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## Changes in inequality within countries after 1990

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## **Changes in inequality within countries after 1990**

Carlos Gradín\*

September 2020

**Abstract:** In this paper, we use the World Income Inequality Database to assess the main trends in inequality within countries since around 1990. We cope with the heterogeneity in the original information (regarding the measure of resources, equivalence scale, etc.) by focusing on the trends rather than on the levels, and by comparing like to like within countries. With only a few exceptions, we compare the same inequality concept obtained from the same source in two different years in each country, even if the concept and source will differ across countries. The results show that there was a majority of countries witnessing a decline of inequality as measured by the Gini index, even if once accounted for the fact that inequality increased in the most populous countries, it turns out that a majority of people saw inequality increase in their country over this period of time. These trends are complemented with information for inequality in income and wealth from other sources, paying special attention to the top of the distribution.

**Key words:** inequality, income, Gini, WIID

**JEL classification:** D63, I31, O5

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## 1 Introduction: data and measurement

Although interest in inequality has long been part of the research agenda in social sciences, it has recently reached much higher prominence than ever before, since inequality has become an important element in public debates. The reduction of inequality is now considered a priority in the development agenda of countries and international institutions, as reflected in SDG 10. The relevance of inequality is based on a combination of normative and practical reasons. On the one hand, there is a social preference for higher equality. This social preference may vary across countries depending on the views about how dynamic the society is and about what the main determinants of life outcomes are (effort, luck, circumstances). Regardless of these moral views, on the other hand, there is an increasing consensus to recognize that lower inequality is also instrumental in achieving more effectively other key goals, such as reducing poverty, especially in the developing world, or building more stable and cohesive societies, which ultimately drive economic growth and development. Very unequal societies are increasingly seen as dysfunctional in many ways.

There is a growing consensus too about the fact that inequality is a multidimensional phenomenon that should consider all human capabilities (the ability to achieve the kind of lives that people have reason to value, in Amartya Sen's terminology) as well as a dynamic phenomenon in which to consider mobility over the life cycle and across generations. Although there is a growing interest in the analysis of social mobility and of inequality across many dimensions, including education or health, inequality has historically been assessed mainly in the domain of living standards (achievements), with individual economic capacity measured by the amount of resources available to households during a specific period of time (such as a year or a month) using, in most cases, disposable income or consumption. Income is most used in developed countries as well as in Latin America, China, or South Africa, while consumption use predominates in most of Africa and Asia since their estimates are generally perceived as more reliable in these contexts.

The analysis of inequality in income or in consumption (generically called *income inequality*) is data demanding because it cannot be assessed only based on macro-aggregates and is mainly measured using information from surveys that are now collected regularly in most countries, describing the living conditions and relevant characteristics of a nationally representative sample of households. The empirical estimation of income and consumption involves a series of problems originated by non-response and the underestimation of certain sources of income (such as capital and self-employment income) and types of consumption (such as durable goods, infrequent purchases, or luxury goods). These data issues can be partially addressed by improving the quality of surveys or through imputations. The accuracy of income can be improved by integrating information reported by households with the information from other sources, like administrative records (for example, from tax and social security agencies), but this practice is not yet the norm. Another issue associated with the use of household surveys is the misrepresentation of certain population groups that are harder to reach by statistical agencies, especially at the extreme of the distribution. There is also a growing number of household surveys designed to estimate net wealth (the value of financial and non-financial assets, discounting debts) that need to oversample the very rich given that wealth tends to be more highly concentrated than income at the top of the distribution, and they need to provide detailed information about all the assets held by the household, but these surveys remain very rare, especially among developing countries.

Over time, there have been substantial improvements in the coverage, quality, and accessibility of household surveys, but they still present serious problems in terms of comparability both across countries and over time due to the lack of a harmonization in the information collected and how it is processed, and the information is often very dispersed. This has led to different efforts compiling the available information for several countries, facilitating the use by those interested in conducting empirical analyses (like the Luxembourg Income Study, the World Bank PovcalNet, the OECD Income Distribution Database, the UNU-WIDER World Income Inequality Database, among others). These projects involve a different degree of harmonization, geographical and time coverage, and only in a few cases provide access to detailed individual records (which facilitates greater comparability).

Even if the dimension of well-being and data issues have been addressed, assessing the level and trend in inequality in a society is not a trivial exercise because it involves some necessary value judgements about what inequality precisely means. It is necessary to have a measurement framework. This can be done by analyzing changes in the distribution using some graphical and descriptive tools. Over time, there are usually changes (increases or declines) in the income shares of people at different parts of the distribution, such as the poor, the lower and upper middle class, or the rich. An analysis of inequality typically involves tracking these changes, evaluating whether they tend to be more pro-poor, pro-rich, or a combination of movements of both types. This can be done, for example, using a growth incidence curve indicating the relative changes in income for all income quantiles (for example each per cent of the population, percentiles) ranked from the poorest to the richest. To assess whether inequality has remained stable or, on the contrary, has increased or declined, and by how much, these distributional changes must be summarized using an index of inequality. This judgement involves comparing and evaluating changes in well-being of people of different levels of income and thus a specific conceptualization of inequality (and ultimately, of the well-being of the society, known in the public economics literature as *social welfare*).

Researchers in inequality have identified the type of situations in which everybody agreeing on a few reasonable value judgements would also agree on the direction of inequality, and this would be reflected by most known inequality indices. This basically happens when all changes tend to be either pro-poor (then, inequality declines) or pro-rich (then, inequality increases).<sup>1</sup> The intensity of the change on inequality, however, will be different depending on how much importance an index attributes to each part of the distribution affected by changes in income. But in those situations that combine simultaneously pro-rich and pro-poor movements in incomes, people with different views about inequality might disagree even about whether inequality increased or not, and two indices

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<sup>1</sup> The main value judgement defining what inequality means implies agreeing on the fact that an income transfer from any person to someone poorer than her (small enough to not revert the order between them) will reduce inequality (principle of transfers). Another key value judgment is whether inequality remains constant when relative or absolute income distances are kept constant. Most of the empirical analysis on inequality assumes that the ratio of incomes rather than their current value in dollars is what matters (scale invariance), even if this does not rule out the relevance of also considering absolute income. The other two are more technical judgements: that inequality should be assessed anonymously (anonymity) and that only the relative proportion of people at each income level matters, not the actual number of people (population principle). The situations in which these four properties are enough to assess the direction of an inequality change can be identified using the Lorenz curves that map the cumulative proportion of income for each cumulative proportion of people (ordered from poorest to richest) for each population. If the curves do not intersect (all changes are pro-poor or pro-rich), the distribution with the curve falling above is more equally distributed. If they do intersect (some changes are pro-poor and some pro-rich), we need additional value judgement to assess what happened with inequality. For a formalization of the approach, see for instance Chakravarty (2009).

reflecting those conflicting views can also differ. This happens for example if the bottom and top of the distribution improved at the expense of the middle. One can give more relevance to the improvement of the poor and say that inequality declined or to the greater concentration of income at the top and conclude the opposite, that inequality increased. This also means that it is important to understand that if inequality is declining according to one index (an indication of generally pro-poor changes in income as evaluated by that index), this does not mean that all changes are inequality-reducing. It might be the case that some poor people are doing worse or some rich people are doing better (both are inequality-enhancing changes). An inequality index that is stable over time does not necessarily mean that nothing happened in the distribution, but it is possible that there were intense changes going in opposite directions that cancelled out, hence the importance of combining the use of inequality indices with a more detailed analysis of the distributional pattern. Among the different summary indices of inequality, the Gini index, that ranges between 0 (no inequality) and 100 (maximum inequality) is the most popular, but there are others that, in general, tend to attach more relevance to one or both extremes of the distribution. For example, the Mean Log Deviation or the Theil indices will give more relevance to the extremes of the distribution than the Gini index.

## 2 Trends in global income inequality

Despite data limitations (incomplete and heterogenous collection of survey data from different sources), substantial progress has been made so far in assessing the trend over the recent decades in global income inequality, that is, inequality among all persons in the world population regardless of the country where they live. There is a consolidated body of evidence based on survey data pointing to a decline in global income inequality since around 1990 that would break a long-term trend of increasing global inequality. Bourguignon (2016), after combining historical data, estimated that the global Gini index would have increased from 50 in 1820 to 65 in 1990, to then decline, using a series based on survey data, from 70 in 1990 to 62.3 in 2010. Similarly, Lakner and Milanovic (2016), also based on survey data, reported that the global Gini index went down from 72.2 in 1988 to 70.5 in 2008. This work was extended by the World Bank (2016), which reported a similar reduction between those two years (from 69.7 to 66.8), followed by a more intense decline until 2013, when it reached a level of 62.5. In the same vein, Niño-Zarazúa et al. (2017) estimated a decline in the Gini index from 70.8 in 1985 to 63.1 in 2010. The choice of the inequality index is not relevant here, unless we choose one that is very sensitive to the top. According to Lakner and Milanovic, inequality has also declined with other popular inequality indices such as the Mean Log Deviation (Theil-M), the Theil index (Theil-L), and various members of the Atkinson family, but not for those attaching a much greater weight to the top of the distribution (e.g. the coefficient of variation). This discrepancy among indices occurs because the trend in the global income distribution is one of those situations in which there is a combination of pro-poor and pro-rich income changes and therefore, there is no unanimity among inequality indices (reflecting distinct inequality views) in the direction of the trend.<sup>2</sup> This point is better described looking at the entire income distribution, using Lakner and Milanovic's relative growth incidence curve that became known as the 'elephant graph' (Figure 1.a in Lakner and Milanovic 2016; or Figure 2 in Ravallion 2018), because living standards increased proportionally more among the

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<sup>2</sup> That is, the Lorenz curves of 1988 and 2008 intersect (Lakner and Milanovic 2016; shown in Ravallion 2018) and therefore, one needs to be more explicit about whether the improvement of the poor (which reduces inequality) or the improvement of the rich (inequality-enhancing) are more important to determine the net change in inequality.

middle of the distribution (the majority of Asian population, representing the elephant's back) and at the very top (the rich everywhere, representing the elephant's trunk), with a poorer performance among the world's poorest (mostly Africans) and upper middle class (the majority of the population in developed countries). As discussed above, unless we attach much more weight to the improvement of the rich as compared to the improvement of the world's lower and upper middle classes, global (relative) inequality declined.

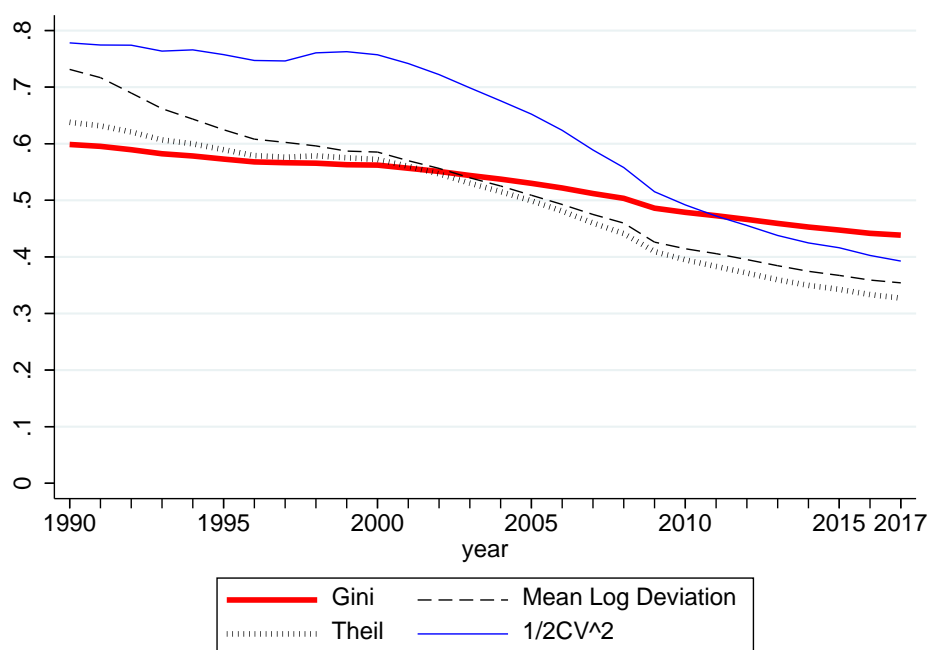
As Ravallion (2018) has pointed out, however, one must also consider that the improvements at the bottom and middle of the distribution, although proportionally large, are very small if measured in dollars because the initial levels were very low. The elephant graph becomes a 'serpent graph' (Figure 4 in Ravallion 2018) when the gains in dollars replace the gains in income growth rates. The curve is almost flat, except at the very top where the dollar gains were by far the largest. This refers to a notion of absolute inequality as opposed to the most common concept of relative inequality, in line with Niño-Zarazúa et al. (2017) who reported an increase in global absolute inequality over time. In any case, there is a general agreement that the current level of global inequality is still very high and unacceptable, indicating huge differences in the standard of living of people around the world.

In understanding the trends in global inequality, it is important to note that differences in the standard of living across the world are, to a large extent, determined by the country in which people live rather than by the rank of their incomes within their countries (whether they are poor or rich by national standards), even if this is changing over time. Global inequality will tend to be higher than the inequality at the country level, precisely, because it combines inequalities among citizens of the same country with disparities in average income between countries, with the latter being the greatest. For that reason, the empirical literature has distinguished between these two components of global inequality: between-country inequality and within-country inequality. This distinction is crucial because the corresponding trends have gone in opposite directions, and these two types of inequality might be distinctly perceived by people (who might take the country rather than the world as their reference in generating their own perceptions of how inequality is changing).

Global trends were, to a large extent, dominated by trends in inequality between countries, that is inequality remaining when persons residing in each country are given the corresponding national average income (i.e. removing inequality within the country). The average standard of living in a country is usually measured by the gross domestic product (GDP) per capita, or by other similar macro-magnitude, often corrected by the important existing differences in prices across countries (using the purchasing power parity, PPP). Global inequality has declined due to faster economic growth in emerging countries, mainly in Asia and notably the most populous China and India. This was possible even if other low income countries, mainly in Africa, witnessed either no growth or a decline in their real per capita income. While GDP per capita (2011 PPP) in 2017 is almost nine times higher in China than in 1990, four times in Vietnam, or 2.5 times in India, it has increased by 51 per cent in the United States or by 43 per cent in Germany over the same period, and has declined by 25 per cent or more in countries like Gambia, Ukraine, Madagascar, Tajikistan, or Burundi. As a result, the Gini index of GDP per capita across countries (a measure of between-country inequality) has

substantially declined from 59.9 in 1990 to 43.8 in 2017. The decline in inequality is clear with other inequality indices too (see Figure 1).<sup>3</sup>

Figure 1. Gini in GDP per capita (2011 PPP), 1990-2017



Note: countries are weighted by their population size.

Source: author's construction based on the World Development Indicators.

Using the Mean Log Deviation, an inequality index that can meaningfully be decomposed into the exact sum of between-country and within-country components, the share of global inequality that is explained by its within-country component (the average of country-level inequality, with countries weighted by their corresponding population) has increased from 17 per cent in 1988 to 23 per cent in 2008 according to Lakner and Milanovic (2016), or from 20 to 35 per cent according to the World Bank (2016) for the 1988–2013 period.

The previous results indicate that inequality within countries is increasing since around 1990, but this is an average and it is hard to identify a general trend because there is a great degree of heterogeneity among countries, even within the same group (whether countries are classified by region, level of development, or initial level of inequality). Some stylized facts emerge but with remarkable exceptions in all cases. Countries have a different exposition to the megatrends driving inequality changes like global trade, technological change, etc., but also have tried to offset inequality tensions generated in the labor market to a different extent using regulations, providing basic services, and implementing

<sup>3</sup> These calculations are based on the World Bank's World Development Indicators database (<https://databank.worldbank.org/source/world-development-indicators>), extracted on 16 January 2020, using GDP per capita, PPP (constant 2011 international dollars) for 114 economies with sufficient data between 1990 and 2017, representing 91 per cent of 2020 world's population. Countries are weighted by their contemporaneous population (using the UN World population prospects).



tax-benefit systems. This makes also necessary more detailed analyses for specific countries or areas to better understand these trends in inequality. Examples of these include Gradín et al. (2020) for the analysis of five developing giants (Brazil, China, India, Mexico, and South Africa), ESCWA (2019) for Arab countries, Odusola et al. (2017) for African countries, or Gornick and Jäntti (2013), Jenkins et al. (2013), and Nolan (2018) for rich countries.

To illustrate this heterogeneity in inequality trends, we use the most recent release of the World Income Inequality Database (WIID) to maximize the geographical coverage, identifying the change in inequality, as measured by the Gini index between 1990 (or closest year) and latest available year in the 2010s for 125 economies, with a joint population of near 7.2 billion in 2020 (92 per cent of the world population according to UN estimates; see Table 1 for details). Unfortunately, not enough information was available for the economies accounting for the remaining 8 per cent of the population (0.6 billion).<sup>4</sup>

The WIID is a compilation produced by the United Nations University World Institute for Development Economics Research (UNU-WIDER) with inequality data reported by many sources, including the World Bank (PovcalNet and other previous sources), the Luxembourg Income Study, OECD Distribution Income Database, Eurostat, Socio-Economic Database for Latin America and the Caribbean (SEDLAC) produced by CEDLAS, various UN agencies (like ECLAC or UNICEF), National Statistical Authorities, and various research studies. The coverage in the selection used here is lower for Middle East and North Africa (ten economies, 72 per cent of the population in the region) as well as for sub-Saharan Africa (30 economies, 78 per cent of the population), in contrast with between 93 and 100 per cent coverage in the other regions (Table 1). The change in inequality, with a few exceptions, was evaluated using information from the same source and for the same concept in both years, preferably per capita net income, although other concepts (per capita consumption or income per equivalent adult) were used if they were deemed better to estimate the trend for the studied period or were the only available. Only small adjustments were done with respect to reported Gini indices to account for changes in methodology (or geographical coverage) over time in cases in which the Gini was estimated in the same year with the old and new methodology (or coverage). No ad-hoc adjustment was made here to standardize indices for different concepts (e.g. income and consumption) as the focus is on the trend rather than on the level. The usual cautionary notes apply here given the heterogeneity of sources and concepts measured, which no cross-country inequality study can completely rule out. We consider only increases or decreases of more than one Gini point (considering stable inequality in the case of changes smaller than one Gini point).

Table 1. Change in within-country income inequality (Gini index) between circa 1990 and latest 2010s

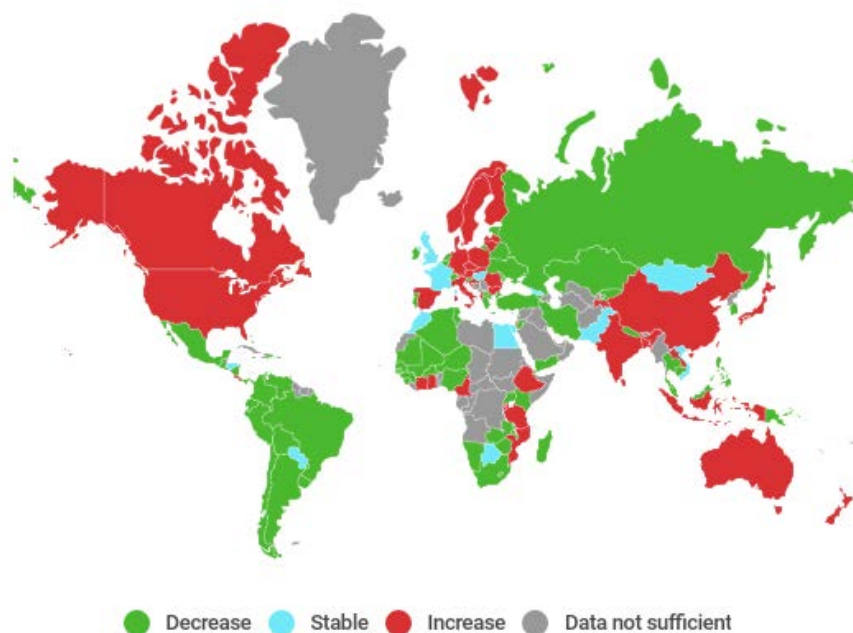
Area		Stable	Increase	Decline	Number of economies with data	Number of economies without enough data	Total
<b>World</b>	N economies	13	45	68	126	132	258
	Population (millions)	628	4,508	2,054	7,190	605	7,795
	Population (%)	8	58	26	92	8	100
<b>By region</b>							
North America	N economies	0	2	0	2	1	3
	Population (millions)	0	369	0	369	0	369

<sup>4</sup> We consider only increases or decreases of more than one Gini point.

	Population (%)	0	100	0	100	0	100
Latin America and the Caribbean	N economies	2	2	16	20	22	42
	Population (millions)	17	5	600	622	30	652
	Population (%)	3	1	92	96	5	100
Europe and Central Asia	N economies	5	19	17	41	17	58
	Population (millions)	148	329	384	861	63	924
	Population (%)	16	36	42	94	7	100
Middle East and North Africa	N economies	2	1	7	10	11	21
	Population (millions)	139	9	188	336	129	464
	Population (%)	30	2	40	72	28	100
Sub-Saharan Africa	N economies	1	9	20	30	18	48
	Population (millions)	2	316	563	881	255	1,136
	Population (%)	0	28	50	78	22	100
South Asia	N economies	1	3	1	5	3	8
	Population (millions)	221	1,566	29	1,816	40	1,856
	Population (%)	12	84	2	98	2	100
East Asia and the Pacific	N economies	2	9	7	18	20	38
	Population (millions)	101	1,914	290	2,305	58	2,362
	Population (%)	4	81	12	97	2	100
<b>By income group</b>							
High income	N economies	4	24	13	41	40	81
	Population (millions)	144	862	190	1,196	65	1,261
	Population (%)	11	68	15	94	5	100
Upper middle income	N economies	3	8	24	35	24	59
	Population (millions)	13	1,496	1,076	,2585	94	2,680
	Population (%)	1	56	40	97	3	100
Lower middle income	N economies	6	7	19	32	15	47
	Population (millions)	471	1,909	545	2,925	180	3,105
	Population (%)	15	61	18	94	6	100
Low income	N economies	0	6	12	18	13	31
	Population (millions)	0	240	242	482	235	717
	Population (%)	0	33	34	67	33	100
<b>By initial inequality</b>							
Low (<30)	N economies	3	19	3	25		
	Population (millions)	76	542	57	676		
	Population (%)	11	80	8	100		
Intermediate	N economies	7	19	17	43		
	Population (millions)	533	3,542	288	4,363		
	Population (%)	12	81	7	100		
High (≥40)	N economies	3	7	48	58		
	Population (millions)	19	423	1,708	2,151		
	Population (%)	1	20	79	100		

Source: changes (more than one Gini point) in income inequality estimated using a selection of series from UNU-WIDER, World Income Inequality Database (WIID, version 17 December 2019). Classification by income group based on the World Bank list of 218 economies (June 2019). Population in 2020 from Population Prospects, Population Division (UN DESA).

Figure 2. Map of within-country inequality change between circa 1990 and latest 2010s, Gini index

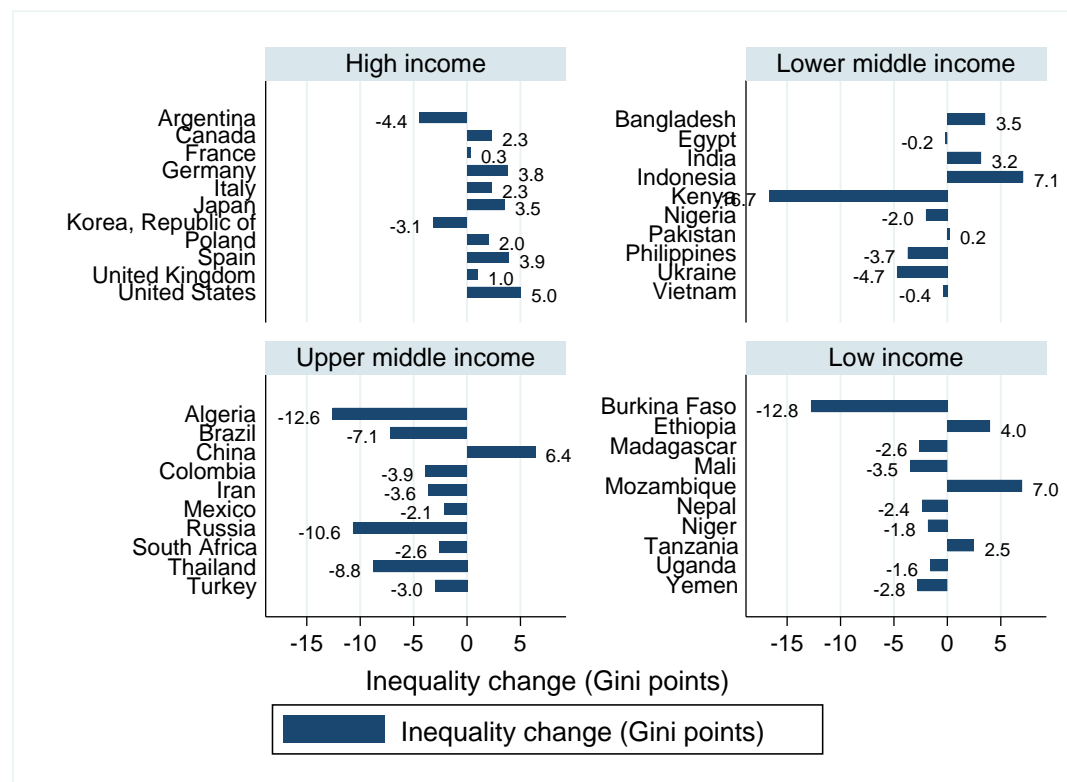


Source: changes (more than one Gini point) in income inequality estimated using a selection of series from the WIID, version 17 December 2019.

It turns out that there are more economies with declining inequality than with increasing inequality over the analyzed period, but a larger share of the world population lives in countries that witnessed raising inequality. Indeed, inequality increased in 45 economies making up 58 per cent of the population (4.5 billion), while declined in 67 economies accounting for 26 per cent of the population (2 billion). It has remained stable in the other 13 economies with data (8 per cent of the population or 0.6 billion). As a result, the average Gini (weighted by country population) increased from 36.3 to 38.3 (and the average increase was of 1.6 Gini points). The standard deviation in Gini levels declined from 8.7 to 5.7, pointing to some sort of convergence among countries to higher levels of inequality.

Inequality increases were the norm in many high income countries in North America (United States and Canada), across all European subregions, as well as in Japan in Asia. Inequality has also increased in less developed economies in East and South Asia, such as China, Bangladesh, India, or Sri Lanka. On the other hand, inequality has declined in almost all countries in Latin America, but also in the Middle East and North Africa, in sub-Saharan Africa, and in Russia and some neighbour countries. This pattern, however, presents remarkable exceptions. For example, inequality remained constant or declined in several high-income European economies (being stable in France and the United Kingdom, declining in Ireland, Portugal, Belgium, Switzerland, or the Netherlands). Other exceptions to the pattern in their areas are the decline of inequality in South Korea in Asia, the increase of inequality in Costa Rica, and the stability in Paraguay and Honduras in Latin America, as well as the increase in inequality in Mozambique and Madagascar in sub-Saharan Africa.

Figure 3. Change in within-country inequality (Gini points) between circa 1990 and latest 2010s by country income group (largest economies)



Source: changes (more than one Gini point) in income inequality estimated using a selection of series from the WIID, version 17 December 2019. Classification based on World Bank list of economies (June 2019). Population in 2020 from Population Prospects, Population Division (UN DESA).

### 3 Trends in top income and wealth shares

One aspect of the distribution of global living standards that has attracted more attention in recent years is the increasing evidence that points to the fact that income and wealth are highly concentrated at the top of the distribution, a phenomenon that cannot be fully captured by household surveys alone due to the systematic misrepresentation and underestimation of the rich and their incomes and assets. The investigation of this issue requires using a more complex approach that integrates information on income and wealth obtained from household surveys with information coming from a variety of other sources, including fiscal data (whether simple tax tabulations or complete files with individual records), national accounts, or rich lists (like the world's billionaires Forbes list). This process is not risk free because there is a high cross-country disparity in the availability and accessibility of these sources, as a result of the lack of data, or the lack of transparency when the data exist but is not released by governments. Furthermore, the quality of the available data may also vary substantially across countries and within the same country over time due, for example, to inconsistencies in the tax base, the tax unit, the enforcement level, prevailing levels of tax evasion. The use of administrative data is challenging in countries in which a large part of the economy is informal. The way how all this heterogeneous information is processed to estimate the income shares of different percentiles of the population is not trivial either, requiring a complex methodology, for example interpolating the upper tail using a generalized Pareto model.

In this line, the World Inequality Lab (WIL) has produced in a systematic way the World Inequality Database, containing inequality data for more than 70 countries and wealth inequality for more than 30, from which the global distribution of income, and to a lesser extent for wealth, can be estimated. The analysis based on this source, which can be found in the World Inequality Report 2018 (WIL 2018 and related literature) or, more recently, in the 2019 Human Development Report, deviates from the previous ones not only in the sources used and the geographical coverage but also in other respects, like the more extensive use of pre-tax income per tax unit or adult, as opposed to per capita household disposable (i.e. after-tax) income, or the focus on the income shares of the very top of the distribution. The result of this exercise is that income growth rates over time have been larger at the bottom half of the income distribution than at the upper half, except for the very top in which growth rates were the largest, with the Gini index remaining stable over the 1990–2016 period, as opposed to the declining trend discussed earlier.

The most outstanding feature highlighted by this approach is precisely the large and increasing concentration of income among the very rich. The global income share of the top one per cent in 2016 has increased by more than two percentage points since 1990 (from 18.1 to 20.4 of world's income), while the share of the bottom 50 per cent has also increased but by less than one percentage point (from 8.8 to 9.7). The gains of these two groups were obtained at the expense of the rest of the population; those between percentiles 50<sup>th</sup> and 99<sup>th</sup> would have seen a decline in their share from 73.1 to 69.9 per cent of total income. The large and increasing concentration of income at the top one per cent was widely spread geographically but not uniformly. The raise over time has been much more intense in Russia and Ukraine (from 7.3 to 20.2 per cent), Southern Africa (from 11.6 to 19.6 per cent), North America (from 14.5 to 20.2 per cent), or Asia excluded the Middle East (from 11.1 to 16.3 per cent), being more moderate in Europe (from 8.2 to 10.4 per cent), Latin America (from 25.1 to 27.9 per cent), Oceania (from 19.5 to 20.8 per cent), Western Africa (from 14.0 to 16.6 per cent), or Middle Africa (from 21.4 to 22.5 per cent). It has shown substantial declines only in Eastern Africa (from 27.8 to 17.9 per cent) and Middle East and Northern Africa (from 30.7 to 26.4 per cent).<sup>5</sup>

If the information necessary to track changes in income distributions is scarce and problematic, the situation turns out to be even more difficult when it comes to estimate the distribution of the stock of individual wealth, which is expected to be more heavily concentrated among fewer people than income and more complex to estimate. There are only a few countries, mainly rich economies, with household survey data allowing to analyze directly the trend in wealth inequality (such as those included in the Luxembourg Wealth Study or in the OECD Wealth Distribution Database). The administrative data that would allow to estimate or improve the accuracy of the distribution of wealth at the top are also scarce or inaccessible.

Despite these data constraints, there have been a couple of projects making the most of the limited information available, involving a large range of imputations whenever the information is missing, although these estimates should be taken even more cautiously than in the case of income. One of them is the Global Wealth Report 2019—and its companion the Global Wealth Databook 2019—produced by Credit Suisse (2019a,b). It estimates the distribution of global wealth between 2000 and 2019, combining information from household balance sheets, household surveys, and rich lists, among other sources. Information for countries with missing data is imputed, exploiting, for example, the regularities in the relationship between income and wealth across countries where information for

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<sup>5</sup> Calculation based on the World Inequality Database (<https://wid.world>), extracted on 19 January 2020.

both exist and using interpolation based on the Pareto distribution. Net wealth is defined here as the marketable value of financial assets plus non-financial assets (principally housing and land) less debts, and comparison across countries is done using exchange rates rather than PPPs (the authors argue that the value of assets to wealthy owners is not determined solely by consumer prices in their home country). Wealth is estimated per adult. Wealth is much more unequally distributed than income, and this report shows a decline in global wealth inequality in line with the decline in global income inequality using survey data. On the overall, the global wealth Gini index has declined from 91.9 in 2000 to 85.5 in 2019.<sup>6</sup> The top richest one per cent of adults currently owns as much as 45 per cent of the global net wealth down from the 46.9 per cent share in 2000, based on this approach. Like in the case of income, this decline in global inequality was also driven by the rapid growth of average wealth in emerging markets, most notably China. This led to a decline in inequality between countries, while underlying trends within countries tended to raise the concentration of wealth at the top. Changes in the share of the top one percent were geographically unequally distributed too, with larger increases in China (from 20.5 to 30.3 per cent of total wealth) and other emergent economies (from 32.4 to 39.0), while a more moderate increase was estimated for North America (from 32.7 to 34.7), and stability was found over the whole period in Europe (with a decline during the recession that was later reverted, ending up with 25.2 per cent).

The World Inequality Report 2018 also points to a greater concentration of wealth among the top one per cent since around 1990 in the few countries with enough wealth information available. The share of the top one per cent increased in China from 15.8 to 29.6 per cent of national wealth, in Russia from 21.5 to 42.6, in India from 16.1 to 30.7, in the United States from 27.4 to 38.6, in the United Kingdom from 16.4 to 19.9, and in France from 17.2 to 23.4. Based on this limited evidence for Europe, China, and the United States, the World Inequality Report has projected that the top one per cent of the world would own about 33 per cent of total wealth in 2016, a level that falls below the share estimated by Credit Suisse, but in this case the trend would have been increasing from the level of 28 per cent held in the 1980s.

## 4 Concluding remarks

Assessing the trend in inequality within countries over a long period of time is not an easy task. It involves a number of choices in terms of data and measures. The lack of data for many countries, mainly in the Global South, or the lack of consistency across countries and over time, pose important constraints. In this paper, we have made the most of available information in a rich but heterogenous dataset on inequality worldwide to shed some light on the issue. We have focused on the Gini index, the most commonly reported index, and compared like to like in each country, combining information from the same source and income concept in two years (the closest to 1990 and the most recent in the 2010s). The approach relies on the underlying assumption that the heterogeneity in inequality concepts used is less relevant to assess the trends than it is to assess the level of inequality. The paper provides readers with detailed information on each observation used in the analysis (that can be traced back to the corresponding WIID version in which it is based). The alternative is to convert all inequality values (like those based in per capita consumption or in total household gross income) into

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<sup>6</sup> Note that the Gini index can be higher than 100 in the presence of negative net wealth values (when debt is greater than the value of assets for some people).

a standardized measure of inequality (like inequality in per capita net income). Such process is necessary for most analyses, but also requires more data manipulation and will necessarily rely on stronger assumptions, something explicitly avoided here.

The approach has highlighted a sort of paradoxical fact. A majority of countries in the world have witnessed a decline in the level of inequality at the national level over a long period of time, at least as measured by the Gini index and based on information reported from household surveys. However, raising country inequality is a fact for the majority of the population in the world over that same period, after taking into account that inequality has increased in some of the most populous countries, including China, India, the United States, Japan, and most of Europe, as opposed to inequality declining or remaining stable in Latin American countries, and in many other in the Middle East, North Africa, sub-Saharan Africa, and Russia and some neighbour countries.

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## Appendix

Table A: Inequality within countries based on the WIID—circa 1990 (initial) and latest (final)

Country	Initial year	Initial Gini	Final year	Final Gini	Original source in WIID	Resource	Scale
Albania	1996	27.01	2012	28.96	WB	Consumption	Per capita
Algeria	1988	40.19	2012	27.62	WB	Consumption	Per capita
Argentina	1991	45	2017	40.56	SEDLAC	Income	Per capita
Armenia	1996	48.2	2017	33.62	D&S / WB	Consumption	Per capita
Australia	1989	33	2014	34.4	LIS	Income (net)	Per capita
Austria	1987	23	2013	31.1	LIS	Income (net)	Per capita
Bangladesh	1989	28.85	2016	32.39	WB	Consumption	Per capita
Belarus	1995	31.7	2017	25.44	D&S / WB	Consumption	Per capita
Belgium	1995	29	2018	25.6	Eurostat	Income (net)	Equivalized
Bolivia	1992	53.6	2017	44	SEDLAC	Income	Per capita
Botswana	1986	54.21	2016	53.33	WB	Consumption	Per capita
Brazil	1990	60.3	2017	53.17	SEDLAC	Income	Per capita
Bulgaria	1992	30.71	2014	37.42	WB	Income	Per capita
Burkina Faso	1995	48.07	2014	35.3	WB	Consumption	Per capita
Burundi	1992	33.33	2014	38.62	WB	Consumption	Per capita
Cambodia	1994	38.5	2012	30.76	D&S / WB	Consumption	Per capita
Cameroon	1996	44.45	2014	46.64	WB	Consumption	Per capita
Canada	1990	28.6	2017	30.9	Statistics Canada	Income (net)	Equivalized
Chile	1990	52.4	2015	48.5	LIS	Income (net)	Per capita
China	1990	32.22	2015	38.59	WB	Consumption	Per capita
Colombia	1989	53.59	2017	49.72	WB	Income	Per capita
Costa Rica	1990	43.6	2017	48.3	SEDLAC	Income	Per capita
Cote d'Ivoire	1989	36.89	2015	41.47	WB	Consumption	Per capita
Croatia	1988	22.78	2015	31.11	WB	Income	Per capita
Cyprus	1997	29	2018	29.1	Eurostat	Income (net)	Equivalized
Czechia	1992	23.2	2016	25.3	OECD	Income (net)	Equivalized
Denmark	1990	22.6	2016	26.1	OECD	Income (net)	Equivalized
Dominican Republic	1989	50.46	2016	45.72	WB	Income	Per capita
Ecuador	1987	50.49	2017	44.67	WB	Income	Per capita
Egypt	1991	32	2015	31.82	WB	Consumption	Per capita
El Salvador	1991	53.95	2017	38.01	WB	Income	Per capita
Estonia	1993	39.5	2015	32.67	WB	Income	Per capita



Eswatini	1995	60.45	2010	51.45	WB	Consumption	Per capita
Ethiopia	1996	29	2016	33	Central Statistical Agency	Consumption	Per capita
Fiji	1991	49	2014	36.7	Sharma 2004 / WB	Consumption	Per capita
Finland	1990	21.5	2017	26.6	OECD	Income (net)	Equivalized
France	1995	29	2017	29.3	Eurostat	Income (net)	Equivalized
Gambia, The	1992	48.1	2016	35.92	D&S / WB	Consumption	Per capita
Georgia	1996	37.13	2017	37.94	WB	Consumption	Per capita
Germany	1990	25.6	2016	29.4	OECD	Income (net)	Equivalized
Ghana	1989	35.99	2017	43.52	WB	Consumption	Per capita
Greece	1986	35.2	2016	33.3	OECD	Income (net)	Equivalized
Guatemala	1989	59.6	2014	48.28	WB	Income	Per capita
Guinea	1991	46.84	2012	33.73	WB	Consumption	Per capita
Guinea-Bissau	1991	56.1	2010	50.66	WB	Consumption	Per capita
Honduras	1991	51	2016	50	SEDLAC	Income	Per capita
Hong Kong	1991	45	2016	53.9	Census and Statistics Department	Income (gross)	No adjustment
Hungary	1991	29.1	2015	28.1	LIS	Income (net)	Per capita
India	1988	32.55	2012	35.71	WB	Consumption	Per capita
Indonesia	1990	32	2017	39.1	Central Bureau of Statistics	Consumption	Per capita
Iran	1990	43.6	2016	39.97	WB	Consumption	Per capita
Ireland	1987	32.9	2010	29.4	LIS	Income (net)	Equivalized
Israel	1990	32.9	2017	34.4	OECD	Income (net)	Equivalized
Italy	1989	32.6	2014	34.9	LIS	Income (net)	Per capita
Jamaica	1991	39.69	2016	34.66	Planning and Statistical Institutes	Consumption	Per capita
Japan	1985	30.4	2015	33.9	OECD	Income (net)	Equivalized
Jordan	1992	43.36	2011	33.66	WB	Consumption	Per capita
Kazakhstan	1996	35.38	2017	27.45	WB	Consumption	Per capita
Kenya	1992	57.46	2016	40.78	WB	Consumption	Per capita
Korea, Republic of	1992	34.9	2012	31.8	Cheong 2005/LIS	Income (net)	Per capita
Kyrgyzstan	1993	47.2	2017	27.34	D&S / WB	Consumption	Per capita
Laos	1993	34.31	2013	36.39	WB	Consumption	Per capita
Latvia	1993	26.99	2015	34.2	WB	Income	Per capita
Lebanon	1995	43.5	2012	31.83	Ministry of Social Affairs / WB	Consumption	Per capita
Lesotho	1987	56.02	2010	54.18	WB	Consumption	Per capita
Lithuania	1993	33.64	2015	37.37	WB	Income	Per capita

Luxembourg	1986	24.7	2016	30.4	OECD	Income (net)	Equivalized
Madagascar	1994	45.26	2012	42.65	WB	Consumption	Per capita
Malawi	1993	62	2017	44.69	WB	Consumption	Per capita
Malaysia	1989	46.17	2016	41.04	WB	Income	Per capita
Mali	1989	36.5	2010	33.04	WB	Consumption	Per capita
Mauritania	1989	46	2014	32.62	D&S / WB	Consumption	Per capita
Mauritius	1991	37	2012	38.47	WB	Income/ Consumption	Per capita
Mexico	1989	50.4	2016	48.3	SEDLAC	Income	Per capita
Moldova	1997	36.94	2017	25.9	WB	Consumption	Per capita
Mongolia	1995	33.2	2016	32.35	WB	Consumption	Per capita
Morocco	1991	39.2	2014	39.55	WB	Consumption	Per capita
Mozambique	1997	40	2015	47	Ministry of Economics and Finance	Consumption	Per capita
Namibia	1993	74.3	2016	59.07	WB	Consumption	Per capita
Nepal	1996	35.21	2011	32.84	WB	Consumption	Per capita
Netherlands	1990	31.2	2013	28.7	LIS	Income (net)	Per capita
New Zealand	1990	30.2	2018	34.1	Ministry of Social Development	Income (net)	Equivalized
Nicaragua	1993	56.4	2014	46.2	SEDLAC	Income	Per capita
Niger	1993	36.1	2014	34.28	WB	Consumption	Per capita
Nigeria	1992	44.98	2010	42.97	WB	Consumption	Per capita
North Macedonia	1996	45.6	2015	35.59	D&S / WB	Income	Per capita
Norway	1986	22.2	2017	26.2	OECD	Income (net)	Equivalized
Pakistan	1991	33.25	2016	33.45	WB	Consumption	Per capita
Panama	1989	54.9	2017	49.75	SEDLAC	Income	Per capita
Papua New Guinea	1996	55.43	2010	41.85	WB	Consumption	Per capita
Paraguay	1990	48.2	2017	48.8	SEDLAC	Income	Per capita
Peru	1997	55.7	2017	43.3	SEDLAC	Income	Per capita
Philippines	1991	43.82	2015	40.11	WB	Consumption	Per capita
Poland	1992	29.3	2016	31.3	LIS	Income (net)	Per capita
Portugal	1995	37	2018	32.1	Eurostat	Income (net)	Equivalized
Romania	1989	23.31	2015	35.91	WB	Income	Per capita
Russia	1993	48.38	2015	37.74	WB	Consumption	Per capita
Rwanda	1985	28.9	2017	43.71	WB	Consumption	Per capita
Saint Lucia	1995	42.58	2016	51.23	WB	Income	Per capita
Senegal	1992	54.14	2012	40.29	WB	Consumption	Per capita

Sierra Leone	1990	62.9	2011	34.03	WB	Consumption	Per capita
Singapore	1993	37.8	2011	47.3	Statistics Singapore	Income	Per capita
Slovakia	1992	20.2	2013	28.1	LIS	Income (net)	Per capita
Slovenia	1993	29.18	2015	25.41	WB	Income	Per capita
South Africa	1993	68.1	2015	65.5	Hundenborn et al. 2016	Income (net)	Per capita
Spain	1990	31.9	2016	35.8	LIS	Income (net)	Per capita
Sri Lanka	1991	43	2016	45	Department of Census and Statistics	Income (gross)	No adjustment
Sweden	1991	20.9	2017	28.2	OECD	Income (net)	Equivalized
Switzerland	1992	35.6	2013	32.8	LIS	Income (net)	Per capita
Tajikistan	1999	29.54	2015	34	WB	Consumption	Per capita
Tanzania	1992	35.29	2012	37.78	WB	Consumption	Per capita
Thailand	1990	42.9	2017	34.1	National Statistical Office	Income (gross)	No adjustment
Tunisia	1990	40.24	2016	32.82	WB	Consumption	Per capita
Turkey	1987	43.4	2015	40.4	OECD	Income (net)	Equivalized
Uganda	1989	44.36	2017	42.75	WB	Consumption	Per capita
Ukraine	1992	29.71	2016	25	WB	Consumption	Per capita
United Kingdom	1990	33.1	2018	34.07	Institute for Fiscal Studies	Income (net)	Equivalized
United States	1990	41.4	2018	46.42	Census Bureau	Income (gross)	Equivalized
Uruguay	1989	42.2	2017	39.49	SEDLAC	Income	Per capita
Venezuela	1989	39.8	2010	36	SEDLAC	Income	Equivalized
Vietnam	1993	35.65	2016	35.27	WB	Consumption	Per capita
Yemen	1992	39.5	2014	36.71	WB	Consumption	Per capita
Zambia	1991	60.51	2015	57.14	WB	Consumption	Per capita
Zimbabwe	1990	56.8	2011	43.15	WB	Consumption	Per capita

Note: D&S = Deininger and Squire, unpublished data provided by the World Bank based on unit record data, 2004; LIS = Luxembourg Income Study database; OECD = Organization for Economic Co-operation and Development; SEDLAC = Socio-Economic Database for Latin America and the Caribbean; WB = World Bank. Cheong 2005 = K.S. Cheong's calculations for the WIID; Hundenborn et al. 2016 = Hundenborn, J M. Leibbrandt and I. Woolard, 'Drivers of Inequality in South Africa', SALDRU Working Paper 194, 2016; Sharma 2004 = 'Growth, inequality and poverty in Fiji Islands: institutional constraints and issues', Department of Economics, University of the South Pacific, 2004.

Source: author's construction based on the WIID, version 17 December 2019.