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Chapter 24

Poverty and Inequality: The Global Context

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The previous chapters in this Handbook have focused primarily on inequality in developed countries. The approximately five billion people who live in low and middle-income countries figured only fleetingly in the plot, as a huge (and possibly a little frightening) cast of extras, who produce cheap internationally tradable goods (Chapter 23) and are potential migrants to richer countries (Chapter 19). Yet, developing countries account for over 80% of the world's population, and experience levels of absolute poverty—and often of inequality too—much greater than those found in developed countries.

This chapter summarizes the recent evidence on global poverty and inequality, including both developed and developing countries. It draws on two main compilations of distributional data created at the World Bank, both of which are built up from country-specific nationally representative household surveys, generally fielded by national statistical offices. First is the *PovcalNet* data set, which comprises some 560 surveys for 100 low and middle-income countries, representing some 93% of the developing world's population.[2] Where necessary, the *PovcalNet* data set is complemented with information from the *World Development Report* 2006 household survey database, which has a somewhat broader geographical coverage (including many developed countries), but a more limited time-span.

In the first part of the chapter we discuss our poverty and inequality data and present evidence on levels and recent trends in poverty and inequality around the world. Global and

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[2] See http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp .

regional poverty aggregates are also discussed here. Section 2 turns to the issues involved in aggregating inequality indices across countries, in order to construct a meaningful measure of global inequality. It reviews the main results from the literature that has sought to measure global income inequality, and briefly summarizes some of the evidence on global inequalities in health and education. Section 3 discusses the empirical relationship between economic growth, poverty and inequality dynamics. Here we present what we see as the three key stylized facts to emerge from these data: the absence of a correlation between growth rates and changes in inequality among developing countries; the strong (positive) correlation between growth rates and rates of poverty reduction, and the importance of inequality to that relationship. In Section 4, in a more speculative mode, we turn to the likely economic determinants of poverty and inequality changes. Section 5 offers some conclusions, and points to some promising research themes within this general topic.

1. Poverty and inequality around the world: a bird's eye view

There has been a remarkable expansion in the availability of household surveys in developing countries over the last 25 years. These surveys, which are typically designed and fielded by national statistical agencies, have the measurement of living standards in the population as one of their key objectives. Although clearly there are measurement errors in such data, it is also widely accepted that these data represent the best available source of information on the distribution of living standards for any country where they have been conducted.

Our poverty and inequality measures are constructed for the distributions of household income or consumption per capita, as captured by these surveys. This choice of indicator prompts three caveats. First, by focusing on income or consumption, we end up effectively taking a one-dimensional approach to measuring welfare. It would clearly be desirable to include other important dimensions of welfare not already included in consumption or income (at least directly), such as health status, cognitive functioning, civil and personal freedoms and environmental quality.[3] Even short of a fully multidimensional approach to welfare, it might well

[3] The Human Development Index (HDI) is a well-known example of how one can construct an aggregate index that combines income and certain "non-income" dimensions of welfare. The HDI does not directly reflect inequality within countries and also imposes some questionable aggregation conditions (including trade offs); for further discussion see Ravallion (1997). Grimm et al. (2006) provide an ambitious attempt to differentiate the HDI by income groups.

be desirable to include in the aggregate indicator of well-being some measure of the value of access to public and publicly provided goods (such as education and health services, personal security, and access to local infrastructure). But extending welfare measurement in either of these two directions in a manner that allows international comparisons is impossible on the basis of the information available to date. As in most of the preceding chapters in this Handbook, we restrict our attention to the narrow realm of people's ability to consume private goods, as measured by their income or consumption expenditures.

Second, income is not the same thing as consumption. Although over the long-run consumption should come quite close to permanent income (except for the limited number of lineages where bequests are important), there can be considerable deviations in the short run, as households either save or dissave. Consumption is thus generally considered a better measure of current welfare than income.[4] In addition, and perhaps of greater practical importance, the questionnaires for income and consumption are perforce quite different, and yield different types of measurement error; see Deaton (1997). As a result of both higher measurement error and of the variance of the transitory component,[5] income inequality tends to be higher than inequality in consumption expenditures in a given distribution. In the description that follows, we use consumption distributions to construct our poverty and inequality measures wherever possible. Only when consumption data are unavailable in the survey do we report income-based indicators. The type of indicator is noted for each country in Table 1.

Third, by looking at the distribution of income or consumption per capita, we are effectively making two strong assumptions, neither of which is likely to hold perfectly. First, we ignore intra-household inequality. Following common practice, such inequality is simply assumed away from our computations. Secondly, even if one is forced to use a single indicator for each household, it is not clear that the per capita definition is the most appropriate. There are differences in needs across age groups (and possibly genders), and there may well be certain fixed costs or "household public goods" that generate economies of scale in consumption at the household level.[6] Both of these considerations have led many analysts to use some measure of "equivalent income" as their welfare indicator for each household. However, these variables turn

[4] It is sometimes claimed that this argument carries less weight in developed countries, but for a counter argument see Slesnick (1998).
[5] There tend to be more people dissaving than saving at the bottom of the distribution, and more people saving than dissaving at the top.
[6] See Lanjouw and Ravallion (1995).

out to be quite sensitive to the different assumptions made in identifying specific equivalence scales from observed demand behavior, and there is no agreement on which particular scale should be used.[7] There is likely to be more agreement, in fact, with the statement that different scales may be appropriate for different settings (such as, say, South Korea and Togo). All this implies that seeking to introduce sensitivity to household size and composition in the context of international comparisons is, given the present state of knowledge, likely to contribute to less, not more, clarity.

Having agreed on the choice of welfare indicator, the next challenge is the aggregation of the national distributions into scalar poverty or inequality indices. This is a much easier problem in the case of relative inequality measures that are, by construction, scale-invariant.[8] Since these measures do not depend on mean incomes or on the currency in which income is expressed, a number of vexing issues to do with Purchasing Power Parity (PPP) exchange rates and with the relevance of national account means to welfare measurement (to which we return below when discussing poverty measures) can be safely ignored. The inequality indices reported in Table 1 are therefore simple Gini indices and mean log deviations (MLD), computed over the original distribution of household consumption (or income) per person in each country's nominal currency, in each year. Unlike the Gini index, MLD is additively decomposable into between-group and within-group inequality components (Bourguignon, 1979).

Absolute poverty measures, on the other hand, summarize the extent of deprivation in a distribution with respect to a specific welfare threshold, given by the poverty line. This implies that scale matters, and so does the choice of mean (e.g. mean income from a household survey, or GDP per capita) and exchange rate when making inter-country comparisons or aggregations. It has been argued that misreporting of incomes in household surveys would justify scaling up the income distribution so that its mean equaled per capita consumption in the Private Consumption account in the National Accounts System (NAS).[9] But such an approach ignores the fact that the Private Consumption account includes components of institutional consumption as well as personal consumption, which could introduce a systematic overstatement of household

[7] See Coulter, Cowell and Jenkins (1992) and Chapter 3 of this *Handbook*.
[8] Absolute inequality measures, which may well be relevant for the discussion of global trends, are scale-sensitive. We return to absolute measures of inequality in Section 2 below.
[9] See, for instance, Sala-i-Martin (2006).

welfare levels. Things are even worse if the scaling up is to GDP per capita itself, rather than only to per capita consumption from the NAS.

In addition, in economies with substantial subsistence agriculture and other forms of production for own consumption, it is not clear that the national accounts system provides a more accurate portrayal of real consumption than the surveys, which typically include information on consumption from own production at the household level. Finally, it is unlikely that income under-reporting or selective compliance in surveys is distribution-neutral.[10] If richer households under-report more than middle-income or poorer households, then the uniform re-scaling that is proposed would result in an unwarranted under-estimation of poverty. It appears likely that richer households are also less likely to participate in surveys. This has theoretically ambiguous implications for inequality, although there is evidence (for the US) that it entails a non-negligible underestimation of overall inequality (Korinek et al., 2006). In what follows we do not use National Accounts information to re-scale mean incomes or consumption from the surveys (although NAS data are used in the interpolation method of Chen and Ravallion, 2004, which is used for "lining up" household surveys with the reference years used in Tables 2 and 3).

In this chapter, we report poverty measures with respect to the World Bank's "standard" international poverty line of about $1 a day (or, more precisely, $32.74 per month, at 1993 international PPP exchange rates).[11] This is a deliberately conservative definition of "poverty," being anchored to the poverty lines typical of low-income countries. It is also one that has acquired considerable currency in international policy discussions: The first Millennium Development Goal (MDG1), for example, is to halve the 1990s "$1 a day" poverty rate by 2015. To gauge sensitivity, we also use a line set at twice this value, $65.48 per person per month. Following common practice we refer to these as the "$1 a day" and "$2 a day" lines ($1.08 and $2.15 would be more precise). The higher line is more representative of what "poverty" means in middle-income developing countries.

These international lines are converted to local currencies using the Bank's 1993 PPP exchange rates for consumption, and each country's consumer price index (CPI). PPP exchange rates adjust for the fact that non-traded goods tend to be cheaper in poorer countries. There is more than one way to calculate PPP exchange rates. The Geary-Khamis (GK) method used by

[10] See, for example, Banerjee and Piketty (2005) and Korinek et al. (2006).
[11] See Chen and Ravallion (2001) for a detailed description of how this line was constructed.

the Penn World Tables (PWT) uses quantity weights to compute the international price indices. For our purposes, this method gives too high a weight to consumption patterns in richer countries when measuring poverty globally. The Elteto-Kones-Sculc (EKS) method — a multilateral extension of the usual bilateral Fisher index — attempts to correct for this bias. Since 2000, the World Bank's global poverty and inequality measures have been based on the Bank's PPP rates, which use the EKS method.[12] At the time of writing, new PPP rates, based on 2005 prices, are about to become available. While existing poverty and inequality measures have not yet been revised accordingly, we comment later on some of the likely implications.

Once the international poverty lines have been appropriately converted into local currency, and local CPI has been used to inflate the line to the nominal currency of the survey year, poverty measures are calculated for each survey year. Naturally, different countries do not all field their household surveys (which are rarely annual) in the same year. In Table 1, we report the year(s) in which the latest surveys available to us were conducted in each country, and report poverty measures for those years. In Tables 2 and 3, where we seek to describe regional and global poverty aggregates, the poverty measures are lined up in time for each of a set of "reference years" using the interpolation method described in Chen and Ravallion (2004).

We will focus on the most common poverty measure, namely the headcount index (*H*), which gives the proportion of the country's population that live in households with per capita incomes below the poverty line. Other measures are the poverty gap index (*PG*), which gives the average shortfall of income from that line, where the average is taken over the entire population (with the gap set to zero for incomes higher than the poverty line); the squared poverty gap index (Foster et al., 1984); and the Watts (1968) index. The latter two measures penalize inequality amongst the poor, and so are better at picking up differences in the severity of poverty. *PovcalNet* provides all these measures. In some of the discussion, we also multiply *H* by the country's population, to yield the absolute number of poor people.

Table 1 presents the two inequality measures (Gini and MLD) and *H* for the two poverty lines for every country for which we have household-survey data.[13] Wherever possible, we present results for two periods: (i) the 1990s (centered on 1994), and (ii) the 2000s (centered on 2004). Since most surveys have less-than-annual frequency and since countries field their

[12] For further discussion of the difference between these two methods and the bearing on poverty measurement see Ackland et al. (2006).
[13] An extended version of Table 1 is available from the authors giving *PG* for both poverty lines.

surveys on different schedules, for each country we use the survey nearest to the two period centers, and indicate the year in the table.

The range of inequality measures across the 130 countries in Table 1 is very large indeed. The Gini index ranges from 0.20 in the Slovak Republic, to 0.74 in Namibia. The MLD ranges from 0.12 in Hungary to 0.71 in Bolivia using data for the 2000s; using data for the nineties, the range is from 0.07 in Slovak Republic to 1.13 in Namibia. In terms of country groupings, the high-income economies (including the OECD) and Eastern Europe and Central Asia (ECA) record the lowest inequality measures, and Sub-Saharan Africa (SSA) and Latin America and the Caribbean (LAC) have the highest. The predominance of measures using income, rather than consumption, in LAC is a contributing factor to the high inequality measures for that region. The high-level of inequality in SSA thus deserves special mention, as many of the indices refer to distributions of consumption expenditures. The commonly-held view that LAC is unambiguously the most unequal region in the world needs to be qualified accordingly.

Figure 1 plots inequality (measured by the latest available Gini coefficient) against GDP per capita for each country listed in Table 1. The figure reveals a negative correlation between inequality and mean incomes (measured by GDP per capita). The correlation coefficient is –0.44 (statistically significant at the 1% level). In addition, the variance of inequality is higher among poorer countries, but much smaller among richer ones. Above $20,000 per capita per annum, all Gini indices lie in the relatively narrow interval of (0.25, 0.45). The implication is that no country has successfully developed beyond middle-income status while retaining a very high level of inequality in income or consumption. High inequality (a Gini above 0.5, say) is a feature of underdevelopment. We do not explore the difficult issue of causality here: is it that high inequality prevents growth, or is it that growth tends to reduce inequality? These issues are the subject of large literature, which is summarized in Chapter 22. We simply note the significant negative correlation in levels, and that very high levels of inequality are not observed among rich countries in the present-day cross-section.

In terms of changes over time, there is no universal or common trend in inequality between the 1990s and 2000s. Out of the 49 countries in Table 1 that have inequality measures for both periods, 30 (29) record an increase in the Gini (MLD[14]) index, 13 (16) record declines, and in 6 (3) countries there has been little or no change, which we (somewhat arbitrarily) define

[14] Forty-nice countries report Gini coefficients in both periods. Forty-eight report MLDs in both periods.

as being in the range (-2.5%, 2.5%). These numbers are consistent with the evidence of rising within-country inequality discussed in Chapter 23, but we caution against over-interpreting results in a selected sample of some 50 countries for which data was available on both periods.

The situation is somewhat different with regard to poverty: there is even greater variation in levels, the correlation with mean incomes is more pronounced, and there is a clearer pattern in the recent changes. Two important facts can be gleaned from Figure 2, which plots *H* (for the $1-a-day threshold) against GDP per capita. The first is that absolute poverty incidence decreases markedly with mean income, as one would expect. The simple correlation coefficient is -0.57 and statistically significant at the 1% level. Above a GNP per capita of approximately $15,000 p.a., this extreme kind of absolute poverty essentially vanishes.[15] In fact, dollar-a-day poverty is not even estimated for the high-income countries listed in Table 1, and they are not included in Figure 2. The second fact is that this relationship between mean income and poverty is not statistically "tight". The points in Figure 2 do not lie neatly along a specific curve or line. Below a per capita GDP of around $12,000, there is considerable variation in the incidence of extreme poverty for each level of mean income. In fact, at around $2,000, one can find countries with the same per capita income levels reporting poverty rates in a range from zero to 65%. Latent country-level heterogeneity may well be confounding the ability to detect the true relationship; we will return to this point. However, as we will see in the next section, this heterogeneity in poverty levels conditional on mean incomes has a lot to do with between-country differences in the level of inequality.

To look at poverty trends over time, we resort to a longer time series than the one presented in Table 1. Chen and Ravallion (2007) compile poverty indicators for 560 surveys from 100 countries (essentially the same sample of countries used by *PovcalNet*). Since poverty incidence at the $1-a-day threshold is effectively zero in high-income economies (which account for the main differences between the *PovcalNet* dataset and that presented in Table 1) we restrict our attention to the Chen-Ravallion sample of countries.

Tables 2 and 3 present the world and regional average poverty levels, both as incidence (*H*) and in absolute numbers of the poor for selected reference years spanning 1981-2004. Table 2 uses the $1-a-day poverty line, while Table 3 uses the $2-a-day line. There is clear evidence of

[15] Which may explain why researchers looking at developed countries tend to be more concerned with inequality than with poverty and, even when addressing the latter, usually rely on alternative concepts of poverty, such as relative poverty, social exclusion (see Chapter 15) or "low pay" (see Chapter 11).

a decline in absolute poverty in the developing world over the last quarter century. The incidence of $1-a-day poverty, as a proportion of the developing world's population, fell from 40% in 1981 to 18% in 2004. By 2004, the developing world as a whole was only four percentage points short of attaining MDG1 (a poverty rate of 14.3% by 2015). The corresponding proportions for the total population of the world are 34% and 15%, assuming that nobody lives below $1 a day in the high-income countries. Although the rapid reduction of poverty in China (from 63% to 10%) accounts for much of this global decline, there has clearly been progress elsewhere too: global poverty incidence excluding China falls from 31% to 21% over 1981-2004.

The rates of poverty reduction have been quite disparate in different countries. If one partitions the country sample into the broad regions defined by the World Bank, we see clear heterogeneity in poverty reduction across regions (Table 2). The most pronounced decline was registered in East Asia (from 58% to 9%). South Asia came second, with a fall from 50% to 31%. At the other end of the spectrum, poverty incidence actually rose in ECA during the period of transition from socialism to market economies, though showing encouraging signs of progress since the late 1990s. In Sub-Saharan Africa, poverty was essentially the same in 2004 and 1981, having first grown during the 1980s, and then declined slowly since the late 1990s. Such a small decline in poverty rates, combined with a growing population, translates into a rise in the absolute number of people living in households below the $1-a-day poverty line, as can be seen from panel (b) in Table 2. In fact, the number of poor people rose not only in Africa and Eastern Europe and Central Asia, but also in Latin America, where economic stagnation and persistent inequality in the last decades prevented substantial progress against poverty. These regional trends in poverty reduction are summarized in Figure 3 below, which is also taken from Chen and Ravallion (2007). The dominant role of poverty reduction in East Asia is immediately apparent.

Trends are somewhat more muted for the $2-a-day poverty line. Global incidence in the developing world fell from 67% to 48% (59% to 52% if China is excluded). Poverty also fell markedly in the Middle-East and North Africa (MENA), and South Asia, but doubled in ECA. Because of population growth, the absolute number of poor people (under $2-a-day) rose in every region other than East Asia. Given a very substantial decline in East Asia, the world total grew only slightly, from 2.45 billion to 2.55 billion. This is in contrast to a decline in the

absolute number of poor (under $1-a-day), from 1.47 billion to 0.97 billion in the same period. See tables 2 and 3.[16]

The 1993 PPP exchange rates on which these calculations were based are known to have a number of problems. In particular, the two most populous countries, China and India, did not participate in the 1993 price surveys, so their PPPs are subject to larger margins of error. This will be corrected in the 2005 PPPs, in which both countries participated. The preliminary release of the new estimates at the time of writing indicate higher price levels in both China and India than implied by the 1993 PPPs, so the poverty rates in these two countries will rise relative to the rest of the developing world. Aggregate poverty counts will then rise, although the rates of aggregate progress over time will actually be higher than implied by Tables 2 and 3, given that India and (especially) China had high rates of poverty reduction over time. (Note that, while the new PPPs change the level comparisons, the real growth rates in a given country are unaffected.)

2. Global inequality

If *constructing* internationally comparable poverty measures is harder than computing comparable inequality measures (because the latter are scale-, and thus exchange-rate-invariant), *aggregation* into a single global measure is more difficult for inequality than for poverty. Standard poverty measures are immediately decomposable by population subgroups and, therefore, easy to aggregate up from sub-groups. The numbers of poor can simply be added across countries, while poverty incidences and poverty gaps are first weighted by the country's population share and then summed. This simple procedure underlies the global poverty incidence and the global absolute numbers of the poor that are reported in the previous section.

The analogous procedure for inequality indices is more involved for two reasons. First, it has to contend with the fact that global inequality is not merely an aggregation of within-country inequalities. It also contains a component that corresponds to inequality *between* countries. Second, once the world is treated as a single entity, with a well-defined distribution of living standards, then the scale in which each individual national distribution is expressed matters again. While PPP exchange rate calculations are not needed if one simply wants to compare national levels of inequality, they are crucial for the construction of a global inequality index.

[16] For a more detailed discussion, including their recent estimates when accounting for cost-of-living differences between rural and urban areas, see Chen and Ravallion (2007).

By "global inequality" we shall mean inequality amongst all people of the world, ignoring where they live. This is calculated by combining the surveys from all the different countries (at the appropriate PPP exchange rates) into a single world distribution of income, and then computing inequality indices for this distribution. As long as the inequality index is additively decomposable (such as MLD), it will be possible to separate this overall measure into a component corresponding to inequality between countries, and one that aggregates the inequality within all the different countries. Only recently have household surveys been available for a sufficient number of countries for this approach to be feasible. Since then, this approach has become dominant among researchers interested in global interpersonal inequality—for the simple reason that it does not ignore inequality within countries.

The earlier literature contains two (simpler) approaches to measuring overall inequality in the world. The first takes each country as the relevant unit of observation, and computes inequality between these "country means". This is what Milanovic (2005) calls Concept 1 inequality, and what World Bank (2005) calls inter-country inequality. Second, it is possible to take account of different population sizes by weighting each country mean by its share of world population—giving Milanovic's Concept 2 inequality, or what World Bank (2005) calls international inequality. Both of these approaches are unsatisfactory since they ignore inequality within countries, and capture only the between-country differences.

In the last few years, a number of studies have sought to quantify global inequality, and to investigate its dynamics. One of the most ambitious was a paper by Bourguignon and Morrisson (2002), who constructed a time-series of world inequality estimates for the period from 1820 to 1992. For all but the last ten to twenty years of that series, disaggregated household survey data are not available for many countries. The authors thus grouped countries into 33 'blocks', the composition of which changed over time, depending on data availability (see Bourguignon and Morrisson, 2002, for details). The distributions are constructed in such a manner that all the members of a 'bloc' are assumed to have the same distribution as a country for which data are actually available in the relevant time-period. The authors construct a distribution based on decile (and some ventile) shares, and on GDP per capita figures. Individuals are assumed to have the same incomes within tenths (or twentieths) of the distribution, where that income corresponds to the group's share of GDP per capita. This set of

strong assumptions allowed the authors to construct a long time series covering most of the 19th and 20th centuries.[17]

The main finding of the study is that world inequality rose almost continuously from the onset of the industrial revolution until the First World War. During that period, the world's Gini index rose from 0.50 to 0.61. Although inequality was also rising within most countries for which data were available, the real driving force for this increase in global disparity was inequality *between* countries, i.e., international inequality (see Figure 4).

Between the two World Wars, and until around 1950, a decline in within-country inequality was observed, but the rise in inequality across countries continued apace and proved to be the dominant force.[18] The world Gini index rose further to 0.64. From the middle of the Twentieth Century onwards, the rise of global inequality slowed, as Japan and parts of East Asia started growing faster than Europe and North America. This process became particularly pronounced after the take-off of China in the 1980s. Broadly speaking, global inequality changes in the second half of the last century are much less significant than in the 130 years that preceded it: there was certainly a reduction in the rate of growth of inequality and, towards the end of the period, it actually started to decline.

When considering the last decades of the Twentieth Century, however, better and more comprehensive data are available, enabling researchers to work with approximations to the world income distribution based on (and only on) fully disaggregated household surveys. Looking at the second half of the century with these new data, three interesting regularities emerge. First, even as (unweighted) intercountry inequality continued to grow between 1950 and 2000, international inequality (when population weighted) began to fall. The disparate behavior in these two inequality concepts has been one of the reasons behind the discordant discourse on globalization and inequality. The continuing rise in intercountry inequality (to which Pritchett, 1997, refers as "divergence, big time") was due largely to slow growth in most poor (and small) countries, relative to some middle-income and richer countries. The decline in international inequality, which refers to a population-weighted distribution, was due fundamentally to rapid

[17] Given the long-run perspective of this exercise, however, it is likely that some of the problems associated with using means from the National Accounts had only limited importance. In particular, the estimated evolution of GDP per capita over such a long period is likely to be very strongly correlated with any measure of household welfare.

[18] The increase in inter-country inequality between 1914 and 1950 took place *during* each of the two World Wars, and most markedly during the Second World War. The inter-war period properly defined (1919-1939) actually saw a reduction in inter-country inequality. On the association between wars and rising international inequality, and between crises and its decline, both during this period and in 1890-1895, see Milanovic (2006).

growth in two large nations that started out very poor: China and, to a lesser extent, India. As Figure 5 suggests, once China and India are excluded from the international distribution, the post-1980 trend in that inequality concept changes dramatically, and becomes much closer to the rising trend in intercountry inequality.

The second regularity is that the last two decades in the Twentieth Century saw resumption in the upward trajectory of aggregate within-country inequality, defined as the contribution of within-country inequality to total inequality. The rise in within-country inequality prevented the decline in international inequality (which began, slowly, around the 1960s) from translating immediately into a decline in global inequality. Recall that global inequality is the sum of (appropriately aggregated) within-country inequality and international inequality. Indeed, Milanovic (2002, 2005) finds that global income inequality between people was still rising between 1988 and 1993, but appears to have fallen between 1993 and 1998. This is confirmed by World Bank (2005), which extends Milanovic's data set by a couple of years, and is consistent with the findings reported in Chapter 23.

The third regularity is that there are signs of *inequality convergence* over time, whereby inequality has a tendency to rise in low inequality countries, and fall in high inequality ones. This was first noticed by Bénabou (1996), although his tests did not deal with the concern that the signs of convergence may stem solely from measurement error. Subsequent tests by Ravallion (2003) indicate that convergence is still evident when one uses better data and an econometric method that allows for classical measurement errors in the inequality data.

Bénabou interprets inequality convergence as an implication of a neoclassical growth model. Ravallion points instead to an explanation in terms of the policy and institutional convergence that has occurred in the world since about 1990. Low-inequality socialist economies have become more market-oriented, which has increased inequality. On the other hand, non-socialist economies have adopted market-friendly reforms. In some of these economies pre-reform controls benefited the rich, keeping inequality high (Brazil is an example), while on others the controls had the opposite effect, keeping inequality low (India is an example). Thus liberalizing economic policy reforms can entail sizable redistribution between the poor and the rich, but in opposite directions in the two groups of countries. However, as Ravallion also notes, the process of convergence toward medium inequality implied by his

finding is not particularly rapid, and it should not be forgotten that there are deviations from these trends, both over time and across countries.

The foregoing discussion has been about relative inequality. What about the competing concept of absolute inequality, which depends on the absolute gaps in levels of living between the "rich" and the "poor."?[19] As Figure 6 shows, the two concepts give rise to completely different trends for international inequality: whereas relative inequality measures (such as the Gini and the MLD) fall from around 1980 onwards, absolute measures record substantial increases.[20] This figure is drawn for (population-weighted) international inequality, but the difference is as important when considering global inequality.

Although this chapter (and the broader debate) has focused on income inequality and poverty trends, there should be no presumption that it is the only inequality that matters. Indeed, from some perspectives, international disparities in health status and educational achievement may matter inherently just as much (in addition to being instrumentally important to shaping income inequality and poverty). Since around 1930 there has been convergence in the intercountry and international distributions of life expectancy at birth (LEB). As (weighted) mean world LEB rose from 53.4 years in 1960 to 64.8 years in 2000, its distribution moved from bimodality to unimodality and the coefficient of variation fell from 0.233 to 0.194 (World Bank, 2005). This heartening trend was partly reversed, however, during the 1990s, when LEB fell precipitously in some of the world's poorest countries, due largely to the spread of HIV/AIDS.[21]

Educational inequality, measured for the distribution of years of schooling, has also fallen substantially over the last four decades or so. As mean years of schooling in the world rose from 3.4 in 1960 to 6.3 in 2000, the coefficient of variation fell from 0.739 to 0.461. (Note that inequality measures for variables like life expectancy or years of education have to be interpreted with care, as both variables are effectively bounded from above.) This pattern of rising means and falling inequality in attainment was common to all regions of the world and, in addition, all regions also saw a reduction in gender disparities, as measured by the male to female schooling ratio (World Bank, 2005).[22]

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[19] For further discussion of the role played by the concept of absolute inequality in debates about the distributional impacts of economic growth and trade openness see Ravallion (2004).
[20] Although we include only two relative and one absolute measure, the opposing trends between relative and absolute measures over this period are robust to the choice of index. See Atkinson and Brandolini (2004)
[21] See Deaton (2003) on the relationship between health outcomes and inequality more broadly.
[22] See also Castello and Domenech (2002) on international inequality in education.

Unfortunately, this reduction in *attainment* inequality has not always meant a reduction in the disparities in true educational *achievement*. Indeed, internationally comparable test score data suggests that these disparities remain strikingly large with, for example, the reading competence of the average Indonesian student in 2001 being equivalent to that of a student in the 7th percentile of the French distribution.

These changes in the distribution of health and education should be taken into account when assessing global inequality in a broad sense. While this chapter provides only a very brief summary of the existing evidence along each dimension, a number of scholars have attempted to explore the correlations among the different dimensions. Because increases in longevity have been greater in poorer countries, for instance, Becker, Philipson and Soares (2005) argue that inequality in measures of wellbeing that account for the quantity, as well as quality, of life have been declining throughout the post-war period.

3. The growth-poverty-inequality triangle

Given the negative correlation between mean incomes and inequality levels across countries that is illustrated in Figure 1, it is not surprising that there is an even stronger correlation between mean incomes and poverty rates. Given the mathematical relationship that must always hold between mean income, poverty and inequality, the first correlation more or less automatically implies the second. To see why, we can assume (without loss of generality) that the shape of the Lorenz curve can be fully captured by a vector of (functional form) parameters π, such that $L(p,\pi)$ is the share of consumption (or income) held by the poorest p proportion of the population, ranked by household consumption per person. It is well known that the slope of the Lorenz curve $L(p,\pi)$ with respect to p (denoted $L_p(p,\pi)$) is simply the ratio of the quantile function ($y(p)$) to the mean μ.[23] By evaluating that derivative at $p=H$, we can write the following equation for the headcount index of poverty, given a poverty line z:

$$H = L_p^{-1}(z/\mu,\pi) \qquad (1)$$

(Where $L_p[L_p^{-1}(.),\pi] = z/\mu$.)

[23] The quantile function is the inverse of the cumulative distribution function, $p=F(y)$.

Equation (1) is an identity that relates the incidence of poverty at any given (real) poverty line to two aspects of the distribution: the mean μ and inequality or, more precisely, the Lorenz curve. From (1) it can be seen that the partial derivative of poverty with respect to the mean (holding the Lorenz curve parameters fixed) is always negative so that, if the poverty line is fixed and inequality is constant, poverty must fall as the mean rises.[24] In the scatter-plot of Figure 2, the poverty line is the same across all countries. If Lorenz curves did not differ systematically with GDP per capita, poverty should be lower as GDP rises:. This association is only strengthened by the negative correlation between GDP and inequality levels in the cross section: higher income levels are associated with lower poverty both because of the direct effect of a higher mean at a given Lorenz curve, and because there exists an inverse empirical relationship between income levels and inequality.[25]

But the cross-country correlation between mean incomes and inequality need not be informative of the growth process of a particular country, since there may well be country-specific idiosyncrasies that cloud temporal patterns in the cross-section. So, what happens to inequality as a particular country grows over time? The first careful attempt to answer that question, by Simon Kuznets (1955), has become so influential that it still guides a great deal of thinking on the topic. Building on the Lewis (1954) model of development as a transfer of resources from a low-productivity, low-inequality sector (say, traditional agriculture) to a higher-productivity, higher inequality sector (say, manufacturing or modern commercial agriculture), Kuznets hypothesized that inequality would rise during an initial phase of the process (as labor begins to move across sectors), and then eventually decline (as most workers are already in the modern sector, and the intersectoral gap loses significance). Kuznets found empirical support for this inverted-U inequality trajectory in the data he had available at the time, for the US, England and Germany. Some cross-sectional studies have found evidence consistent with an inverted-U relationship between inequality and mean income, and there is a hint of this relationship in Figure 1.[26]

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[24] This is a general result because the Lorenz curve is always (by construction) an increasing and convex function of the percentiles of the income distribution.

[25] It is interesting to note that the negative correlation between GDP and inequality levels is much weaker if the sample is restricted to developing countries only.

[26] Following the most common specification in the literature on testing the Kuznets Hypothesis, we regressed the Gini index on a quadratic function of log GDP per capita using the data in Figure 1. The coefficient on log GDP was positive and that on its squared value was negative, and both coefficients were significant at the 1% level. The turning point was within the range of the data.

As data on changes in inequality over time have accumulated for many more countries, however, it has become apparent that the inverted-U relationship hypothesized by Kuznets does not hold in general. It does not hold systematically for individual countries for which there are long time-series of inequality measures. Bruno et al. (1998) compiled time series data on inequality measures amongst growing developing countries and found almost no cases that conformed to the prediction of the Kuznets Hypothesis. And its "dynamic version", which postulates a relationship between rates of GDP growth and changes in inequality, does not seem to hold on average either. Using all countries in the *PovcalNet* data set for which there are more than one survey, Ravallion (2007) plots proportional changes in the income Gini against proportional changes in mean income for 290 observations, representing 80 countries. (This can be thought of as a re-estimation of the relationship in Figure 1 in which we restrict the sample to developing countries and allow for the existence of country-level fixed effects, potentially correlated with mean income.) A small negative correlation (r=-0.15) is found in the data, which is insignificant at the 10% level. Among growing economies, inequality tends to rise as often as it falls.[27] Thus we have:

> *Stylized Fact 1: Economic growth tends to be distribution-neutral on average in developing countries, in that inequality increases about as often as it decreases in growing economies.*

It is not then surprising that there is a strong correlation between growth rates and changes in absolute poverty. This is evident in Figure 7, which plots the proportionate changes in the poverty rate (using the $1 a day line) against the growth rates in the survey mean; the correlation coefficient is -0.44 and the regression coefficient is -1.76 with a White standard error of 0.24; n=290 after trimming likely outliers due to measurement error. Thus we have:[28]

> *Stylized Fact 2: Measures of absolute poverty tends to fall with economic growth in developing countries.*

In discussing Figure 2 we had noted that, although there is a clear negative correlation between GDP per capita and poverty levels, there is also considerable heterogeneity around the average relationship. Figure 7 shows that a similar relationship holds after we take proportional

[27] Among economies experiencing contractions during the spells used by Ravallion (2007), inequality increases are somewhat more frequent than inequality reductions.

[28] This second stylized fact was noted by Ravallion (1995), Ravallion and Chen (1997), Fields (2001), Dollar and Kraay (2002) amongst others.

differences: growth in GDP is strongly associated with poverty reduction, but there is considerable variation in the size of the effect. An illustration is provided by Ravallion (2001), who estimated a regression coefficient on a scatter-plot very much like that in Figure 7. The 95% confidence interval on that coefficient implies that a 2% rate of growth in mean income (which is about the average rate for developing countries in the 1980s and 90s) will bring anything from a 1% to a 7% annual decline in poverty incidence.

Why are there such large differences across countries (and time-periods) in the impact of growth on poverty? Given equation (1), it is unsurprising that the answer has to do with inequality. Interestingly, though, it has to do both with the initial level of inequality (i.e. how unequal a country is before a given growth spell) and with changes in that level (i.e. on the "incidence" of economic growth). Taking the differential of (1) will yields two terms,[29] one of which accounts for the impact of changes in the mean (i.e. growth) holding the initial distribution constant while the other captures the change in the distribution (i.e. the Lorenz curve), holding the mean constant:

$$\frac{dH}{H} = -\frac{L_{pp}^{-1}z}{L_p^{-1}\mu}.\frac{d\mu}{\mu} + \frac{L_{p\pi}^{-1}}{L_p^{-1}}d\pi \qquad (2)$$

The first term is the growth component of poverty reduction, while the second term is the distributional component (the weighted sum of all changes in the distributional parameters).[30] Given the convexity of the Lorenz curve, equation (2) shows that the partial growth elasticity of poverty reduction ($\frac{\partial H}{H}\frac{\mu}{\partial \mu}$) is always negative. This result conforms to intuition: holding the poverty line and the Lorenz curve constant, poverty must fall when the mean rises. But the sign of the second term is ambiguous, since it depends on the marginal change in the Lorenz curve—in other words, it depends on the incidence of economic growth: on how the new income from growth is distributed.

The two ways in which inequality affects the impact of growth on poverty can be seen clearly in (2). First, initial inequality reduces the growth component of poverty reduction (in absolute value), because L_p^{-1} tends to be higher in more unequal distributions. This stands to

[29] This is true if we hold the poverty line constant in real terms. If that is allowed to change over time (giving a relative poverty measure), there will be a third term for the change in the poverty line.
[30] For further discussion of this decomposition see Datt and Ravallion (1992) and Kakwani (1993).

reason: the growth component captures how a given amount of growth would affect poverty if there was no change in the Lorenz curve. In other words: how it would affect poverty if the gains from growth were distributed proportionately to existing household incomes. Clearly, the more unequal the original distribution, the smaller the share of the growth accruing to the poor, and the lower the poverty reduction arising from that given growth; this was first demonstrated empirically by Ravallion (1997).[31]

Figure 8, which is also taken from Ravallion (2007), plots the total growth elasticity of poverty reduction against initial inequality, for a sample of countries during 1981-2005, when poverty is defined by the $1-a-day line.[32] It can be seen that the average empirical (total) elasticity is higher (in absolute values) the lower the initial inequality. The correlation coefficient of 0.26 is statistically significant at the 1% level. Whereas the elasticity averaged -4 for countries with Gini indices in the mid 20s, it was very close to zero for countries with a Gini index of about 0.60. To illustrate the important role played by initial inequality, Ravallion (2007) uses a parsimonious parametric model, based on essentially the same data, to simulate the rate of poverty reduction with a 2% rate of growth and a headcount index of 40%. In a low-inequality country—a Gini index of 0.30 (say)—the headcount index will be halved in 11 years. In a high-inequality country—a Gini index of 0.60 (say)—it will take about 35 years to halve the initial poverty rate.[33]

A second mechanism though which inequality affects the impact of growth on poverty is through changes in inequality during the growth process. If the aggregate changes in the Lorenz curve in the second term of the RHS of (2) are poverty increasing then the effect of growth on poverty will be less than the partial effect, holding distribution constant. Figure 8 also suggests that changes in initial inequality have considerable empirical importance, since this (and measurement error) accounts for the spread around the regression line.

We can summarize these observations as:

[31] For an up-date see Ravallion (2007).
[32] Period elasticities are smoothed by taking the simple average over two contiguous spells, and fifteen extreme elasticities (lower than -20 or above +20) are excluded.
[33] The opposite also holds: high inequality protects the poor from the adverse impact of aggregate economic contraction. For example, high inequality districts of Indonesia experienced less dramatic rates of increase in poverty during the 1998 financial crisis than did low inequality districts (Ravallion and Lokshin, 2007).

Stylized Fact 3: The higher the initial level of inequality in a country or the greater the increase in inequality during the growth spell, the higher the rate of growth that is needed to achieve any given (proportionate) rate of poverty reduction.

We can thus sum up the analysis of the empirical inter-relationships between growth, poverty and inequality as follows. Despite some evidence that this might be changing in the 1990s, the balance of the evidence for the last quarter century suggests that there is no systematic empirical relationship between economic growth rates and changes in inequality (Stylized Fact 1). Given the relationship that must hold between poverty, inequality and mean income in levels, Stylized Fact 1 implies that there must be a negative correlation between changes in poverty incidence and economic growth. This is indeed the case empirically: growth *is* good for the poor (Stylized Fact 2). But the relationship between mean income and poverty is mediated by the Lorenz curve, so that the power of growth to reduce poverty depends on inequality. In fact, that power tends to decline both with the initial level of inequality, and with increases in inequality during the growth process (Stylized Fact 3).

4. Exploring the economics behind these stylized facts

How can we go beyond the mathematical relationship between mean income, poverty and inequality to gain a deeper understanding the economic forces behind changes in inequality and poverty, and their relationship with aggregate growth? In this section, we review some of the insights from three branches of the literature that has tried to explore these determinants.

The first branch seeks to exploit spatial variation in the geographic and sectoral patterns of growth and in initial demographic and distributional conditions within countries to shed light on what makes growth more or less "pro-poor," i.e. to examine its incidence within a country. Datt and Ravallion (1998) and Ravallion and Datt (2002) for India, Ravallion and Chen (2006) and Montalvo and Ravallion (2008) for China, Ravallion and Lokshin (2007) for Indonesia and Ferreira, Leite and Ravallion (2007) for Brazil all follow this approach. In essence, these studies compute a panel of poverty rates across states (or provinces) and over time, and regress the changes against sector-specific rates of growth in each spatial unit. Control variables typically include differences in initial conditions across state, including pre-sample differences in land or income inequality, literacy, and the like. There may also be time-varying state-level controls, such as changes in various types of public spending in each state.

These studies require relatively long series of repeated cross-section household surveys, and are easiest to conduct in large countries, where spatially disaggregated sub-samples retain statistical representativeness. Looking across the studies carried out so far, a few lessons emerge. First, the sectoral composition of growth does seem to matter for poverty reduction. In all three countries, the growth elasticities of poverty reduction varied substantially and significantly across sectors. But the relative sector ranking varied across countries: agricultural growth was by far the most effective in reducing poverty in China, while growth in the services sector had a higher impact on poverty in Brazil and India. In all three countries, the effect of manufacturing growth on poverty reduction seemed to vary significantly across states, suggesting that diverse geographic, distributional or institutional conditions can affect the growth elasticity of poverty reduction, even within a single country.

It was generally found that less "initial" (i.e. pre-sample) inequality was associated with a greater effectiveness of growth in reducing poverty (as the previous section would suggest). Greater literacy and better initial health conditions (often measured inversely by infant mortality rates) also help make growth more poverty-reducing. In India, about half of the range in long-term rates of poverty reduction across India's states (between the best performer, Kerala, and the worst one, Bihar) can be attributed to the difference in initial literacy rates (Datt and Ravallion, 1998). The elasticity of poverty to *non-farm* economic growth in India was particularly sensitive to differences in human resource development (Ravallion and Datt, 2002). In Brazil, one interesting finding was that a greater level of voice or "empowerment"—proxied by the rate of unionization more than ten years before the sample started—also raised the elasticity of poverty reduction with respect to growth (in manufacturing).

Other policies can also affect the pattern of distributional change (and thus of poverty reduction), even after one controls for differences in the pattern of growth. A repeated finding is that higher rates of inflation result in lower rates of poverty reduction (in Brazil, China and India). The Brazilian case study revealed two important changes in the policy environment which contributed to greater success against poverty: a dramatic reduction in the country's previously massive rate of inflation (in 1994), and a substantial increase in the amount of social security and social assistance payments, accompanied by some improvements in targeting, during the period 1988-2004.

A second branch of literature is even more micro-oriented, and takes the individual household, rather than a state or province, as the unit of observation. This approach is exemplified by the various chapters in Bourguignon et al. (2005) and can be thought of as a set of statistical decompositions of the *growth incidence curve*, as given by $g(p) = d\ln y(p)$ (where it will be recalled that $y(p)$ is the quantile function).[34] $g(p)$ is the income growth rate at percentile p of the distribution (for example, $g(0.5)$ is the growth rate of the median income). In these studies, a small set of models for key economic relationships—such as earnings regressions, participation equations, or education demand functions—is estimated for both the initial and terminal years of the period under study. Then various counterfactual income distributions can be simulated by importing sets of parameters from either date into the corresponding models for the other date. The spirit of the exercise follows that of Oaxaca (1973) and Blinder (1973) and the results, like the original Blinder-Oaxaca decomposition, are best interpreted as a statistical decomposition of changes in the distribution, rather than as measures of causal effects.

Nevertheless, some of the empirical regularities arising from the studies of Latin America and East Asia in Bourguignon et al. (2005) are quite interesting. First, the increase in the returns to schooling that accompanied rapid growth in countries like Taiwan (China) or Indonesia tended to contribute to increases in inequality. This effect was also present in countries that grew less rapidly, like Mexico, and is reminiscent of the so-called "Tinbergen Race" between increases in the demand for schooling (arising from technological progress) and the rising supply of skilled workers (brought about by expansions in the educational system). In most countries in the sample, the demand-side dominated, leading to increased earnings inequality; the only exceptions were Brazil and Colombia.

Greater earnings inequality often led to higher inequality in household incomes, but not always. An interesting example is provided by Taiwan, where a marked increase in labor force

[34] On the properties of the growth incidence curve see Ravallion and Chen (2003). When making distributional comparisons over time, the growth incidence curve can be calculated from any two cross-sectional surveys (which do not need to be panel surveys, given the usual anonymity assumption). Alternatively, one of the two quantile functions can be a counterfactual distribution. It can also be shown that the changes in most commonly used poverty and inequality measures can also be written as functionals of the corresponding growth incidence curve, usually with weights that can be interpreted as the sensitivity of the particular measure to changes in the distribution at each percentile. This is particularly simple for the Watts index of poverty; it can be readily shown that the change in this index is given by the area under the growth incidence curve up to the headcount index of poverty (Ravallion and Chen, 2003).

participation by women led to a divergence between the earnings and income distributions. While the entry of relatively skilled women into the labor force reduced earnings inequality (as they entered roughly in the middle of the distribution), it contributed to an increase in the dispersion of household incomes: most of these new workers were married to skilled men, and lived in households that were already relatively well-off. The importance of changes in labor force participation and occupational structure is not an isolated characteristic of the Taiwanese experience. In Brazil, too, between 1976 and 1996, a substantial increase in extreme poverty was associated primarily with an increase in unemployment, informality, and underemployment. In Indonesia, a large share of the overall increase in inequality was associated with large movements of labor away from wage employment (in agriculture) towards (predominantly urban) self-employment.

This approach also illustrates the ambiguous effect of rising levels of education on inequality. In Colombia, Indonesia and Mexico, substantial increases in the average level of schooling of the population did not lead to lower inequality. On the contrary, when one controls for the changes in returns, it seemed to be associated with higher inequality levels. This result was due to two effects: increases in the education stock that raised inequality in educational attainment itself (i.e. where most of the increase is accounted for by rises among the better-educated), but also the fact that when returns to education are convex, even a distribution-neutral increase in schooling can lead to higher earnings inequality. Of course, educational expansions can offset this effect if they lower returns to schooling, but this is less likely to happen in countries experiencing sharp increases in demand for skills.

By its very nature, this generalized Blinder-Oaxaca approach is, in isolation, incapable of attributing the causal origin of any of these changes to specific exogenous or policy shocks. This is particularly true when broad policy changes, such as a large-scale liberalization of trade, or a permanent change in the exchange rate, are expected to have substantial general equilibrium effects, affecting many variables at the same time. Wide-ranging changes in tariffs, for instance, can affect the distribution of income or consumption through changes in consumer prices, changes in relative wage rates, and changes in employment levels across industries. All of these variables will be changing in the micro-simulations that generate counterfactual growth incidence curves, but which share of the changes is due to the trade liberalization policy is anyone's guess.

To address this point, a third branch of the literature has sought to combine macroeconomic or general equilibrium models with micro-simulations on household survey data. Examples include Bourguignon, Robinson and Robilliard (2002) for the Indonesian crisis, Chen and Ravallion (2004b) for China's accession to the WTO, and Ferreira et al. (2003) for Brazil's devaluation in 1998-9. These models are still in their early, experimental phase, and are subject to the usual criticisms leveled against computable general equilibrium models (CGEs). Nevertheless, when the model is run on a single household survey, and its predictions are checked against a separate, ex-post survey (as in the case of Brazil), its distributional prediction performance is superior to those of the previous generation of representative-agent CGEs.[35]

A common finding in these exercises concerns the importance of worker and employment flows across sectors, in response to shocks or policy changes that affect relative prices. Developing country labor markets are often *de facto* very flexible (despite sometimes significant *de jure* rigidities), because of the existence of large informal sectors. When relative goods prices change in response to a change in the exchange rate (as in Brazil, in 1998) or policy change (as in China's accession to the WTO), different industries contract and expand in response, and workers to move across these sectors.

5. Conclusions

Absolute poverty is clearly a bigger problem in developing countries—where over four fifths of the world's population lives—than in developed ones. Virtually all of the one billion people subsisting on per capita incomes less than one dollar per day live in developing countries. Perhaps more surprisingly, inequality is also a bigger problem in developing countries. Looking at the world as a whole, there is a clear negative correlation between average levels of inequality and the level of development, and all countries with really high income inequality—a Gini index of (say) 0.50 or higher—are developing economies.

However, the evidence from the available cross-section of developing countries suggests that there is little aggregate tendency for these inequality levels to fall with economic growth.

[35] An intermediate approach seeks to identify the causal effects of policy changes econometrically, and then estimate their share within the different components of a micro-simulation-based decomposition. Ferreira, Leite and Wai-Poi. (2007) regress changes in wages and employment levels disaggregated by sectors on (arguably exogenous) changes in tariffs and exchange rates. These trade-mandated changes are then used to generate counterfactual growth incidence curves, which can be interpreted alongside other micro-simulation results.

Although there are no developed countries today with inequality levels above a Gini index of 0.50, growth rates among developing countries are virtually uncorrelated with changes in inequality levels. This is our first stylized fact.

The absence of a robust cross-country correlation between changes in inequality and growth necessarily implies that there must be a strong negative correlation between growth and changes in poverty. This is confirmed empirically: on average, economies that grow faster reduce absolute poverty much more rapidly—our second stylized fact.

But this does not mean that policymakers in developing countries can ignore inequality. There are a number of reasons why persistently high inequality is a concern. Two primary reasons were not discussed here, namely the fact that higher inequality may be ethically objectionable in its own right, and the possibility that greater inequality may generate certain inefficiencies that could actually reduce the future rate of economic growth. World Bank (2005) contains summary discussions of both points; on the second also see Chapter 22. In this chapter, we have focused on a third reason why persistent inequality may be undesirable in developing economies: the fact that, even for a given growth rate, inequality tends to reduce the growth elasticity of poverty reduction—our third stylized fact. Other things equal, one percentage point of growth leads to a smaller reduction in poverty in a very unequal country than in a less unequal one. And if inequality rises during the growth process, things are worse yet.

While these three stylized facts can be identified from a macro, cross-country perspective, an understanding of the economic factors behind changes in distribution (or behind the levels and incidence of growth) in developing countries requires a more microeconomic approach, which exploits differences in conditions within countries. Changes in income distribution respond to so many different stimuli—in a general equilibrium environment—that no single method has yet been developed to fully identify the causes of all observed changes. Instead, researchers have relied on a variety of different approaches. Sub-national regression analysis (using geographical panel data) sheds light on the relative importance of sectoral growth patterns, and of initial differences in the distribution of land or human capital. Micro-simulation based decompositions of growth incidence curves can help us understand the relative roles of changes in household endowments; changes in returns to those endowments; and changes in participation and occupational choices. Finally, combining such micro-simulations with models

capable to capturing the general equilibrium transmission of initial shocks can help us understand the distributional impact of broad, economy-wide policy changes.

As we move forward, more research is needed in all of these fronts, and in their integration. It is only from such research that we can hope to learn what enables some countries (such as Vietnam) to grow rapidly with little or no rise in inequality, and thus to enjoy dramatic rates of poverty reduction. The diversity of country experience has established that equitable growth is possible, and that it is particularly pro-poor. But much remains to be learned about both the general economic conditions and the policy context within which it is achievable.

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Figure 1: Income levels and inequality around the world

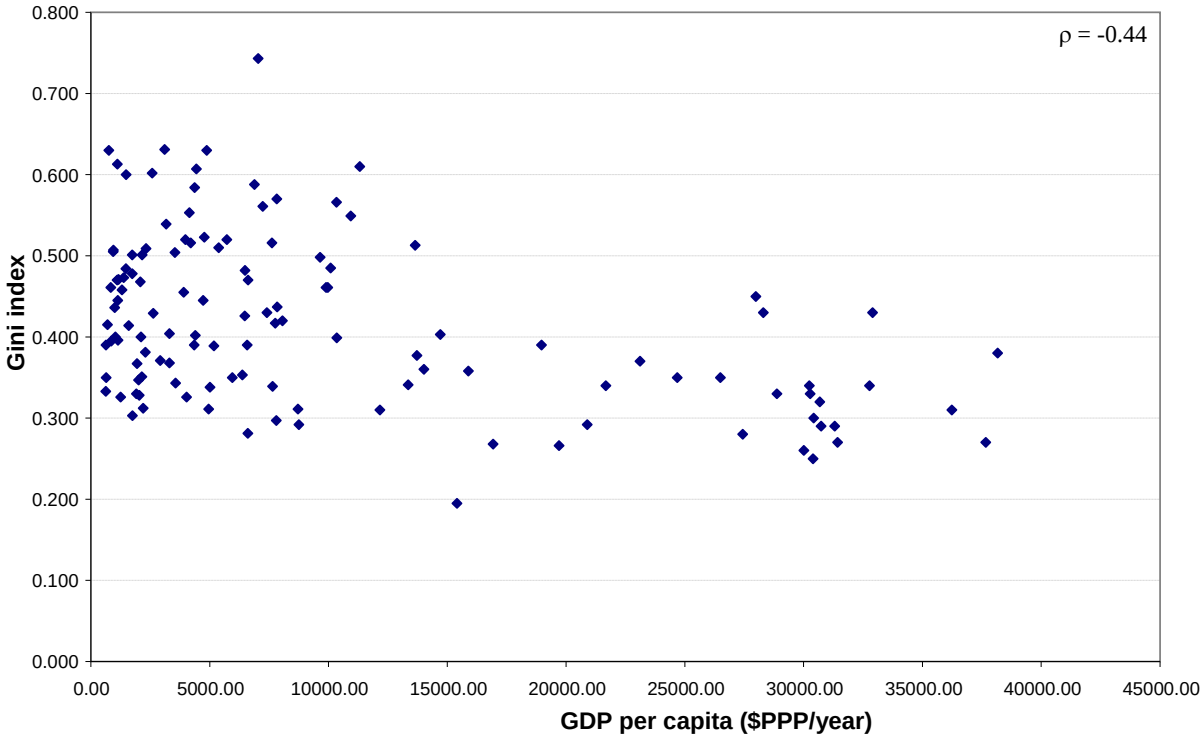


Figure 2: Income levels and poverty around the world

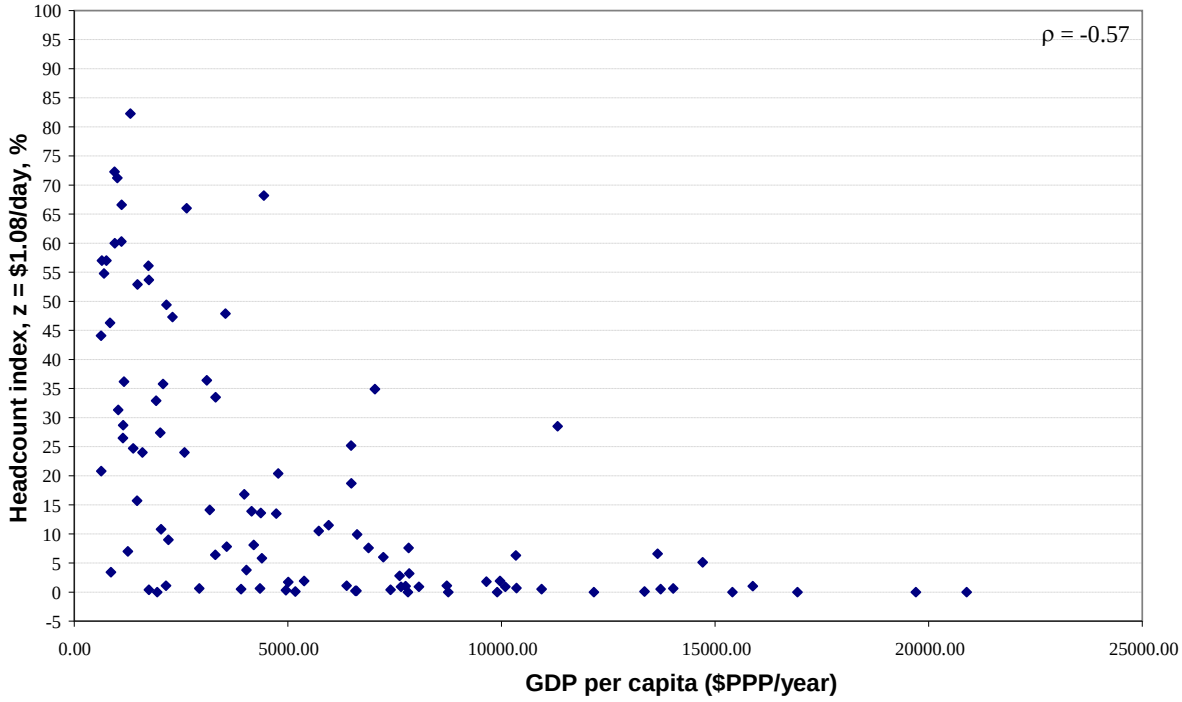
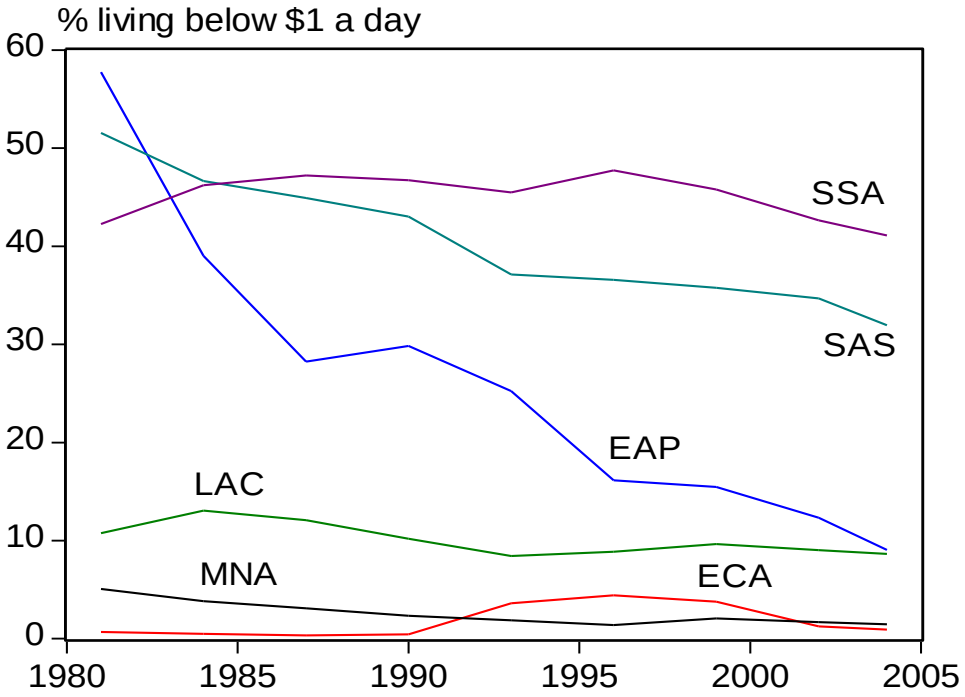
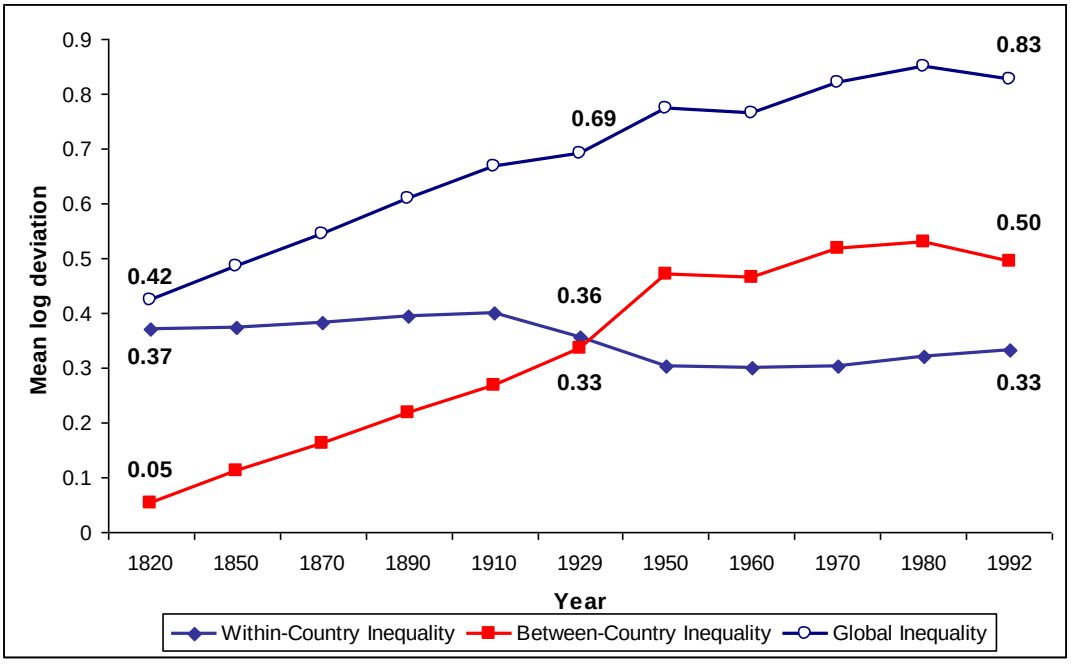


Figure 3: Trends in the incidence of absolute poverty in LDCs, by region.



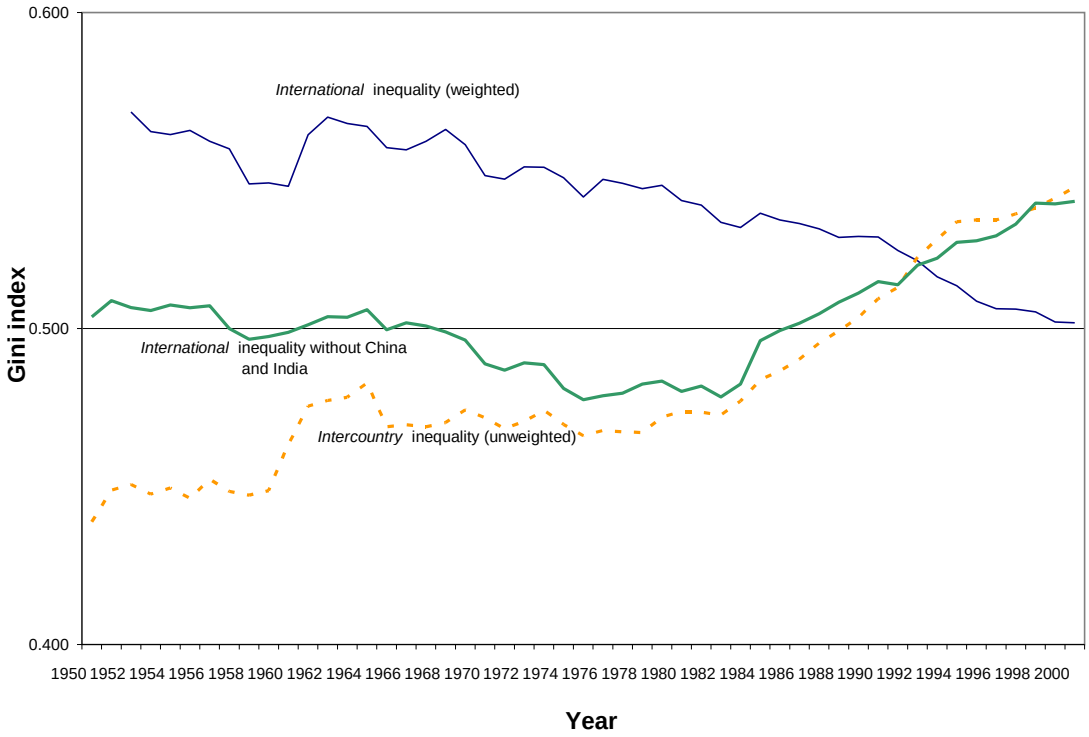
Source: Chen and Ravallion (2007).

Figure 4: Global Inequality and its components, 1820-1992.



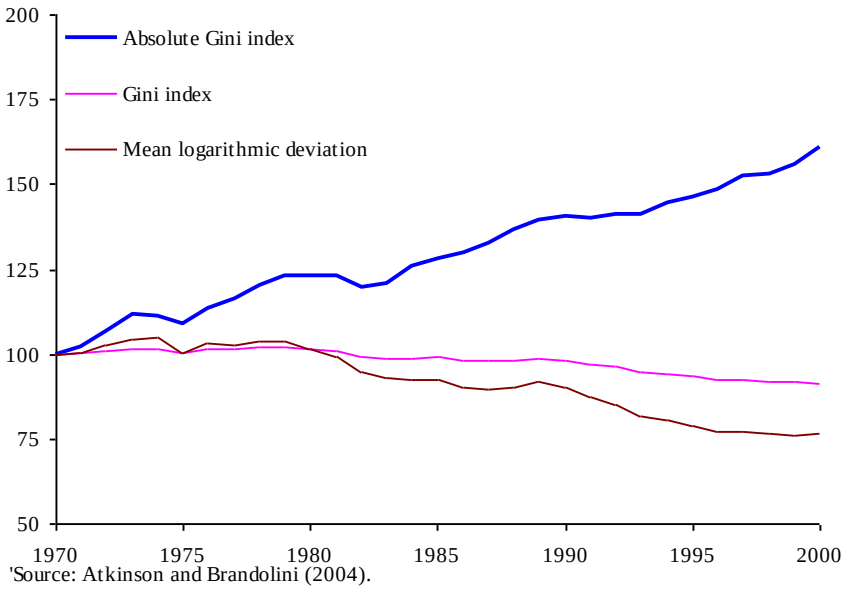
Source: Bourguignon and Morrisson (2002) and World Bank (2005).

Figure 5: Intercountry inequality and international inequality, 1950-2000.



Source: Milanovic (2005) and World Bank (2005).

Figure 6: Absolute and relative inequality in the world, 1970-2000



'Source: Atkinson and Brandolini (2004).

Figure 7: Growth in poverty headcount against growth in survey mean consumption or income in LDCS, 1981-2004

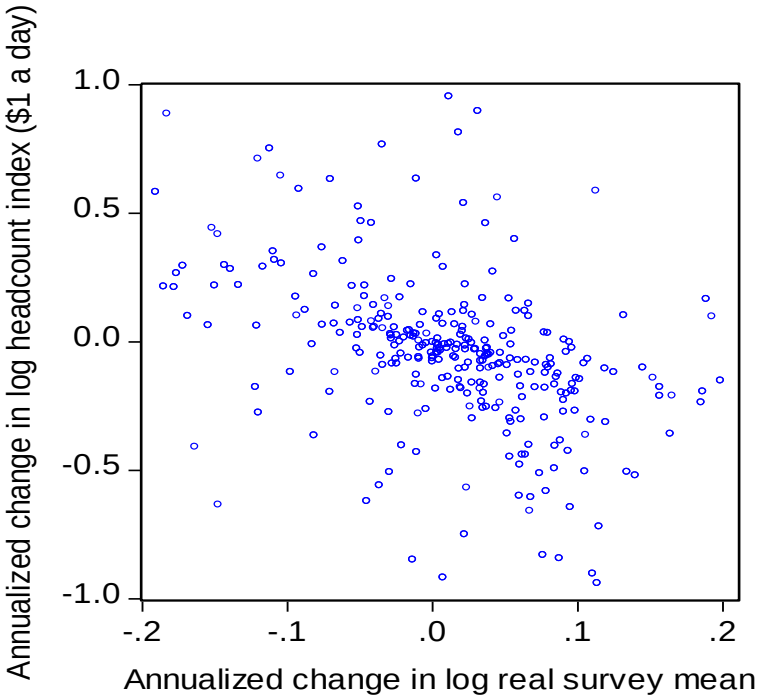
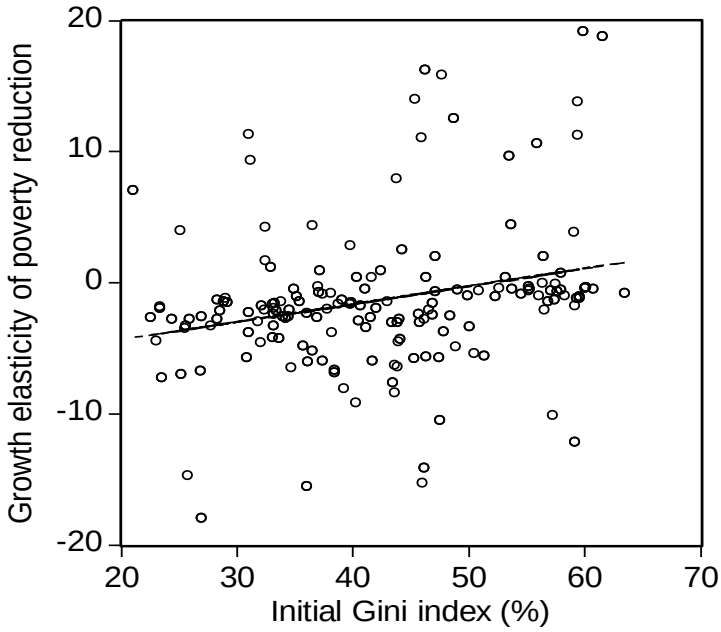


Figure 8: Empirical growth elasticities of poverty reduction against initial Gini index: LDCs in 1981-2004.



Source: Ravallion 20007

Table 1: Poverty and inequality measures for individual countries, 1990s and 2000s.

#	Country	World Bank's regional classification [N]	GDP per capita, PPP (constant 2000 international $)**	Survey Year	y/c	International Poverty Line		Inequality		Source *
						Population Below $1 a day %	Population Below $2 a day %	Gini Index	MLD	
1	Albania	ECA	4,955.27	1997 2004	c	0.10 0.30	11.30 9.30	0.291 0.311	0.141 0.163	1
2	Algeria	MNA	6,375.64	1995 ..	c	1.10 ..	14.40 ..	0.353 ..	0.215 ..	1
3	Argentina	LAC	13,652.41	1996 2003	y	1.10 6.60	9.80 17.40	0.486 0.513	0.429 0.510	1
4	Armenia	ECA	5,011.03	1996 2003	c	6.80 1.70	31.80 30.30	0.444 0.338	0.343 0.198	1
5	Australia	HI	30,677.86	1994 ..	y	.. ..	.. ..	0.320 ..	.. ..	2
6	Austria	HI	30,735.78	.. 2000	y	.. ..	.. ..	.. 0.290	.. ..	3
7	Azerbaijan	ECA	5,953.36	1995 ..	c	11.50 ..	45.80 ..	0.350 ..	0.211 ..	1
8	Bangladesh	SAR	1,916.20	1996 ..	c	32.90	81.90	0.330	0.185 ..	1
9	Belarus	ECA	7,809.61	1995 2002	c	1.40 0.00	13.00 1.40	0.288 0.297	0.143 0.147	1
10	Belgium	HI	30,004.20	.. 2000	y	.. ..	.. ..	.. 0.260	.. ..	2
11	Bolivia	LAC	2,579.16	.. 2002	y	.. 24.00	.. 42.90	.. 0.602	.. 0.709	1
12	Bosnia & Herzegovina	ECA	..	.. 2001	c	.. ..	.. ..	.. 0.250	.. ..	2
13	Botswana	SSA	11,313.27	1994 ..	c	28.50 ..	56.10 ..	0.610 ..	0.673 ..	1
14	Brazil	LAC	7,825.78	1995 2004	y	10.50 7.60	23.30 19.80	0.615 0.570	0.756 0.617	1
15	Bulgaria	ECA	8,753.89	1994 2003	c	0.00 0.00	1.30 6.40	0.243 0.292	0.099 0.146	1
16	Burkina Faso	SSA	1,142.93	1994 2003	c	51.40 28.70	80.10 71.30	0.507 0.396	0.441 0.267	1
17	Burundi	SSA	629.81	1992 ..	c	44.10 ..	85.10 ..	0.333 ..	0.183 ..	1
18	Cambodia	EAP	2,628.83	1994 2004	c	82.00 66.00	96.20 89.80	0.383 0.429	0.252 0.307	1
19	Cameroon	SSA	2,079.40	1996 ..	c	35.80 ..	71.80 ..	0.468 ..	0.375 ..	1

20	Canada	HI	30,277.87	.. 2000	y	.. ..	.. ..	.. 0.330	.. ..	2
21	Cape Verde	SSA	5,381.04	.. 2001	c	.. 1.90	.. 19.00	.. 0.510	.. 0.446	1
22	Central African Rep.	SSA	1,111.49	1993 ..	c	66.60 ..	84.00 ..	0.613 ..	0.741 ..	1

23	Chile	LAC	10,938.57	1994 2003	y	0.90 0.50	10.80 5.60	0.552 0.549	0.548 0.539	1
24	China	EAP	6,620.67	.. 2004	c	.. 9.90	.. 34.90	.. 0.470	.. ..	3
25	Hong Kong, China	HI	32,901.35	1996 ..		.. ..	.. ..	0.430 ..	.. ..	3
26	Colombia	LAC	6,886.04	1995 2003	y	3.10 7.60	16.30 19.40	0.572 0.588	0.611 0.669	1
27	Costa Rica	LAC	9,646.49	1996 2003	y	3.60 1.80	13.30 9.60	0.471 0.498	0.419 0.459	1
28	Côte d'Ivoire	SSA	1,470.76	1995 2002	c	12.30 15.70	49.40 48.40	0.367 0.484	0.227 0.409	1
29	Croatia	ECA	12,164.04	.. 2001	c	.. 0.00	.. 0.50	.. 0.310	.. 0.159	1
30	Czech Rep.	HI	19,699.53	1993 ..	y	0.00 ..	0.00 ..	0.266 ..	0.121 ..	1
31	Denmark	HI	31,422.48	1997 ..	y	.. ..	.. ..	0.270 ..	.. ..	2
32	Dominican Republic	LAC	7,617.82	1996 2004	y	1.80 2.80	11.70 16.20	0.487 0.516	0.426 0.476	1
33	Timor-Leste	EAP	..	.. 2001	c	.. ..	.. ..	.. 0.370	.. ..	2
34	Ecuador	LAC	3,981.58	1994 ..	y	16.80 ..	37.40 ..	0.520 ..	0.511 ..	1
35	Egypt, Arab Rep.	MNA	4,031.03	1995 ..	c	3.80 ..	47.00 ..	0.326 ..	0.179 ..	1
36	El Salvador	LAC	4,775.52	1995 2002	y	20.80 20.40	47.10 40.50	0.499 0.523	0.454 0.541	1
37	Estonia	HI	15,885.01	1995 2003	c	0.40 1.00	6.90 6.70	0.301 0.358	0.155 0.220	1
38	Ethiopia	SSA	1,030.17	1995 ..	c	31.30 ..	76.40 ..	0.400 ..	0.278 ..	1
39	Finland	HI	30,420.32	.. 2000	y	.. ..	.. ..	.. 0.300	.. ..	2
40	France	HI	28,876.53	1995 ..	y	.. ..	.. ..	0.330 ..	.. ..	3
41	Gambia, The	SSA	1,744.87	1992 ..	c	53.70 ..	84.00 ..	0.478 ..	0.402 ..	1
42	Georgia	ECA	3,303.92	1996 2003	c	0.00 6.40	8.50 25.80	0.371 0.404	0.240 0.288	1
43	Germany	HI	27,437.59	.. 2000	y	.. ..	.. ..	.. 0.280	.. ..	2

44	Ghana	SSA	2,299.10	1992 ..	c	47.30 ..	84.00 ..	0.381 ..	0.243 ..	1
45	Greece	HI	21,674.64	.. 2000	y	.. ..	.. ..	.. 0.340	.. ..	3
46	Guatemala	LAC	4,150.21	.. 2002	y	.. 13.90	.. 32.60	.. 0.553	.. 0.581	1

47	Guinea	SSA	2,107.90	1993 ..	c	.. ..	.. ..	0.400 ..	.. ..	2
48	Guyana	LAC	4,203.60	1993	y	8.10	27.00	0.516	0.499 ..	1
49	Haiti	LAC	1,479.34	.. 2001	y	.. 52.90	.. 77.60	.. 0.600	.. 0.675	1
50	Honduras	LAC	3,170.33	1994 2003	y	23.70 14.10	48.20 36.00	0.552 0.539	0.573 0.523	1
51	Hungary	ECA	16,927.87	1993 2002	c	0.00 0.00	0.80 0.70	0.279 0.268	0.134 0.119	1
52	India	SAR	3,307.95	.. 2004	c	.. 33.50	.. 80.00	.. 0.368	.. ..	3
53	Indonesia	EAP	3,570.06	1993 2002	c	17.40 7.80	64.20 52.90	0.344 0.343	0.193 0.197	1
54	Iran, Islamic Rep.	MNA	7,405.16	1994 ..	c	0.40 ..	7.00 ..	0.430 ..	0.322 ..	1
55	Ireland	HI	36,237.93	.. 2000	y	.. ..	.. ..	.. 0.310	.. ..	2
56	Israel	HI		.. 2000	y	.. ..	.. ..	.. 0.310	.. ..	2
57	Italy	HI	26,495.73	.. 2001	c	.. ..	.. ..	.. 0.350	.. ..	2
58	Jamaica	LAC	3,907.43	1993 2004	c	4.90 0.50	27.50 14.40	0.357 0.455	0.221 0.357	1
59	Japan	HI	27,991.92	1993 2004	c	.. ..	.. ..	0.248 0.450	.. ..	3
60	Jordan	MNA	5,175.99	1992 2002	c	0.60 0.10	10.60 7.50	0.434 0.389	0.323 0.255	1
61	Kazakhstan	ECA	7,652.20	1993 2003	c	0.40 0.90	17.50 17.10	0.327 0.339	0.179 0.194	1
62	Kenya	SSA	1,137.37	1994 ..	c	26.50 ..	62.30 ..	0.445 ..	0.345 ..	1
63	Kuwait	HI		1998 ..	y	.. ..	.. ..	0.320 ..	.. ..	2
64	Kyrgyz Republic	ECA	1,749.30	1993 2003	c	8.00 0.40	17.30 23.50	0.537 0.303	0.586 0.152	1
65	Lao PDR	EAP	2,012.94	1992 2002	c	18.60 27.40	74.90 74.20	0.304 0.347	0.158 0.202	1
66	Latvia	ECA	13,724.49	1995 2003	c	0.00 0.50	7.00 4.40	0.310 0.377	0.167 0.247	1
67	Lebanon	MNA	4,876.22	1995 ..	c	.. ..	.. ..	0.630 ..	.. ..	2
68	Leshoto	SSA	3,104.77	1995	c	36.40	56.00	0.631	0.840	1

				..		..	..	..	..	
69	Lithuania	ECA	14,020.39	1994 2003	c	2.50 0.60	16.00 7.50	0.373 0.360	0.242 0.224	1
70	Macedonia, FYR	ECA	6,579.66	.. 2003	c	.. 0.20	.. 3.30	.. 0.390	.. 0.263	1

71	Madagascar	SSA	840.15	1993 ..	c	46.30 ..	80.00 ..	0.461 ..	0.373 ..	1
72	Malawi	SSA	631.45	.. 2004	c	.. 20.80	.. 63.00	.. 0.390	.. 0.258	1
73	Malaysia	EAP	10,090.96	1995 ..	y	0.90 ..	13.50 ..	0.485 ..	0.416 ..	1
74	Mali	SSA	942.05	1994 ..	c	72.30 ..	90.60 ..	0.505 ..	0.437 ..	1
75	Mauritania	SSA	2,160.64	1993 ..	c	49.40 ..	81.90 ..	0.501 ..	0.436 ..	1
76	Mexico	LAC	9,967.30	1995 2004	c	8.40 1.90	26.00 12.50	0.537 0.461	0.528 0.379	1
77	Moldova	ECA	2,151.04	1992 2003	c	7.30 1.10	31.80 20.80	0.343 0.351	0.201 0.207	1
78	Mongolia	EAP	2,033.98	1995 2002	c	13.30 10.80	48.90 44.80	0.332 0.328	0.188 0.184	1
79	Morocco	MNA	4,346.35	1998 ..	c	0.60 ..	14.30 ..	0.390 ..	0.264 ..	1
80	Mozambique	SSA	1,162.36	.. 2002	c	.. 36.20	.. 74.10	.. 0.471	.. 0.386	1
81	Namibia	SSA	7,037.76	1993 ..	y	34.90 ..	55.80 ..	0.743 ..	1.132 ..	1
82	Nepal	SAR	1,379.11	1996 2003	c	34.40 24.70	77.90 64.80	0.377 0.473	0.239 0.382	1
83	Netherlands	HI	31,305.98	.. 1999	y	.. ..	.. ..	.. 0.290	.. ..	2
84	New Zeland	HI	23,109.26	1997 ..	y	.. ..	.. ..	0.370 ..	.. ..	2
85	Nicaragua	LAC	3,538.94	1993 ..	c	47.90 ..	77.90 ..	0.504 ..	0.452 ..	1
86	Niger	SSA	700.29	1994 ..	c	54.80 ..	86.10 ..	0.415 ..	0.291 ..	1
87	Nigeria	SSA	1,008.09	1993 2003	c	59.20 71.20	85.30 92.30	0.450 0.436	0.374 0.331	1
88	Norway	HI	37,667.33	.. 2000	y	.. ..	.. ..	.. 0.270	.. ..	2
89	Pakistan	SAR	2,206.29	1993 2004	c	8.50 9.00	63.00 59.50	0.303 0.312	0.157 0.165	1
90	Panama	LAC	7,234.06	1995 2003	y	7.40 6.00	17.40 16.80	0.571 0.561	0.645 0.603	1
91	Papua New Guinea	EAP	2,321.83	1996 ..	c	.. ..	.. ..	0.509 ..	.. ..	3
92	Paraguay	LAC	4,368.11	1995 2003	y	19.40 13.60	38.50 29.80	0.591 0.584	0.687 0.660	1

93	Peru	LAC	5,725.07	1994 2003	y	9.40 10.50	31.60 30.60	0.449 0.520	0.350 0.489	1
94	Philippines	EAP	4,730.58	1994 2003	c	18.10 13.50	52.70 43.90	0.429 0.445	0.306 0.332	1
95	Poland	ECA	13,349.33	1993 2002	c	4.10 0.10	11.80 1.50	0.324 0.341	0.208 0.197	1
96	Portugal	HI	18,965.97	1994-97 ..	y	<2 ..	<2 ..	0.390 ..	.. ..	2
97	Romania	ECA	8,721.79	1994 2003	c	2.80 1.10	27.40 12.60	0.282 0.311	0.136 0.169	1
98	Russian Federation	ECA	10,349.98	1993 2002	c	6.10 0.70	22.70 13.50	0.483 0.399	0.420 0.273	1
99	Rwanda	SSA	1,104.69	.. 2000	c	.. 60.30	.. 87.80	.. 0.470	.. 0.378	1
100	Senegal	SSA	1,598.65	1995 ..	c	24.00 ..	65.70 ..	0.414 ..	0.296 ..	1
101	Serbia & Montenegro	ECA	..	.. 2003	c	.. ..	.. ..	.. 0.280	.. ..	2
102	Sierra Leone	SSA	752.51	1989 ..	c	57.00 ..	74.20 ..	0.630 ..	0.732 ..	1
103	Singapore	HI	28,305.42	1998 ..	y	.. ..	.. ..	0.430 ..	.. ..	2
104	Slovak Rep.	ECA	15,408.87	1992 ..	y	0.00 ..	0.00 ..	0.195 ..	0.066 ..	1
105	Slovenia	HI	20,890.20	1993 ..	c	0.00 ..	0.00 ..	0.292 ..	.. ..	2
106	South Africa	SSA	10,337.77	1995 ..	c	6.30 ..	32.20 ..	0.566 ..	0.564 ..	1
107	Spain	HI	24,680.95	.. 2000	y	.. ..	.. ..	.. 0.350	.. ..	2
108	Sri Lanka	SAR	4,391.40	1996 2002	c	6.60 5.80	45.40 41.50	0.344 0.402	0.199 0.271	1
109	St. Lucia	LAC	6,482.11	1995 ..	y	25.20 ..	59.60 ..	0.426 ..	0.316 ..	1
110	Swaziland	SSA	4,440.13	1995 ..	c	68.20 ..	87.40 ..	0.607 ..	0.688 ..	1
111	Sweden	HI	30,392.45	.. 2000	y	.. ..	.. ..	.. 0.250	.. ..	2
112	Switzerland	HI	32,775.22	.. 2000	y	.. ..	.. ..	.. 0.340	.. ..	3
113	Tajikistan	ECA	1,256.90	.. 2003	c	.. 7.00	.. 42.50	.. 0.326	.. 0.179	1

114	Tanzania	SSA	649.53	.. 2000	c	.. 57.00	.. 90.20	.. 0.350	.. ..	1
115	Thailand	EAP	8,065.13	1992 2002	c	6.00 0.90	37.50 25.80	0.462 0.420	0.357 0.297	1
116	Trinidad & Tobago	HI	14,708.07	1992 ..	y	5.10 ..	23.20 ..	0.403 ..	0.288 ..	1
117	Tunisia	MNA	7,758.15	1995 ..	c	1.00 ..	12.70 ..	0.417 ..	0.301 ..	1
118	Turkey	ECA	7,842.15	1994 2003	c	2.40 3.20	18.00 19.40	0.415 0.437	0.299 0.335	1
119	Turkmenistan	ECA	..	1993 ..	c	20.70 ..	59.10 ..	0.354 ..	0.209 ..	1

120	Uganda	SSA	1,312.82	1992	c	90.30	98.10	0.426	0.319	1
				2002		82.30	95.70	0.458	0.364	
121	Ukraine	ECA	6,605.20	1995	c	2.10	14.80	0.393	0.267	1
				2003		0.20	5.00	0.281	0.133	
122	United Kingdom	HI	30,237.16	..	y	..	..	..	..	2
				1999		..	..	0.340	..	
123	United States	HI	38,165.25	..	y	..	..	..	..	2
				2000		..	..	0.380	..	
124	Uruguay	LAC	9,897.78	1996	y	0.60	4.60	0.438	0.344	1
				2004		0.00	9.20	0.461	0.378	
125	Uzbekistan	ECA	1,942.35	1993	c	3.30	26.50	0.333	0.189	1
				2003		0.00	1.80	0.367	0.230	
126	Venezuela, RB de	LAC	6,485.33	1995	y	9.40	28.80	0.468	0.402	1
				2003		18.70	40.20	0.482	0.461	
127	Vietnam	EAP	2,924.84	1993	c	14.60	58.20	0.357	0.214	1
				2004		0.60	21.90	0.371	0.229	
128	Yemen, Rep.	MNA	857.68	1992	c	3.40	19.90	0.395	0.268	1
				..		..	..	..	..	
129	Zambia	SSA	949.10	1993	c	73.60	90.70	0.526	0.518	1
				2004		60.00	84.90	0.507	0.467	
130	Zimbabwe	SSA	1,738.57	1995	c	56.10	83.00	0.501	0.433	1
				..		..	..	..	..	

Notes: [N] The World Bank classifies countries regionally and among income groups according to 2006 nominal GNI per capita, calculated using the World Bank Atlas method. High income countries have GNI per capita of $11,116 or more. ECA=Eastern Europe and Central Asia; MNA=Middle-East and North Africa; EAP=East Asia and the Pacific; SAR=South Asia; SSA=Sub-Saharan Africa; LAC=Latin America and Caribbean; HI=High Income. y=income; c=consumption;

* 1=PovCal; 2=WDR 06; 3=WDI;

** Source: the World Bank Indicators, reference year 2006.

Table 2: Poverty measures for $1 a day

(a) Percentage of population

Region	1981	1984	1987	1990	1993	1996	1999	2002	2004
East-Asia and Pacific (EAP)	57.73	39.02	28.23	29.84	25.23	16.14	15.46	12.33	9.05
Of which China	63.76	41.02	28.64	32.98	28.36	17.37	17.77	13.79	9.90
Eastern-Europe+Central Asia (ECA)	0.70	0.51	0.35	0.46	3.60	4.42	3.78	1.27	0.94
Latin America+Caribbean (LAC)	10.77	13.07	12.09	10.19	8.42	8.87	9.66	9.09	8.64
Middle East+North Africa (MNA)	5.08	3.82	3.09	2.33	1.87	1.69	2.08	1.69	1.47
South Asia (SAS)	49.57	45.43	45.11	43.04	36.87	36.06	34.92	33.56	30.84
Of which India	51.75	47.94	46.15	44.31	41.82	39.94	37.66	36.03	34.33
Sub-Saharan Africa (SSA)	42.26	46.20	47.22	46.73	45.47	47.72	45.77	42.63	41.10
Total	**40.14**	**32.72**	**28.72**	**28.66**	**25.56**	**22.66**	**22.10**	**20.13**	**18.09**
Total excl.China	31.35	29.69	28.75	27.14	24.58	24.45	23.54	22.19	20.70

(b) Number of people

Region	1981	1984	1987	1990	1993	1996	1999	2002	2004
EAP	796.40	564.30	428.76	476.22	420.22	279.09	276.54	226.77	169.13
China	633.66	425.27	310.43	374.33	334.21	211.44	222.78	176.61	128.36
ECA	3.00	2.27	1.61	2.16	16.94	20.87	17.90	6.01	4.42
LAC	39.35	50.90	50.00	44.60	38.83	42.96	49.03	48.13	47.02
MNA	8.81	7.26	6.41	5.26	4.53	4.38	5.67	4.88	4.40

SAS	455.18	445.05	471.14	479.10	436.74	452.91	463.40	469.55	446.20
India	363.72	359.41	368.60	376.44	376.14	378.91	376.25	377.84	370.67
SSA	167.53	199.78	222.80	240.34	252.26	286.21	296.07	296.11	298.30
Total	**1470.28**	**1269.56**	**1180.73**	**1247.68**	**1170.17**	**1087.81**	**1108.61**	**1051.46**	**969.48**
Total excl.China	836.62	844.29	870.30	873.35	835.96	876.37	885.83	874.85	841.12

Source: Chen and Ravallion (2007). The set of countries are the Part 2 member countries of the World Bank, which is essentially all low and middle-income countries, which the Bank currently defines as having average GDP per capita over 2004-06 no more than $11,115.

Table 3: Poverty measures for $2 a day

(a) Percentage of population

Region	1981	1984	1987	1990	1993	1996	1999	2002	2004
EAP	84.80	77.17	68.53	69.73	65.04	52.49	49.34	41.68	36.58
China	88.12	79.00	68.64	72.16	68.13	53.34	50.05	40.94	34.89
ECA	4.60	3.93	3.08	4.31	16.53	17.97	18.57	12.88	9.79
LAC	28.45	32.25	29.57	26.25	24.09	25.24	25.31	24.76	22.17
MNA	29.16	25.59	24.24	21.69	21.41	21.40	23.62	21.09	19.70
SAS	88.53	87.01	86.57	85.62	82.22	82.12	80.41	79.73	77.12
India	88.92	87.89	86.98	86.30	85.33	84.12	82.67	81.37	80.36
SSA	74.52	76.98	77.36	77.05	76.09	76.42	75.85	73.81	71.97
Total	**66.96**	**64.25**	**60.73**	**60.79**	**59.44**	**55.52**	**54.24**	**50.69**	**47.55**
Total excl.China	59.08	58.87	57.89	56.78	56.43	56.26	55.63	53.85	51.58

(b) Number of people (millions)

Region	1981	1984	1987	1990	1993	1996	1999	2002	2004
EAP	1169.74	1115.97	1040.71	1112.93	1083.21	907.83	882.70	766.26	683.83
China	875.77	819.11	744.07	819.11	802.86	649.47	627.55	524.24	452.25
ECA	19.78	17.38	14.03	20.07	77.83	84.88	87.94	60.75	46.25
LAC	103.90	125.58	122.30	114.85	111.08	122.30	128.44	131.14	120.62
MNA	50.56	48.62	50.24	48.91	51.80	55.40	64.50	60.92	59.13
SAS	813.04	852.39	904.21	953.00	973.99	1031.48	1067.15	1115.54	1115.77
India	624.92	658.92	694.71	733.13	767.39	798.07	825.93	853.32	867.62

SSA	295.46	332.87	365.02	396.32	422.11	458.37	490.58	512.62	522.34
Total	**2452.47**	**2492.81**	**2496.50**	**2646.09**	**2721.72**	**2665.66**	**2721.31**	**2647.22**	**2547.94**
Total excl. China	1576.70	1673.70	1752.42	1826.98	1918.86	2016.19	2093.75	2122.98	2095.69

Note: For region identifiers see Table 2. Source: Chen and Ravallion (2007).