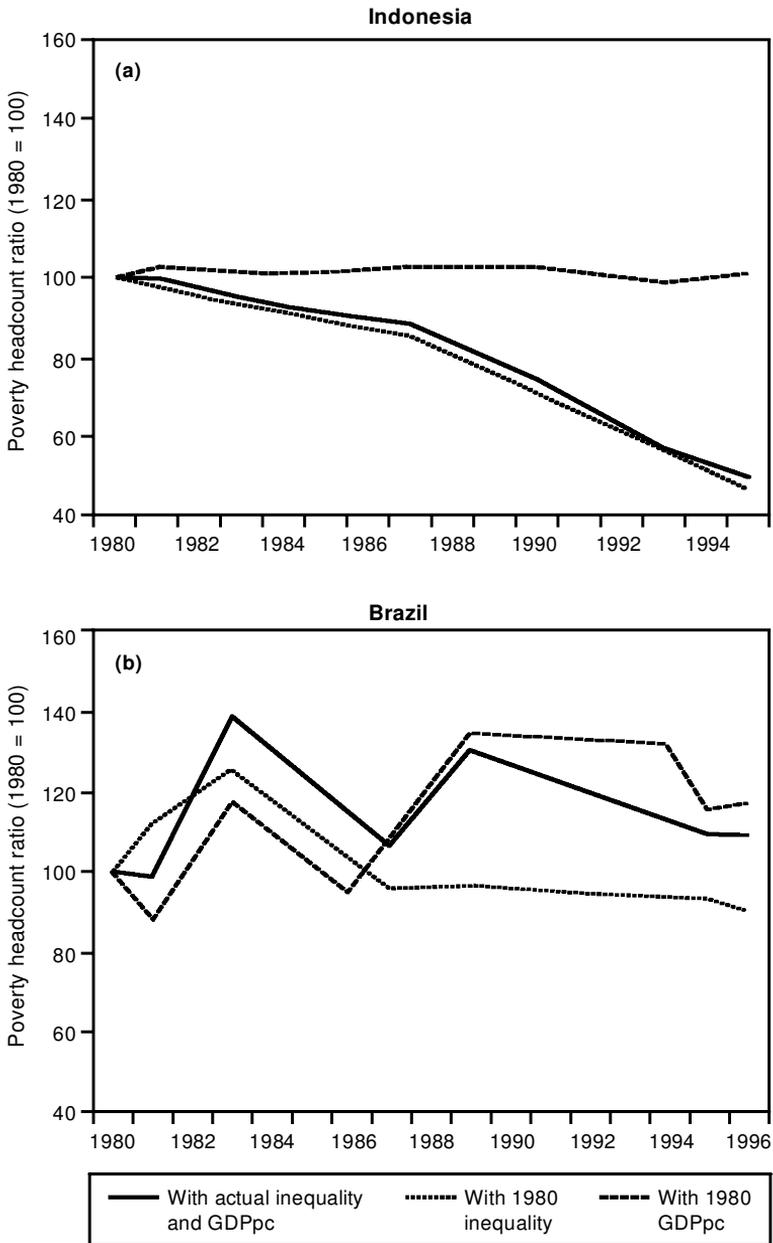


FIGURE 2. Estimated poverty In Indonesia and Brazil, 1980-1996.

1989 and 1997: Hungary and Bulgaria. Both have been through thorough transformations that have had a devastating impact on the standard of living of their populations. In Bulgaria, real income has decreased and inequality soared. Hungary, however, a more successful case, has experienced positive real GDP per-capita growth after 1993 (inverted U-shaped dotted line) yet a

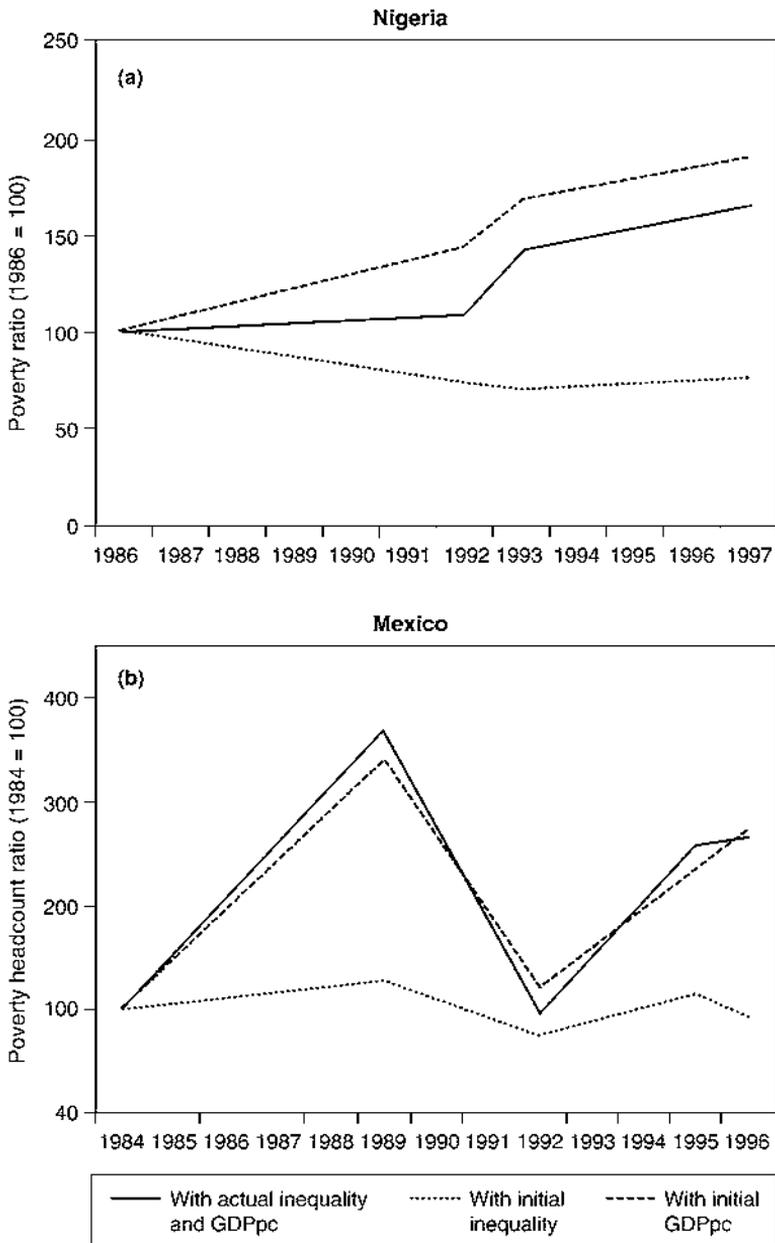


FIGURE 3. Estimated poverty in Nigeria and Mexico, 1980s-1990s.

continuously increasing pattern of inequality. In these cases, poverty is driven by both inequality and growth, and the latter, due to the modest levels of inequality, is able to steer the direction of the poverty trend.

The final comparison is between two successful cases of income-poverty reduction, mainly driven by fast growth: India (1983-1997) and Pakistan

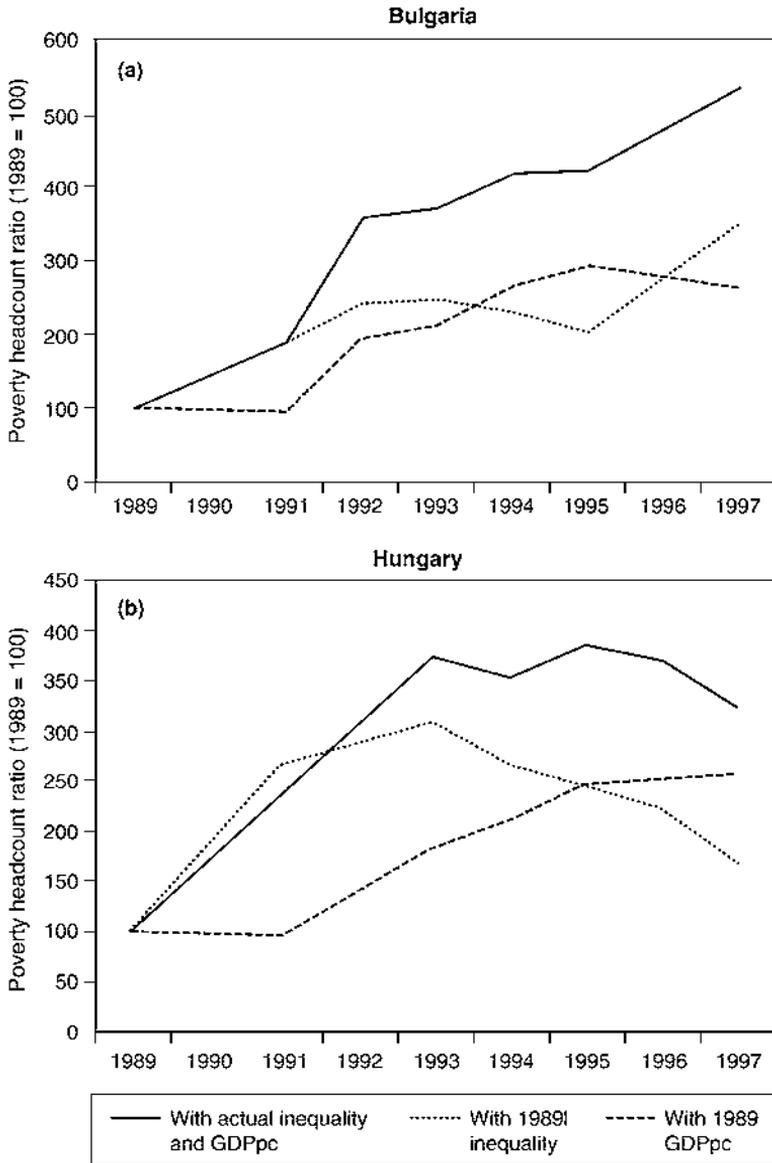


FIGURE 4. Estimated poverty in Bulgaria and Hungary, 1989-1997.

(1985-1997). Figure 5 shows modest changes in poverty with constant levels of income. Only when applying the observed income dynamics does the poverty rate decline quickly. Furthermore, Pakistan shows evidence of a decreasing inequality effect on poverty reduction. The examples shown demonstrate how different combinations of income levels and its distribution within the country can produce completely different results in terms of poverty rates, suggesting the importance of policies that foster both growth and equity.<sup>38</sup>

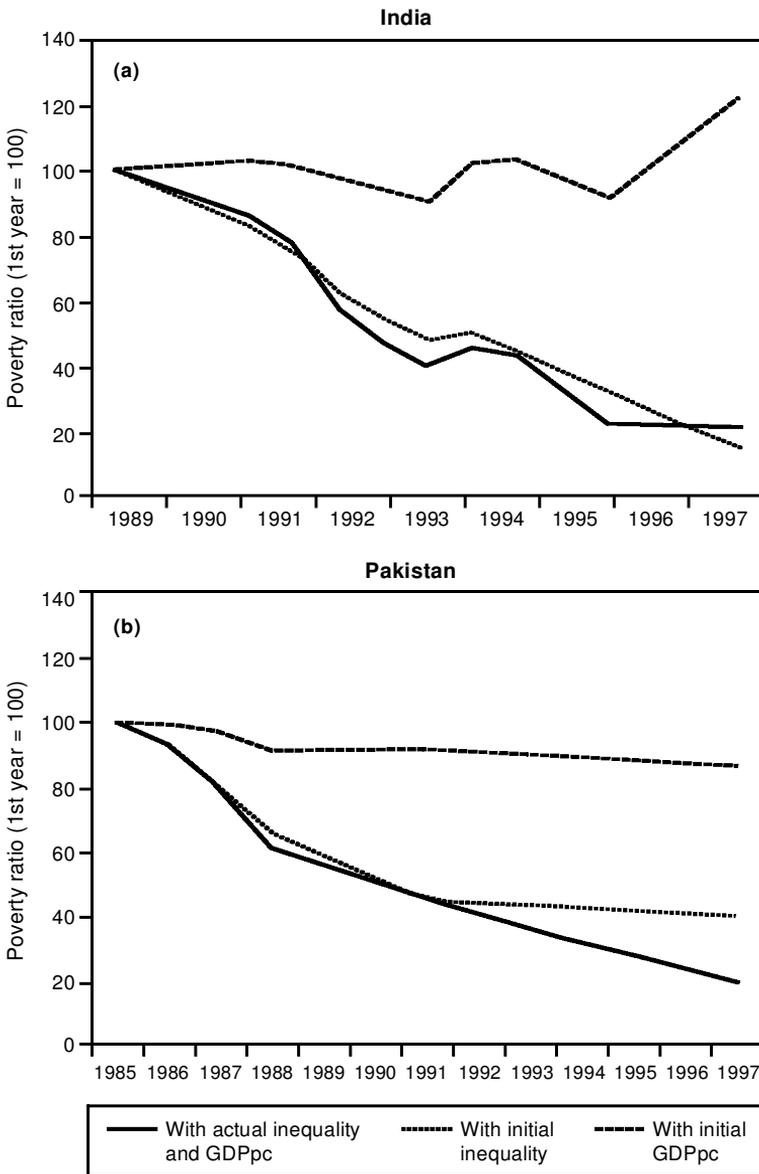


FIGURE 5. Estimated poverty In India and Pakistan, 1980s-1990s.

### International inequality

Many works carried out in the past on ‘world’ inequality in effect gather information on inequality between countries. This perspective of international inequality compares countries’ average levels of welfare among each other, in order to understand differences in welfare across nations. Some of the findings from this literature have ventured into drawing conclusions on

the levels and trends in 'world' inequality (across world 'individuals'). Those who have done this have assumed that the individuals who have the average income in their country represent the entire population of the country.

In fact, the country average levels of welfare only reflect the average individual in each country (i.e. the individual or household with an average level of income — alternatively of earnings or assets). The danger of such consideration lies in the neglect of the national distributional reality described in the previous section.<sup>39</sup>

In spite of these limitations, work on international inequality is useful for understanding the path of convergence (or divergence) from an international average product per capita that countries or regions experience throughout the world. In other words, it is useful to understand and test the tendency for poorer countries to grow faster than richer ones: the convergence of the level of their incomes. Among others, important work carried out in this field can be found in Theil (1979) and Theil and Seale (1994). Clearly, this branch of economic analysis is intimately linked to the literature on macroeconomic growth.

An important observation is that made by Firebaugh, when he notes that products per capita converge or diverge due to rates of change of product, but also those of population. He finds, similarly to Schultz (1998), that international inequality has remained largely stable between the 1960s and the 1980s, due to offsetting effects of differences in income and population growth rates in the largest nations.<sup>40</sup>

When looking at the past four decades, many agree that the distribution of product per capita between countries has become more polarized.<sup>41</sup> In the 1960s, the period average GNP per capita (measured in 1995 US\$) in the richest 10 countries in the world at the time was 93 times that of the poorest 10. Three decades later, the gap between the 1990s top and bottom groups has widened, bringing the ratio up to 160, an 81% increase.<sup>42</sup> If we now look at the economic performance for the group of 10 countries who were at the top in the 1960s, and compare it with that of the 10 countries at the bottom for the same period, we see an average increase of 100% in GNP per capita for the former group (from 1995 US\$16 221 to US\$33 157), and a more modest 90% for the latter (from 1995 US\$174 to US\$330).<sup>43</sup>

The club of countries who were initially rich has outperformed that of those who started poor: the condition for convergence between rich and poor countries' incomes (poor countries grow faster than the rich ones) was apparently not met. This evidence is, however, limited to a pattern of divergence across the extremes. What occurred in middle-income countries is more mixed. In support for these findings is a general consensus on the diverging pattern between the rich and the poor, and convergence of middle-income countries' incomes and those of developed countries. If we do the same exercise as earlier using population-weighted averages, however, the picture is reversed. Since China's population is 80% of the bottom 10 countries, its high growth rates make it an outlier. As a consequence, while in the 1960s the ratio of average income of the top 10 countries to that of the bottom 10 is 137, in the 1990s it is reduced to 65.<sup>44</sup>

Figure 6, and its close-ups for, respectively, the low-income (Fig. 6a), the middle-income (Fig. 6b), and the high-income (Fig. 6c) groups, shows evidence of clear improvement for the rich and middle-income countries, but of large dispersion with many losers among the low-income ones.<sup>45</sup>

As shown in Figure 6a, 37 out of the 50 countries that have started out in the low-income group (delimited with a \$1000 ceiling) have remained there in the 1990s.<sup>46</sup> Among these, 15 have experienced an absolute decline in their GNP per capita.<sup>47</sup> In the 1960s middle-income group (between \$1000 and \$10 000), with the exception of Georgia and Venezuela, all countries experience an increase in their per-capita product. Finally, in our sample, all of those who started in the high-income category improved their absolute position, having experienced an increase in GNP per capita.

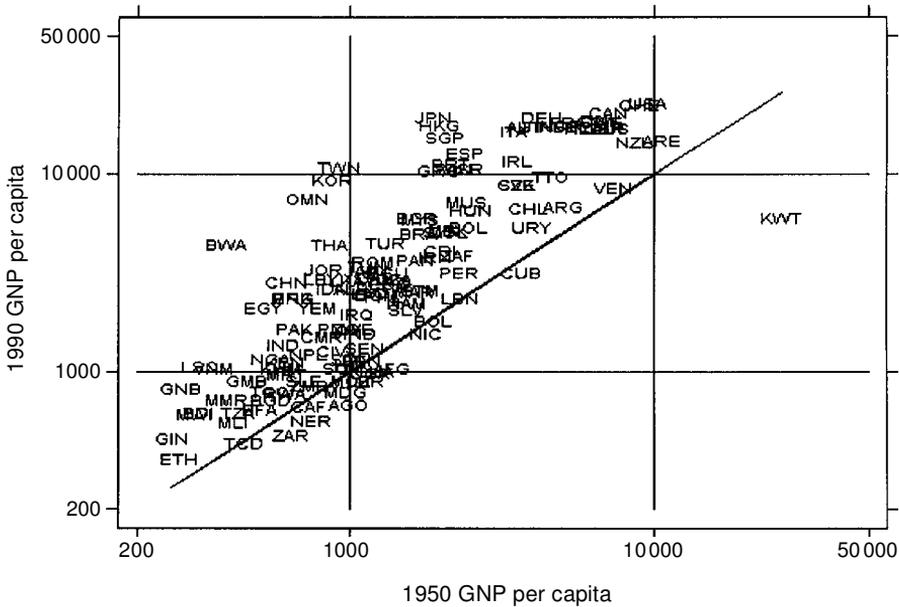
Despite the different periods covered, the exchange rate and PPP adjustments yield similar results. Looking at Figure 7, where GDP per capita is calculated using PPP rates, divergence between poor and rich countries is not as evident.<sup>48</sup> While for the exchange rate adjusted example initially rich countries seemed to maintain their position, PPP adjustments show a slightly more pro-convergence picture (or, at least, one where divergence is less straightforward). In effect, adjusting for differences in price levels across countries makes poor countries relatively better off due to, among other things, the correlation between per-capita product and price level.<sup>49</sup> PPP rates compensate for exchange rate undervaluation or overvaluation as a consequence of large differences in relative price levels.

The 1999 Human Development Report presents evidence on the long-term evolution of international inequality using valuable data assembled and produced by Maddison (1995). The uniqueness of Maddison's series is the period of time covered; starting in the early 1800s, considerably longer than the data usually available.<sup>50</sup> Until the beginning of the nineteenth century, differences in standard of living among nations were minor. In 1820, GDP per capita (in 1990 US\$) ranged from China's US\$523 (the poorest nation at the time) to the UK's US\$1765. The corresponding figures for the poorest and the richest country in 1992 are US\$300 (Ethiopia), and US\$21 558 (the US). Despite the general catching up by some high-growth countries (mainly East-Asian), the gap between the poorest and the richest nations has widened. Maddison's conclusions suggest diverging patterns of product per capita among rich and poor countries since 1820.

Pritchett is another big advocate of divergence, convincingly refuting any evidence of convergence.<sup>51</sup> According to his calculations, from 1870 to 1985 the gap between rich and poor countries has widened. He made a similar analysis to that already presented, comparing the poorest countries' income with that of the then richest one, the US.

Measured in purchasing-power-parity terms at 1985 prices (P\$), the ratio of the per capita income of the richest country (the United States) to the average per capita income of the poorest countries grew from around 9 (P\$2,181 compared with P\$250) in 1870 to over 50 (P\$16,779 compared with P\$325) in 1960.<sup>52</sup>





Note: Log scale. Real GDP per capita, in PPP-adjusted 1990 international \$ by Maddison; from Gallup *et al.* (1999).

FIGURE 7. GDP per capita (constant PPP\$) in 1950 and 1990. Note: Log scale. Real GDP per capita, in PPP-adjusted 1990 international dollars, by Maddison (from Gallup *et al.*, 1999).

Korzeniewicz and Moran’s findings support the evidence that inequality among nations has increased between 1965 and 1992. These authors use exchange-rate-based GNP per-capita figures, as opposed to the PPP-based figures of Pritchett, Maddison, and others.<sup>53</sup> They defend their choice by observing the various problems related to PPP rates. While in principle PPP-based figures would be ideal, most of the figures are in fact based on extrapolations from benchmark studies carried out in only some years and for a few countries; the results are then extrapolated across time and space, towards other ‘similar’ nations. As an example, Pritchett’s and Maddison’s work is based on backwards extrapolation of PPP adjustments held constant (same basket in the 1800s and in the 1990s). This practice is in fact difficult to defend. Furthermore, the authors argue that, since the quality of similar services (e.g. government employees or doctors) is assumed identical across countries for the calculation of PPP-based data, studies based on PPP data exaggerate the extent of international convergence.

On the far-from-perfect nature of the PPP methodology, the authors have a point. They conclude that the choice of PPP-based or exchange-rate-based analyses depends on the intent of the researcher. While as it is the former may be more suitable for evaluating trends in consumption within nations, the latter may be more advantageous if the intent is to capture the “evolution of people’s command over world income or international

exchange”.<sup>54</sup> However, it is also undeniable that the prevailing view is that the PPP method provides in theory an ideal estimate of ‘relative material well-being’ of peoples living in different nations.<sup>55</sup> This will be increasingly true as PPP rates become more accurately developed, especially in China, India and other large developing countries. This will be possible mainly with the joint effort of the World Bank, the OECD, and the United Nations through the International Comparisons Program making PPP-based comparisons accurate and a valuable alternative to the more volatile exchange rate-based ones.

Trends in international inequality (convergence literature) have been carefully scrutinized in past years. Robert Barro and Xavier Sala-i-Martin (1995) have argued that, within Europe, Japan, and the US, regional convergence happens at a nearly uniform rate of 2% per year. In their support comes Pritchett, who in spite of his clear rejection of global convergence supports convergence among middle-income and high-income countries.

Sachs and Warner (1995) calibrate the existence of convergence, adding a clause: if a country’s initial income is low and its government pursues growth-oriented policies, then very rapid growth rates may be possible, and convergence exists. Convergence is then observed only conditionally. More generally, low-income countries with similar determinants of steady-state growth grow faster. ‘Conditional convergence’ implies that, controlling for capital accumulation and population, countries converge.<sup>56</sup> Conditional convergence is a robust finding of the recent empirical growth literature. This literature estimates a 2% rate of convergence across a wide variety of datasets.<sup>57</sup> The 2% estimate, when using a broad cross-section of countries (as in Barro, 1991; Mankiw *et al.*, 1992; Barro and Sala-i-Martin, 1995) is conditional on measures of the stock and flow of human capital. This means the change in the initial level of product across countries is due to variations in the initial technological state and the initial stock of physical capital. Owing to their greater international mobility, variations in technology and physical capital, when compared with initial human capital differences, will lead to relatively faster growth and higher rates of convergence.

Summers and Heston also attempt to capture world income distributions by constructing a set of shares of world output, in constant PPP dollars, using newly available national data from the Penn World Tables to assess empirically the evolution of the international distribution of income, between 1960 and 1990.<sup>58</sup> These are adjusted by number of persons as well as by number of equivalent adults, with a weight of 0.5 for those younger than 15 years of age. Their findings rely on single-statistic inequality estimates (using Gini coefficients). The results reflect other works, suggesting a modest increase in international income distribution, confirming the good performance of the middle-income non-oil-exporting countries, and the poor performance of the poor countries. They conclude that international disparities have declined, mainly as a consequence of the relatively good performance of middle-income economies. However, they observe an increasing gap between high-income and low-income economies.

Danny Quah introduces a ‘twin peaks’ view of the international distribution of resources, observing how the pattern of inequality across countries

has been increasingly clustering among the very rich and the very poor, while the middle-income group is thinning.<sup>59</sup> Some countries, notably East Asian, caught up and joined a club of rich countries, while many others fell into a poverty trap. His conclusions lead to believe that the world is sharply polarized into rich and poor. This pattern is presently driven by two groups of countries. In the lower peak are China, India, and Indonesia, with 2.5 billion people and an average per-capita income of PPP\$1000 international dollars; and from above, the 500 thousand inhabitants of the US, Japan, and other rich countries, with income per capita of over PPP\$11 000.<sup>60</sup>

Robert Lucas (2000) carries out a simple yet effective exercise of international inequality through a model that simulates its evolution in the past centuries and projects results into the next 100 years. His model forecasts a pattern of convergence that has started in the past three decades and that will continue into the rest of the century, as poorer countries catch up. The major mechanism that increases a country's chance of embarking on growth is the average world income: the richer the world, the higher the probability of pre-industrial nations to start growing. Furthermore, growth rates depend on the gap between leader and follower: the higher the difference, the faster growth. Doing so, the author effectively gauges the coefficients in his model to reproduce the dynamics of growth and international inequality since the early 1800s. The reasons behind this trend are not looked into. Clearly more complex forces than those described by Lucas drive these trends. The simplicity and intuitiveness of his approach are nevertheless intriguing.

The value of the exercise is largely in its forecast: as years go by, most countries will have been growing at high rates, and very few will still be at the pre-industrial level. As a consequence, overall growth will decelerate towards a rate of 2%, and international inequality will start decreasing asymptotically. This leaves some hope for the improvement of future international inequality patterns.

## **World inequality**

World distribution is the newest line of research in inequality studies. Its introduction has been largely made possible by improved computational tools and increased availability of, and access to, national surveys. It is worth noting that this branch of analysis is the composite result of the former two described in the previous sections: intra-national and international inequality. The interest in such approach to inequality lies on the decreasing importance of national boundaries when assessing individual well-being. This is mainly a result of the rapid economic integration among nations brought about by the globalization of trade, assets, and information flows. As global citizens are increasingly aware about what happens out of their country, the question may now lie on whether world inequality is the real issue of concern, and not just intra-national or international.

As discussed, the units of analysis for the study of world or global inequality patterns and trends are, at least in theory, individuals or households

across countries. The lining of individuals in a single database is still a very difficult exercise to carry out in practice due to lack of homogeneous or even heterogeneous data, other arguably sound statistical techniques have been used to estimate this distribution. The use of intra-national single inequality statistics, such as the Gini coefficient, as well as the position of the country *vis-à-vis* the rest of the world (using the country's product per capita) have been used to simulate such distribution.

Schultz (1998) uses non-survey data available — estimating world distribution from GDP per-capita figures and Gini coefficients.<sup>61</sup> His findings point out that cross-country (international) inequality measured at PPP has been relatively constant since World War II, while within-country (intra-national) inequality has increased. The logical result is a deterioration of world inequality.

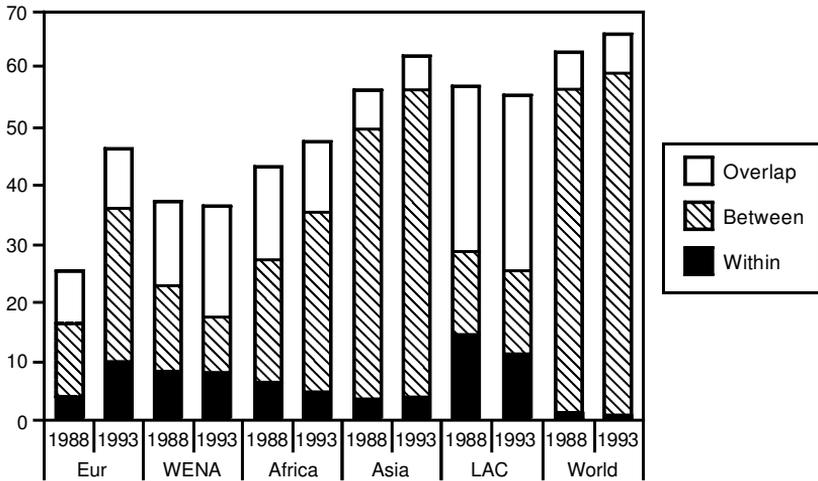
Berry *et al.* (1983) denounce the lack of reliable data as well as the conceptual difficulties in creating a homogeneous sample of analysis. They use percentile shares from household surveys for their national inequality estimation, which is arguably a more complete measure than the single-inequality statistic used by others, yet rely on GDP per-capita figures for income measurements.

Other more recent studies have adopted more careful techniques, made also possible by accessibility to panels of survey data.<sup>62</sup> Danny Quah, in a recent paper, found that the dominant driving forces for determining world inequalities are those macroeconomic ones that determine cross-country patterns of growth and convergence. Microeconomic phenomena (in this case, inequality across individuals within countries) remain a critical issue of increasing concern, even though they are far from being responsible for the increasing world inequality. In other words, the relation between a country's growth performance and its within-country inequality plays only a small role in global inequality dynamics.<sup>63</sup> This argument may be valid in terms of direct impact of inequality on growth. However, inequality has large lagged and indirect impacts on economic growth, which in turn slows down affecting global patterns of convergence.

One study in particular that represents an important step forward with respect to the previous efforts to capture world inequality is Branko Milanovic's work on the representation of the true world income distribution. Both his methodological approach and his initial findings deserve close attention as they possibly will open the way to the new methodology for world inequality calculations, as well as a new perspective on the world distributional agenda.<sup>64</sup>

### *Short-term trends in world inequality: an accurate analysis*

Given that the latest and most accurate source of information on world inequality comes from Milanovic's work, I shall describe his method and illustrate the results. It is worth noting that the novelty of his work comes from the fact that the data on income levels and distribution originates entirely from household surveys. Due to limitations in income distribution



Source: Milanovic (1999).

FIGURE 8. Regional Gini coefficients, 1988 and 1993 (distribution of persons by \$PPP income per capita).  
Source: Milanovic (1999).

information, the analysis is limited to two relatively close points in time: 1988 and 1993. For the estimation of inequality and income levels, he uses data from 91 countries (covering around 90% of world population), and proceeds to adjust income measures across countries and time through purchasing power parity conversions. Income or expenditure figures must be available for each percentile of the population in every country. Percentiles must represent at least one-tenth of the population (i.e. deciles) of individuals, ranked by their expenditure or their household disposable per-capita income. Finally, each income-percentile observation (i.e. data point) needs also to be weighted by the amount of people it includes.<sup>65</sup>

The Gini coefficient is unable to fully capture the changes in the distribution of income across groups. However, summary conclusions can be drawn from Gini-based inequality analyses. The major results are by region and for the entire world (Figure 8). As shown in the overall height of the bars, between 1988 and 1993 income inequality, measured by Gini coefficients, nearly doubled in Eastern Europe and the Former Soviet Union, it increased in Africa and in Asia, and declined in Latin America and in Western Europe, North America and Oceania.

One way to judge the role of group income differentials in generating inequality is to decompose the components on an inequality index (in this case, the Gini coefficient). Milanovic decomposes the observed inequality variations in ‘class’-driven (within country) and ‘place’-driven (across countries) using the Pyatt-type decomposition.<sup>66</sup> More precisely, this technique allows to brake the Gini into within-country inequality, between-country inequality, and an overlapping component.<sup>67</sup> To better understand the origins of the described dynamics in inequality, Figure 8 also shows the differences in within-country and across-country inequality.<sup>68</sup>

TABLE 3. Real per-capita income levels and changes in the world income distribution

| Income percentile | 1988 average | 1993 average | Change |
|-------------------|--------------|--------------|--------|
| Bottom 5          | 277          | 238          | -14    |
| Bottom 10         | 313          | 278          | -11    |
| Bottom 20         | 417          | 371          | -11    |
| Top 20            | 10 141       | 11 574       | 14     |
| Top 10            | 16 146       | 18 844       | 17     |
| Top 5             | 20 773       | 24 447       | 18     |

Source: Milanovic (1999).

The ideal picture is that observed in Western Europe, North America and Oceania, and to some extent in Latin America and the Caribbean (LAC), where both place (within) and class (between) inequality decreased, as well as — even though more moderately given an increased overlap component (i.e. increased homogeneity) — the overall Gini coefficient. The results suggest that most of the inequality changes in the other regions have been driven by widening across-country gaps, and only to a minor extent by within-country discrepancies. For the world as a whole, differences in mean income across countries explains over three-quarters of the change in the world Gini coefficient.

The general message from these results is entirely supported by using other inequality indicators and tests (i.e. the Theil index, the Lorenz curve, and various tests of stochastic dominance). In terms of income shares, the bottom income quintile of the world population experienced a deterioration of its real income of 11%, while the corresponding figure for the top 5% is an increase of 14 percentage points (Table 3).<sup>69</sup> The most striking difference is, however, at the very tails of the distribution. While the poorest ventile (5%) of the world population in Milanovic's sample experienced a deterioration in real income of 14 percentage points, the richest ventile of the world population increased its average real income by 18%.

The final message from Milanovic's study is that world inequality has increased between 1988 and 1993, mainly as a consequence of divergence in income per capita among countries (international inequality), leaving to intra-national inequality patterns a very small share of the blame. In particular, the cross-country effect was driven by the differences in mean incomes between large poor countries like India and China, and smaller and rich countries like the US, Japan, Germany, the UK, and France. A smaller factor was the increase in inequality between urban and rural China, treated separately by the author, and slower growth in large South Asian countries (e.g. India and Bangladesh).

### Perceptions of inequality: assets and awareness

We have thus far examined what is, is not, and should be in the literature on inequality. This discussion is gaining relevance as economies and societies integrate. Most of the recent debate on globalization focuses on its distributional impact on individuals. It is thus worth mentioning some of the

implications of the recent inequality trends at the micro level, with particular emphasis on the public perceptions of inequality.

The evidence discussed suggests that gaps in income, wealth (and, in some regions, education, and health) among individuals and households within and across countries have been stable or widening in the past decades.<sup>70</sup> At the same time, and probably at an even faster rate, the awareness of this gap has been increasing exponentially, mainly among those who have less relatively to the rest of the economy. The reason for this trend is a bundle of phenomena usually referred to as 'globalization': the increasing degree of openness of economies to new products, services, information, and technology. This process is biased in favor of the rich in terms of benefits (see Lundberg and Squire, 1999).

There are, however, two levels in which benefits from globalization can be viewed: increased information of what goes on outside the traditional boundaries of the community (awareness) and availability of a new range of products (access). Awareness is not only increased information of new technologies and other valuable productivity-enhancing techniques. More futile knowledge also creeps into many emerging economies (i.e. what the consumption patterns of the rich are at home and abroad). Assuming that 'awareness' is growing faster than 'access', the latter will remain relatively more polarized at the top, as opposed to the more diffused awareness.

The general implication is that those who have less do not necessarily know less anymore, particularly among the lower-middle-income urban households. Through advertising and public information campaigns, the media makes people aware of new unnecessary fads and wants, targeting those groups whose access is chronically limited by reduced purchasing power and unstable working conditions.<sup>71</sup> As a consequence, frustration levels that are already high from the mere objective increase in disparities of access are likely to be magnified by availability of awareness.<sup>72</sup>

It would be neither realistic nor rational to expect positive results from controlling or even limiting the spread of information, technology, and knowledge available from an increasingly globalized economy. More positive results may derive from increased access by operating on another kind of awareness, the 'productive awareness'. This still remains largely an exclusive domain of wealthier sectors of society.

Long-term policies that include the improvement of education and training on information technology could allow more equal access, thus closing the already wide digital gap among peoples and nations. Ultimately, the patterns of distribution of productive knowledge (and of assets, that are a mere reflection of it) and to the opportunities to accumulate or maintain them are crucial and often neglected aspects of development both at the national and international level.

## **Conclusion**

The main purpose of this paper is to establish a primer on the present discussion over resource inequality. Due to the complexity of the concept, I

highlight the need to specify what kind of inequality is being observed, claimed, or mentioned. The frequent exercise of comparing data from different sources, that may adopt completely different definitions, can result in dubious results to say the least.

So far, the conclusions to be drawn from the available evidence suggest that most advanced industrialized countries have experienced decreasing 'intra-national' inequality until the 1970s, with an inversion in the trend after that. However, studies looking at the developing (non-transitional) world suggest, with a few exceptions, a general decrease in intra-national income inequality. This may indicate convergence of intra-national income inequality levels across the world.

On the contrary, the pattern for international inequality trends has been one of divergence, especially when trends are observed using exchange-rate-based adjustments. Using PPP adjustments, there seems to be a moderately stable pattern since the 1980s — neither divergence nor convergence — around the world.

Finally, world inequality has increased in the period of time between 1988 and 1993. This has been overwhelmingly driven by diverging income trends across countries and regions. It is thus clear that world inequality remains driven by international inequality. This finding is, however, only an initial one. In reality, international inequality is driven by diverging growth patterns in national or domestic product. These in turn may depend heavily on the way resources are distributed within countries (intra-nationally). In this context, we have shown how growth with high income dispersion reduces its effectiveness in reducing poverty, which in turn hinders prospects of future growth. It is therefore essential that these local and intra-national gaps be taken into consideration in the policy prescriptions both at the national/governmental and at the international level.

One general conclusion is the urgent need to support the generation of new and high quality micro data of intra-national income and or asset distribution, to complete and broaden the work by Milanovic and others. More countries and years could be observed, allowing more consistent time and cross-section analyses. This would yield important evidence on long-term world income distribution. The Canberra Group, a set of over 20 national and international statistical offices and departments, is developing guidelines to homogenize the existing data, concentrating future efforts to produce comparable income distribution assessments. This is already available for a number of developed and transitional economies.<sup>73</sup> Also, more resources should be conveyed towards the International Comparisons Program for the generation of national time series of PPP rates, which represent a healthy alternative to exchange rate adjusted figures for international comparisons.

As a final note, in light of the trend towards globalization and the opportunities and insecurities that accompany it, there is an urgent need for expanding the inequality debate beyond the income-based single-digit indicator. While few would disagree that all nations should participate in the globalization process, the net benefit from this process is often skewed

towards the most educated. Development policies need to promote equal opportunities for access to basic goods and services, assets, education, and employment. Last, but far from being least, local and national institutions must be transparent, and must be representative of (and recognized by) the communities in which they operate. Only then will the stage be set for the natural decline of the intra-national, international, and world disparities.

## **Acknowledgments**

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## **Notes**

1. The Gini coefficient varies from 0 (least unequal) to 1. Major works on the measurement of inequality are Kuznets (1955), Atkinson (1970), Sen (1973), Bourguignon (1979), Cowell (1985), and Cowell (2000). For an excellent review of the major indicators of inequality, see Litchfield (1999).
2. In a graph where the cumulative resource endowment (expressed as a percentage) is placed on the vertical axis and the cumulative number of units (expressed as a percentage) is placed on the horizontal axis, perfect equality would be represented with a diagonal line. Actual resource distributions are illustrated by a curve that departs from the line of perfect equality. This line is the Lorenz curve and can be expressed mathematically. The Gini coefficient is based on the ratio of the area located between the line of perfect inequality and the Lorenz curve to the total area of the graph below the line of equality.
3. A component that is not included in the income figures from survey data — and that may represent a very large fraction of household income, especially for rural households — for very low-income regions (in Sub-Saharan Africa and some Latin American countries) is income produced by households for own consumption. See Timothy Smeeding's comment in Summers and Heston (1999).
4. A country's PPP rate is defined as the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as \$1 would buy in the United States. PPPs take into account the cost differences across countries of buying a similar basket of goods and services in numerous expenditure categories, including non-tradables. This approach relies on a detailed comparison of the prices of hundreds of goods across nations to create a 'world average price' for each good based on local prices instead of exchange-rate prices. The PPP basket is therefore representative of total GDP across countries. The problem with exchange-rate adjustments derives from the eventuality that governments manipulate their exchange rates, thus overvaluing or undervaluing their volumes of production. As a consequence, certain economic activities (especially those in the non-tradables sector) may not be counted by some national accounting methods. This distortion is more likely in less developed countries. For these reasons, PPP adjustment has been often considered superior to exchange-rate in cross-country comparisons.
5. The Living Standards Measurement Surveys are surveys produced by national statistical offices around the world, under the supervision of the World Bank or other multinational organizations that follow a certain standard for the sake of time and international comparability.
6. See Atkinson and Bourguignon (2000, pp. 34–36).

7. This concept is re-presented in Summers and Heston (1999), yet was developed in earlier work by the authors.
8. The growing literature on intra-household inequality patterns (among household members) effectively establishes the necessary links between gender discrimination, household poverty, and inequality, overcoming the often unrealistic assumption that household resources are equally distributed among household members. See Quisumbing *et al.* (1995) and Haddad and Kanbur (1990).
9. See Kuznets (1955) and Kaldor (1956).
10. See Anand and Kanbur (1993), Fishlow (1995), Shultz (1998), Ravallion and Chen (1997). Deininger and Squire (1996) describe the newly available international inequality data set, laying out the conditions that data on income inequality should satisfy: (a) originate from 'income surveys' as opposed to administrative or government accounts; (b) calculated using the 'broadest definition' of income or expenditure, and not only wages; and (c) covering a 'nationally representative' sample of units of reference.
11. See Bruno *et al.* (1996).
12. See Rodrik (1998). This is also a finding that is far from being universally accepted. Deininger and Squire (1998) conclude that only for non-democracies does inequality have a negative impact on growth.
13. This theory does not find univocal empirical support since inequality and tax rates have generally been found negatively correlated (see Perotti, 1996). However, Milanovic (2000) finds a positive relationship between income inequality and redistribution targeted towards the poor in 24 middle-income and high-income democracies.
14. Fajnzylber *et al.* (1998) test for the impact of inequality — measured using the available Deininger and Squire-based data on inequality — on crime, finding strong positive evidence, even after controlling for endogeneity bias.
15. See Forbes (1998), Li and Zou (1998), and Barro (1999). Evidence from previous studies that had supported such relationship was based on cross-country samples and long-term period averages. (see Benabou, 1997; Persson and Tabellini, 1994; Perotti, 1996).
16. One possible complication for using land as a proxy for asset endowment is that its quality varies largely geographically, contaminating the significance of cross-section and time comparisons.
17. See Székely and Londoño (1997).
18. The World Income Inequality Database was developed as a joint project of the United Nations Development Programme (UNDP) and the United Nations University/World Institute for Development Economics Research.
19. See Li *et al.* (1998).
20. See Atkinson *et al.* (1995).
21. Gottschalk and Smeeding (1999). This study uses survey data for those countries whose national statistical offices provide reasonably comparable numbers across time that also follow common standards, thus enabling cross-country comparisons. All of them are household surveys. The income measure used is household adult equivalent net income, with a 0.5 scale parameter.
22. See Cornia (1999).
23. The author uses a very similar methodology to that adopted by Gottschalk and Smeeding (1999) (see Forster, 2000).
24. See Atkinson (1999).
25. For capturing polarization, the Wolfson indicator was used. It generally moved along with the Gini coefficient and the mean/median ratio. For details, see Birdsall *et al.* (2000).
26. Ravallion uses the least heterogeneous survey data available. The drawback is a smaller sample. See Ravallion (2000).
27. Kanbur and Lustig (1999) use Gini coefficients from many sources, explicitly selecting the most reliable ones, even though the quality remains low, both in terms of comparisons across countries and time.
28. As for other studies, the results raise concerns since, for many of his empirical results, Cornia uses datasets that are not corrected for differences in data, income or expenditure definition, personal versus household units of analysis, etc. The notorious outliers in his findings are some East/South-East Asian countries (Cornia, 1999).

29. Cornia (1999) includes across-the-board Washington-Consensus-like reforms: (a) trade liberalization; (b) dominance of financial flows in developing economies; (c) badly implemented privatization plans; (d) labor markets liberalization; and (e) fiscal reform and declining role of the welfare state.
30. The relationship is given by  $P_t = P(z/y_t, \mathbf{L}_t)$ , where poverty at time  $t$  is a function of the poverty line,  $z$ , the mean income level,  $y$ , and the Lorenz vector,  $\mathbf{L}$ , that denotes the distribution of income.
31. For more details, see Datt and Ravallion (1992).
32. Poverty is calculated as the headcount ratio (percentage of population below the poverty line), assuming a constant poverty line for each country. This is due to the computational limitation of the program used to estimate poverty from income level and dispersion. Since income is proxied with product, and the latter is generally higher than the former, poverty level is probably being overestimated. This again should not disprove the findings as I am focusing only on changes in poverty within countries.
33. The program used to obtain poverty synthetic measures from average income levels and Lorenz distributions is POVCAL, developed by Gurav Datt. Note that the same exercise can be carried out estimating poverty gap and FGT measures instead of poverty headcount ratios. See Datt and Ravallion (1992).
34. Conversely, we can determine the poverty rate with constant distribution, or  $P(z/y_2, \mathbf{L}_1)$ .
35. This technique should be used to convey the idea behind the process of poverty dynamics in conjunction with growth and inequality changes, but should be interpreted carefully so as to not consider independently the growth and the distributive effects of economic and social policies, which in reality are inevitably inseparable. Furthermore, objections to the model could be raised in terms of lagged impact of growth on poverty. See Cornia (1999) and Kanbur and Lustig (2000).
36. I use PPP adjusted GDP per capita to proxy average income. Inequality information comes from quintile shares data constructed using households ranked by gross income for Brazil, and persons ranked by net expenditure for Indonesia. These measurement differences, however, will not distort my conclusions since I am comparing within-country time dynamics and not cross-section levels. For more details on potential problems of cross-country studies using mixed data, see Milanovic (1999).
37. This very simple example ignores the dynamic interactions of inequality and growth, as past inequality may affect present growth rates.
38. For a comprehensive analysis of growth-with-equity policies, see Birdsall *et al.* (1998).
39. Sen (2000) advances a method to correct national average figures using the dispersion of income within the country as a weight. Higher inequality reduces the adjusted-income figure. In the same discussion, decreasing returns from additional GNP per-capita gains are incorporated in the inequality-corrected welfare measure.
40. China's higher-than-world-average income growth has reduced international inequality. On the contrary, Japan's higher-than-world-average income growth and India's lower-than-world-average income growth have increased it. At the same time, India's higher-than-world-average population growth has increased inequality and the US lower-than-world-average population growth has had the opposite effect (Firebaugh, 2000).
41. At this stage, grouped figures are unweighted to avoid the numbers to be dominated by trends in China and India (the most populous countries).
42. The 10 poorest countries in the 1960s were (from lower to higher GNP per capita) China, Burundi, Malawi, Nepal, Burkina Faso, Kenya, Nigeria, Pakistan, Bangladesh, and Lesotho. The poorest countries in the 1990s were Burundi, Malawi, Nepal, Nigeria, Sudan, Rwanda, Chad, Sierra Leone, Congo, Niger. The 10 richest countries in the 1960s were Japan, Belgium, France, Norway, Netherlands, Sweden, the US, Luxembourg, Denmark, Switzerland. The richest in the 1990s were Singapore, Austria, Japan, Belgium, France, Norway, the US, Luxembourg, Denmark, and Switzerland. These are my own calculations using World Bank (2000) data.
43. Note that these changes are computed on unweighted group-average 1995US\$ GNP per-capita figures.
44. The 'absolute' figures (product levels) for the calculation of these ratios are:

Weighted average GNP per capita of 1960s bottom 10 in the 1960s = 109  
Weighted average GNP per capita of 1960s top 10 in the 1960s = 14 857  
Weighted average GNP per capita of 1960s bottom 10 in the 1990s = 474  
Weighted average GNP per capita of 1960s top 10 in the 1990s = 30 755.

The 'relative' figures (average percentage changes) for the two groups are:

Unweighted average percentage change in GNP per capita of 1960s bottom 10 = 110%  
Unweighted average percentage change in GNP per capita of 1960s top 10 = 113%  
Weighted average percentage change in GNP per capita of 1960s bottom 10 = 411%  
Weighted average percentage change in GNP per capita of 1960s top 10 = 114%.

45. For Figure 6, I have selected all those countries in the World Development Report 2000 that have at least one observation for GNP per capita in the 1960s and in the 1990s, both measured in 1995 US\$. For those countries with two or more observations in the two decades, I have used average figures.
46. These categories follow roughly the World Bank's current classification method. The widely used World Bank's thresholds are based on 1998 GNP per capita, calculated using the World Bank Atlas method: low income, \$760 or less; lower-middle income, \$761-\$3030; upper-middle income, \$3031-\$9360; and high income, \$9361 or more.
47. They are those above the 45° line in the figures, along which no change in GNP per capita occurs.
48. For Figure 7, I have used data from Gallup *et al.* (1999), using PPP-adjusted GDP per capita levels originally obtained by them from Maddison (1995). Note that due to constraints in the data availability, the country samples used for constructing Figures 2 and 3 are not identical.
49. This was initially pointed out by Kravis *et al.* (1982).
50. See UNDP (1999, pp. 38-39).
51. See Pritchett (1997).
52. To estimate clearly unavailable 1870 figures for the poorest countries at the time (the lower bound of incomes), Pritchett used five different methods: the lowest recorded incomes in the data available for 1960; current estimates of poverty lines (the level of income that defines poverty in a given country); incomes required for nutritional adequacy; the relationship between income, mortality, and demographic sustainability; and known historical estimates of income. Using these five distinct approaches, he arrived at a figure of PPP\$250 as a reasonable guess at the lowest level that income could have reached in 1870 (Pritchett, 1996).
53. These are, however, obtained from the World Bank World Development Indicators, calculated using the 'Atlas Method' that smoothens the effects of prices and exchange rate fluctuations. See Korzeniewicz and Moran (1997, 2000).
54. See Krozenievicz and Moran (2000).
55. This point is convincingly defended in Firebaugh (2000).
56. The level of per-capita income is inversely related to its growth rate, given equal preferences, technology, population growth, governance, human capital, and other structural variables. Maybe the clear heroism of such condition makes convergence unrealistic.
57. This implies that half the gap between the initial and steady-state position of an economy is eliminated in 35 years.
58. See Summers and Heston (1999).
59. A similar middle-group thinning effect is happening at the micro level, within countries' income distribution patterns. For more methodological details, results, and implications, see Birdsall *et al.* (2000).
60. These groups are far from being stable. China and India are in fact improving their position within the peak of the poor countries, yet still record per-capita product well below \$1000. See Quah (1996).
61. GDP per capita may yield contaminated results when used to approximate income for cross-section analyses of inequality since it neglects home consumption and it includes non-distributed capital profits.
62. See Ravallion, Datt and Van de Walle (1991), Chen, Datt and Ravallion (1994), and Ravallion and Chen (1997).

63. See Quah (1999).
64. See Milanovic (1999).
65. For example, if country A has per-capita income  $Y$ , a population of 1 million, and data-points in decile shares  $s_d$ , each decile ( $d$ ) will represent 100 000 individuals in the world sample. Decile income per capita is  $Y_d = 10 * s_d * Y$ .
66. More details presented in Pyatt (1976).
67. The overlapping component exists because the coefficient is not exactly decomposable by recipients. In other words, this component takes into account those who, say, live in rich countries but who are poorer than somebody else in a poorer country. Some interpret it as an indicator of population 'homogeneity'. The larger its relative importance with respect to the other two components, the more homogeneous the population analyzed and the less important are 'class' and 'place' inequality. For more details on the overlap component, see section VII in Milanovic (1999).
68. The former is a function of country Gini coefficient weighted by its size (population and income) relative to the universe (region or world).
69. Obviously, these figures do not indicate mobility patterns (i.e. they do not follow the same households across time). They are instead simply based on snapshots of percentiles' income levels in two different points in time, regardless of who in 1993 moved away from their original percentile, and who did not.
70. These trends are mostly occurring in the transitional economies.
71. These trends are well described in UNDP (1998), by pointing out how "... commercial information needs to be complemented by public education to make consumers aware of both the benefits and the potential drawbacks of the choices they face". For a comprehensive coverage of issues relating consumption and development, see UNDP (1998, Chapter 2).
72. For a complete analysis and a new theoretical framework on public perceptions, mobility, and market reform, see Graham and Pettinato (2001).
73. The Luxembourg Income Study is a major initiative to freely disseminate high-quality micro data from various countries. See [<http://www.lis.ceps.lu/index.htm>].

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