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INEQUALITY IN DEVELOPING COUNTRIES: LEVELS AND RECENT TRENDS

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Inequality in Developing Countries:

levels and recent trends [*]

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Abstract

This paper reviews the empirical evidence on the levels and trends in income/consumption inequality in developing countries. It includes a discussion of data sources and measurement issues, evidence on the levels of inequality across countries and regions, an assessment of trends in these variables since the early 1980s, and a general discussion of their determinants. The available evidence suggests that on average the levels of national income inequality in the developing world increased in the 1980s and 1990s, and declined in the 2000s.

Resumen

Este artículo revisa la evidencia empírica sobre los niveles y las tendencias de la desigualdad monetaria en los países en desarrollo. El trabajo incluye un análisis de las fuentes de datos y los problemas de medición, evidencia sobre los niveles de desigualdad entre países y regiones, una evaluación de las tendencias de estas variables desde principios de los ochenta y una discusión general de sus determinantes. La evidencia disponible sugiere que, en promedio, los niveles de desigualdad de los países en desarrollo aumentaron en los años ochenta y noventa, y disminuyeron en la década del dos mil.

JEL Codes: D31, I32

Keywords: inequality, income, consumption, developing countries

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1. Introduction

Poverty and inequality are certainly among the main concerns in the developing world. A typical developing country is characterized by high levels of material deprivation, and large dispersion in individual wellbeing, at least when compared to a typical developed economy. Fighting poverty and minimizing the unjust inequalities are top priorities in the developing world. The United Nations, in the famous declaration of the Millennium Development Goals (MDGs), proposed as target number 1 to halve income poverty in the developing world from 1990 to 2015. The reduction of inequality does not occupy the same privileged position in the agenda, but few would not list it as a central social concern.

High poverty and inequality are pervasive characteristics of the developing world. However, they are not immutable features of these economies. There is convincing evidence pointing to a robust decline in the levels of absolute income poverty in the developing world over the last decades; and substantial progress in the reduction of deprivation in various non-monetary dimensions - education, health, sanitation, access to infrastructure. Changes in income inequality have been much less clear, as relative inequality has risen in some countries and fallen in others. In fact, the evidence suggests that on average the developing countries are today somewhat more unequal than three decades ago.

This chapter reviews the empirical evidence on the levels and trends in income inequality in developing countries. We focus the analysis on the income/consumption approximations to welfare; in particular the chapter deals mainly with relative inequality across individuals in household consumption expenditures per capita. This choice is restricted by space limitations and does not imply ignoring that a general assessment inequality should also include other non-monetary dimensions (*e.g*. health, education) and other monetary variables (*e.g*. wealth).

The empirical evidence shown in this chapter is drawn from the academic literature, regional and country papers, and open-access databases, in particular the PovcalNet project developed in the World Bank. Although most of the evidence is based on statistics obtained from national household surveys, we also report results from tax records (the World Top Incomes Database, WTID) and international surveys (the Gallup World Poll) to illustrate some issues. Even though the main purpose of the chapter is presenting basic evidence on levels and trends, we also briefly review the main discussions on determinants of recent changes in inequality in the developing world.

The rest of the paper is organized as follows. In section 2 we briefly characterize the economies in the developing world and discuss some measurement issues. In section 3 we document the levels of income inequality in the developing world, while in section 4 we summarize the evidence on trends since the early 1980s. Section 7 closes with a summary and some final remarks.

2. The developing world: characterization and data

In this section we briefly characterize the economies of the developing world, and review the sources of data to measure and analyze income poverty and inequality.

2.1. Developing countries

The division between developed and developing countries is a helpful simplification that can be done in different arbitrary ways. In this chapter we follow the World Bank's main criterion based on gross national income (GNI) per capita: developing countries are those with per capita GNI below a certain threshold (US$12,276 in 2011). These nations are usually classified into six geographical regions: East Asia and Pacific (EAP), Eastern Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), Middle East and North Africa (MENA), South Asia (SA) and Sub-Saharan Africa (SSA). The developing countries cover almost 75% of the total land area in the world and represent 85% of the total population. Table 2.1 summarizes some basic demographic and economic statistics.

Table 2.1
Population, GNI per capita and Human Development Index, 2010.
Developing countries, by region.

	Countries	Population (millions)	GNI per capita		HDI
			PPP	Atlas method	
Developing countries	**153**	**5,840**	**7,023**	**4,291**	**0.608**
East Asia and Pacific	24	1,961	4,911	2,992	0.619
Eastern Europe and Central Asia	30	478	12,558	7,815	0.751
Latin America and the Caribbean	31	584	9,789	6,433	0.706
Middle East and North Africa	13	331	6,462	3,647	0.636
South Asia	8	1,633	3,429	1,704	0.535
Sub-Saharan Africa	47	853	3,288	1,798	0.450
Developed countries	**62**	**1,055**	**37,303**	**38,818**	**0.857**
Total	**216**	**6,894**	**15,682**	**14,181**	**0.663**

Source: population is taken from the United Nations Demographic Yearbook. Gross National Income (GNI) per capita in international dollars adjusted for purchasing power parity (PPP) and in current US$ (Atlas method) are taken from World Development Indicators. The Human Development Index (HDI) is from the UNDP Human Development Report. GNI and HDI are unweighted averages across countries.

According to these indicators Eastern Europe and Central Asia is the most developed region in the group: per capita GNI is almost twice the mean for the developing world, and the Human Development Index (HDI) is significantly higher. Latin American and the Caribbean ranks second in the development scale, and Middle East and North Africa third. Although economic growth in Asia has been remarkable in the last decades, per capita GNI and other development indicators are on average still below the mean of the developing world. South Asia is significantly less developed than East

Asia and the Pacific. Sub-Saharan Africa is the poorest and least developed area in the world. The mean of the national per capita GNIs in that region is less than 50% of the developing world mean, and less than 10% of the mean of the industrialized economies.

2.2. Data sources

National household surveys are the main source of information for distributive analysis. Since one of the central goals of these surveys is measuring living standards in the population, they typically include questions to construct a monetary proxy for wellbeing: income and/or expenditures on consumption goods. Although some developing countries started to implement national household surveys after World War II, it is only recently that governments engaged in programs of regularly collecting information through household surveys, often with the help of some international organization. Distributive statistics for the developing world are rare before the 1970s, and reasonably robust only from the 1990s on. There has been a remarkable increase in the availability of national household surveys over the last decades. A chapter like this one, that includes a broad assessment of income inequality and poverty in developing countries, could hardly have been written two decades ago, and is a sign of the huge progress made on data collection. However, as we discuss below, data limitations are still stringent, and allow only a still blurred picture of inequality and poverty in the developing world.

The databases for international distributive analysis can be classified into two groups: those that produce statistics with microdata from surveys or administrative records, and those that collect, organize and report statistics from other sources. The former group includes the World Bank´s PovcalNet, the Luxembourg Income Study, the World Income Distribution (WYD) database, the World Top Incomes Database and some regional initiatives. The second one includes the seminal work by Deininger and Squire (1996) and its follow-up - the WIDER´s World Income Inequality Database-, the *All the Ginis* database, and some other projects.

The main source of information for poverty and inequality analysis at a large international scale in the developing world is the World Bank´s *PovcalNet*, a compilation of distributive data built up from national household surveys, generally fielded by national statistical offices. PovcalNet, which is the main source for the World Bank's World Development Indicators, includes statistics constructed mostly from household survey microdata, and in some few countries from grouped tabulations. At the moment of writing this database includes more than 850 surveys for almost 130 countries, representing more than 90% of the population of the developing world, spanning the period 1979-2011. The website of PovcalNet provides public access to data to generate estimates for selected countries and alternative poverty lines from

grouped data.[1] Martin Ravallion and Shaohua Chen, the main developers of PovcalNet, have produced several papers exploiting the dataset to monitor and analyze poverty and inequality in the developing world (Ravallion and Chen, 1997; Chen and Ravallion, 2001, 2010, 2012). This project has been increasingly influential in shaping the assessment of inequality, and in particular poverty, in the developing world by researchers and policy practitioners.[2] It is, for instance, the source used to monitor the poverty-reduction goal of the MDGs. This chapter draws heavily on statistics computed by the PovcalNet project.

Some regional initiatives aimed at computing social statistics from household survey microdata in a standardized way are useful to study distributive issues in specific geographic areas, and as sources of information for world databases. For instance, the Socioeconomic Database for Latin America and the Caribbean (*SEDLAC*), jointly developed by CEDLAS at the Universidad Nacional de La Plata (Argentina) and the World Bank's LAC poverty group (LCSPP), includes distributive and labor statistics for LAC constructed using consistent criteria across countries and years. *BADEINSO*, developed by the United Nations´ ECLAC, is also a large and good-quality database on economic and social variables in LAC. In Eastern and Central Europe the *World Bank ECA database* includes statistics for 28 countries since 1990 computed from direct access to household surveys. The *Household Expenditure and Income Data for Transitional Economies* developed by Branko Milanovic in the World Bank is the antecedent of that database. Milanovic has also built the *World Income Distribution* (WYD) database, which includes data for five benchmark years (1988, 1993, 1998, 2002 and 2005) for 146 countries, 75% obtained from direct access to household surveys. The dataset has been used in several studies to compute global inequality (Milanovic, 2002, 2005, 2012). The *Luxembourg Income Study* (LIS), described in chapter 9 of this volume, includes distributive information computed from household survey microdata for developed countries. LIS also reports statistics for several transitional economies in Eastern Europe and recently has added some developing countries in Latin America (Brazil, Colombia, Guatemala, Mexico, Peru and Uruguay).

The growth in the availability of distributive statistics stimulated efforts to gather and organize them. Deininger and Squire (1996) put together a large dataset of quintile shares and Gini coefficients for most countries since World War II taken from different studies and national reports. This panel database, which greatly promoted the empirical study of the links between inequality and other economic variables, was updated and extended by the UNU/WIDER-UNDP *World Income Inequality Database*

[1] Statistics are derived from the estimation of a general quadratic and a beta Lorenz curves from grouped data. Shorrocks and Wan (2008) propose an algorithm that reproduces individual data from grouped statistics with a higher degree of accuracy.

[2] The 2006 World Development Report on world inequality used data from PovcalNet, and added indicators for the developed countries.

(WIDER, 2008).[3] The WIID database includes Gini coefficients, quintile and decile shares, and the income shares of the richest 5% and the poorest 5%. The information is drawn from very different sources, which raises comparability concerns.[4] To provide guidance in the use of the database, ratings are given to the observations, based on the survey quality, the coverage, and the quality of the information provided by the original source. The *SWIID database* is an effort to identify reasonably comparable information in WIID (Solt, 2009).[5]

The *All the Ginis* database, assembled also by Branko Milanovic, is a compilation and adaptation of Gini coefficients retrieved from five datasets: LIS, SEDLAC, WYD, the World Bank ECA database, and WIID. Besides gathering all the information in a single file, the *All the Ginis* database is useful as it provides information on the welfare concept and recipient unit to which the reported Gini refers, facilitating the comparisons.

The *Chartbook of Economic Inequality*, assembled by Atkinson and Morelli (2012), presents a summary of evidence about changes in economic inequality (income/consumption, earnings and wealth) in the period from 1911 to 2010 for 25 countries. The information drawn from household surveys for the seven countries in the developing world included in the database (Argentina, Brazil, India, Indonesia, Malaysia, Mauritius and South Africa) starts in the 1950s.[6]

All the datasets mentioned above are based on data from national household surveys.[7] Even when they are the best available source of information for distributive analysis, household surveys are plagued with problems for international comparative studies, because, among other reasons, the questionnaires and the procedures to compute income/consumption variables differ among countries, and frequently also within a country over time. Some surveys inquire about income and others about consumption, some capture net income and some gross income, in some cases variables are reported on a weekly basis and in others on a monthly basis, items as the implicit rent from own housing are included in some surveys and ignored in others. Even in those projects that made explicit efforts to reduce these differences (*e.g*. PovcalNet, SEDLAC) comparability issues persist, as problems rooted in differences in questionnaires are

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[3] WIID was initially compiled over 1997-1999 for the UNU/WIDER-UNDP project "Rising Income Inequality and Poverty Reduction: Are They Compatible?" directed by Giovanni Andrea Cornia. Tabatabai (1996) at International Labour Organization also made an independent effort to put together distributive statistics for many countries in the world.

[4] Analyzing the Deininger and Squire (DS) dataset, Atkinson and Brandolini (2001) conclude that "users could be seriously misled if they simply download the *accept* series (*i.e*., the "high quality" subset]". Although WIID implies a significant improvement from the original DS dataset, a similar word of caution applies.

[5] SWIID should also be reviewed critically: in many cases it requires a case-by-case analysis, which is simply a sign that much effort is still needed in putting together comparable statistics. As it is based on secondary datasets, external problems are inadvertently incorporated.

[6] Except for Brazil, for these developing countries the top income data in the Chartbook start earlier than the 1950s.

[7] The exception is the Chartbook of Economic Inequality, that uses a range of sources.

difficult to be completely overcome. These problems are well recognized in the literature. For instance, Chen and Ravallion (2012) state that "…there are problems that we cannot deal with. For example, it is known that differences in survey methods (such as questionnaire design) can create non-negligible differences in the estimates obtained for consumption or income". In a survey of global income inequality, Anand and Segal (2008) share those concerns.

There are some alternatives to reduce the comparability problems, although they all come at a price. Gallup conducts a survey in nearly all nations in the world with almost exactly the same questionnaire. The Gallup World Poll is particularly rich in self-reported measures of quality of life, opinions, and perceptions, but it also includes basic questions on demographics, education, and employment, and a question on household income. In principle, the Gallup World Poll allows a distributive analysis in nearly all the countries in the world based on the same income question. The downside is that measurement errors may be very large when reported income is based only on one question and with sample sizes of just around 1000 observations per country. Gasparini and Gluzmann (2012) compare basic demographic statistics drawn from the Gallup Poll with those computed from the national household surveys of the LAC countries for year 2006, and conclude that in most countries statistics from the Gallup Poll, including income poverty and inequality, are roughly consistent with those from national household surveys.

The Estimated Household Income Inequality (EHII) data set produced by the University of Texas Inequality Project (UTIP) is based on UTIP-UNIDO, a global data set that calculates industrial pay-inequality measures for 156 countries from 1963 to 2003, using the between-groups component of a Theil index, measured across industrial categories in the manufacturing sector (Galbraith and Kum, 2005).[8] Although in principle the use of industrial pay information could lend some homogeneity into the comparisons, the technique employed may not provide an accurate measure of inequality over the whole income distribution.

3. Inequality: levels

In this section we present results regarding the level of inequality in the developing countries, deferring to the next section the discussion of the trends. In most of the section we measure inequality computed over the distribution of household consumption per capita, using data from PovcalNet. As it is usual in this literature, we frequently refer to *income* inequality, despite the fact that statistics are constructed over the distribution of consumption expenditures.

[8] Specifically, EHII consists on estimates of gross household income inequality, computed from an OLS regression between the Deininger and Squire inequality measures and the UTIP-UNIDO manufacturing pay inequality measures, controlling for the source of information in the inequality data (income/expenditure, gross/net, and household/per capita measures) and for the share of manufacturing employment in total employment.

This chapter is mainly focused on within-country inequality, so welfare disparities are measured among individuals living within the national boundaries. Although globalization is increasingly raising global inequality concerns, inequality remains mainly a national matter. This view also leads us to mostly document *unweighted* statistics of inequality measures across countries, a practice that is consistent with the typical cross-country approach in the development literature. Weighting by population would imply an assessment of inequality in a region or in the world strongly affected by some highly-populated countries, such as China, India and Indonesia in Asia, or Brazil and Mexico in Latin America, and almost ignoring the situation in other less-populated nations. Having said that, since the decision of taking each political entity as a unit in the analysis is certainly debatable; we show some results using both unweighted and population-weighted statistics.

3.1. Inequality in the world

We start by comparing inequality levels across developing countries based on the Gini coefficient for the distribution of household consumption per capita for year 2010, computed in PovcalNet mostly from household survey microdata. Other inequality measures are highly correlated with the Gini coefficient. For instance, in PovcalNet and WIID datasets the Pearson and Spearman correlations of the Gini and several extreme inequality measures (*e.g*. the 90/10 and 80/20 income-share ratios) exceeds 0.9.

PovcalNet reports information for the distribution of per capita consumption expenditures, except in almost all Latin American (LA) countries, for which income inequality statistics are reported. In the analysis that follows we adjust the income Gini coefficients in LA to reflect the gap between income and consumption inequality estimates. Specifically, we selected seven LA countries with household surveys that include reasonably good consumption and income data in several years:[9] on average the ratio of the consumption/income Ginis is 0.861 (standard deviation of 0.046). We apply that coefficient to the 22 Latin American and Caribbean countries with income data to approximate their consumption Ginis.[10]

In most cases the observations correspond to year 2010, or adjacent years. However, some countries are lacking a recent household survey (or it was dropped due to quality concerns). In fact, in 24 countries the survey used to estimate inequality in 2010 was carried out between 2000 and 2005, while in 6 cases (5 of them in the Caribbean) the observation corresponds to the 1990s. With that caveat in mind, the PovcalNet dataset has relatively recent distributive information for 82% of the countries in the developing world, representing 97% of its total population. The country coverage

[9] The countries are Argentina, Costa Rica, Ecuador, Mexico, Nicaragua, Panama and Peru.

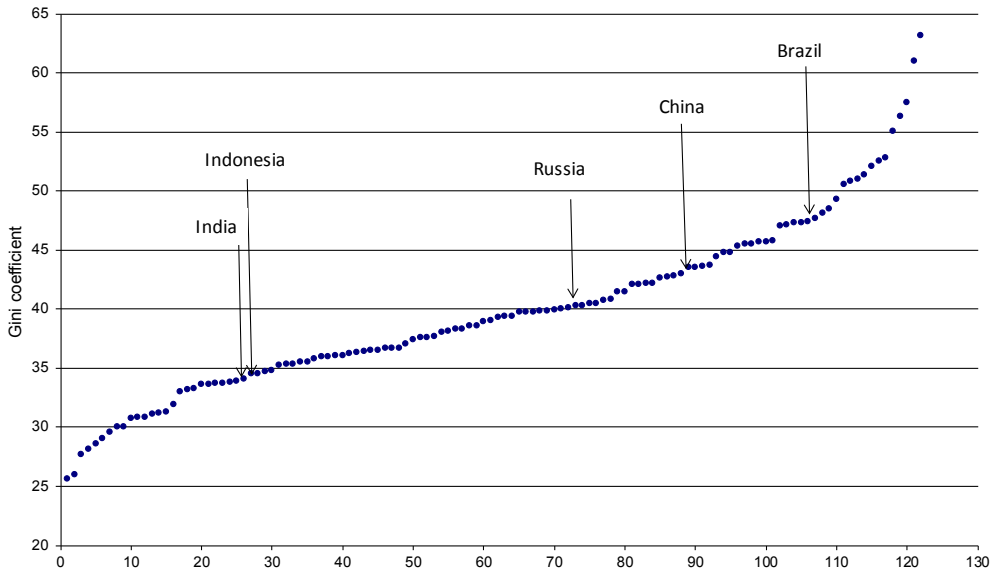
[10] We decided to apply the same coefficient to all LAC countries after failing to find significant regularities between the ratio consumption/income Ginis and other observable variables for the seven countries in the sample. WDR (2006) reports consumption and income Ginis in four Latin American countries; the mean ratio of the Ginis is 0.81. The value is somewhat lower (0.77) for the eight non-LA countries in the sample.

across regions is heterogeneous. In East Asia and Pacific PovcalNet includes 12 out of the 24 developing countries, which nonetheless represent 96% of the total population of the area. The coverage in Eastern Europe and Central Asia is almost complete, lacking information only for the small Kosovo. In LAC the coverage is complete in continental Latin America, but weak in the Caribbean. Anyway, countries with information represent 98% of the total population in LAC (the main missing country in terms of population is Cuba). The dataset in Middle East and North Africa does not contain information only for Lebanon and Libya, which represent 3% of the MENA population. In South Asia the only country missing is Afghanistan, while in Sub-Saharan Africa there is information for 42 out of the 47 countries, representing 95% of the population.

Figure 3.1 displays the range of Gini coefficients for 122 countries around year 2010, ranking from the least unequal (Ukrania, 25.6) to the most unequal economy (South Africa, 63.1).[11] The mean value is 39.8, while the median is 39.2. More than half of the observations are in the range [35, 45]. Only seven Eastern Europe countries have Ginis below 30, and five Sub-Saharan African countries have Ginis higher than 55. The population-weighted mean is less than one point lower than the simple mean (39.1), a result affected by the relatively low level of inequality in populous India and Indonesia (China has a Gini somewhat higher than the world mean). Figure 3.1 shows the position of some of the most populated countries: Brazil has high inequality levels, China and Russia intermediate values, and India and Indonesia relatively low levels in the context of the developing world.

[11] PovcalNet reports Ginis above 63.1 for Comoros and Seychelles, two small island countries in the Indian Ocean. However, the results are not well established. For instance, the reported Gini in Seychelles is 42.7 in 2000 and 65.8 in 2007, a highly implausible change in just seven years.

Figure 3.1
Gini coefficients for the distribution of household consumption per capita
Developing countries, 2010



Source: own calculations based on PovcalNet (2013).
Note: countries sorted by their Gini coefficients.

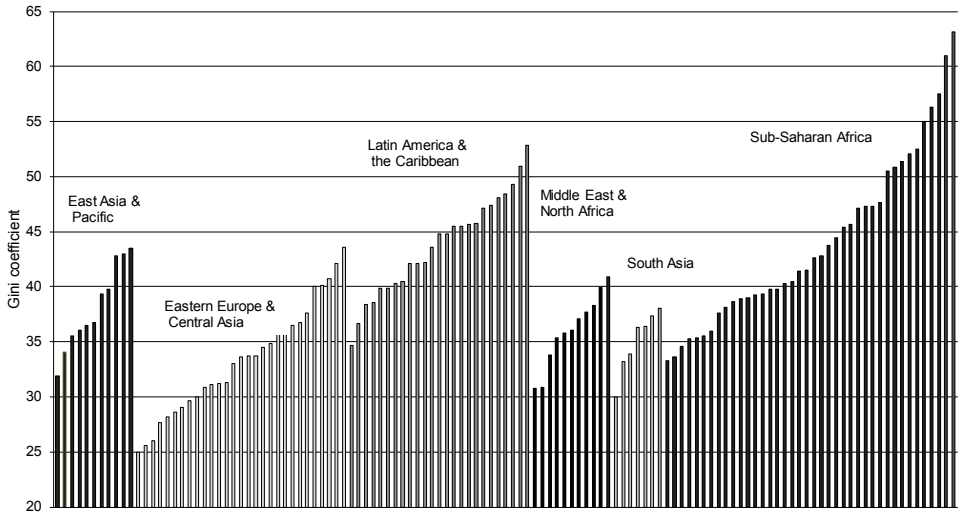
The variability of Gini coefficients across countries is large compared to the changes within countries over time, at least for the period for which we have more robust information (since the early 1980s). Li, Squire and Zou (1998) find in the Deininger and Squire dataset that 90% of the total variance in the Gini coefficient is explained by variation across countries, while only a small percentage is accounted by variation over time. From this observation Li *et al*. (1998) conclude that inequality should be mainly determined by factors which differ substantially across countries, but tend to be relatively stable within countries over time. We find a similar result in a panel of developing countries from 1981 to 2010: 88.5% of the variance in that panel is accounted by variation across countries.

The inequality rankings are relatively stable over time. The Spearman-rank correlation coefficient for the Ginis in 1981 and 2010 is 0.68, while it rises to 0.74 for 1990 and 2010, both significant at 1%. The last decades witnessed enormous economic, social and political changes in the developing world, but, although the income distributions have been affected with various intensities, the world inequality ranking has not changed much, a fact that suggests the existence of some underlying factors that are stronger determinants of the level of inequality.

In Figure 3.2 developing countries are grouped in regions. Sub-Saharan Africa is the geographic area that includes countries with the highest inequality levels, but it is also the region with the highest dispersion, possibly in part due to measurement errors (Table 3.1). Although eight out of the ten highest Gini coefficients belong to Sub-

Saharan African countries, and the arithmetic mean of the Gini coefficient is the highest in the world, the median is lower than in Latin America.[12]

Figure 3.2
Gini coefficients for the distribution of household consumption per capita
Developing countries, 2010



Source: own calculations based on PovcalNet (2013).
Note: each bar represents a country in a given geographic region of the developing world.

Table 3.1
Gini coefficients for the distribution of household consumption per capita
Developing countries, 2010

	Mean	Median	Coef. Var.	Min.	Max.
East Asia and Pacific	38.1	36.7	0.101	31.9	43.5
Eastern Europe and Central Asia	33.6	33.7	0.144	25.6	43.6
Latin America and the Caribbean	43.8	44.8	0.104	34.7	52.8
Middle East and North Africa	36.0	36.1	0.091	30.8	40.9
South Asia	35.0	36.3	0.081	30.0	38.1
Sub-Saharan Africa	44.4	42.1	0.175	33.3	63.1
Developing countries	39.8	39.2	0.181	25.6	63.1

Source: own calculations based on PovcalNet (2013).
Note: Unweighted statistics.

Latin America and the Caribbean has been typically pointed out as the most unequal region in the world. Deininger and Squire (1996), for instance, state that their dataset confirm the "familiar fact that inequality in Latin America is considerably higher than in the rest of the world".[13] This type of assessment however is usually made combining income Ginis for LAC with consumption Ginis for other regions, and/or ignoring Sub-Saharan Africa. With the adjustment mentioned above to take the

[12] The harmonic mean is similar in SSA than in LAC.
[13] See also Lopez Calva and Lustig (2010) and Chen and Ravallion (2012).

income/consumption gap into consideration (parameter 0.861), we find that the mean Gini for LAC is 43.8, slightly lower than in SSA (44.4), but the median is higher (44.8 in LAC and 42.1 in SSA). To reach the result of a higher mean Gini in LAC than in SSA we would need an adjustment parameter higher than 0.92; such value is larger than what we estimated in all LA countries in the sample, except Mexico.

The rest of the regions in the developing world have Ginis mostly below 40. The arithmetic mean is 38.1 in East Asia and Pacific, 36.0 in Middle East and North Africa, and 35.0 in South Asia. Inequality is likely to be higher in MENA, since several oil-producing countries are excluded for being high-income economies (and also for lack of information).[14] Eastern Europe and Central Asia is the region with the lowest inequality levels, with a mean Gini coefficient of 33.6. Interestingly, the dispersion measured by the coefficient of variation is higher than in the rest of the regions, except SSA.

Almost all very highly unequal countries (Gini coefficients above 50) are in Sub-Saharan Africa (Table 3.2). This region, however, has a similar share of countries in the high and middle categories. In contrast, in LAC most countries have high levels of inequality, while in EAP, MENA and SA most countries are in the middle-inequality group. Only ECA has economies with low inequality (Gini coefficients below 30).

Table 3.2
Classification of countries by level of inequality and by region
Developing countries, 2010

	Inequality				
	Very high [50-70]	High [40-50)	Middle [30-40)	Low [20-30)	Total
East Asia and Pacific	0	3	8	0	11
Eastern Europe and Central Asia	0	5	16	7	28
Latin America and the Caribbean	2	17	6	0	25
Middle East and North Africa	0	1	10	0	11
South Asia	0	0	7	0	7
Sub-Saharan Africa	10	14	16	0	40
Total	12	40	63	7	122

Source: own calculations based on PovcalNet (2013).
Note: countries are classified according to the value of the Gini coefficient for the distribution of household consumption per capita.

The *All the Ginis* dataset (ATG) includes Gini coefficients from LIS, SEDLAC, WYD, the World Bank ECA database and WIID. We selected consumption Ginis from ATG for year 2005 or close, and applied a similar adjustment as described above for those countries in LAC with only income Ginis. The basic results are similar to the ones obtained with PovcalNet data. The linear correlation coefficient for the Gini between both data sources is 0.784, while the Spearman rank correlation is 0.784, both significant at 1%.

[14] Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates are in that group. Malta and Israel are also ignored for being developed and Lebanon and Libya are excluded for lack of information.

The Gini coefficients in ATG go from 23.1 (Czech Republic) to 62.9 (Comoros). The mean and median coincide in 40.1. Again, more than half of the observations are in the range [35, 45]. Only several Eastern European countries have Ginis below 30, while only four Sub-Saharan African countries have Ginis higher than 55.

The evidence on inequality levels in the developing world drawn from WIID is similar. For instance, based on a sample of income Ginis for around 2005, Gasparini *et al*. (2013) find that the mean Gini for the six Sub-Saharan African countries in the dataset is 56.5, followed by Latin America (52.9), Asia (44.7) and Eastern Europe and Central Asia (34.7).[15] We find that the linear correlation coefficient for year 2005 for the Gini coefficient in PovcalNet and WIID is 0.871, and the Spearman coefficient is 0.820.

The Luxembourg Income Study database (see chapter 9 of this volume) covers 36 countries, including 6 in Latin America, which occupy the top places in all the income inequality rankings. The LA Ginis go from 50.6 in Colombia to 43.9 in Uruguay; the most unequal non-LA country is Russia with a value of 40.8, while the rest of the countries in LIS go from 37 (USA) to 22.8 (Denmark). The mean Gini for the Eastern European countries in LIS is slightly higher than the mean for the high-income economies. Data from the World Development Indicators also suggest that inequality in the developing world is significantly higher than in the OECD high-income countries. The mean income Gini for the latter group is 32.2, which is lower than in any other region in the world.

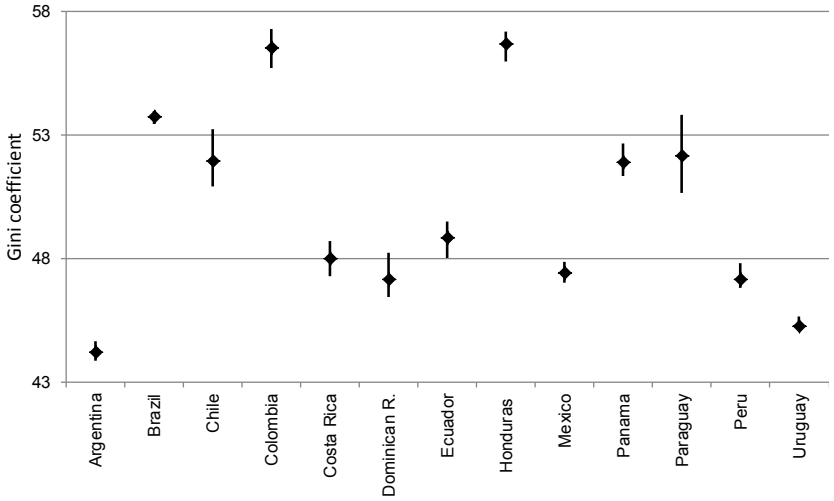
The EHII database confirms the high inequality levels of Sub-Saharan Africa and Latin America, but perhaps surprisingly, it records similar levels in South Asia and Middle East and North Africa.[16] The mean Gini for the period 1998-2002 is 47.3 in SSA, 46.4 in LAC, 46.4 in MENA and 47.2 in SA. According to this dataset inequality is relatively lower in East Asia and Pacific (44.9) and Eastern Europe and Central Asia (44). The estimated level of the Gini coefficient is substantially lower in the developed economies; the mean is equal to 36.5.[17] The Pearson (Spearman) correlation coefficient between EHII and PovcalNet Ginis is 0.642 (0.603), lower than the resulting value when comparing PovcalNet with WIID or ATG, but still significant at 1%.

Most international databases do not provide confidence intervals for the point estimates of the distributive measures, making impossible the assessment of the statistical significance of the inequality differences among countries. However, given that the indicators are calculated from large national household surveys, the confidence intervals are typically relatively narrow. SEDLAC provides the confidence intervals for all the Gini coefficients in Latin America: for instance, the 95% confidence interval for the income Gini was [43.9, 44.7] in Argentina 2010, [53.5, 54.0] in Brazil

[15] The OECD high-income countries rank as the least unequal in the world with a mean income Gini of 32.8.
[16] See also Galbraith and Kum (2005).
[17] This mean excludes the oil-rich Arab countries. When including these countries in the sample the mean Gini jumps to 39.

2009; and [47.0, 47.9] in Mexico 2010. Differences in the point estimates of more than 1 Gini point are always statistically significant (Figure 3.3).

Figure 3.3
Gini coefficient and confidence intervals (95%)
Distribution of household income per capita
Latin American countries, 2010



Source: own calculations based on SEDLAC (CEDLAS and the World Bank).

3.2. Inequality beyond the Gini coefficient

The international databases usually allow a closer look at the distributions in the world, beyond a single parameter, such as the Gini coefficient. Table 3.3 reports some basic statistics of the decile shares in 120 countries around 2010.[18] On average (unweighted) the poorest 10% of the population in a country accrues 2.6 % of total consumption reported in the survey: that share climbs to 31.5% for the richest 10%. In a typical developing country the aggregate consumption of the poorest 60% of the population is similar than the consumption of the richest 10%.

It is interesting to notice that the coefficient of variation of the decile consumption shares across countries is decreasing up to the top decile, when it strongly rises: countries in the world seem substantially different in the consumption share of the poor and the rich, but not in the share of the middle strata, in particular the upper-middle strata.[19]

[18] Again, figures for Latin American countries are estimated based on the comparison of income and consumption microdata of seven countries in that region.
[19] This fact is naturally related to the typical shape of the real-world income distributions. For instance, under log-normality, the derivative of the decile shares with respect to the standard deviation of log incomes is U-shaped.

Table 3.3
Deciles shares, distribution of household consumption per capita
Developing countries, 2010

Deciles	Mean	Std. Dev.	Coef.Var.	Min.	Max.
1	2.6	0.81	0.31	1.0	4.4
2	3.8	0.86	0.23	1.5	5.8
3	4.8	0.90	0.19	2.0	6.8
4	5.8	0.92	0.16	2.6	7.8
5	6.8	0.92	0.13	3.5	8.8
6	8.1	0.87	0.11	4.7	9.9
7	9.6	0.80	0.08	6.6	11.0
8	11.7	0.65	0.06	9.0	12.7
9	15.3	0.84	0.05	12.7	17.6
10	31.5	6.12	0.19	19.5	51.7

Source: own calculations based on PovcalNet (2013).
Note: Unweighted statistics.

The aggregate consumption share of deciles 5 to 9 is on average around 50%: that share is very stable across countries. Palma (2011) has labeled this phenomenon the *homogeneous middle*. Variability across countries is actually smaller in the upper-middle deciles. Take the distribution of the shares of deciles 7 to 9 in total consumption across countries. While the percentile 10 of that distribution is 34.7, the percentile 90 is just 38.3. The corresponding intervals for the distribution of the share accruing to the poorest 60% [25.4, 38.2] and the richest 10% [24.3, 39.3] are much wider. The proportion of total consumption accruing to those in the upper-middle strata (deciles 7 to 9) is also quite similar in all geographic regions of the world: it ranges from 35.9% in SSA to 37.3% in ECA. The main difference across regions lies in the share of the bottom 60% compared to those in the upper 10%. For example, while the share of deciles 7 to 9 in total consumption is almost the same in ECA (37.3%) and LAC (37.1%), the share of the bottom 60% is more than 7 points higher in the former (36.4% and 29.1%).

The correlation coefficients for the decile shares in total consumption provide information about the structure of the distributions across countries in the world (Table 3.4). In a cross-country perspective gains are highly positively correlated in the first 8 deciles; on the other hand, for decile 10 correlations are all negative and large, except with decile 9, for which the correlation is non-significant. Gains in the participation of the richest 10% are tightly linked to losses in the share of the poorest 80% of the population. The table suggests that when we move up in the ladder of countries according to the share of the bottom deciles, we expect to see gains in the lowest strata obtained mostly against the share of the upper 10% of the population (and not for instance against the middle strata, and in alliance with the rich).

Table 3.4
Correlation coefficients across countries of decile consumption shares
Developing countries, 2010

	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10
d1	1									
d2	0.9355*	1								
d3	0.8930*	0.9883*	1							
d4	0.8421*	0.9624*	0.9910*	1						
d5	0.8042*	0.9273*	0.9647*	0.9787*	1					
d6	0.7336*	0.8739*	0.9291*	0.9623*	0.9847*	1				
d7	0.6310*	0.7734*	0.8436*	0.8950*	0.9378*	0.9736*	1			
d8	0.3127*	0.4711*	0.5624*	0.6446*	0.7253*	0.8085*	0.8982*	1		
d9	-0.5793*	-0.4905*	-0.4112*	-0.3258*	-0.2389*	-0.1232	0.0527	0.4390*	1	
d10	-0.7844*	-0.9032*	-0.9452*	-0.9689*	-0.9844*	-0.9891*	-0.9650*	-0.7962*	0.118	1

Source: own calculations based on PovcalNet (2013).
*=significant at 1%.

3.3. Inequality in the Gallup World Poll

The Gallup World Poll provides new evidence on the international comparisons of income inequality, as it includes identical income and household structure questions applied to national samples in 132 countries. Of course, the reliability of the national inequality estimates in Gallup is lower than those obtained with household surveys, since only one income question is used to approximate well-being, and the sample sizes are considerably smaller. However, Gluzmann (2012) finds that the correlation coefficient between the Gini coefficients computed with Gallup microdata and those reported in the World Development Indicators that are based on per capita income is high (0.85). Interestingly, the relationship with the consumption Ginis in WDI is much weaker; the linear correlation coefficient is 0.21, non-significant at 10%. International surveys with similar questionnaires across countries, such as the Gallup World Poll, could hardly be a substitute for household surveys as the main source for distributive analysis at the country level, but they may have a great potential for international comparisons of social variables. Future improvements in the quality of these surveys could turn them into a very valuable source for comparative international research.

Gasparini and Gluzmann (2012) use microdata from the Gallup World Poll 2006 to compute inequality in each region of the world. According to the unweighted mean of the national income Gini coefficients, Latin America is the most unequal region in the world (excluding Africa, which is not in the sample). The cross-country Gini in Latin America is 49.9, slightly larger than in South Asia (48.9), and Eastern Asia and Pacific (47.1). Countries in Eastern Europe and Central Asia (41.8), North America (39.2) and especially Western Europe (34.0) are the least unequal in the world. Alternatively, regional inequality can be measured by considering each region as a single unit, and computing inequality among all individuals in that unit, after translating their incomes to a common currency - a concept usually labeled *global inequality* (see chapter 12 of this Handbook). The global Gini in Latin America is 52.5, a value higher than in Western Europe (40.2), North America (43.8) and Eastern Europe and Central Asia (49.8), but lower than in South Asia (53.2) and Eastern Asia and Pacific (59.4). The change in the

rankings between the two concepts of inequality is driven by the differences across regions in the heterogeneity among countries in terms of mean income. Gasparini and Gluzmann (2012) report that the between component in a Theil decomposition accounts for 8% of total regional inequality in Latin America and 32.4% in East Asia and Pacific.

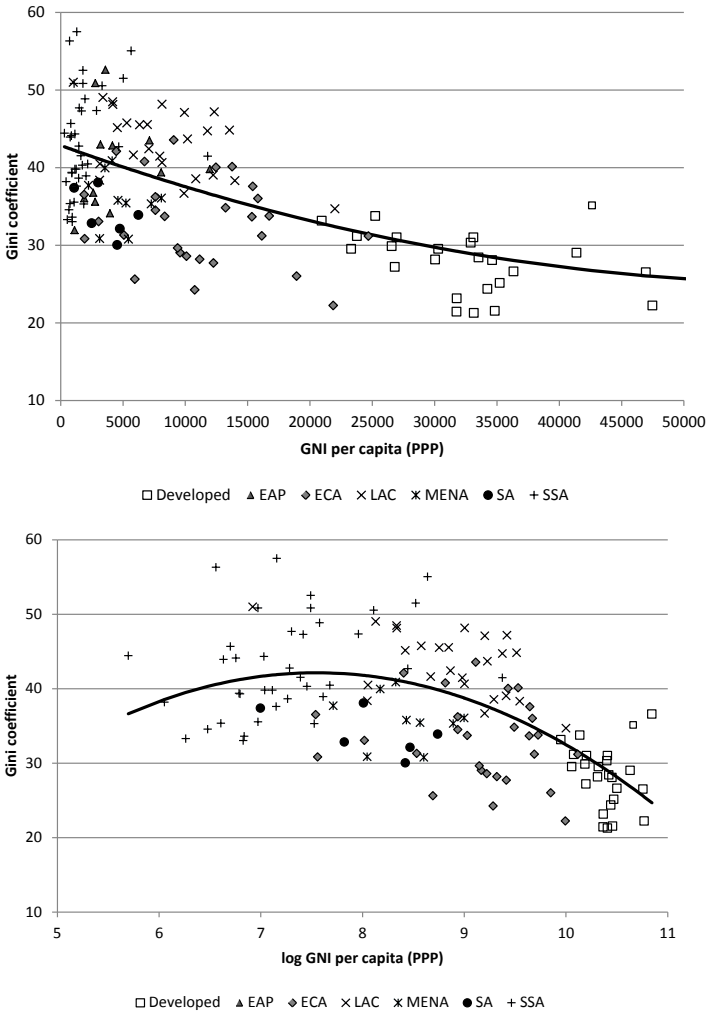
3.5. Inequality and development

Is the level of inequality in a country associated to its development stage? In this section we take advantage of a cross-section of national Gini coefficients for year 2010 to take a look at this issue. Of course, this topic is related to the long-lasting debate initiated with the seminal contributions by Lewis (1954) and Kuznets (1955), who argued that the process of industrialization would imply an inverse U pattern for inequality. However, the empirical test for the Kuznets curve requires time-series or panel data, and not just a cross-section, since it is a hypothesis about the dynamics of an economy over its development process. The causal relationship between development and inequality is the subject of a large literature that has to face numerous empirical challenges, and hence it is far from settled (see Anand and Kanbur, 1993; Fields, 2002; Banerjee and Duflo, 2003; Dominics, Florax and de Groot, 2008; and Voitchovsky, 2009 for assessments). In this section we simply document the empirical relationship between these two variables across countries in a recent point in time without exploring the difficult issue of causality.

The first panel in Figure 3.4 plots the Gini coefficient for the distribution of consumption per capita against per capita gross national income (GNI).[20] The figure seems to reveal a decreasing relationship between inequality and development. The linear correlation coefficient between the Gini coefficient and per capita GNI is -0.56 (statistically significant at the 1% level). An inverse-U shape shows up in the second panel of Figure 3.4, when per capita GNI is presented in logs. However, the increasing segment of the curve covers only very poor Sub-Saharan African countries. The relationship Gini-GNI is decreasing in the range of GNI of most countries in the world.

[20] The Gini for the developed countries is computed over the distribution of income per capita, a fact that probably tends to underestimate the slope of the curve.

Figure 3.4
Inequality and development
Per capita gross national income (GNI) and Gini coefficient
Developing countries, 2010



Source: own calculations based on WDI and PovcalNet (2013).

The results of the regressions in Table 3.5 and the Lind and Mehlum (2010) test confirm an inverse U shape for the relationship between the Gini coefficient and log GNI per capita in a cross-section of countries.[21] The result seems also valid, although becomes considerable weaker, when restricting the sample to developing economies. The turning points implicit in the regressions correspond to around US$ 1800, a value that is lower than the per capita GNI of most developing countries in the world, except for some economies in Sub-Saharan Africa. The inclusion of regional dummies reveals that East Asian, and especially Latin American and Sub-Saharan African countries are

[21] It is also confirmed estimating GDP with the Atlas method, and using the *All the Ginis* database.

particularly unequal, even when controlling for their levels of economic development.[22]

Table 3.5
Relationship between Gini coefficient and GNI per capita

	All countries		Only developing countries	
	(i)	(ii)	(iii)	(iv)
log GNIpc	24.24	24.44	18.01	26.54
	(9.52)**	(4.48)***	(8.23)*	(6.58)**
log GNIpc squared	-1.606	-1.409	-1.202	-1.541
	(0.552)**	(0.34)***	(0.53)*	(0.48)**
Developed countries		-1.416		
		(2.76)		
East Asia & Pacific		7.352		7.170
		(1.43)***		(1.62)***
Latin America & Caribbean		10.238		10.157
		(0.53)***		(0.62)***
Middle East & North Africa		2.334		2.144
		(1.28)		(1.48)
South Asia		1.705		1.515
		(1.79)		(1.97)
Sub-Saharan Africa		13.749		13.660
		(2.33)***		(2.34)***
Constant	-49.34	-72.10	-61.67	-80.27
	-38.69	(13.17)***	(28.64)**	(20.06)**
Observations	146	146	121	121
R-squared	0.31	0.58	0.07	0.45
Lind and Mehlum test for inverse U shape				
| *t* |	2.72	2.31	1.35	2.0
p-value	0.004	0.011	0.089	0.024

Note: Robust cluster standard errors in brackets.
* significant at 10%; ** significant at 5%; *** significant at 1%
Omitted category: Eastern Europe and Central Asia.
Lind and Mehlum test: H_0: monotone or U shape; H_1: inverse U shape.

4. Inequality: trends

In this section we report the recent trends in income inequality in the developing countries. We start laying out the general patterns, and then deep into the evidence for each region. Although most of the section deals with relative inequality, we devote a section to explore patterns for absolute inequality, and a section to document aggregate welfare changes. We end with a brief summary of the methodologies and main issues in the debate on inequality determinants in the developing world.

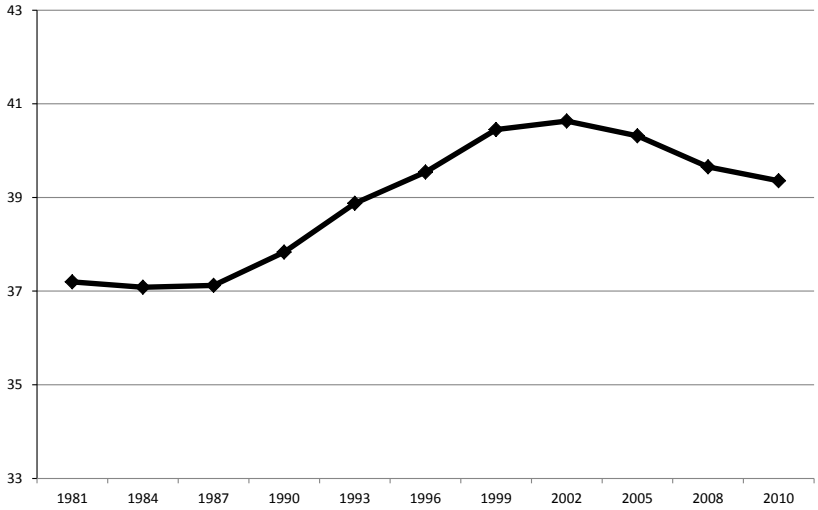
4.1. General changes

The available evidence suggests that on average the levels of national income inequality in the developing world increased in the 1980s and 1990s, and declined in the 2000s. Using data from PovcalNet, the mean Gini for the distribution of per capita

[22] The Latin American "excess inequality" is documented in Londoño and Székely (2000); Gasparini, Cruces and Tornarolli (2011), and others.

consumption expenditures increased from 37.2 in 1981 to 39.4 in 2010 (Figure 4.1).[23] The mean was basically unchanged between 1981 and 1987,[24] then increased more than three points to reach a value of 40.5 in 1999, and from 2002 it started to fall, although slowly (from 40.6 in 2002 to 39.4 in 2010).

Figure 4.1
Gini coefficient
Unweighted mean for developing countries, 1981-2010



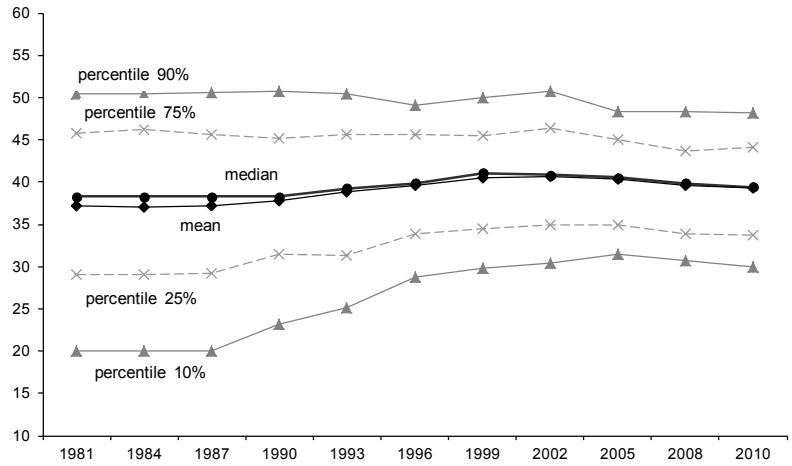
Source: own calculations based on PovcalNet (2013).
Note: The national Gini coefficients are computed over the distribution of household consumption per capita.

Figure 4.2 adds to the picture the changes at different percentiles of the distribution of national Ginis in the developing world. The figure makes clear that on average the changes in the last decades have not been large, compared to the range in which the Gini varies across countries. The picture also reveals that the growth in the mean Gini in the late 1980s and 1990s was mainly due to the substantial increase in the low-inequality countries, in particular Eastern Europe and Central Asia economies after the fall of communism, and also some Asian economies in the early stage of economic take-off. Instead, the fall in the 2000s was more generalized, although more intense in those countries above the median, such as those in Latin America. This observation suggests convergence in the levels of inequality in the developing economies. In fact, the standard deviation for the distribution of Gini coefficients substantially fell over time: 11.2 in 1981, 10.1 in 1990, 7.4 in 1999 and 7.2 in 2010. Countries in the

[23] In order to compute changes we discard countries in PovcalNet with less than four observations over the period 1981-2010, or with observations concentrated in a narrow time-period. The sample we use for the calculations on trends include 76 countries that represent 88% of the developing world population. In order to build a constant sample in a few cases Gini coefficients are imputed assuming constant inequality. Income Ginis in LAC are adjusted as explained in the previous section.
[24] This result is in part driven by the lack of information on changes in inequality over this period for several countries in the developing world. See below.

developing world are still very different in terms of income inequality but differences have become considerably smaller in the last three decades.

Figure 4.2
Gini coefficient
Unweighted statistics for developing countries, 1981-2010



Source: own calculations based on PovcalNet (2013).
Note: The national Gini coefficients are computed over the distribution of household consumption per capita.

A closer inspection of the data reveals that the result of a stable mean Gini in most of the 1980s is driven by the lack of information for several countries, and by a substantial heterogeneity in the changes of those with information (Table 4.1).[25] The strong rise in the mean Gini in the 1990s is associated to a large proportion of countries with growing inequality in a framework of much improved information. The tide seems to have started to turn in the 2000s, when most of the countries in the sample experienced a fall in inequality. But even in this decade of widespread social improvement, the country performances in terms of inequality reduction were quite heterogeneous. In fact, in 20% of the economies of the developing world the Gini coefficient increased between 2002 and 2010, while in 15% it experienced changes smaller than 2.5%.

[25] We classify countries in groups according to whether the Gini went up or down by more or less than 2.5% in a period. That threshold is certainly arbitrary. A change of 2.5% applied to the mean Gini in the developing world - which is around 40- represents 1 Gini point. A change of 1 point in the Gini coefficient is typically statistically significant, given the sample sizes of the national household surveys.

Table 4.1
Proportion of countries classified in groups according to the change in the Gini coefficient

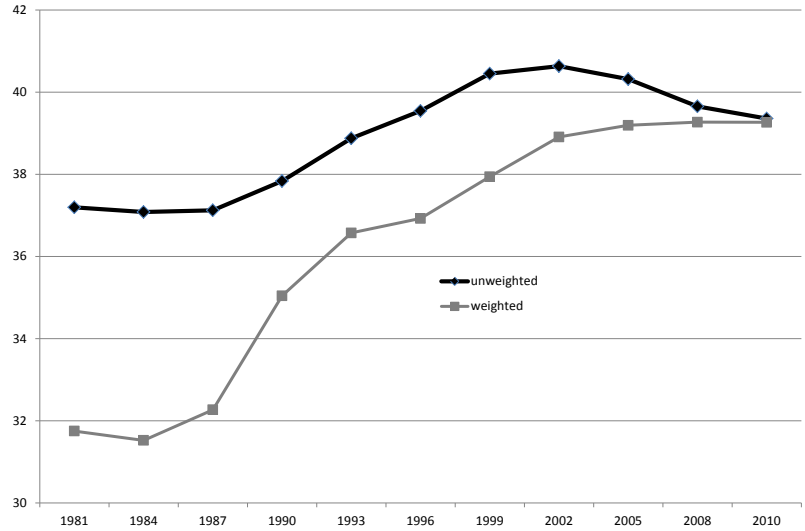
	1981-1990	1990-2002	2002-2010
Fall	14.7	22.7	65.3
No change	21.3	16.0	14.7
Increase	34.7	60.0	20.0
No information	29.3	1.3	0.0
Total	100.0	100.0	100.0

Source: own calculations based on PovcalNet (2013).
Note: "Fall" includes countries where the Gini fell more than 2.5% in the period, "Increase" include countries where the Gini rose more than 2.5%, "No change" includes countries where the Gini changed less than 2.5%, "No information" includes countries without two independent observations in each period.

The bulk of the countries in the sample (64%) experienced a change in the pattern of inequality around the turn of the century, from non-falling to decreasing inequality, while only a few experienced a pattern of continuous increasing (12%) or decreasing (15%) disparities over the two decades. The inverse U shape of the inequality pattern observed for many economies in the developing world could be consistent with the Kuznets story of economic growth for countries located close to the curve turning point. However, we fail to find any significant correlation between the type of the inequality pattern and different measures of development and growth. The inverse-U pattern in the period 1981-2010 appears to have been common to a wide range of economies (more on this below).

The growth in the population-weighted mean of the Gini coefficient across developing countries was stronger than the increase in the unweighted mean (Figure 4.3). While the latter increased 2.2 points in the period 1981-2010, the former jumped 7.5 points. The gap between the two means shrunk from 5.4 points in the early 1980s to almost zero in the late 2000s. This pattern is mainly accounted by the dramatic surge in income inequality in China over the period. Interestingly, the fall in the unweighted mean Gini in the 2000s does not show up in the weighted mean, mainly because of the increase in inequality in China (also in India and Indonesia, but to a lesser extent). Although the Gini for a typical developing country significantly decreased in the 2000s, the national Gini for a typical person in the developing world did not fall.

Figure 4.3
Gini coefficient
Weighted and unweighted means
Developing countries, 1981-2010

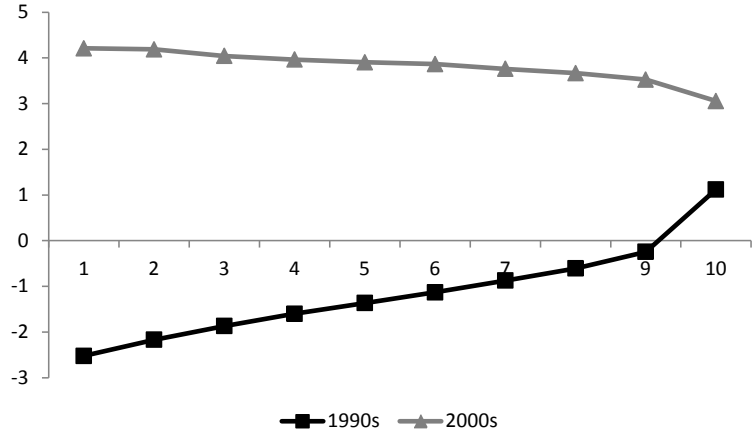


Source: own calculations based on PovcalNet (2013).
Note: The Gini coefficients are computed over the distribution of household consumption per capita.

In the rest of this section we go beyond the Gini coefficient and track changes along the distribution. The growth-incidence curves (GIC) are useful instrument to summarize income distribution changes. In Figure 4.4 each point in a GIC indicates the unweighted mean across countries in the annual rate of growth of real consumption per capita (in PPP US$) for a given decile of the national distributions.[26] There is a stark contrast in the GIC corresponding to the 1990s and the 2000s. The first one is clearly increasing, suggesting growing inequalities, while the second is decreasing (and flatter), indicating a fall in income disparities in the 2000s. On average, in that decade consumption per capita grew by more than annual 4% in the three bottom deciles of the national distributions and by 3% in the top decile.

[26] The GIC depicted in Figure 4.4 is not the world growth-incidence curve, where for instance decile 1 would include the poorest 10% of the world population.

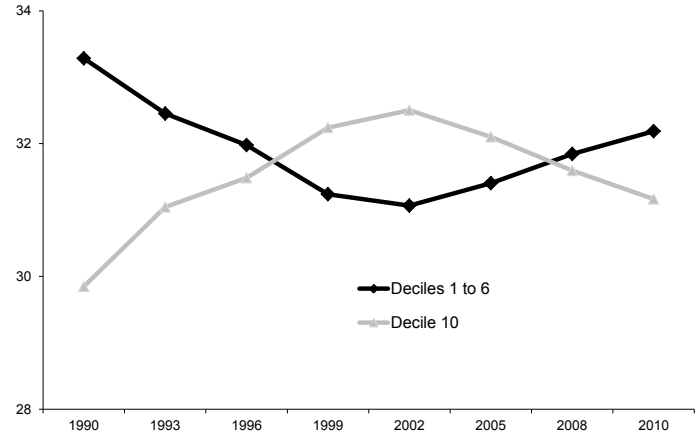
Figure 4.4
Growth-incidence curves
Annualized growth rate in consumption per capita by decile
Unweighted mean for developing countries



Source: own estimates based on PovcalNet (2013).
Note: annual change in consumption per capita (PPP US$). 1990s=1990-2002, 2000s=2002-2010.

Naturally, the contrast between decades is also evident when looking at income shares. The results are summarized in Figure 4.5: while the share of the bottom 60% fell 2 points in the 1990s and increased 0.9 points in the 2000s, the performance of the top 10% was almost the exact mirror: increased 2.4 points in the 1990s and fell 1 point in the following decade. The share of the "middle" (deciles 7 to 9) has remained quite stable over the two last decades (36.9 in 1990, 36.5 in 1999 and 36.6 in 2010). This stratum seems not only quite homogeneous across countries but also over time (Palma, 2011).

Figure 4.5
Decile shares
Unweighted mean for developing countries, 1990-2010

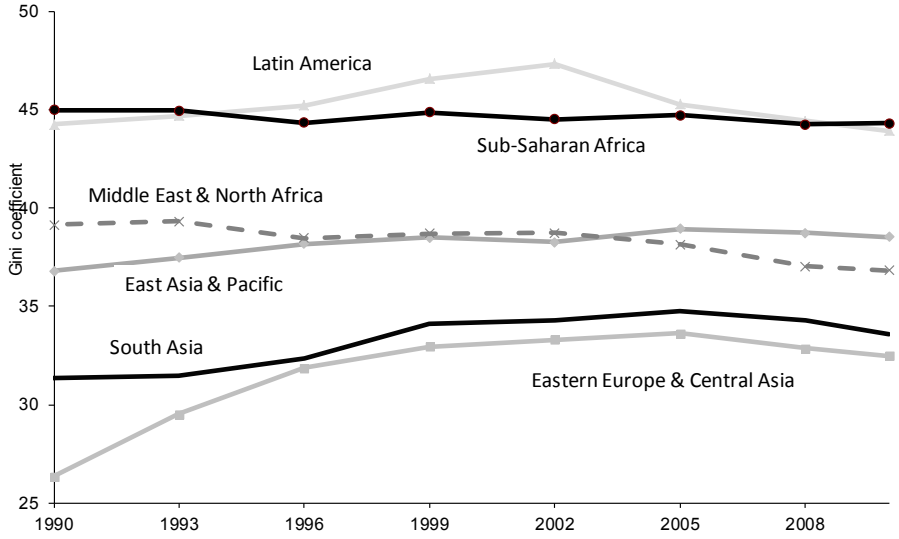


Source: own estimates based on PovcalNet (2013).
Note: The decile shares are computed over the distribution of household consumption per capita.

4.2. Changes by region

Changes in inequality have been heterogeneous across the six geographical regions of the developing world (Figure 4.6).[27] The mean Gini coefficient in Latin America increased more than two points in the 1990s, but then dropped in the 2000s by a larger amount. The data reveals almost no change in inequality in Sub-Saharan Africa over the two last decades and some decline in the five MENA countries included in the sample. Instead, the Gini coefficient increased more than two points in Asia, and more than six points in Eastern Europe and Central Asia. The increase in both regions was concentrated in the 1990s. Figure 4.6 suggests again some pattern toward convergence: the gaps in inequality among regions in the world are smaller now than two decades ago. For instance, while the gap in the Gini coefficient between LAC and ECA was 18 points in the early 1990s, it shrank to 11 points in the late 2000s.

Figure 4.6
Gini coefficients
Unweighted means by region, 1990-2010



Source: own estimates based on PovcalNet (2013).
Note: The Gini coefficients are computed over the distribution of household consumption per capita.

In all regions the share of countries with falling inequality increased in the 2000s, as compared to the 1990s. The two most remarkable changes in the pattern occurred in Latin America, and in Eastern Europe and Central Asia. While the Gini went down in 26% of the LA economies in the 1990s, that share increased to 95% in the 2000s. In

[27] We prefer not to report the regional patterns before 1990 since the number of observations is small in several regions. The numbers of countries by region in the sample we use to assess inequality trends are: 8 in EAP, 20 in ECA, 19 in LAC (all in Latin America, none from the Caribbean), 5 in MENA, 4 in SA and 20 in SSA.

ECA while the growth in inequality was generalized in the 1990s, more than half of the countries experienced reductions in the 2000s.

Using data from PovcalNet, Chen and Ravallion (2012) report changes in the within component of the global mean-log deviation between 1981 and 2008. This within component is a population-weighted measure of the national inequalities. They find substantial increases in East Asia and Pacific (from 0.125 to 0.256) and Eastern Europe and Central Asia (from 0.128 to 0.225), smaller increases in South Asia (from 0.156 to 0.181), Latin America and the Caribbean (from 0.541 to 0.561) and sub-Saharan Africa (from 0.338 to 0.347) and a fall in MENA (from 0.256 to 0.215). Bastagli *et al*. (2012) report similar patterns using data from PovcalNet, SEDLAC and LIS.

The picture of national inequalities in the world is similar when using other databases. For instance, the unweighted mean Gini in the *All the Ginis* database assembled by Milanovic grew from 36.2 in 1990 to 40.7 in 1999 and then dropped to 39.7 by 2005. While in the 1990s inequality rose in 63% of the economies in the database, that share dropped to 35% in the 2000s. The recorded increase in the 1990s was generalized across regions, but especially intense in Eastern Europe and Central Asia (9 Gini points), while the fall in the 2000s was larger in MENA and Latin America. Cornia and Kiiski (2001), Cornia (2011) and Dhongde and Miao (2013) document similar results using WIID data. We find that the linear (rank) correlation coefficient for the change in the Gini coefficient between 1990 and 2005 recorded in PovcalNet and WIID is 0.776 (0.868), significant at 1%. The corresponding values for the comparison between PovcalNet and ATG are 0.721 and 0.765.

The evidence drawn from the EHII database is also roughly consistent with the patterns discussed above. The mean Gini for the developing world remained almost unchanged in the 1980s, increased in the 1990s from 42.5 in 1990 to 47.0 in 1999, and dropped to 46.5 in 2002 (the latest available date).[28] While in 62% of the countries inequality increased in the early 1990s, that share dropped to 55% between 1993 and 1999, and to 49% between 1999 and 2002. The regional patterns are roughly consistent with those described above. The main difference is that EHII reveals a dramatic increase in inequality in the Middle East and North Africa (7 Gini points) that is not present in the evidence drawn from household surveys.

4.3. Inequality convergence

As suggested above, there are signs of inequality convergence among countries in the developing world. As an example, the mean Gini coefficient for the 20 most unequal countries in our PovcalNet sample in 1981 fell 11% in the following three decades, while it increased 58% for the 20 most egalitarian economies.

Benabou (1996) was the first to present empirical evidence for cross-country convergence in income inequality with data from 1970 to 1990 drawn from the

[28] These estimates are computed dropping countries with few observations in the period.

Deininger and Squire dataset. He found evidence consistent with the predictions of a neoclassical growth model that yields convergence of the entire income distribution and not just the first moment. Evidence on inequality convergence was also found in studies that used improved data: Ravallion (2003) based on PovcalNet, Bleaney and Nishiyama (2003) based on WIID, and Dhongde and Miao (2013) using both datasets. With variations, a typical inequality convergence study estimates

$$G_{it} - G_{i1} = (\alpha + \beta G_{i1})(t-1) + e_{it} \qquad \text{for } t = 2, \ldots, T;\ i = 1, \ldots, N,$$

where G_{it} is the Gini coefficient for country i in year t and e_{it} is an heteroscedastic error term. The parameter β measures the link between the change and the initial Gini, and therefore $\beta<0$ indicates inequality convergence. The intercept adds a notion of the time required to attain convergence: a higher value for α is associated to a slower convergence process. Models could be estimated with the Gini coefficient in levels or logs. In his early study Benabou (1996) found a beta coefficient of -0.039 for a small sample of around 30 countries. Naturally, estimates of the beta coefficient vary according to the data used, the period covered, the time horizons considered, and the regression model applied. Ravallion (2003) estimated a value of -0.028 in the 1990s, Bleany and Nishiyama (2003) a value of -0.0125 between 1965 and 1990, and Dhongde and Miao (2013) a value of -0.022 from 1980 to 2005. This literature has also found that the impact of the initial Gini coefficient on the inequality change diminishes over longer time horizons, and that the speed of inequality convergence is higher than the speed of convergence in per capita income.

We add to this literature our own estimates, taking advantage of the PovcalNet panel of 76 countries from 1981 to 2010 used in this section. Table 4.2 shows the OLS and IVE estimates of α and β for different initial years.[29] The parameter β is negative and significant in all the specifications, suggesting evidence for inequality convergence. The estimated coefficients are in the range of those estimated in the literature.

[29] Caselli *et al* (1996) and Dhongde and Miao (2013) discuss biases that may arise in an OLS model.

Table 4.2
Inequality convergence
Models of the change in the Gini

		Initial year 1981			Initial year 1990		
		Intercept (α)	Slope (β)	R^2	Intercept (α)	Slope (β)	R^2
Gini Index							
	OLS	1.098	-0.026	0.49	0.908	-0.023	0.35
		(18.90)**	(20.38)**		(11.20)**	(10.97)**	
	IVE	1.271	-0.031	0.47	0.855	-0.021	0.35
		(17.91)**	(17.61)**		(9.83)**	(9.90)**	
	Difference	0.173	-0.005		-0.053	0.002	
	Hausman Test	(4.26)**	(4.03)**		(1.69)*	(2.61)**	
Log Gini Index							
	OLS	0.118	-0.032	0.65	0.105	-0.029	0.27
		(28.41)**	(28.11)**		(15.53)**	(15.14)**	
	IVE	0.135	-0.037	0.63	0.104	-0.028	0.27
		(25.79)**	(24.75)**		(14.07)**	(13.66)**	
	Difference	0.017	-0.005		-0.001	0.001	
	Hausman Test	(5.30)**	(5.01)**		(0.49)	(0.48)	

Note: robust t statistics in parentheses *significant at 5%; **significant at 1%; the heteroskedasticity-consistent covariance matrix estimator is used (HC1). IVE estimates use the initial value as the instrument for the inequality measure in the second survey. The number of observations is 456 in the first panel, and 281 in the second.

While the evidence for inequality convergence in the last decades seems well-established, the reasons driven that pattern are not clear. As mentioned before, Benabou (1996) finds the evidence on convergence consistent within the framework of a neoclassical growth model. In contrast, the evidence for unconditional inequality convergence is interpreted by Ravallion (2003) as the result of policy and institutional convergence since around 1990, when socialist control economies became more market-oriented, and non-socialist economies adopted market reforms.

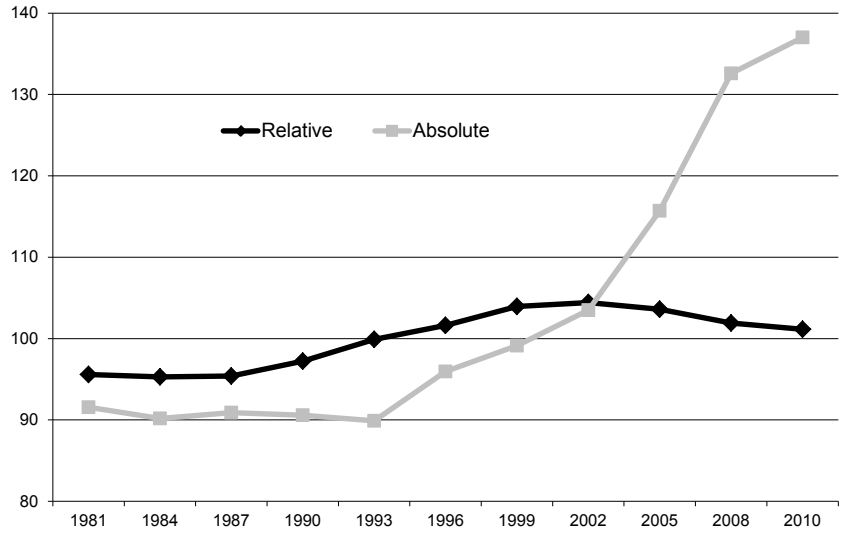
4.4. Absolute inequality

While relative inequality has been the preferred concept in empirical work in development economics, absolute views of inequality certainly have some intuitive appeal (Amiel and Cowell, 1999; Atkinson and Brandolini, 2004). Interestingly, the trends in the two concepts over the last decades have been different in the developing world.[30] The fact that most countries experienced economic growth, while at the same time relative inequality did not fall, implied widening absolute income differences. On average, the absolute difference in monthly consumption per capita between the top and bottom 10% of each country increased over the two decades from $415 (PPP adjusted) in 1990, to $497 in 2002, and $646 in 2010. In more than 90% of the countries in the sample that absolute difference was higher in 2010 than in 1990.

[30] See, as an example, the analysis of Atkinson and Lugo (2010) for Tanzania.

The contrast between the recent trends in absolute and relative inequality in the developing countries is illustrated in Figure 4.7. While relative inequality rose in the late 1980s and early 1990s, absolute inequality declined, driven by a reduction in mean income. The strong growth in the developing world since mid-1990s is reflected in the substantial hike in the degree of absolute inequality. Although some equalizing forces operated in the 2000s that reduced the relative gaps, they were not enough to narrow the absolute gaps in a context of economic growth. Based on these facts, Ravallion (2004) argues that the disagreements over whether inequality in the world has gone up or down may partly be due to differing views about the importance of absolute versus relative conceptions of inequality.

Figure 4.7
Absolute and relative Gini coefficients
Unweighted means, developing countries, 1981-2010



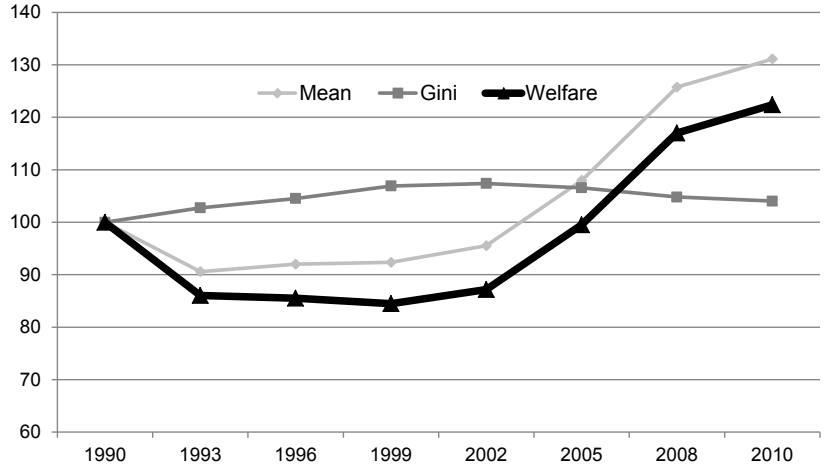
Source: own estimates based on PovcalNet (2013).
Note: Normalized to 100=mean over the period 1981-2010.The Gini coefficients are computed over the distribution of household consumption per capita.

4.5. Aggregate welfare

The typical way of assessing the economic performance of a country is by means of its per capita income or output. However, this practice is valid only when the evaluator's welfare function is utilitarian. Except in this extreme case, measuring aggregate welfare involves not only knowing the mean but also other elements of the income distribution, in particular the degree of inequality. Although social welfare functions are naturally arbitrary, since they depend on the analyst's value judgments, it is common in the literature to work with anonymous, paretian, symmetric and quasiconcave functions. For simplicity, here we consider the abbreviated welfare function proposed by Sen (1976), $W_S=\mu.(1-G)$, where μ is the mean of the distribution and G is the Gini coefficient. Figure 4.8 shows the unweighted mean of W_S for the developing countries in the period 1990-2010 computed from household survey data.

In general, aggregate welfare has followed changes in per capita income. The income fall in the early 1990s (mostly due to the negative performance in ECA) was reinforced by the increase in inequality, driving welfare down around 15%. Between 1993 and 2002 mean income went up but the change was counterbalanced by a similar increase in the Gini, keeping welfare roughly constant. The 2000s witnessed a robust increase in mean income, along with some fall in inequality, implying a 40% increase in aggregate welfare between 2002 and 2010. According to these calculations the mean aggregate welfare in the developing countries was 22% higher in 2010 than in 1990, implying an annual growth rate of around 1%.

Figure 4.8
Aggregate welfare
Sen welfare function, unweighted mean, developing countries, 1990-2010

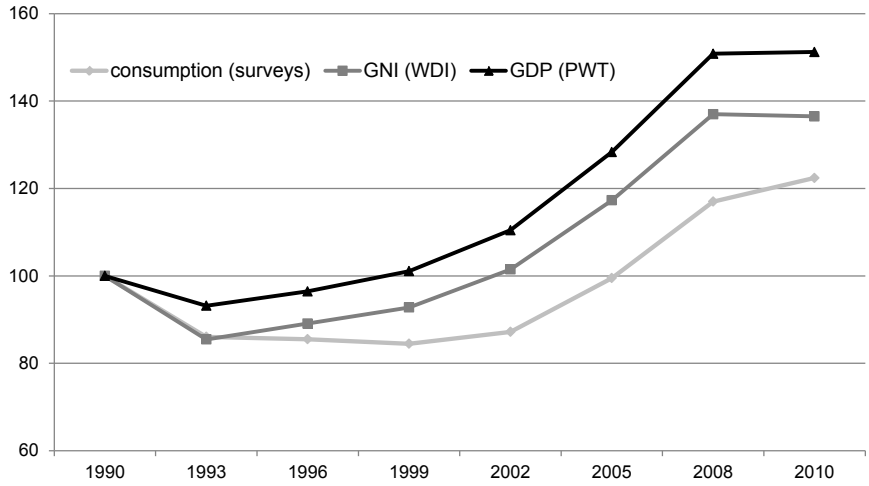


Source: own estimates based on PovcalNet (2013).
Note: Normalized to 100=value in 1990.

In order to calculate welfare it is necessary to have estimates of the mean income and some inequality measure. Ideally, both parameters should be estimated from the same source, typically a household survey, as we have done so far. Some authors have taken a different approach, anchoring the mean to a variable from National Accounts, such as per capita GDP or aggregate household consumption expenditures. For several reasons changes in mean income from household surveys tend to differ significantly from changes in per capita GDP (Deaton, 2003, 2005; Anand and Segal, 2008). Some of these differences are natural since per capita income and GDP are not the same thing, but some are rooted in measurement errors both in household surveys and in National Accounts. Some authors pay the price of the potential inconsistency of using two different data sources (i) to avoid departing from the typical growth and development literature that is based on National Accounts data, (ii) as a way to alleviate the underreporting issue in household surveys, and (iii) to avoid problems related to the unavailability of surveys for many years in several countries (Ahluwalia *et al*., 1979; Bourguignon and Morrisson, 2002; Sala-i-Martin, 2006; Bhalla, 2002).

In Figure 4.9 we compute the unweighted average of aggregate welfare across developing countries using alternative mean income variables. According to these estimates mean welfare in the developing world grew at an annual 1% from 1990 to 2010 using mean consumption from household surveys, 1.6% using per capita GNI from WDI, and 2.1% using per capita GDP (PPP adjusted) from Penn World Tables (Heston *et al*., 2012).[31] These discrepancies are worrying and call for increasing efforts to understand and reduce the gaps among data sources. The population-weighted mean of the welfare measure grew at a much higher rate, due to the positive performance of several large countries.[32] The growth rate between 1990 and 2010 was 2.3% using household survey data, 3% anchoring mean income to per capita GNI from WDI, and 3.3% when using the Penn World Tables.

Figure 4.9
Aggregate welfare for alternative mean variables
Sen welfare function, unweighted mean, developing countries, 1990-2010



Source: own estimates based on PovcalNet (2013), WDI and PWT.
Note: Mean anchored to per capita consumption (PovcalNet), GNI per capita PPP (WDI) and GDP per capita (PWT).

4.7. Exploring inequality changes

Explaining changes in the income distribution is a very difficult and challenging task that lies well beyond the objectives of this chapter. In this section we just briefly review some methodologies to study the determinants of the income distribution

[31] In fact, this difference comes from the combination of higher growth recorded in the National Accounts in the 1990s compared to household surveys, and the opposite result in the 2000s. For instance, while per capita GDP slightly fell between 2008 and 2010, mean consumption in household surveys increased at annual 2%.

[32] Some authors have computed global welfare, ignoring the division of the world in countries. The evidence suggest an increase in aggregate welfare in the developing world in the last decades (Pinkovskiy and Sala-i-Martin, 2009; Atkinson and Brandolini, 2010; Pinkovskiy, 2013).

changes and lay out some of the main results regarding developing countries.[33] Certainly, there has been sustained progress in our understanding of the factors that shape the income distributions of the real world, but yet the image that emerges from reviewing the literature is still that of a patchwork of numerous hypotheses and explanations without conclusive empirical support.

Decompositions are one of the most widely used techniques to characterize income distribution changes. Typically, an income model is estimated and a distribution is simulated changing some elements of the estimated income model (*e.g*. parameters or the distribution of observable factors), while keeping the rest fixed. The difference between the actual and the simulated distribution captures the first-round partial-equilibrium effect of the change under study.[34] The method generates entire counterfactual distributions, and hence can capture the heterogeneity of impacts throughout the distribution. The decompositions have been typically used to shed light on the distributive impact of changes in the returns to education, changes in the demographic, sectoral, occupational and educational composition of the population, and changes in labor and social policies. The decompositions do not allow for the identification of causal effects, and suffer from the usual problems of equilibrium-inconsistency and path dependence. Nevertheless, these types of exercises are informative about the relative strength of several direct determinants that may be driving the distributive changes, and therefore could be useful in identifying areas in which to focus the research efforts.

Ideally, income distribution changes should be studied in a general equilibrium framework, since they are the result of complex processes that involve all sorts of effects and interactions throughout the economy. Computable general equilibrium (CGE) models have been applied to study changes in the income distributions around the developing world. These exercises, however, depend critically on parameters and functions that are difficult to estimate, and rely on many simplifying assumptions. The more recent macro-micro approach combines a CGE model (the macro component) with a microsimulation (the micro component). CGE models provide a framework to assess consistency of policy alternatives, but lack the necessary disaggregation for the analysis of distributional issues, which is provided by the microsimulations. Macro and micro components of this methodology communicate through some aggregate variables such as employment levels and wage rates that are generated by the CGE model and used as inputs in the microsimulations (Bourguignon, Bussolo and Pereira, 2008; Bourguignon and Bussolo, 2012). In a related approach, rather than building a full general equilibrium model of the economy, researchers rely on a reduced-form relationship between a set of observed exogenous variables (such as changes in tariff

[33] Bourguignon *et al*. (2008) and Ferreira (2010) are excellent references for methodological issues in recent research on distributive determinants.

[34] See Bourguignon *et al*. (2005); Barros *et al.* (2006) and Bourguignon *et al*. (2008), for methodological proposals; Bourguignon *et al*. (2005) for applications to Asia and Latin America, and Inchauste *et al*. (2012) for a recent application to poverty reduction in Bangladesh, Peru and Thailand. Fortin *et al*. (2011) and Essama Nssah (2012) are useful surveys of the economic literature on decompositions.

rates) and a set of sector-level variables (such as industry-skill wage premia), that serve as inputs in the microsimulations.[35]

A very different strand of the literature involves the estimation of cross-country regressions, typically with panel data, where an aggregate measure of overall inequality, such as the Gini coefficient, is linked to various potentially causal factors (*e.g*. Li *et al*., 1998; Anderson, 2005). Naturally, endogeneity problems are endemic to this approach, which is useful to characterize the structure of correlations among variables, but less successful in identifying causal links.

Most of the literature takes a less ambitious but probably more productive road, and focus on the partial-equilibrium impact of specific shocks and policy changes, using different identification strategies depending on the characteristics of the shock/policy and the data available. Examples of these methodologies include (i) a typical supply and demand approach, where the impact of indicators of trade, technology or other factors on the relative wage between skilled and unskilled workers is estimated, controlling for relative supply; (ii) the cost function approach, where the impact of several indicators on the share of skilled wages in total wage bill is estimated, using flexible cost functions (usually a translog cost production function), and (iii) mandated wage regressions.[36] In only some few cases experiments can be used and then causal links are more clearly identified. For instance, the conditional cash transfer program *Progresa* in Mexico was initially implemented with a random assignment of treated and control rural villages, which allowed a rigorous impact evaluation. Taking advantage of that design, Todd and Wolpin (2006) estimate a full structural model of behavior, including education, fertility and labor supply decisions, a model that can be used to simulate the distributive impact of policies and shocks.[37]

The bulk of the distributive analysis in developing countries has focused mainly on the labor market and on public and private transfers, while largely setting aside the role played by other sources of income, such as capital, land rents and business profits. The neglect of these other factors is essentially due to the fact that household surveys fail to capture these income sources properly.[38] This shortcoming has, for instance, severely limited the study of the impact of the exploitation of natural resources on inequality, a relevant topic in several developing countries. Most studies narrow the analysis to particular indicators of the labor market, as the wage gap between skilled and unskilled labor (the wage premium) or the returns to education. For instance, Bourguignon *et al*. (2005) show that increases in returns to schooling were large contributors to increasing inequality in East Asia and Latin America in the 1990s.

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[35] Ferreira, Leite and Wai-Poi (2010) use this approach to estimate the effect of a trade liberalization episode on the distributions of wages and household incomes in Brazil.

[36] See Anderson (2005).

[37] See also Parker and Skoufias (2001) and Gertler (2004) for impact evaluations studies of the Mexican conditional cash transfer program.

[38] For instance, according to SEDLAC data, on average in Latin America in 2010 the share of labor income in total household income was 82.3%, the share of transfers (including pensions) 13.9%, and the rest of the sources just 3.8%.

In what follows we review some general debates on the determinants of recent inequality changes.

Growth and development. As shown in section 3 there is a significant negative relationship between inequality and measures of development, such as GNI per capita, in a cross-section of countries. From this evidence Ferreira and Ravallion (2009) conclude that "high inequality is a feature of underdevelopment". However, the short or medium run relationship between inequality and development has proved to be elusive. There appears to be no evidence in the last decades of a significant correlation between the growth rate of an economy and the change in the inequality level (Ravallion and Chen, 1997; Ravallion, 2001, Dollar and Kraay, 2002; Ferreira and Ravallion, 2009).[39] Ravallion (2007), for example, analyzed 290 episodes in 80 countries in 1980-2000 and found a correlation coefficient non-significant at the 10% level between the changes in the log of the Gini coefficient and changes in the log of mean income in real terms between successive household surveys. The analysis of more recent data from PovcalNet leads to the same conclusion. Using 473 spells in the period 1981-2010 we find a non-significant coefficient of -0.0094. A similar result applies when restricting the sample to observations after 1990 or 2000, or when considering longer spells.[40] The data suggests that among both growing and contracting economies, inequality increased about as often as it fell. In the last decades economic growth has been distribution-neutral on average in the developing countries.[41]

Globalization. Much of the recent public and academic debate on inequality changes has been related to the rise in globalization. In the latest decades most developing countries have experienced increasing openness to international trade, capital markets flows and foreign direct investment. The theoretical channels linking these changes to inequality are multiple and complex, which accounts for the lack of conclusive empirical results (Wood, 1997; Rama, 2003; Winters *et al*., 2004; Anderson, 2005; Goldberg and Pavcnik, 2007; Harrison *et al*. 2011). While studies in cross sections of developing countries are inconclusive as regards the impact of globalization upon inequality, several longitudinal estimates concerning countries taken separately or in small groups reveal a positive correlation between openness and the relative demand for skilled labor (Anderson, 2005; Goldberg and Pavnick, 2007; Harrison *et al*., 2011; Chusseau and Hellier, 2012). Trade openness may affect the income distribution through various channels. The traditional Stolper-Samuelson effect predicts a reduction in the skill premium in unskilled-labor-abundant developing countries, a

[39] A related literature finds no support for a Kuznets curve with longitudinal data (Bruno, 1998; Fields, 2002; Hellier and Lambrecht, 2012).

[40] The relationship becomes negative, although just slightly significant, when using the change in log real per capita GDP (Penn World Tables) or per capita GNI (WDI) as measures of growth.

[41] Ravallion (2004) argues that, on average, growth is not associated with increases in relative inequality but absolute inequality, and it is these higher absolute gaps between "rich" and "poor" that generate the perception of an unequal growth processes.

prediction that does not appear to be confirmed by the facts (Goldberg and Pavnick, 2007; Feenstra, 2008). While some of the research has pointed then to non-trade factors - such as skill-biased technological change and labor institutions - to explain rising wage gaps, in recent years new mechanisms have been explored through which trade can increase income inequality. These mechanisms include heterogeneous firms and bargaining, trade in tasks, labor frictions and incomplete contracts (Harrison *et al*., 2011). In addition, competition among developing countries may increase inequality in middle-income countries (*e.g.* Latin America) competing with low-income economies.[42] Also, the growing size of the developing world (as new countries enter the world markets) may foster inequality by augmenting the world endowment of unskilled labor. The literature finds that the mechanisms through which globalization affects income distribution are country, time, and case specific and therefore the impacts of trade liberalization need to be examined in conjunction with other concurrent policy reforms (Goldberg and Pavnick, 2007). In addition, and due to various limitations, the literature is mostly focused on the static link between globalization and income distribution that typically operates through changes in relative prices and wages, rather than on the dynamic, more indirect link from trade to growth, and then to poverty and inequality.

Technology and education. Skill-biased technological change is a popular explanation for the rise in inequality in the developed countries. Changes in technology, such as the use of computers, increase the relative demand for skilled workers driving the skill premium up. This hypothesis is also plausible in the developing countries, where globalization increased the transfers of more skill-intensive technologies from the North, and fostered imports of capital goods, typically complementary of skilled labor. Several studies find that openness-driven technological transfers tend to increase inequality in emerging countries (Conte and Vivarelli, 2007). The increase in the wage skill premium may be temporary, as the introduction of new technologies requires a transitional period during which skilled workers are employed to adapt the firm to the new technology (Pissarides, 1997; Helpman and Trajtenberg, 1998). The empirical evidence typically shows evidence on the short and medium-run effects of the reforms, failing to capture the long-run impact. The generalized fall in inequality in the 2000s in the developing world might be in part attributed to the petering out of the unequalizing initial impact of the liberalizing reforms and technological shocks experienced by many countries in the 1990s.

[42] The increase in inequality in Latin America has also been explained arguing that it is a region relatively abundant in natural resources, while in the onset of liberalization Asian countries were relatively abundant in unskilled labor (Wood, 1997).

The increase in education may counteract the effect of skill-biased technological change in the typical Tinbergen´s race between education and technology.[43] In fact, education has expanded in the developing world at high rates during the last decades, mitigating the impact of other factors that tend to increase the wage premium.[44] However, the link between education and income inequality may not be that straightforward. Given the convexities in the returns to education, even an equalizing increase in schooling may generate an unequalizing change in the distribution of labor incomes. Bourguignon, Ferreira and Lustig (2005) have labeled this phenomenon "the paradox of progress", a situation where an educational expansion is associated to higher inequality.[45]

Market reforms. Several developing countries have implemented market-oriented reforms in the last decades, reducing regulations and privatizing firms. The paradigmatic case includes the former socialist control economies in ECA, but the transition from centrally planned to market-oriented economies was also experienced by several African and Asian countries, including China. The evidence suggests a significant increase in inequality over the transition period. That surge has been linked to the process of privatizations, that implied an increase in the earnings dispersion in comparison to the more compressed wage structure of the state-own firms, and the institutional and regulatory reforms that have increased competition in product and factor markets and decreased the bargaining power of labor.[46] Other non-socialist economies also adopted market-friendly reforms; Ravallion (2003) argues that in some cases (*e.g.* Brazil) pre-reform controls benefited the rich and kept inequality high, and then reforms help lowering inequality, while in some others (*e.g*. India) the controls (and the reforms) had the opposite effect.

Fiscal and social policy. Developing countries are characterized by relatively low levels of taxation, heavy reliance on regressive revenue instruments, and low coverage and benefit levels of transfer programs (World Bank, 2006). This structure limits the redistributive potential of fiscal policy and in some cases even exacerbates the market income disparities.[47] While average tax ratios for advanced economies exceed 30 per cent of GDP, ratios in developing economies (excluding emerging Europe) generally fall in the range 15–20 per cent of GDP (Baltagi *et al*., 2012). Tax collection is not only

[43] According to Tinbergen (1975) changes in earnings inequality are the outcomes of a "race" between technological progress raising the demand for skills, and the expansion of education raising the supply of skills.

[44] See Gasparini, Galiani, Cruces and Acosta (2011) for Latin America.

[45] Inequality may also increase after an education expansion, given that wage dispersion is larger at higher educational levels (Alejo, 2012).

[46] See Cornia (1996), Milanovic (1998), Ferreira (1999), Cornia and Reddy (2001), and Milanovic and Ersado (2010).

[47] For instance, Lustig (2012) finds that in Latin America when indirect taxes are taken into account, the net income of the poor and the near poor can be lower than it was before taxes and cash transfers.

lower but also more regressive than in developed countries. The difficulties in collecting more progressive taxes are related to the high levels of self-employment and sizeable informal sectors, which limit the capacity of the tax authorities to verified taxpayers´ income and assets. On the spending side, in most developing economies social spending is relatively low, and participation in social insurance schemes is restricted to high-income workers in the formal sector and to public sector employees.[48] All these factors combine for a low redistributive impact of the fiscal policy. For instance, Goñi, López and Servén (2008) and Lustig (2012) find that the tax and transfer system in Latin America decreased the market Gini by only 2 percentage points, a meager impact compared to the 20-points impact estimated in 15 European economies. Developing countries have still a long way to go to enhance the distributive impact of fiscal policy while supporting economic efficiency.

However, since the mid-1990s there have been some encouraging signs of improvement, especially in terms of increasing coverage and better targeting of social policies. The recent expansion of conditional cash transfer programs (CCTs) implies a promising approach for enhancing the distributive impact of public spending in developing economies. CCTs typically transfer income to poor households, conditional on households making certain investments on their children's human capital – education, health and nutrition. Such programs have been adopted in many developing economies, including some Sub-Saharan African countries, although on a smaller scale (Fiszbein and Shady, 2009; Garcia and Moore, 2012). CCTs became particularly popular in LAC: by 2010 there were 18 countries in Latin America and the Caribbean applying CCTs, covering 20% of total LAC population, and spending on average 0.40% of GDP (Cruces and Gasparini, 2012). Soares *et al*. (2009) estimate that the CCTs in Brazil and Mexico reduced the Gini for disposable income by 2.7 percentage points, accounting for about a fifth of the decrease in that index between the mid-1990s and the mid-2000s.

Others. Of course this brief review does not exhaust the multiple factors behind distributive changes in the developing world; in fact, arguably any shock or policy affects the income distribution. For instance, demographic factors, such as the decline in fertility, the rise in life expectancy and the growing importance of assortative mating and single-parent households have been identified as relevant sources of inequality changes. Labor policies are one key target for research. Several studies find that the weakening of labor institutions such as unions and the declining real value of minimum wages were responsible for the increase in earnings inequality in several developing countries, especially in the 1990s, while more ambitious labor policies contributed to the reduction in inequality in the 2000s. Migration and sector changes have been

[48] ILO (2010) reports that in the early 2000s the share of the population above the legal retirement age receiving a pension in developing economies was, on average, around 40 per cent, as compared to 90 per cent in European economies.

identified as key determinants of inequality changes, at least since the seminal contributions by Lewis (1954) and Kuznets (1955). Changes in inequality are associated to the geographic and sectoral pattern of growth (Loayza and Raddatz, 2010). Ferreira and Ravallion (2009), for instance, report that in Indonesia a large share of the increase in inequality was associated with migration from wage employment in agriculture to urban self-employment.[49]

5. Concluding remarks

There has been a remarkable improvement in the availability of information for distributive analysis in the last decades due to increasing efforts by researchers, national governments and international organizations. To be sure, the picture of inequality and poverty in the developing world is substantially sharper now than in the late 1990s, when the first volume of the Handbook of Income Distribution was written. There remain, however, enormous data limitations that make that picture only a very rough approximation of reality. Household surveys are lacking in some countries and are carried out very occasionally in others. Changes in methodology over time are frequent; a fact that generally implies improvement in the data collection, but that at the same time introduces comparability issues with previous surveys that are difficult to deal with. Household surveys have endemic problems in capturing some income and consumption items and in dealing with selective compliance and under-reporting issues. The gaps with National Accounts aggregates, usually variable over time, are a disturbing sign of measurement errors and conceptual issues. Comparability across countries is another big problematic issue, as there are few efforts among national agencies to standardize surveys or at least some criteria to gather and process information. Another issue of concern is the difficulty in obtaining statistical confidence intervals for the distributive statistics, either because agencies do not report them, do not provide information on sampling issues, or do not release the microdata. In sum, in order to be able to characterize and track distributive changes in the developing world with more accuracy we need more efforts to extend the coverage and frequency of household surveys, and improve their reliability and comparability across countries. There is still a long way to go to get an accurate assessment of poverty and inequality in the developing world.

From the data available, some general facts emerge. The evidence on income relative inequality suggests that on average the developing countries are somewhat more unequal than three decades ago. The patterns have been different by period and region. Relative income inequality rose in the late 1980s and in the 1990s. The changes were larger in Eastern Europe and Central Asia, probably as a result of the transition from a central-planned to a more market-oriented economy; in East Asia, likely as a consequence of the economic take-off; and in Latin America probably as the result of

[49] Milanovic (2012) makes an interesting argument about the key role of migration in global inequality.

recurrent macroeconomic crises and some structural transformations. Distributive changes in the 2000s become more equalizing in most of the developing world, but the changes were rather moderate and with considerable heterogeneity across countries. In fact, in this decade of widespread social improvement around a third of the countries did not experience falling inequality levels. Reducing inequality certainly remains a top concern in the developing countries of the world.

References

Ahluwalia, M., Cartner, N. and Chenery, H. (1979). Growth and poverty in developing countries. *Journal of Development Economics* 6(3), pp. 299-341.

Alejo, J. (2012). Educación y Desigualdad: una metodología de descomposición basada en dos interpretaciones de la ecuación de Mincer. Evidencia para Argentina. Anales de la XLVII Reunión Anual de la Asociación Argentina de Economía Política, Trelew, Argentina.

Amiel, Y. and Cowell, F. (1999). *Thinking about Inequality: Personal judgment and income distributions*. Cambridge: Cambridge University Press.

Anand, S. and Segal P. (2008). What do we know about global income inequality? *Journal of Economic Literature* 46(1), pp. 57-94.

Anderson, E. (2005). Openness and inequality in developing countries: A review of theory and recent evidence. *World Development* 33(7), pp. 1045-1063.

Atkinson, A. and Brandolini, A. (2001). Promise and pitfalls in the use of "secondary" data-sets: Income inequality in OECD countries as a case study. *Journal of Economic Literature* 39(3), pp. 771-199.

Atkinson, A. and Brandolini, A. (2004). Global world inequality: absolute, relative or intermediate?" Paper Presented for the 28th Generation Conference of the International Association for Research in Income and Wealth, Cork, Ireland.

Atkinson, A. and Brandolini, A. (2010). On analyzing the world distribution of income. *World Bank Economic Review* 24(1), pp. 1-37.

Atkinson, A. and Lugo, M. (2010). Growth, poverty and distribution in Tanzania.

Atkinson, A. and Morelli, S. (2012). Chartbook of economic inequality: 25 countries, 1911-2010. Manuscript.

Bastagli, F., Coady, D. and Gupta, S. (2012). Income inequality and fiscal policy. IMF Staff Discussion Note, SDN/12/08, June.

Benabou, R. (1996). Inequality and growth. In *NBER Macroeconomics Annual 1996*, Volume 11, NBER.

Bourguignon, F. and Bussolo, M. (2012). Income distribution and computable general equilibrium models: macro-micro modelling. In Dixon and Jorgenson (eds). *Handbook of Computable General Equilibrium Modeling*, Volume 1A. North Holland Press.

Bourguignon, F., Bussolo, M. and Pereira da Silva, L. (2008). *The Impact of Macroeconomic Policies on Poverty and Income Distribution. Macro-Micro Evaluation Techniques and Tools.* Washington, DC: The World Bank.

Bourguignon, F., Ferreira, F. and Leite P. (2008). Beyond Oaxaca-Blinder: Accounting for differences in households income distributions. *Journal of Economic Inequality*, 6(2), pp. 117-148.

Bourguignon, F., Ferreira, F. and Lustig, N. (2005). *The microeconomics of income distribution dynamics in East Asia and Latin America*. Washington, DC: The World Bank.

Bourguignon, F. and Morrison, C. (2002). Inequality among world citizens: 1820-1992. *American Economic Review* 92(4), pp. 727-744.

Caselli, F., Esquivel, G. and Lefort, F. (1996). Reopening the convergence debate: a new look at cross-country growth empirics. *Journal of Economic Growth* 1, 363-389.

Chotikapanich, D., Valenzuela, R. and Prasada Rao, D. (1997). Global and regional inequality in the distribution of income: Estimation with limited and incomplete data. *Empirical Economics* 22(4), pp. 533-546.

Chusseau, N. and Hellier, J. (2012). Globalization and inequality: Where do we stand? ECINEQ Working Paper 279.

Cockburn, J., Duclos, J. and Zabsonré, A. (2012). Is the value of humanity increasing? A critical-level enquiry. FERDI Working Paper 52.

Conte, A. and Vivarelli, M. (2007). Globalization and employment: Imported skill biased technological change in developing countries. IZA Discussion Paper 2797.

Cornia, G. (1996). Transition and income distribution: Theory, evidence and initial interpretation. UNU-WIDER Research in Progress 1.

Cornia, G. and Kiiski, S. (2001). Trends in income distribution in the post-world war II period: Evidence and interpretation. UNU–WIDER Discussion Paper, 2001/89.

Cornia, G. and Reddy, S. (2001). The impact of adjustment related social funds on income distribution and poverty. UNU/WIDER Discussion Paper 2001/1.

Deaton, A. (1997). *The analysis of household surveys: A microeconometric approach to development policy.* Washinton D.C: The World Bank.

Deaton, A. and Zaidi, S. (2002). Guidelines for constructing consumption aggregates for welfare analysis. Living Standards Measurement Study Working Paper 135, The World Bank.

Deininger, K. and Squire, L. (1996). A new data set measuring income inequality. *World Bank Economic Review* 10(3), pp. 565-591.

De Ferranti, D., Perry, G., Ferreira, F. and Walton, M. (2004). *Inequality in Latin America, breaking with history?* Washington, DC: The World Bank.

Dhongde, S. and Miao, X. (2013). Cross-country convergence in income inequality. ECINEQ Working Papers 290.

Feenstra, R. (2008). Offshoring in the Global Economy: Lecture 1: Microeconomic Structure; Lecture 2: Macroeconomic Implications. The Ohlin Lectures, presented at the Stockholm School of Economics on September 17-18, 2008.

Ferreira, F. (2010). Distributions in motion: Economic growth, inequality, and poverty dynamics. The World Bank Policy Research Working Paper 5424.

Ferreira, F. (2012). Inequality of opportunity around the world: what do we know so far? Inequality in Focus 1(1), pp. 8-11, The World Bank.

Ferreira, F. and Ravallion, M. (2009). Poverty and inequality: The global context. In Salverda, Nolan and Smeeding (eds). *The Oxford Handbook of Economic Inequality.* Oxford: Oxford University Press.

Fields, G. (2002). *Distribution and Development: A New Look at the Developing World*. Cambridge: MIT Press.

Fiszbein, A. and Schady, N. (2009). Conditional cash transfers. Reducing present and future poverty. The World Bank Policy Research Report.

Fortin, N., Lemieux, T. and Firpo, S. (2011). Decomposition Methods in Economics. In Ashenfelter and Card (eds). *Handbook of Labor Economics*, Volume 4, Part A.

Fosu, A. (2011). Growth, inequality, and poverty reduction in developing countries. Recent global evidence. UNU-WIDER Working Paper 2011/1.

Hellier, J. and Lambrecht, S. (2012). Inequality, growth and welfare: The main links. ECINEQ Working Paper 258.

Helpman, E. and Trajtenberg, M. (1998). A time to sow and a time to reap: Growth based on general purpose technologies. In Helpman (ed). *General Purpose Technologies and Economic Growth*. Cambridge: MIT Press.

Galbraith, J. and Kum, H. (2005). Estimating the inequality of household incomes: toward a dense and consistent global data set. *Review of Income and Wealth* 51(1), pp. 115-143.

Gasparini, L., Cicowiez, M. and Sosa Escudero, W. (2013). *Pobreza y desigualdad en América Latina. Conceptos, herramientas y aplicaciones*. Editorial Temas.

Gasparini, L., Galiani, S., Cruces, G. and Acosta, P. (2011). Educational upgrading and returns to skills in Latin America: evidence from a supply-demand framework, 1990-2010. IZA Discussion paper 6244.

Gasparini, L. and Gluzmann, P. (2012). Estimating income poverty and inequality from the Gallup World Poll: the case of Latin America and the Caribbean. *Journal of Income Distribution* 21(1).

Gasparini, L. and Lustig, N. (2011). The rise and fall of income inequality in Latin America". En Ocampo y Ros (eds). *The Oxford Handbook of Latin American Economics*, Chapter 27. Oxford: Oxford University Press.

Gentilini, U. and Sumner, A. (2012). Poverty where people live: what do national poverty lines tell us about global poverty? International Policy Centre for Inclusive Growth Working Paper 98.

Gertler, P. (2004). Do conditional cash transfers improve child health? Evidence from PROGRESA's control randomized experiment. *American Economic Review* 94(2), pp. 336-341.

Gluzmann, P. (2012). Desigualdad del ingreso y del bienestar subjetivo. Análisis y comparaciones internacionales. Ph.D. dissertation, Universidad Nacional de La Plata.

Goldberg, P. and Pavcnik, N. (2007). Distributional Effects of globalization in developing countries. *Journal of Economic Literature* 45(1), pp. 39-82.

Goldin, C. and Katz, L. (2008). *The race between education and technology*. Cambridge: Harvard University Press.

Goñi-Pacchioni, J., López, H. and Servén, L. (2011). Fiscal redistribution and income inequality in Latin America. *World Development* 39(9), pp. 1558-1569.

Harrison, A., McLaren, J. and McMillan, M. (2011). Recent perspectives on trade and inequality. *Annual Review of Economics* 3(1), pp. 261-289.

Hellier, J. and Lambrecht, S. (2012). Inequality, growth and welfare: The main links. ECINEQ Working Paper 258.

Heston, A., Summers, R. and Aten, B. (2012). Penn World Table Version 7.1, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, July.

International Labor Organization (ILO) (2010). World Social Security Report 2010/11: Providing Coverage in Times of Crisis and Beyond; Geneva.

Inchauste, G., Olivieri, S., Saavedra, J. and Winkler, H. (2012). What Is Behind the Decline in Poverty Since 2000? Evidence from Bangladesh, Peru and Thailand. The World Bank Policy Research Working Paper 6199.

Karshenas, M. (2003). Global poverty: National Accounts based versus survey based estimates. *Development and Change* 34(4), pp. 683-712.

Kuznets, S. (1955). Economic growth and income inequality. *American Economic Review* 45(1), pp. 1-28.

Lewis, A. (1954). Economic development with unlimited supplies of labor. *Manchester School of Economics and Social Studies* 22, pp. 139–192.

Li, H., Squire, L. and Zou, H. (1998). Explaining international and intertemporal variations in income inequality. *Economic Journal* 108(446).

Lind, J. and Mehlum, H. (2010). With or without U? The appropriate test for a U shaped relationship. *Oxford Bulletin of Economics and Statistics* 72(1), pp. 109-118.

Loayza, N. and Raddatz, C. (2010). The composition of growth matters for poverty alleviation. *Journal of Development Economics* 93(1), pp. 137-151.

López Calva, L. and Lustig, N. (eds.) (2010). *Declining inequality in Latin America: A decade of progress?* Brookings Institution and UNDP.

Lustig, N. (1995). *Coping with Austerity: Poverty and Inequality in Latin America*. Washington, DC: Brookings Institution.

Lustig, N. (2012). Fiscal policy and income redistribution in Latin America: Challenging the conventional wisdom. Tulane University Economics Working Paper 1124.

Milanovic, B. (1998). *Income, inequality, and poverty during the transition from planned to market economy.* World Bank Regional and Sectoral Studies. The World Bank, Washington, D.C.

Milanovic, B. (1999). Explaining the increase in inequality during transition. *Economics of Transition* 7(2), pp. 299-341.

Milanovic, B. (2002). True world income distribution, 1988 and 1993: first calculation based on household surveys alone. *Economic Journal* 112(476), pp. 51-92.

Milanovic, B. (2005). *Worlds apart: measuring international and global inequality.* Princeton: Princeton University Press.

Milanovic, B. (2011). A short history of global inequality: The past two centuries. *Explorations in Economic History* 48(4), pp. 494-506.

Milanovic, B. (2012a). Global income inequality by the numbers: In history and now. An overview. The World Bank Policy Research Working Paper 6259.

Milanovic, B. (2012b). Global inequality recalculated and updated: The effect of new PPP estimates on global inequality and 2005 estimates. *Journal of Economic Inequality* 10(1), pp. 1-18.

Palma, J. (2011). Homogeneous middles vs. heterogeneous tails, and the end of the "inverted-U": the share of the rich is what it´s all about. Cambridge Working Papers in Economics 1111.

Parker, S. and Skoufias, E. (2001): Conditional cash transfers and their impact on child work and school enrollment: evidence from the PROGRESA program in Mexico. *Economia* 2(1).

Pinkovskiy, M. (2013). World welfare is rising: Estimation using nonparametric bounds on welfare measures. *Journal of Public Economics* 97(1), pp. 176-195.

Pinkovskiy, M. and Sala-i-Martin, X. (2009). Parametric estimations of the world distribution of income. NBER Working Paper 1543.

Pissarides, C. (1997). Learning by trading and the returns to human capital in developing countries. *World Bank Economic Review* 11(1), pp. 17-32.

Rama, M. (2003). Globalization and workers in developing countries. The World Bank Policy Research Working Paper 2958.

Ravallion, M. (1997). Can high-inequality developing countries escape absolute poverty? *Economics Letters* 56(1), pp. 51-57.

Ravallion, M. (2001). Growth, inequality and poverty: Looking beyond averages. *World Development* 29(11), pp. 1803–1815.

Ravallion, M. (2003). Inequality convergence. *Economic Letters* 80(3), pp. 351-356.

Ravallion, M. (2004b). Competing concepts of inequality in the globalization debate. The World Bank Policy Research Working Paper 3243.

Ravallion, M. (2007). Inequality is bad for the poor. In Jenkins and Micklewright (eds). *Inequality and poverty re-examined*. Oxford: Oxford University Press.

Ravallion, M. (2010). Price levels and economic growth: making sense of the PPP changes between ICP rounds. The World Bank Policy Research Working Paper 5229.

Ravallion, M. and Chen, S. (1997). What can new survey data tell us about recent changes in distribution and poverty? *World Bank Economic Review* 11(2), pp. 357-382.

Robinson, J. (2009). The political economy of inequality. ERF Working Paper 493.

Sala-i-Martin, X. (2006). The world distribution of income: falling poverty and … convergence, period. *The Quarterly Journal of Economics* 121(2), pp. 351-397.

Sen, A. (1976). Real national income. *Review of Economic Studies* 43(1), pp. 19-39.

Shorrocks, A. and Wan, G. (2008). Ungrouping income distributions: Synthesising samples for inequality and poverty analysis. In Basu and Kanbur (eds). *The Oxford Handbook of Arguments for a Better World: Essays in Honor of Amartya Sen*. Volume I: Ethics, Welfare and Measurement. Oxford: Oxford University Press.

Soares, S. , Guerreiro Osório, R., Veras Soares, F., Medeiros, M. and Zepeda, E. (2009). Conditional cash transfers in Brazil, Chile and Mexico: impacts upon inequality. *Estudios Económicos* 0 (Special i), pp. 207-224.

Solt, F. (2009). Standardizing the world income inequality database. *Social Science Quarterly* 90(2), pp. 231-242.

Sumner, A. (2012). From deprivation to distribution: is global poverty becoming a matter of national inequality? IDS Working Paper 2012-394.

Tabatabai, H. (1996). *Statistics on poverty and income distribution: an ILO compendium of data*. Geneva: International Labor Office.

Tinbergen, J. (1975). *Income Differences: Recent Research*. Amsterdam: North-Holland.

Todd, P. y Wolpin, K. (2006). Assessing the impact of a school subsidy program in Mexico: Using a social experiment to validate a dynamic behavioral model of child schooling and fertility. *American Economic Association* 96(5), pp. 1384-1417.

Voitchovsky, S. (2009). Inequality, Growth and Sectoral Change. Chapter 22 in Nolan, Salverda and Smeeding (eds.), *Oxford Handbook of Economic Inequality*.

Winters, A., McCulloch, N. and McKay, A. (2004). Trade liberalization and poverty: The Evidence so far. *Journal of Economic Literature* 42, pp. 72-115.

Wodon, Q., Castro, R. and Lee, K. (2001). Poverty in Latin America: Trends (1986-1998) and determinants. *Latin American Journal of Economics - formerly Cuadernos de Economía* 38(114).

Wood, A. (1997). Openness and wage inequality in developing countries: The Latin American challenge to East Asian conventional wisdom. *World Bank Economic Review* 11(1), pp. 33-57.

World Bank (2000). *World Development Report: Attacking Poverty*. New York: Oxford University Press.

World Bank (2006). *World development report: Equity and development*. World Bank and Oxford University Press.

World Bank (2008). *Global Purchasing Power Parities and Real Expenditures*. 2005 International Comparison Program. Washington, DC: The World Bank.