Policy Research Working Paper 10796

The World Bank's New Inequality Indicator

The Number of Countries with High Inequality

Cameron Nadim Haddad
Daniel Gerszon Mahler
Carolina Diaz-Bonilla
Ruth Hill
Christoph Lakner
Gabriel Lara Ibarra

WORLD BANK GROUP
Poverty and Equity Global Practice &
Development Data Group
June 2024

Policy Research Working Paper 10796

Abstract

The World Bank recently introduced a new key indicator to guide its work: the number of countries with high inequality, defined as a Gini index above 40. The new indicator was introduced as part of the new World Bank vision of ending poverty on a livable planet. This paper reviews why reducing inequality matters for ending poverty on a livable planet, summarizes the advantages and disadvantages of using the Gini index to track inequality, outlines challenges in measuring inequality, and discusses what a Gini threshold of 40 implies. Using the most recent data for every country, 52 countries of a total of 169 countries are classified as high inequality countries, which represents a decline from 77 countries at the beginning of the millennium.

This paper is a product of the Poverty and Equity Global Practice and the Development Data Group, Development Economics. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at http://www.worldbank.org/prwp. The authors may be contacted at dmahler@worldbank.org.

The World Bank's New Inequality Indicator: The Number of Countries with High Inequality

Cameron Nadim Haddad, Daniel Gerszon Mahler, Carolina Diaz-Bonilla, Ruth Hill, Christoph Lakner, and Gabriel Lara Ibarra[1]

JEL classification: D63, I32.

Keywords: Inequality, Gini coefficient.

[1] This note benefitted from feedback from Benu Bidani, Deon Filmer, Haishan Fu, Dean Jolliffe, Aart Kraay, Luis-Felipe Lopez Calva, Minh Nguyen, Nishant Yonzan, Regina Pleninger, Sutirtha Sinha Roy, Umar Serajuddin, and members of the Global Poverty Working Group. We gratefully acknowledge financial support from the UK Government through the Data and Evidence for Tackling Extreme Poverty (DEEP) Research Program.

1. Introduction

For the first time, the World Bank is using an indicator of within-country inequality to track progress toward its vision (World Bank 2024a). The new indicator tracks the number of countries with a Gini index above 40, and is used alongside the Prosperity Gap (Kraay ⓡ al. 2023) to measure shared prosperity. These two indicators replace the growth of the bottom 40% in each country as the core measures of shared prosperity.

The objective to reduce within-country inequality builds on prior work by the World Bank and others suggesting that reducing inequality is key to sustainable development (World Bank 2005, World Bank 2016). In this paper, we shed light on this new objective in five different ways. First, we briefly review the literature on why inequality matters. Second, we summarize advantages and disadvantages of using the Gini index as the measure of inequality. Third, we outline challenges in measuring inequality with the available data. Fourth, we discuss how the threshold of a Gini index of 40 relates to previous definitions of high inequality, the distribution of Gini coefficients in the World Bank's Poverty and Inequality Platform (PIP), and a poll of World Bank experts. Fifth, we analyze the countries that are classified as high inequality according to the threshold.

2. Reducing inequality is key to ending poverty on a livable planet

In this section we briefly review the literature on why reducing inequality matters for ending poverty on a livable planet, focusing on the impact of inequality on opportunities, elite capture, poverty reduction, economic growth, climate change, and social cohesion.

Opportunities. High levels of inequality often characterize unjust societies, where opportunities are driven by inherited characteristics, such as ethnicity, gender, parents' socioeconomic status, or other factors beyond an individual's control (Corak 2013, Brunori et al. 2013). Those without inherited opportunities may not be able to access education and employment, leading to wasted human potential (World Bank 2005). The inequality of outcomes of the current generation is the inequality of opportunities for the next generation (Atkinson 2015), exacerbating these consequences for future generations.

Elite capture. Economic inequality often spills over to political and social inequality, whereby politically powerful groups capture resources intended for the benefit of the broader population. These powerful groups may influence the political structures to prevent policies from leveling the playing field and ensuring broad-based economic growth. This form of corruption, known as elite capture, has been demonstrated to further exacerbate existing levels of poverty and inequality among a country's most marginalized communities (Persha & Anderssen 2014, Dutta 2009, Platteau & Gaspart 2003). Elite capture has also been linked with reductions in the effectiveness of foreign aid (Andersen et al 2020).

Poverty reduction. Lowering inequality can be an effective strategy to reduce poverty. Everything else equal, reductions in inequality often increase the income or consumption of the worst-off, thus lowering their poverty severity or bringing them out of poverty altogether (Ravallion 2001). Furthermore, lowering inequality implies that the growth-poverty elasticity improves (Bourguignon 2003). Hence, with lower inequality, a given growth in GDP per capita will generate more poverty reduction. Put differently, for a given level of GDP per capita, countries with lower inequality require less growth to end poverty. Inequality reductions have the potential to have a sizeable impact on poverty reduction.

If all countries reduced their Gini coefficient by 1%, global poverty would fall more than if all countries grew their economies 1 additional percentage point (Lakner et al. 2022).[2]

Economic growth. Many studies have investigated the relationship between inequality and economic growth. There is evidence that inequality slows growth in both low-income and high-income countries (Barro 2000, Barro 2008, Banerjee & Duflo 2003), but also evidence that inequality may be beneficial for transitional growth in low-income countries (Brueckner & Lederman 2018). Due to the highly complex relationship between inequality and growth, it is difficult to arrive at any certain relationship between the two, yet it seems safe to conclude that the literature has not found unequivocal evidence in favor of inequality reductions harming economic growth. One of the likely reasons why inequality reductions need not come at the expense of economic growth is that inequalities reflect both differences in opportunities and differences in effort. Although taxes and transfers may reduce effort and hence limit economic growth, they may also expand opportunities. There is evidence suggesting that inequality of opportunity is bad for growth (Marrero & Rodriguez 2013, Ferreira et al. 2018) and particularly for the growth of the poor (Van der Weide & Milanovic 2018). Thus, reducing inequality, insofar as it reduces inequality of opportunity, will likely spur economic growth.

Climate change. Climate change is impacting the poorest within countries the most as they tend to live in areas with more exposure to extreme climatic events, and because their livelihoods are more impacted by temperature changes and natural disasters (Hallegatte & Rozenberg 2017). At the same time, the poorest are less able to adapt because they have limited resources (Dercon 2014). As such, reductions in inequality that make the poorer better off will likely increase the ability of vulnerable populations to adapt and thus limit the welfare implications of climate change. Reducing inequality can also matter for mitigating climate change. If countries reduce inequality, they require less growth to end poverty, and as economic growth is a major driver of greenhouse gas emissions, inequality reductions imply that fewer emissions would be needed to end poverty (Wollburg ⓡ al. 2023).

Social cohesion. Inequality influences social cohesion. Higher inequality has been associated with greater political instability, including a greater risk of violence (World Bank 2011), and lower ability for countries to respond to economic shocks (Berg & Ostry 2011). Notions of economic fairness and perceptions of inequality also impact individual behavior (Brunori et al. 2013, Niehues 2014).

3. Choice of inequality measure

Classifying countries as high inequality requires choosing a specific measure of inequality on which to group countries. The new World Bank indicator uses the Gini index as the measure of inequality. Several other inequality measures exist, each with their own benefits and shortcomings. Here we will look at a subset of measures and summarize the advantages and disadvantages of the Gini vis-à-vis these measures.

Concretely we consider five measures of inequality: the Gini index, the mean log deviation, the Theil index, Kuznets ratios, and quantile ratios, all of which are defined in Box 1. We evaluate these inequality measures along four criteria: whether they are commonly used, easy to explain, Lorenz consistent, and subgroup decomposable. Table 1 summarizes the conditions satisfied by the five inequality measures considered.

[2] Over longer periods of time, growth rates are generally much higher than inequality changes, so despite this potential of inequality declines for poverty reduction, historically most poverty reduction has come from economic growth (Bergstrom 2022).

Box 1: Definitions of a subset of inequality measures

The Gini index is a measure of inequality ranging from 0 to 100 (or 0 to 1), where 0 indicates perfect equality and 100 perfect inequality (Gini 1912, Ceriani & Verme 2012). The Gini index is commonly defined through a Lorenz curve, which plots the cumulative income or consumption share for a country on the vertical axis against the cumulative population share on the horizontal axis. The Gini index is twice the area between the 45-degree line (which reflects perfect equality) and the observed Lorenz curve. Mathematically, the Gini coefficient is the average transfer needed to make two people in a country equal, expressed relative to the country's mean income or consumption ($\bar{x}$): $Gini = \frac{1}{2\bar{x}N^2}\sum_{i=1}\sum_{j=1}\left|x_i - x_j\right|$, where N is the number of people in a country.

The mean log deviation and the Theil index belong to the class of Generalized Entropy inequality measures (Shorrocks 1980), which were derived from their fulfillment of a range of desirable theoretical properties, these being subgroup decomposability, anonymity, the population principle, the transfer principle, and scale invariance. The various general entropy measures differ by how large weight they place on inequality at the bottom of distributions vis-à-vis inequality at the top of distributions. The mean log deviation is given by $\frac{1}{N}\sum_{i=1}^{N} ln\frac{\bar{x}}{x_i}$, while the Theil index is given $\frac{1}{N}\sum_{i=1}^{N}\frac{x_i}{\bar{x}} ln\frac{x_i}{\bar{x}}$.

Kuznets ratios measure the share of income going to the top quantiles divided by the income going to the bottom quantiles. The greater the ratio, the higher inequality. One example of a Kuznets ratio is the share of income going to the top 10% divided by the income share of the bottom 40%, also known as the Palma ratio (Palma 2011).

Quantile ratios measure income ratios at particular quantiles, such as the income of the 90th percentile divided by the income of the 10th percentile.

Table 1: Comparison of various inequality measures

Inequality measure	Commonly used	Easy to explain	Lorenz consistent	Subgroup decomposable
Gini coefficient	Yes	No	Yes	No
Mean log deviation	No	No	Yes	Yes
Theil index	No	No	Yes	Yes
Kuznets ratios	Yes	Yes	No	No
Quantile ratios	Yes	Yes	No	No

Commonly used is difficult to track formally given that the Kuznets ratios and quantile ratios come in various forms. Due to their frequent use in inequality research, such as in Piketty (2014), we classify them as commonly used. Among the other three measures, Google returns about 5,000,000 hits for the Gini coefficient (or Gini index) while the Theil Index and mean log deviation receive around 100,000 and 15,000 hits, respectively.[3] This leads us to classify the Gini as commonly used and the other two measures as not.

Kuznets ratios and quantile ratios benefit from being expressed in units that are easy to explain. Most people can easily understand what it means if the top 10% has twice the income of the bottom 40%. By contrast, the other three measures do not have very intuitive scales or interpretations. One of the simplest (though still not straightforward) explanations of the Gini coefficient is that it represents the

[3] The mean log deviation is also called a Theil index, which complicates the analysis, but should reinforce the results. The mean log deviation and the Theil index correspond to GE0 and GE1 in the General Entropy (GE) class.

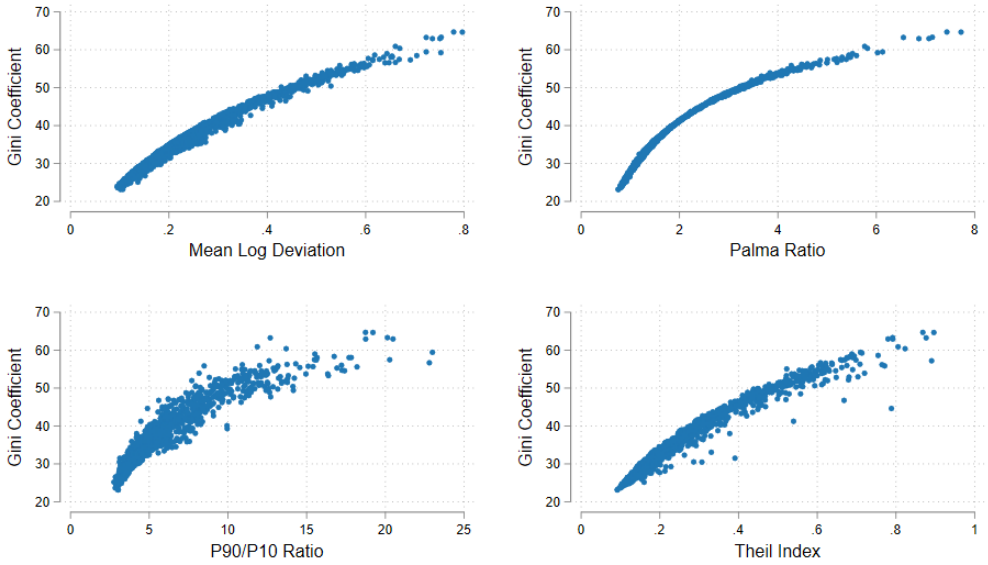
average transfer needed to make two people in a country equal, expressed relative to the country's mean income (see Mahler & Baur (2023) for a visualization of this). For example, a Gini coefficient of 50 means that to equalize the incomes of two randomly chosen individuals, on average 50% of the country's mean income should be transferred from the richer to the poorer individual. Many other interpretations of the Gini coefficient exist (Pyatt 1969, Sen 1973, Yitzhaki 1979, Lerman & Yitzhaki 1984).

Lorenz consistency indicates whether a measure satisfies certain theoretically desirable properties (Foster 1985), such as the Pigou-Dalton transfer principle, which (in its strong form) states that inequality must fall if income is transferred from a wealthier individual to a poorer individual. This does not hold for Kuznets ratios as transfers between individuals not considered in the groups chosen would not influence the inequality measure. For example, the Palma ratio ignores the middle class and is unaffected by what happens in the distribution between the 40^{th} and 90^{th} percentiles. Among the inequality indices that are Lorenz sensitive, they differ by which parts of the distribution they place larger weights on. The Gini coefficient is rank-informed, which means that the index changes in response to transfers depending on the rank of the involved. As a result of being rank-informed, the Gini coefficient is generally more sensitive to transfers in the middle of distributions (where there is more population mass, and hence more possibilities of re-rankings) than in the ends (Atkinson 1970, Sen 1973). In addition, compared to the mean log deviation, the Gini coefficient tends to be relatively more responsive to the top than the bottom.

Subgroup decomposability means that it is possible to decompose total inequality into inequality between groups of a country (say, geographical regions) and within groups of a country (Bourguignon 1979). The Theil index and mean log deviation were developed with this attribute in mind. The Gini coefficient, Kuznets ratios, and quantile ratios, by contrast, are not subgroup decomposable.

As can be seen, no measure satisfies all criteria, and in general there is a trade-off between selecting a measure with desirable theoretical properties and a measure that is easy to understand and familiar to many. The Gini index somewhat falls in the middle. It is likely familiar to the widest audience with a long history of use, while also satisfying basic theoretical properties, yet it is difficult to interpret. Because most inequality measures are highly correlated with each other (Figure 1), it does not make much practical difference which one is chosen to classify countries as high inequality. As an example of a Kuznets ratio, we use the Palma ratio, and as an example of a quantile ratio, we use the income of the 90^{th} percentile divided by the income of the 10^{th} percentile (noted P90/P10 below). The Spearman rank correlation between the Gini index and the four other measures ranges from 0.968 to 0.999 while the Pearson correlation ranges from 0.908 to 0.981 (Table 2). Only with the P90/P10 ratio are there notable re-rankings vis-a-vis the Gini. The P90/P10 ratio is the measure utilizing the least distributional information and satisfying the fewest theoretical properties.

Figure 1: Associations between inequality measures



Source: World Bank's Poverty and Inequality Platform (PIP) and Global Monitoring Database (GMD).

Table 2: Correlations of alternative inequality measures with the Gini coefficient

Indicator	Spearman	Pearson
Mean Log Deviation	.990	.982
Palma Ratio	.999	.952
P90 / P10	.968	.908
Theil Index	.983	.969

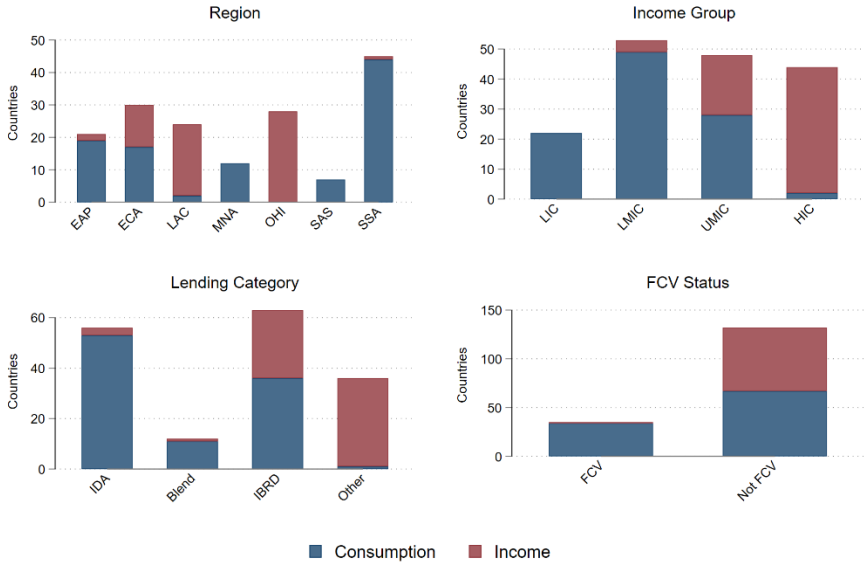
Source: World Bank's Poverty and Inequality Platform (PIP) and Global Monitoring Database (GMD).

4. Data

To evaluate the threshold set by the World Bank as well as the implications for which countries are classified as high inequality, we rely on data from the World Bank's Poverty and Inequality Platform (PIP). PIP contains Gini estimates for 169 countries comprising about 98% of the world's population. Some countries have annual estimates while others have less frequent estimates. For the analysis used in this paper, half of countries have a Gini index from 2020 or later, while the latest Gini index of 10 countries predates 2011.

Depending on the country, PIP uses disposable income or consumption expenditure to measure inequality. Disposable income is used mostly in Latin America and high-income countries while consumption is used mostly in low and lower-middle income countries (Figure 2), in large part because this reflects the data available. This data availability can be explained by challenges with measuring income in poorer countries (Carletto et al 2021) and challenges with measuring consumption in wealthier countries.

Figure 2: Use of income or consumption across countries



Source: World Bank's Poverty and Inequality Platform (PIP).
Note: EAP = East Asia & Pacific, ECA = Europe & Central Asia, LAC = Latin America & the Caribbean, MNA = Middle East & North Africa, OHI = Other high income, SAS = South Asia, SSA = Sub-Saharan Africa, LIC = low-income countries, LMIC = lower middle-income countries, UMIC = upper middle-income countries, HIC = high-income countries, FCV = countries on the World Bank's fragility, conflict, and violence list.

Income inequality is generally higher than consumption inequality (Deininger 1996) for at least two reasons: (1) incomes can be very low or even negative for some time while subsistence requires a minimum level of consumption, and (2) households generally have a declining marginal propensity to consume. The latter means, for example, that a household may have a very high annual income due to a capital income shock, but may not use it all for consumption in order to save for the future and safeguard against future shocks. Due to their conceptual differences, for the most part we treat income and consumption inequality separately. For a dozen countries or so which have recent Gini coefficients from both income and consumption aggregates, we rely on an assessment of World Bank country experts about which to use. Their assessment is generally based on which measure the country uses to define and track poverty.[4]

PIP estimates inequality from household surveys, which are known to underrepresent the top of the distributions due to underreporting or non-response (Atkinson 2007). In recent years, there have been many attempts to correct for this bias, often combining surveys with tax records that represent the top more accurately (Flachaire et al. 2023, Jenkins 2017, Piketty et al. 2019). Outside high-income countries, this source of data remains limited and where available provides only an incomplete picture of the top due to the absence of comprehensive personal income taxes (Van der Weide et al. 2017). In addition, it is still not obvious how best to combine survey data with administrative records, and depending on how the two are bridged, inequality estimates may change notably (Auten and Splinter

[4] This concerns Albania, Armenia, Bulgaria, Belarus, Belize, Croatia, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Montenegro, Namibia, North Macedonia, Peru, Philippines, Poland, Romania, the Russian Federation, Serbia, the Slovak Republic, Slovenia, the Seychelles, Türkiye, and Ukraine. In all countries but Albania, Armenia, Belarus, Kazakhstan, Namibia, Russia, and Ukraine, income is preferred. The exact welfare type used for each country-year is available in the metadata of the World Development Indicators: https://api.worldbank.org/v2/en/indicator/SI.POV.GINI?downloadformat=csv. For global poverty monitoring, consumption aggregates are preferred.

forthcoming, Alvaredo et al. 2023, Flachaire et al. 2023). Therefore, it is not possible at this time to adjust all countries in PIP for the underreporting of incomes at the top. When it becomes possible to do so, the inequality estimates reported here will be revised upward and more countries will have a Gini index above 40. However, it will then also become necessary to revisit the threshold since the underlying statistic has changed.

In Annex A.1, we test if using data from the World Inequality Database (WID), which adjusts for underreporting for a subset of countries where possible, would lead to different conclusions in terms of the countries classified as in high inequality. We find that 125 of the 151 countries present in both databases would be classified identically, and that most differences do not lead to large country re-rankings albeit with a dozen or so notable exceptions. Using WID, the number of countries that have moved out of the high-inequality country category follows a similar but slightly more muted pattern.

There are other factors contributing to incomparable inequality estimates across countries. For example, given that rural areas tend to have lower price levels than urban areas, it matters whether countries account for such price differences when calculating the real income or real consumption expenditure of households. Currently, it differs whether countries use such spatial deflation (Mancini & Vecchi 2022). At times, there are also comparability issues within-countries over time, as countries frequently change the survey design and consumption aggregation methodology.

5. Choice of threshold

Regardless of the inequality measure and data source used, there are no widely accepted standards for what constitutes a high level of inequality. The World Bank has decided to classify countries with Gini coefficients greater than 40 as high inequality countries. Here we show how this threshold relates to previous definitions of high inequality, the distribution of Gini coefficients in the World Bank's Poverty and Inequality Platform (PIP), and a poll of World Bank experts.

5.1 Existing definitions of high inequality

We reviewed existing reports that have proposed cut-offs designating high inequality. The United Nations Statistics Division occasionally conducts a 'Progress Chart' of the Sustainable Development Goals (SDGs) in which they classify the current level of selected SDG indicators into various groups. In the 2022 edition (United Nations 2022), they classified countries as having *low inequality* if their Gini coefficient was less than 25, *moderately low* if between 25-30, *moderately high* if between 30-40, *highly unequal* if between 40 and 45, and *very high* if above 45. They rely on PIP data, and do not distinguish between consumption and income surveys when classifying. Hence, their threshold is identical to the one proposed by the World Bank.

A UNICEF report stated, "*it's commonly recognized that Gini index<0.2 corresponds with perfect income equality, 0.2–0.3 corresponds with relative equality, 0.3–0.4 corresponds with a relatively reasonable income gap, 0.4–0.5 corresponds with high income disparity, above 0.5 corresponds with severe income disparity*" (UNICEF 2018). A World Bank report on inequality in educational outcomes cited, "*as a rule of thumb, a Gini coefficient [of earnings] above 40 is considered unequal and one above 50 as highly unequal*" (Porta 2011).[5] UNRISD and WHO have also produced reports where Gini coefficients above 40 are considered to be undesirable (UNRISD 2013, Hawsawi & Abouammoh 2022). Thus, a threshold of 40 is consistent with past attempts at defining high inequality.

[5] Earnings inequality tend to be more unequal than consumption inequality, so a corresponding consumption inequality threshold would likely be lower.

We also scanned past literature for evidence of inflection points around which inequality begins to lead to more negative outcomes in some other important dimension. The evidence to that end is very limited and not sufficient to suggest a single threshold.

5.2 Distribution of Gini coefficients in PIP

We compile all national Gini coefficients from PIP since 2000 (World Bank 2024b), which results in 1,779 estimates, of which 1,051 are income-based and 728 are consumption-based (Table 3). Each country is given the same weight in the analysis. This means that if one country has one estimate since 2000, this observation is given a weight of 1, while for a country with 10 estimates, each gets a weight of 1/10.

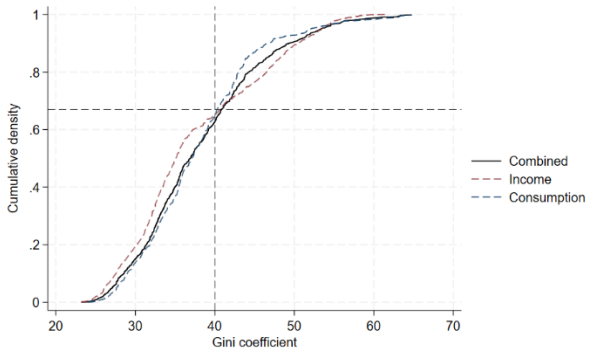
Table 3: Count of Gini coefficients in PIP (post-2000)

	Countries	Surveys
Income-based	68	1,051
Consumption-based	118	728
Total	165	1,779

Source: World Bank's Poverty and Inequality Platform.
Note: Some countries have both income and consumption surveys which is why the country count of income- and consumption-based surveys does not sum to the total.

The cumulative distribution function of these Gini coefficients is shown in Figure 3 and selected summary statistics are shown in Table 4. The average Gini coefficient across 165 countries is 38.2. The average Gini coefficient from consumption-based surveys is 38.4 while the average Gini coefficient for income-based surveys is 37.9. A Gini threshold of 40 is approximately separating the top third of all Gini coefficients (the 67th percentile equals 40.8), as well as the top third of the separate consumption and income distributions (67th percentile equals 40.7 and 41.4, respectively). Hence since 2000, with a threshold of 40, about a third of all countries would have been classified as in high inequality, and this applies both to a third of countries using income and a third of countries using consumption.

Figure 3: CDF of Gini coefficients



Note: The dashed horizontal line reflects the 67th percentile.

Table 4: Selected summary statistics of Gini coefficients

	Mean	25th pctl	33rd pctl	50th pctl	67th pctl	75th pctl
Consumption	38.4	33.1	34.8	37.5	40.7	42.4
Income	37.9	31.1	32.3	34.8	41.4	45.9
Combined	38.2	32.3	33.6	36.9	40.8	42.9

Inequality within countries has fallen over time for many countries (World Bank 2016). If data from the 1990s are used, the 67th percentile is closer to 45 for consumption and 50 for income (Table 5).

However, if the most recent Gini coefficient of each country is used, a threshold of 40 still roughly corresponds to the 67th percentile for income and consumption distributions (38.8 for consumption and 40.3 for income).

Table 5: 67th percentile using other time periods of Gini coefficients

	1990s	2000s	2010s	Latest
Consumption	44.1	42.0	39.5	38.8
Income	47.7	47.2	38.6	40.3
Combined	45.1	42.2	39.3	39.1

The fact that the summary statistics of Gini coefficients across income and consumption surveys is similar appears to contradict our earlier statement that income inequality tends to be higher than consumption inequality. However, the sample of countries using income or consumption aggregates is not representative of all countries. Across the 18 countries in PIP that have both income- and consumption-based surveys from the same year (Annex Table A.3), the average Gini coefficient derived from consumption-based-surveys is 4.5 Gini points lower (equivalent to 10%) than the income-based number (Annex Figure A.3). The similarity between the mean of Gini coefficients estimated from all available consumption or income surveys in PIP suggests that the sample of countries that use income is biased towards more equal countries.

To address this bias, we convert income Gini coefficients to consumption Gini coefficients and vice versa to get a sense of what the distribution of Gini coefficients *could* have looked like, if both income and consumption Gini's were available for all countries. We rely on a method established in Wollburg ⓡ al. (2023). Annex A.3 shows that using a method from Chancel et al. (2023) and using a 10% downscaling of income-to-consumption Gini coefficients gives very similar results. The conversion allows a full global distribution of income-based Gini coefficients, and a full global distribution of consumption-based Gini coefficients to be generated (Figure 4 and Table 6).

Figure 4: CDF of Gini coefficients

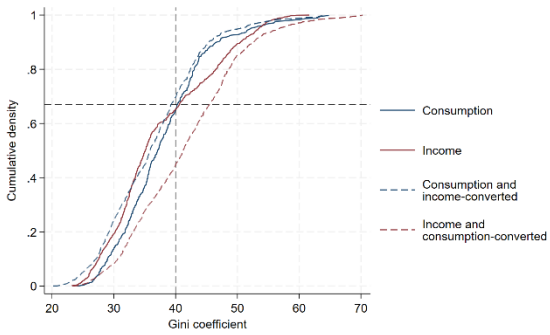


Table 6: Selected percentiles of CDF of Gini coefficients

	Obs	50th pctl	67th pctl	75th pctl
Consumption	718	37.5	40.7	42.4
Consumption & income-converted	1,766	35.9	39.3	41.1
Income	1,048	34.8	41.2	45.5
Income & consumption-converted	1,766	41.2	45.5	47.5

Note: "Consumption and income-converted" includes consumption Gini coefficients for countries using consumption aggregates and income-to-consumption-converted Gini coefficients for countries using income aggregates. The reverse applies to "Income and consumption-converted." The conversion method is described in Annex A.3. The dashed horizontal line reflects the 67th percentile.

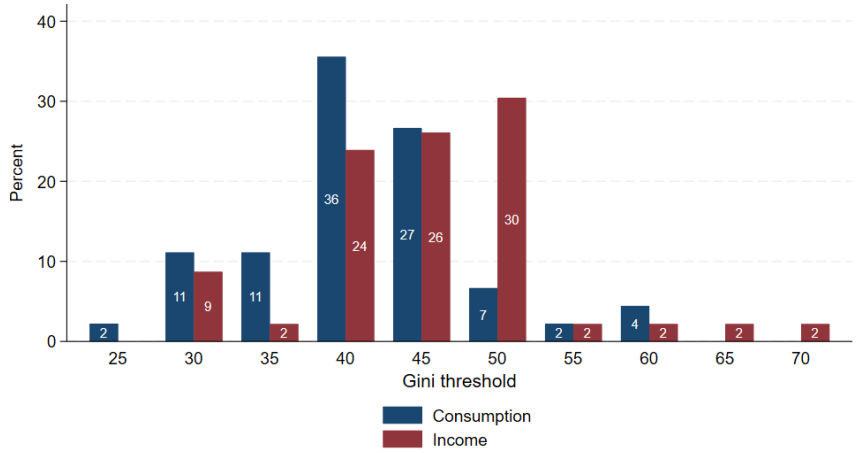
Using consumption Gini coefficients for all countries (original and converted), a Gini threshold of 40 remains largely equivalent to the 67th percentile (39.3), but the 67th percentile of income Gini coefficients (original and converted) is now 45.5, and a threshold of 40 is equivalent to the 45th percentile in this sample. This suggests that having the same threshold for both income and

consumption implies that income-countries will face a tougher standard to avoid being classified as high inequality. For example, the Philippines has both an income and consumption Gini in 2021, and as expected the income Gini is higher. If the income Gini is used (40.7), the country would be classified as in high inequality, whereas if the consumption Gini is used (37.3), it would not. Given that mostly high-income countries and upper-middle income countries use income aggregates, more will be needed for them to escape being classified as in high inequality.

5.3 Survey of World Bank experts

World Bank staff working on inequality and poverty in one or more countries were surveyed in an expert opinion poll, to elicit their views on what constitutes high inequality. Concretely, they were asked "*Above what threshold are Gini coefficients high (for welfare aggregates using consumption)? Enter a number between 0 (perfect equality) and 100 (perfect inequality).*" A similar question was asked with income instead of consumption. Based on 46 responses, the median answer for consumption was 40 (mean = 41) and for income it was 45 (mean = 46). The full distribution of the answers rounded to the nearest 5 is shown in Figure 5.

Figure 5: Expert survey responses of Gini threshold demarking high inequality



Note: n=45 for consumption, n=46 for income. Responses have been rounded to the nearest 5.

6. Country classification

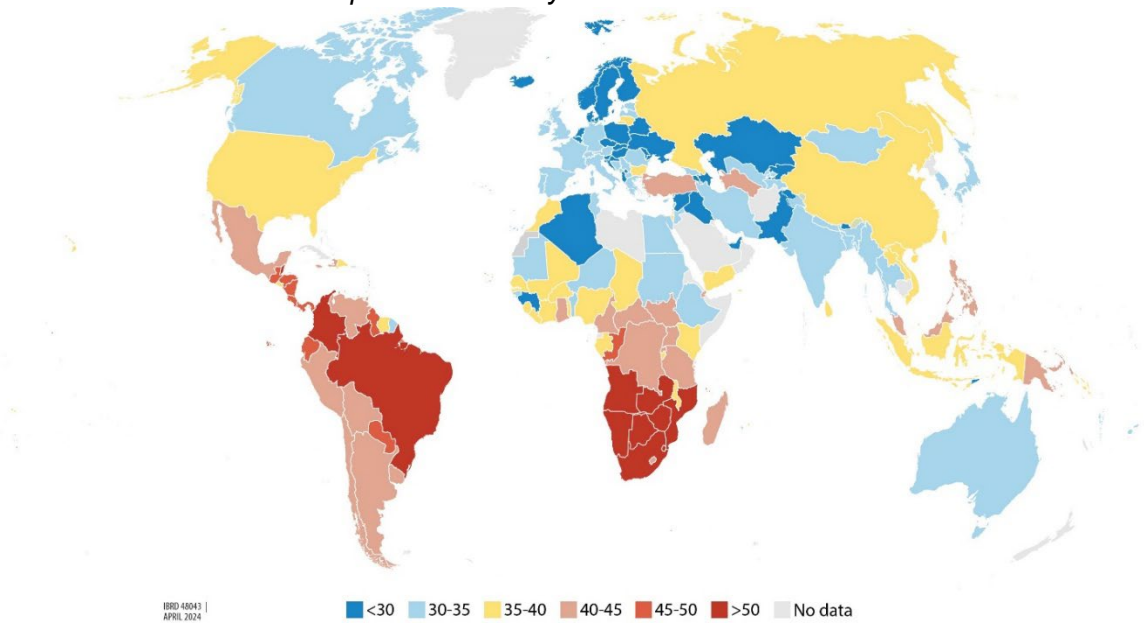
We now show the countries classified as high inequality based on the Gini threshold of 40. Fifty-two of the 169 countries with data are classified as high inequality (Table 7). High-inequality countries are unevenly spread around the world (Map 1 and Figure 6). High-inequality countries are concentrated in Latin America & Caribbean, Southern Africa, low- and middle-income countries, IDA countries, and FCV countries. Yet old data prevents a timely picture in all countries. In several of the subgroups with high levels of inequality (Sub-Saharan Africa, IDA, FCV), around half of the countries do not have Gini estimates from the last five years.

Table 7: High-inequality countries

Country	**Year**	**Gini**	**Country**	**Year**	**Gini**
Consumption			*Income*		
South Africa	2014	63.0	Colombia	2022	54.8
Namibia	2015	59.1	Belize	1999	53.3
Eswatini	2016	54.6	Brazil	2022	52.0
Botswana	2015	53.3	Panama	2023	48.9
Zambia	2022	51.5	Guatemala	2014	48.3
Angola	2018	51.3	Honduras	2019	48.2
Mozambique	2019	50.5	Costa Rica	2022	47.2
Zimbabwe	2019	50.3	Nicaragua	2014	46.2
Congo, Rep.	2011	48.9	Ecuador	2022	45.5
Comoros	2014	45.3	Guyana	1998	45.1
Lesotho	2017	44.9	Paraguay	2022	45.1
Congo, Dem. Rep.	2020	44.7	Venezuela, RB	2006	44.8
South Sudan	2016	44.1	Türkiye	2021	44.4
Grenada	2018	43.8	Mexico	2022	43.5
Rwanda	2016	43.7	Chile	2022	43.0
St. Lucia	2015	43.7	Bolivia	2021	40.9
Ghana	2016	43.5	Philippines	2021	40.7
Central African Republic	2021	43.0	Argentina	2022	40.7
Uganda	2019	42.7	Malaysia	2021	40.7
Madagascar	2012	42.6	Uruguay	2022	40.6
Cabo Verde	2015	42.4	Peru	2022	40.3
Cameroon	2021	42.2	Trinidad and Tobago	1992	40.3
Papua New Guinea	2009	41.9			
Djibouti	2017	41.6			
Haiti	2012	41.1			
Turkmenistan	1998	40.8			
São Tomé and Príncipe	2017	40.7			
Tanzania	2018	40.5			
Jamaica	2021	40.2			
Micronesia, Fed. Sts.	2013	40.1			

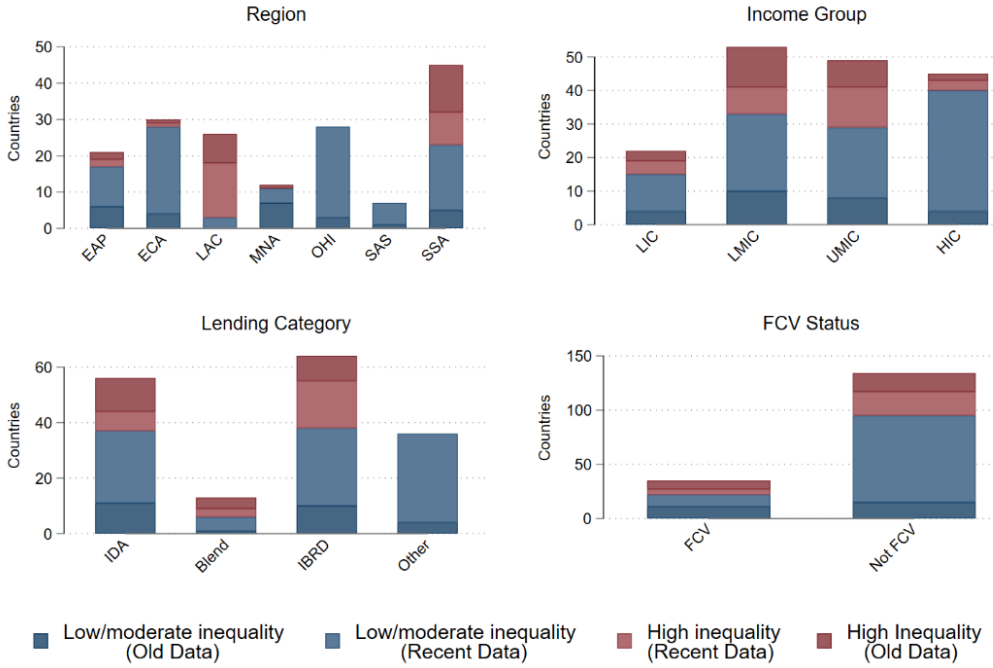
Source: World Bank's Poverty and Inequality Platform.
Note: Only countries with a Gini coefficient above 40 are listed.

Map 1: Countries by latest Gini coefficient



Source: World Bank's Poverty and Inequality Platform.

Figure 6: High-inequality countries by subgroup



*Note: "*High Inequality" is defined as countries with Gini coefficients above 40. Data covers all 169 countries with at least one household survey in the Poverty and Inequality Platform. Countries without a household survey between 2018 and 2022 are shaded as a darker blue or darker red. Income group, lending category and FCV status is based on Fiscal Year 2024 lists by the World Bank. See Figure 2 for acronym explanations.

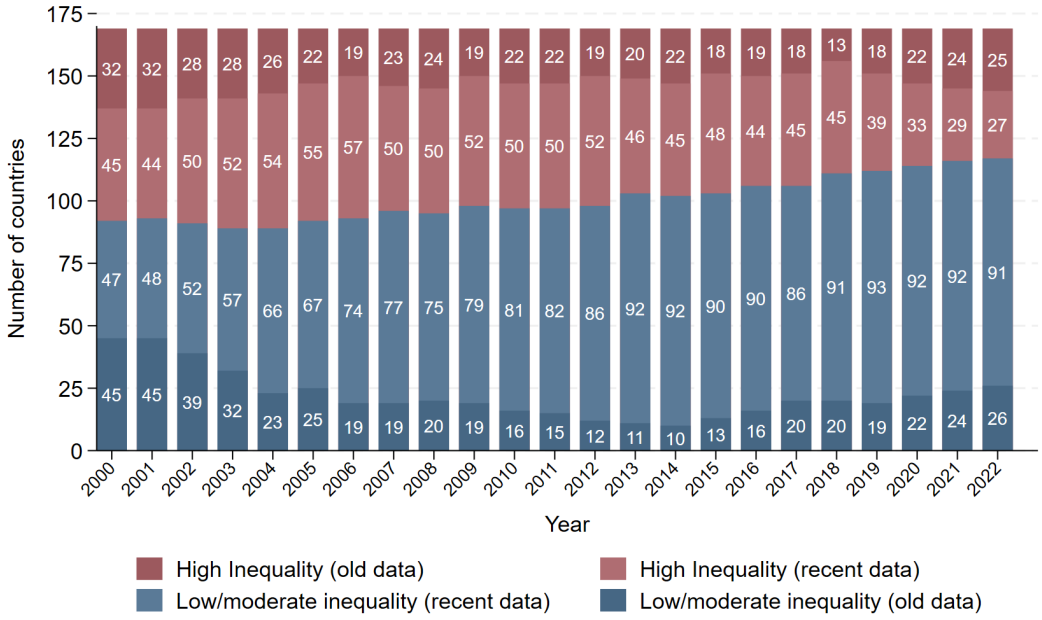
Changes over time need to be interpreted cautiously, as relatively few countries have new data each year. Between 2000 and 2022, there were 79 instances across 51 countries when a country's inequality status changed from high to low inequality or vice versa. Of the countries that experienced

changes in classification status, 22 experienced more than one change in the two-decade period. For example, the Russian Federation entered the high-inequality group in 2004, left it in 2009, returned in 2012, and left it again in 2014. The average change in the Gini coefficient in the years when a country crossed the threshold was 4.9 points. Large jumps are typically preceded by multiple years without a survey rather than large swings in inequality year on year. The jumps are at times due to Gini coefficients not being comparable across surveys due to change in the survey fieldwork, consumption aggregate components and more. Other changes in classification reflect small changes in measured inequality near the thresholds that are unlikely to be practically or statistically significant. Following Alvaredo and Gasparini (2015), World Bank (2016) ignored changes of +/- 1 Gini point when looking at trends over time because such changes typically are statistically insignificant.

Despite these complications a relatively clear trend appears over time. The number of high inequality countries has declined from 77 in 2000 to 52 in 2022 (Figure 7). Since 2005, the number of countries exiting the high inequality category has been greater or equal to the number of countries entering in 15 out of 18 years (Figure 8).

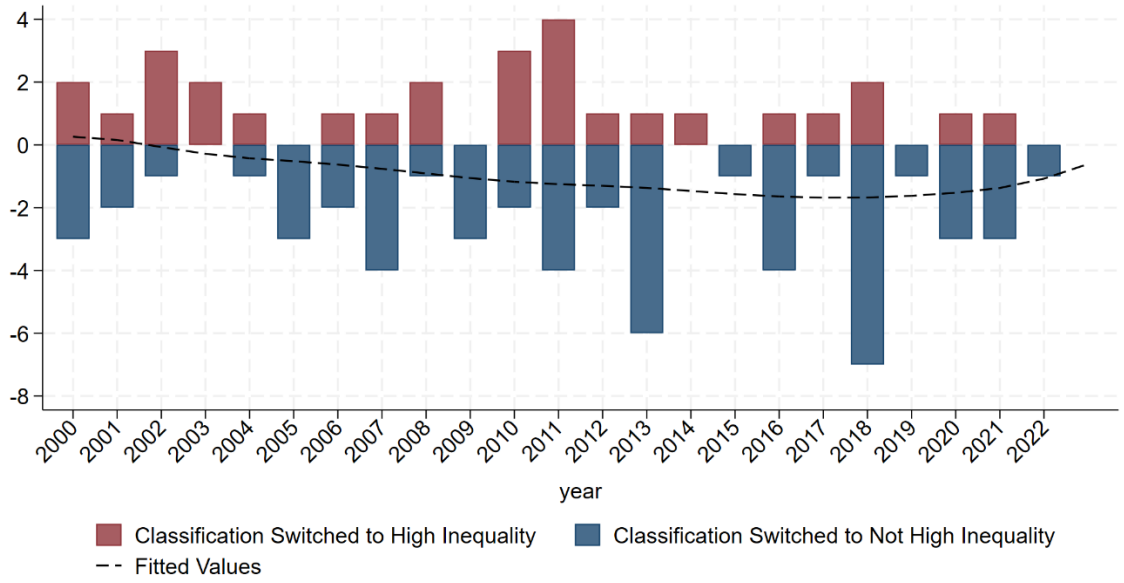
The number of countries with recent data has declined noticeably over the last decade. In 2012, only 31 of the 169 countries in PIP had a household survey older than five years. By 2022, 51 countries' Gini coefficients were based on data older than five years. This is in part because data from 2022 (and before) is still being processed, and in part because COVID-19 interrupted fieldwork in several countries. We only consider surveys conducted prior a given year. For example, when reporting on 2022, we do not consider surveys conducted in 2023.

Figure 7: Number of high-inequality countries, 2000-2022



Source: World Bank's Poverty and Inequality Platform.
Note: "High Inequality" is defined as countries with Gini coefficients above 40. When historical survey data is unavailable, the most recent survey is used to ensure a balanced sample of countries. Countries without a household survey five years prior to the year in question are shaded as a darker blue or darker red. The graph covers all 169 countries with at least one household survey in the Poverty and Inequality Platform.

Figure 8: Change in number of countries with high inequality from previous year

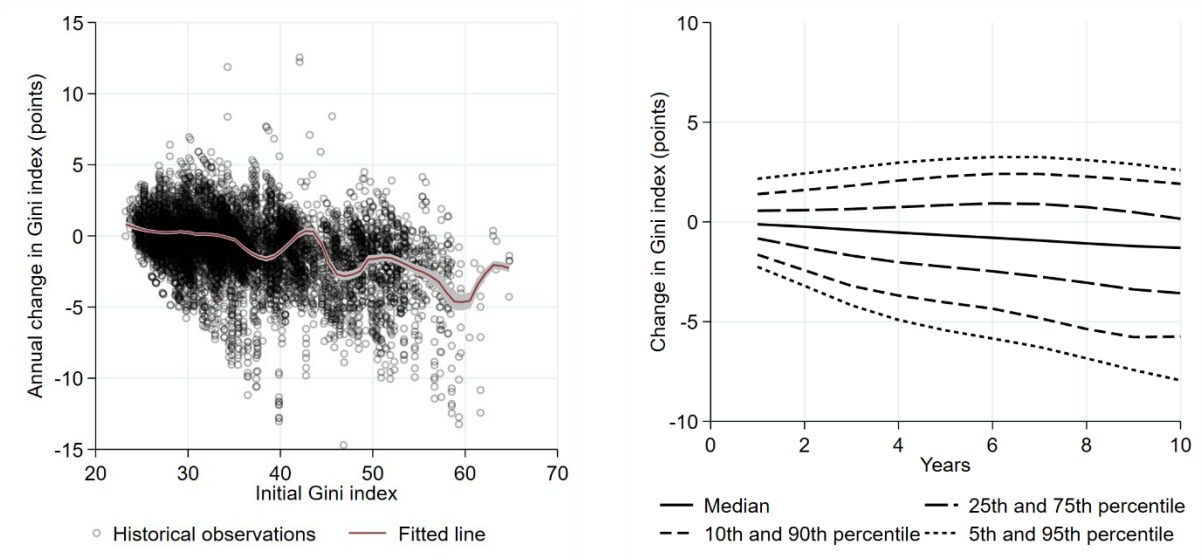


For the 52 countries classified as high inequality, there is scope for many of them to lower their Gini. In general, the higher the initial Gini coefficient, the greater is the expected decline in inequality (Figure 9a). Using all data in PIP, countries with Gini coefficients less than 30 on average do not experience changes to inequality while countries with Gini coefficients above 50 on average experience declines of several Gini points. Within a reasonable timespan, many high-inequality countries could escape this categorization. The largest 5% of historical declines in the Gini coefficient over a 10-year period exceed 7 points (Figure 9b). Only 15 of the 52 countries would remain in the high inequality group if experiencing such a decline over the coming decade.

Figure 9: Historical changes to Gini coefficients

a. By initial Gini coefficient

b. By time horizon



Note: The y-axis reports changes in Gini points, not percent changes in the Gini.

7. Conclusion

This paper discussed the new World Bank vision indicator tracking the number of countries with high inequality, measured as having a Gini index of disposable income or consumption greater than 40. The paper summarized the importance of reducing inequality for sustainable development, discussed the advantages and disadvantages of using the Gini index as a measure of inequality, the challenges of setting a threshold to identify countries in high inequality, and analyzed the number of and trend in countries classified as high inequality according to the threshold.

Moving ahead, there is a need for more frequent and timely data to ensure that recent developments are reflected. There is also a need for more comparable data to ensure that methodological differences across countries are not driving the conclusions. Finally, there is a need to account for measurement challenges in estimating inequality from household surveys, particularly with respect to adding missing income at the top not captured due to underreporting or for other reasons.

References

Alvaredo, Facundo, and Leonardo Gasparini. 2015. “Recent Trends in Inequality and Poverty in Developing Countries.” In Handbook of Income Distribution, vol. 2A, edited by Anthony B. Atkinson and François Bourguignon, 697–805. Amsterdam: North-Holland.

Alvaredo, Facundo, François Bourguignon, Francisco HG Ferreira, and Nora Lustig. 2023. "Seventy-five years of measuring income inequality in Latin America." International Inequalities Institute Working Paper 111, London School of Economics and Political Science, London, UK.

Andersen, J. J., Niels Johannesen, and Bob Rijkers. 2022. “Elite Capture of Foreign Aid: Evidence from Offshore Bank Accounts.” *Journal of Political Economy* 130(2): 388-425.

Atkinson, Anthony B. 1970. "On the Measurement of Inequality." *Journal of Economic Theory* 2(3): 244–263.

Atkinson, Anthony B. 2007. “Measuring Top Incomes: Methodological Issues,” in A. B. Atkinson and T. Piketty (eds), Top Incomes over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries, Vol 1, Oxford University Press, New York, 18–42.

Atkinson, Anthony B. 2015. “Inequality: What can be done?” Harvard University Press.

Auten, Gerald, and David Splinter. Forthcoming. "Income Inequality in the United States: Using Tax Data to Measure Long-Term Trends." *Journal of Political Economy*.

Banerjee, Abhijit, and Duflo, Esther. 2003. “Inequality and Growth: What Can the Data Say?” *Journal of Economic Growth* 8: 267–299.

Barro, Robert. 2000. “Inequality and Growth in a Panel of Countries.” *Journal of Economic Growth* 5: 5-32.

Barro, Robert. 2008. "Inequality and Growth Revisited." Asian Development Bank. Working Papers on Regional Economic Integration 11.

Bergstrom, Katy. 2022. "The Role of Income Inequality for Poverty Reduction." *World Bank Economic Review* 36(3): 583–604.

Berg, Andrew and Ostry, Jonathan. 2017. "Inequality and Unsustainable Growth: Two Sides of the Same Coin?" *IMF Economic Review* 65(4): 792–815.

Bourguignon, François. 1979. "Decomposable Income Inequality Measures." *Econometrica*: 901–920.

Bourguignon, François. 2003. "The Growth Elasticity of Poverty Reduction: Explaining Heterogeneity Across Countries and Time Periods." In *Inequality and Growth: Theory and Policy Implications*.

Brueckner, Markus, and Lederman, Daniel. 2018. “Inequality and Economic Growth: The Role of Initial Income.” *Journal of Economic Growth* 23(3): 341–366.

Brunori, Paolo, Francisco H. G. Ferreira, and Vito Peragine. 2013. “Inequality of Opportunity, Income Inequality, and Economic Mobility: Some International Comparisons. In Getting development right: Structural Transformation, Inclusion, and Sustainability in the Post-Crisis Era”, New York, 85-115.

Carletto, Gero, Marco Tiberti, and Alberto Zezza. 2022. “Measure for Measure: Comparing Survey Based Estimates of Income and Consumption for Rural Households.” *The World Bank Research Observer* 37(1): 1–38.

Chancel, Lucas, Denis Cogneau, Amory Gethin, Alix Myczkowski, and Anne-Sophie Robilliard. 2023. "Income Inequality in Africa, 1990–2019: Measurement, Patterns, Determinants." *World Development* 163: 106162.

Ceriani, Lidia, and Paolo Verme. 2012. "The Origins of the Gini Index: Extracts from Variabilità e Mutabilità (1912) by Corrado Gini." *Journal of Economic Inequality* 10: 421-443.

Corak, Miles. 2013. “Income Inequality, Equality of Opportunity, and Intergenerational Mobility.” *Journal of Economic Perspectives* 27(3): 79–102.

Deininger, Klaus, and Lyn Squire. "A New Data Set Measuring Income Inequality." *World Bank Economic Review* 10(3): 565–591.

Dercon, Stefan. 2014. "Is Green Growth Good for the Poor?" *World Bank Research Observer* 29(2): 163–185.

Dutta, D. 2009. “Elite Capture and Corruption: Concepts and Definitions.” National Council of Applied Economic Research (4): 1–16.

Ferreira, Francisco H.G., Christoph Lakner, Maria Ana Lugo, and Berk Özler. 2018. "Inequality of Opportunity and Economic Growth: How Much Can Cross-Country Regressions Really Tell Us?" *Review of Income and Wealth* 64(4): 800–827.

Flachaire, Emmanuel, Nora Lustig, and Andrea Vigorito. 2023 "Underreporting of Top Incomes and Inequality: A Comparison of Correction Methods Using Simulations and Linked Survey and Tax Data." *Review of Income and Wealth* 69(4): 1033-1059.
Foster, James. E. 1985. ”Inequality Measurement.” *Fair allocation* 33: 31–68.
Gini, Corrado. 1912. "Variabilità e Mutuabilità. Contributo allo Studio delle Distribuzioni e delle Relazioni Statistiche." Topgr. di. P. Cuppini, Bologna.
Hallegatte, Stephane, and Julie Rozenberg. 2017. "Climate Change Through a Poverty Lens." *Nature Climate Change* 7(4): 250–256.
Hawsawi Taghreed, Abouammoh Noura. 2022. “Distribution of Hospital Beds Across Saudi Arabia from 2015 to 2019: A Cross-Sectional Study.” *East Mediterranean Health Journal*. 28(1): 23–30.
Jenkins, Stephen P. 2017. "Pareto Models, Top Incomes and Recent Trends in UK Income Inequality." *Economica* 84(334): 261–289.
Kraay, Aart ⓡ Christoph Lakner ⓡ Berk Ozler ⓡ Benoit Decerf ⓡ Dean Jolliffe ⓡ Olivier Sterck ⓡ and Nishant Yonzan. A New Distribution Sensitive Index for Measuring Welfare, Poverty, and Inequality. World Bank, 2023.
Lakner, Christoph, Daniel Gerszon Mahler, Mario Negre, and Espen Beer Prydz. 2022. "How Much Does Reducing Inequality Matter for Global Poverty?" *Journal of Economic Inequality* 20(3): 559-585.
Lerman, Robert, and Shlomo Yitzhaki. 1984. "A Note on the Calculation and Interpretation of the Gini Index." *Economics Letters* 15(3-4): 363–368.
Mahler, Daniel Gerszon, and Dominikus Baur. 2023. “Progress and Setbacks in Reducing Income Inequalities” In Atlas of Sustainable Development Goals 2023, edited by A. F. Pirlea, U. Serajuddin, A. Thudt, D. Wadhwa, and M. Welch. World Bank.
Mancini, Giulia, and Giovanni Vecchi. 2022. "On the Construction of a Consumption Aggregate for Inequality and Poverty Analysis." Washington, DC: The World Bank.
Marrero, Gustavo A., and Juan G. Rodríguez. 2013. "Inequality of Opportunity and Growth." *Journal of Development Economics* 104: 107–122.
Niehues, Judith. 2014. Subjective Perceptions of Inequality and Redistributive Preferences: An International Comparison. Cologne Institute for Economic Research. IW-TRENDS Discussion Paper.
Palma, José Gabriel. 2011. "Homogeneous Middles vs. Heterogeneous Tails, and the End of the ‘Inverted-U’: It's All About the Share of the Rich." *Development and Change* 42(1): 87–153.
Persha, L., and Andersson, K. 2014. “Elite Capture Risk and Mitigation in Decentralized Forest Governance Regimes.” *Global Environmental Change* 24: 265–276.
Piketty, Thomas, Li Yang, and Gabriel Zucman. 2019. "Capital Accumulation, Private Property, and Rising Inequality in China, 1978–2015." *American Economic Review* 109(7): 2469-2496.
Piketty, Thomas. 2014. “Capital in the Twenty-First Century.” Harvard University Press.
Platteau, J. P., & Gaspart, F. 2003. “The Risk of Resource Misappropriation in Community-Driven Development.” *World Development*, 31(10), 1687–1703.
Porta, Emilio. 2011. “Assessing Sector Performance and Inequality in Education: Streamlined Analysis with ADePT Software.” Washington, DC: World Bank.
Pyatt, Graham. 1976 "On the Interpretation and Disaggregation of Gini Coefficients." *Economic Journal* 86(342): 243–255.
Ravallion, Martin. 2001. "Growth, Inequality and Poverty: Looking Beyond Averages." *World Development* 29(11): 1803–1815.
Sen, Amartya. 1973. “On Economic Inequality.” Oxford University Press, Oxford, UK.
Shorrocks, Anthony F. 1980. "The Class of Additively Decomposable Inequality Measures." *Econometrica*: 613-625.
UNICEF. 2018. “Economic and Social Development Atlas 2018.” Chapter 2.
United Nations. 2022. “Sustainable Development Goals Progress Chart: Technical Note.” New York. United Nations Statistics Division.
UNRISD. 2013. “Inequalities and the Post-2015 Development Agenda. Beyond 2015.”
Van der Weide, Roy, and Branko Milanovic. 2018. "Inequality is Bad for Growth of the Poor (But Not for That of the Rich)." *World Bank Economic Review* 32(3): 507-530.
Van Der Weide, Roy, Christoph Lakner, and Elena Ianchovichina. 2018. "Is Inequality Underestimated in Egypt? Evidence from House Prices." *Review of Income and Wealth* 64: S55–S79.

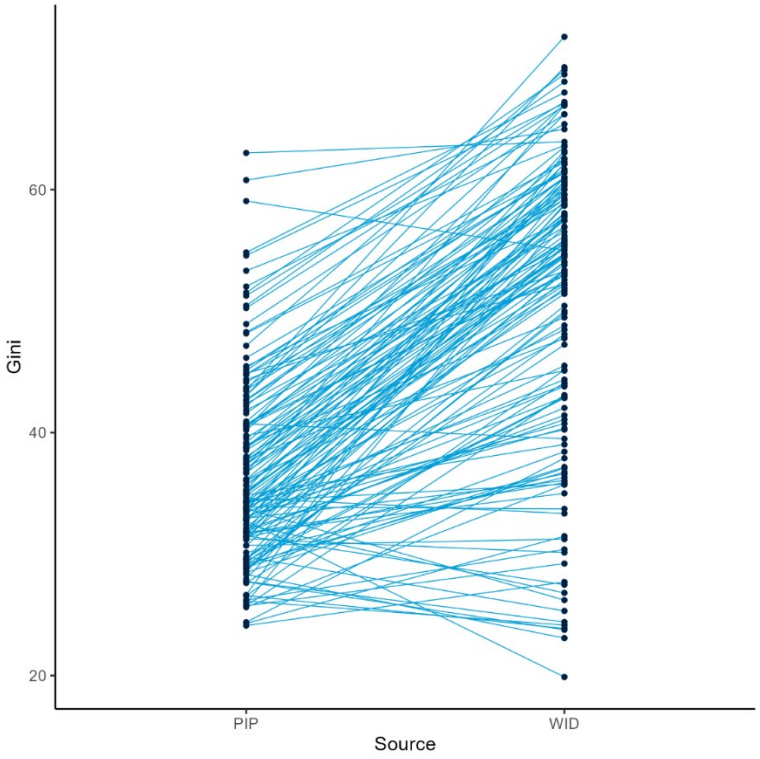
Wollburg, Philip ⓡ Stephane Hallegatte ⓡ Daniel Gerszon Mahler. 2023. “Ending Extreme Poverty Has a Negligible Impact on Global Greenhouse Gas Emissions.” *Nature* 623: 982–986.
World Bank. 2005. “World Development Report 2006: Equity and Development.” Washington, D.C: World Bank Group.
World Bank. 2011. “World Development Report 2011: Conflict, Security, and Development.” World Bank.
World Bank. 2016. “Poverty and Shared Prosperity 2016: Taking on Inequality.” The World Bank.
World Bank. 2024a. New World Bank Group Scorecard FY24-FY30: Driving Action, Measuring Results. Washington, D.C.: World Bank Group.
World Bank. 2024b. Poverty and Inequality Platform (version 20240326_2017) [Data set]. World Bank Group. www.pip.worldbank.org. Accessed 2024.01.04.
Yitzhaki, Shlomo. 1979. "Relative Deprivation and the Gini Coefficient." *Quarterly Journal of Economics* 93(2): 321–324.

Annex

A.1 Comparison between PIP and WID

There are 151 countries that have Gini coefficients reported both in the Poverty & Inequality Platform (PIP) and in the World Inequality Database (WID). Matching the WID estimates with the most recent inequality estimates available per country in PIP, the Gini coefficients reported in WID are higher than those reported in PIP by an average difference of 14 points for the same country and year. Yet the ordering of countries is not too different for most countries, with a handful of notable exceptions (Figure A.1).

Figure A.1: Relationship between PIP and WID Gini estimates



Note: Relationship between the most recently available Gini coefficients for the 151 countries that are available both in the Poverty and Inequality Platform (PIP) and the World Inequality Database (WID). The inequality data from WID are post-tax.

Of the 151 countries, 44 are classified as high inequality when using PIP and setting a threshold of high inequality at a Gini index above 40. Since the Gini coefficients are categorically higher in WID, we define high inequality with WID such that the same share of countries (44 out of 151) are categorized as high inequality. This results in a Gini threshold of 59.2 for WID. Using this approach both PIP and WID assign 125 of the 151 countries the same inequality status (Table A.1).

Table A.1: Classification of high inequality countries by PID and WID

	Not high inequality (WID)	High inequality (WID)
Not high inequality (PIP)	94	13
High inequality (PIP)	13	31

Note: The Gini threshold used to define high inequality in PIP is 40, while the threshold in WID is 59.2. The threshold for WID is set to keep the same number of countries defined as high inequality across the two databases.

Thirteen countries are categorized as high inequality with PIP but not with WID and vice versa (Table A.2). Of these countries 26 countries, eight have Gini coefficients in PIP close to the 40 threshold (+/- 1 Gini point), and 9 are based on household survey data that has been recently added to PIP. The WID, which uses PIP as one of its input data sources, would not have been able to account for these underlying changes in consumption/income data at the time of analysis, providing a possible explanation behind some of the differences between the two sources. WID uses income as the basis for all its inequality calculations, while PIP draws from both consumption- and income-based household surveys. This is another possible factor behind the differences in classification for the subset of 26 countries. The overall correlation between the two set of Gini's is 0.66, however, the correlation between Gini coefficients for consumption-based surveys in PIP and their income-based equivalent in WID is 0.63, while this rises to 0.80 when restricting the sample to only income-based surveys in PIP.

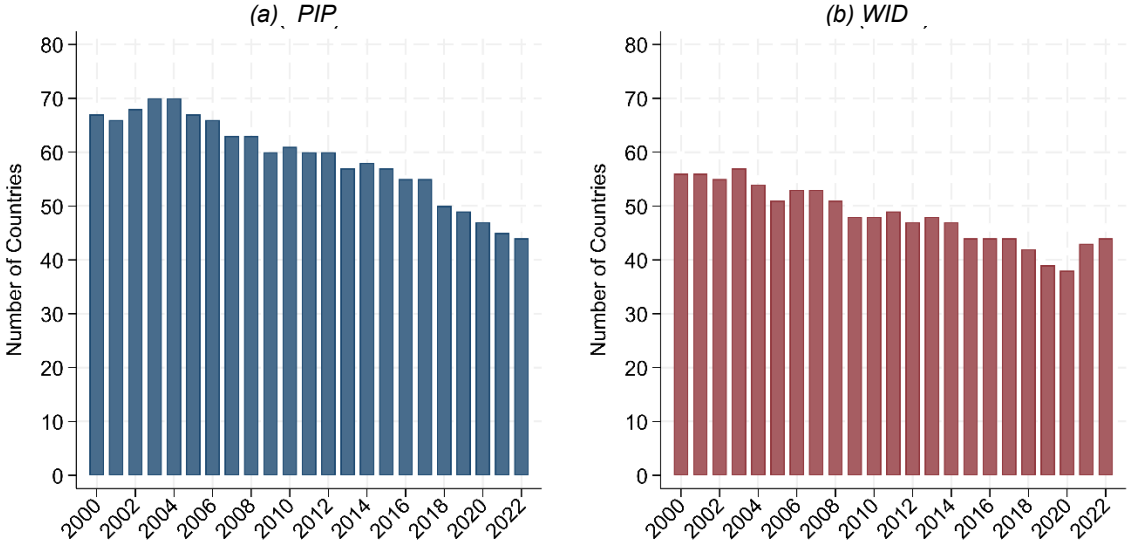
Table A.2: Mismatched classifications by PIP and WID

Categorized as high inequality with PIP, but not with WID				Categorized as high inequality with WID, but not with PIP			
Country	Year	Gini (PIP)	Gini (WID)	Country	Year	Gini (PIP)	Gini (WID)
Namibia	2015	59.1	55.0	Yemen, Rep.	2014	36.7	67.0
Ecuador	2022	45.5	57.4	Côte d'Ivoire	2021	35.3	63.2
Lesotho	2017	44.9	52.2	Syrian Arab Republic	2022	26.6	63.0
Congo, Dem. Rep.	2020	44.8	59.2	Lebanon	2011	31.8	62.2
Türkiye	2021	44.4	53.3	Burkina Faso	2021	37.4	62.1
South Sudan	2016	44.1	58.8	West Bank and Gaza	2016	33.7	61.0
Cabo Verde	2015	42.4	56.5	India	2021	32.8	60.7
Papua New Guinea	2009	41.9	55.1	Suriname	2022	39.2	60.6
Argentina	2022	40.7	52.9	Dominican Republic	2022	37.0	60.4
São Tomé and Príncipe	2017	40.7	39.5	Thailand	2021	34.9	60.3
Philippines	2021	40.7	57.0	Bhutan	2022	28.5	60.0
Malaysia	2021	40.7	55.5	Togo	2021	37.9	60.0
Uruguay	2022	40.6	53.0	Lao PDR	2018	38.8	59.6

Note: The Gini threshold used to define high inequality in PIP is 40, while the threshold in WID is 59.2. The threshold for WID is set to keep the same number of countries defined as high inequality across the two databases.

Despite the country-level differences, the overall trend of falling inequality within the last two decades is similar, but a bit more muted in WID (Figure A.2). The number of countries in high inequality in PIP fell from 67 in 2000 to 44 in 2022 (using the threshold of 40) and in the same period the number high inequality countries in WID fell from 56 to 44 (using a threshold of 59.2).

Figure A.2: Number of countries in high inequality, PIP and WID



Note: The Gini threshold used to define high inequality in PIP is 40, while the threshold in WID is 59.2. The threshold for WID is set to keep the same number of countries defined as high inequality across the two databases.

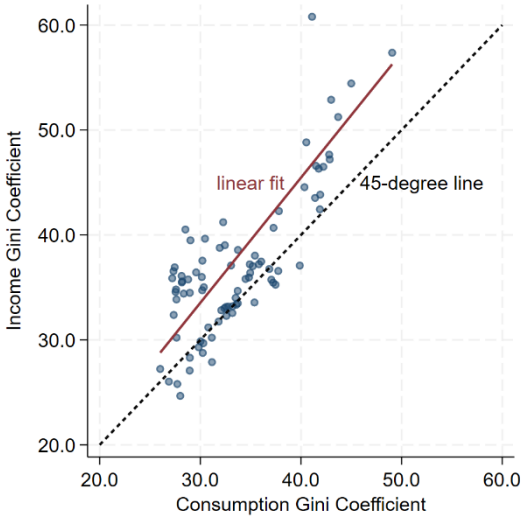
A.2 Additional tables and figures

Table A.3: Country-years with both income and consumption aggregates

Albania	2016-2018
Bulgaria	2007
Croatia	2009, 2010
Estonia	2003, 2004
Haiti	2012
Hungary	1999, 2004-2007
Latvia	2004, 2007-2009
Lithuania	2004, 2008
Montenegro	2012-2014
Nicaragua	1993, 1998, 2001, 2005
Philippines	2000, 2003, 2006, 2009, 2012, 2015, 2018, 2021
Poland	1999, 2004-2019
Romania	2006-2013, 2016, 2018-2021
Russian Federation	2014-2018
Saint Lucia	2015
Serbia	2013, 2015, 2018, 2019
Slovak Republic	2004-2009
Türkiye	2017-2019

Source: World Bank's Poverty and Inequality Platform.

Figure A.3: Relationship between income and consumption Ginis for countries with both



Note: Relationship between income and consumption Gini using data in PIP.

A.3 Income-consumption conversion

Wollburg ⓡ al. (2023) convert between income and consumption distributions by modeling the relationship between income and consumption distributions for the 77 country-pairs that had both distributions in PIP at the time of their analysis. Each income and consumption distribution is collapsed to 100 quantiles. Fitting functional forms through these pairs allow for establishing a relationship between the CDFs of income and consumption distributions. The authors find that the following specification fits well empirically and is theoretically plausible because it is consistent with income and consumption following three-parameter log-normal distributions: $con = inc^{0.93} + 0.68 + 0.26 * \ln(inc_{median})$. We follow their method to also predict income as a function of consumption, which yields: $inc = (\text{con} - 0.03 - 0.33 * \ln(con_{median}))^{1.05}$. In our preferred specification, we use this fit to convert between income and consumption distributions and vice versa, and calculate Gini indices from the converted distributions.

Chancel et al. (2023) offer an alternative conversion. They convert consumption distributions to pre-tax income distributions by calculating the income-consumption ratio, $c(p)$, at each percentile, p, of the two distributions as $c(p) = \alpha + \beta * \log\frac{p}{1-p}$. Given that we rely disposable income (i.e., post-tax and post-transfer), we cannot use their estimated parameters. Instead, we estimate the parameters on our country-years with both income and consumption distributions and use this to generate a percentile-specific income-consumption ratio. Based on this, we create converted distributions and converted Gini coefficients.

As a final method, we use a very simple conversion, which is the average ratio of income-to-consumption Ginis for the 84 country-years that have both. This ratio is 1.13, meaning that we create income Ginis for consumption aggregates by multiplying the consumption Gini by 1.13, and that we create consumption Ginis for income aggregates by dividing the income Gini by 1.13.

The three sets of converted Gini coefficients are highly correlated, with correlation coefficients ranging from 0.98 to 0.99, and their distributions align closely, especially along the upper percentiles (Figure A.4). The 67th percentile derived from the Wollburg et al. conversion methodology (WHM) is very close to the those derived from the Chancel et al. (CHA) and the ratio conversions (Table A.4).

Figure A.4: Relationship between the three conversion methods

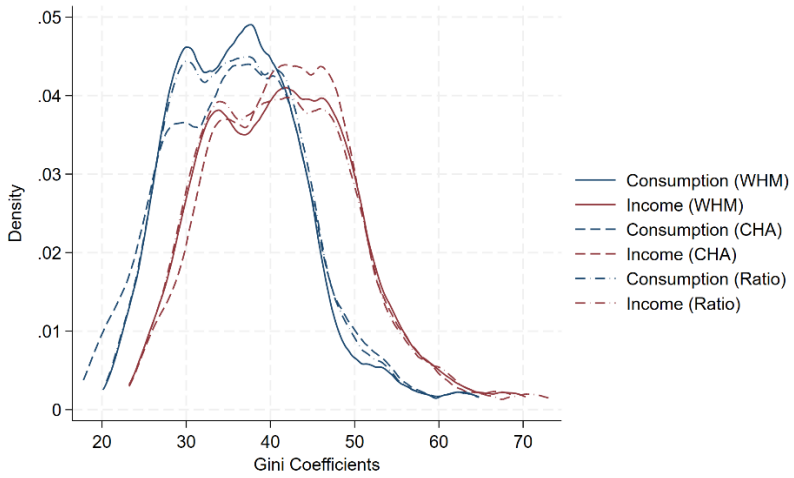


Table A.4: 67th Percentile threshold using different income/consumption conversions

Method	Income and consumption-converted	Consumption and income-converted
Wollburg et al. (WHA)	45.5	39.3
Chancel et al. (CHA)	45.6	40.1
Ratio	45.3	40.1