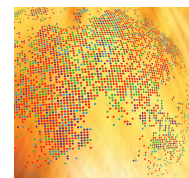# Chapter **3**

Measuring inequality in income and wealth

3.

Measuring inequality in income and wealth

A contribution by the World Inequality Lab

Measuring income inequality is a key step to properly address it. Public debates grounded in facts are critical for societies to determine to what extent they accept inequality, what policies they should implement to tackle it and what taxation they will use—a particularly difficult decision.

Transparency in income and wealth dynamics is also essential to evaluate public policies and track government progress towards more inclusive economies. Sound data on income and wealth are also required to fight (legal) tax avoidance and (illegal) evasion, made possible in part by the built-in opacity of the global financial system.[1] Greater transparency would thus support the highest return to tax policy, part of the policy package to reduce inequality and to finance investments for the Sustainable Development Goals.[2]

The secrecy surrounding ownership of assets around the globe—particularly financial assets—currently makes it impossible to properly track capital accumulation, just as it makes it impossible to ensure that top earners and wealth holders pay their fair share of taxes. Some progress on financial transparency has been made since the 2008 financial crisis, but it has been too slow and limited in relation to the challenge. The share of global wealth hidden in tax havens is an estimated 8 percent of global GDP.[3]

The current lack of transparency on income and wealth dynamics is a political choice. While most governments have (or can find, if they wish) detailed information on the top incomes and wealth, they do not disclose it. This is a digital age paradox: Multinationals have detailed information on individuals' lives and can trade it in the global marketplace. Yet people struggle to get basic information about how growth in income and wealth is shared across the population. Public statistics still rarely move beyond reporting averages. This weakness applies to economic inequality and to other forms of inequality—particularly inequality related to pollution—which are not scrutinized by most statistical institutions today (see chapter 5).

Tackling inequality starts with good measurement

Publishing timely, standardized and universally recognized statistics is key to properly address inequality. Indeed, the production of standardized GDP statistics from the 1950s onwards,[4] thanks to the United Nations Systems of National Accounts, has had huge impacts on framing policy debates and policymaking over the past seven decades. A new generation of growth statistics distributed across income groups (distributional national accounts[5]) is also likely to shape these policy debates. Moving towards developing and publicizing such indicators requires efforts from all actors: policymakers, academia and civil society. The synergies among different actors committed to transparency become apparent when, for example, information on evaded taxes is released by journalists and subsequently analysed by researchers, including some at the World Inequality Lab.[6]

This chapter discusses challenges and recent advances in methodology and data collection to fill a crucial gap in data on human development. It first introduces a new inequality data transparency index. Then, based on data from the World Inequality Database and analysis from the *World Inequality Report*, it presents recent findings on inequality in global incomes. It also surveys income inequality in three country groups, assessing the evolution of inequality by comparing the rate of income growth of the bottom 40 percent with that of the entire population—a target for Sustainable Development Goal 10. The first country group is African countries—where new inequality estimates have recently become available. The second is for Brazil, China, India and the Russian

Publishing timely, standardized and universally recognized statistics is key to properly address inequality

Federation. And the third is European countries and the United States, noting the relative impact of different policies on income distribution. Finally, the chapter turns to the measurement of wealth inequality around the world.

Measuring the transparency gap

Data for tracking income and wealth inequality remain scarce across the globe (figure 3.1). To measure inequality in a country, national statistical authorities ideally would produce rich annual household surveys of individuals' living conditions. And the tax administration would publish income and wealth administrative tax each year. To track income and wealth inequality, survey data and tax data would be linked so that it would be possible to know the fiscal income reported in the tax data by an individual who participated in the living conditions survey. But linked survey and tax data are an exception across the globe, done by only a few countries: for example, Sweden and other Nordic countries. And even there, the ability to measure inequality has deteriorated in recent decades, partly because of the large wealth hidden in offshore financial assets without a proper international registration system to follow them.[7]

In many countries tax data are not available to the public. The production of administrative tax data has historically been closely related to the existence of an income or wealth tax in a country. It was the introduction of the income tax in the United States in 1913, and in India in 1922, that led public administrations to publish income tax statistics. Such information is critical for tax administrations to properly administer taxes and for legislators and taxpayers to be informed about tax policy. But governments are sometimes unwilling to publicly release the data.[8]

While some countries have released new tax data over the past decade, others have actually stopped producing them. And when governments repeal income or wealth taxes, the statistical tools to measure inequality also disappear. The deterioration of administrative tax data thus raises serious concerns, since proper information on wealth and income is key to track inequality and inform public debates. But the situation is worsening in several countries rather than improving.

On a new inequality data transparency index that ranges from 0 to 20, no country scores above 15, and dozens have a score of 0 (see figure 3.1). Data are particularly scarce in Africa and Central Asia. This simple index is preliminary and will be improved as more information is released on income and wealth taxes and availability of survey data. But it already provides an overview of the efforts required to supply transparent data on inequality.

Though the availability of official data is low, the triangulation of different sources has shed new light on income and wealth inequality. Investigative journalism has played a critical role, providing new information that has influenced public discussions and decisionmaking (box 3.1).
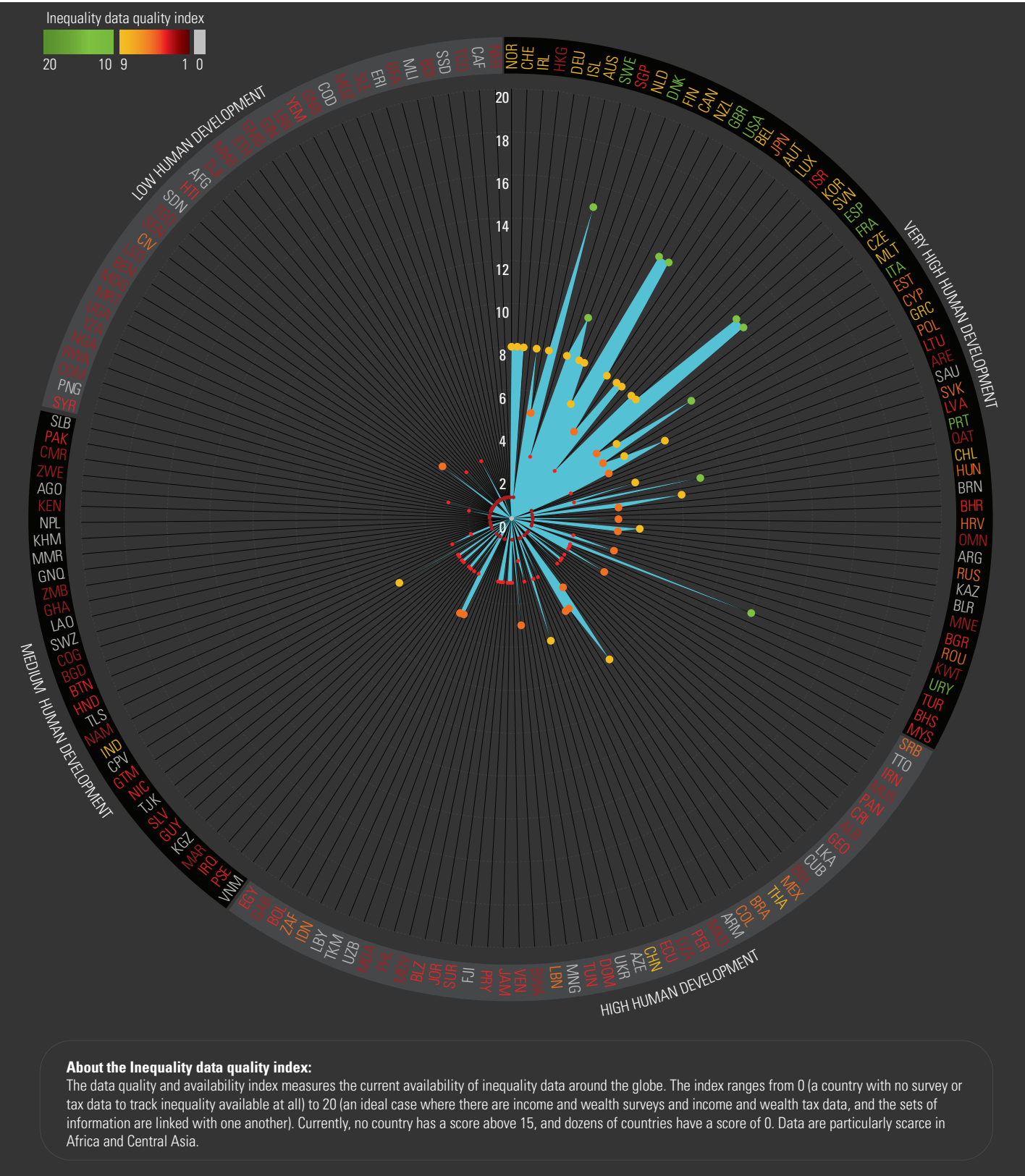
Where to look for global income inequality data

Several global income inequality databases have been constructed over the past decades.[9] They include the World Bank's PovcalNet, which provides inequality data from household surveys; the World Inequality Database, which produces distributional national accounts based on tax, survey and national accounts; the LIS Cross-National Data Center in Luxembourg (LIS),[10] which harmonizes to a high level of detail income and wealth concepts in rich countries using household surveys; the Organisation for Economic Co-operation and Development's Income Distribution Database,[11] which contains distributional survey data for advanced economies; the University of Texas Inequality Project Database,[12] which uses industrial and sectoral data to measure inequality; and the Commitment to Equity Data Center,[13] which provides information on fiscal incidence—the impact of taxes and transfers on different income groups. The United Nations University World Institute for Development Economics Research's World Income Inequality Database provides a range of statistics on income inequality for several countries.[14] There are also detailed regional databases such as the Socio-Economic Database for Latin America and the Caribbean,[15] the harmonized regional statistics maintained by the Economic Commission for Latin America and the Caribbean[16] and the European Union Statistics on Income and

On a new inequality data transparency index that ranges from 0 to 20, no country scores above 15, and dozens have a score of 0

FIGURE 3.1

Dozens of countries have almost no transparency in inequality data

About the Inequality data quality index:
The data quality and availability index measures the current availability of inequality data around the globe. The index ranges from 0 (a country with no survey or tax data to track inequality available at all) to 20 (an ideal case where there are income and wealth surveys and income and wealth tax data, and the sets of information are linked with one another). Currently, no country has a score above 15, and dozens of countries have a score of 0. Data are particularly scarce in Africa and Central Asia.

Note: The index presents the level of availability and quality of data on income and wealth inequality.
Source: World Inequality Lab (http://wid.world/transparency); accessed 17 July 2019.

BOX 3.1

Investigative journalism uncovering inequality

Investigative journalism can shed light and generate data on aspects of inequality for which no measurement standards exist or that have remained opaque because of asymmetries in the distribution of power (see chapter 2). New and widespread protocols to assess who is being left behind or extreme wealth concentration might take years or even decades to generate, with constraints ranging from corruption to pressure by interest groups.

Investigative journalism has played a remarkable role in informing the public of important dimensions of inequality. Today, we know more about the globalization of hidden wealth because of disclosures such as those in the Panama Papers and the Paradise Papers.[1] On the other side of the distribution, decentralized reporting based on investigative journalistic research routinely uncovers abuse towards disadvantaged groups: When all other mechanisms that give voice to excluded groups fail, journalism is often their last hope.[2]

Amartya Sen has argued that a free press and an active political opposition constitute an effective early warning systems against famines because information and political pressure push for action.[3] By the same token, the media has played an important role in thwarting behaviours that impede human development—human trafficking and, in the worst instances, slavery; child labour; child marriages; genital mutilation; and malnutrition, especially among children, which can cause stunting that has lifelong effects.[4]

Journalistic exposure of corruption can also protect public finances.[5]

In a globalized world, internationally coordinated efforts to find and disclose information can catch up with actors that operate strategically in different countries, taking advantage of transparency blind spots. The Global Investigative Journalism Network and the International Consortium of Investigative Journalism are two prominent examples of this approach.[6] These networks have the potential to develop and defend standards of responsible reporting and diversify the risks of pressure from interest groups.

Quality journalism tends to face financial, political and safety challenges. When journalism and media produce information and knowledge that has the characteristics of a public good, indirect and direct subsidies remain fundamental to avoid underprovision.[7] Journalists can be subject to pressures, intimidation and attacks, which appear to be on the rise in many countries,[8] highlighting the importance of protecting an independent, plural and diverse media.

Investing in quality investigative journalism has high social returns, deterring and correcting corruption, protecting those left behind and informing public policies. One area to explore is an enhanced role for international cooperation: Currently only around 0.3 percent of official development assistance is spent in media development, a small fraction of which is clearly linked to investigative journalism.[9]

Notes

1. In additional to the increase in public awareness and accountability, these data have been used as part of academic research. See, for instance, analysis of the relation of tax evasion and inequality by Alstadsæter, Johannesen and Zucman (2019). 2. See examples and discussion in Brunwasser (2019). 3. Sen 1982, 1999. 4. Schiffrin 2019. 5. Brunwasser 2019; Schiffrin 2019. 6. Brunwasser 2019; Schiffrin 2019. 7. Schiffrin 2019. 8. In resolution 33/2, the United Nations Human Rights Council expressed "deep concern" at the increased number of journalists and media workers who had been killed, tortured, arrested or detained in recent years as a direct result of their profession (UNHRC 2018). 9. Over 2010–2015, $32.5 million appears to be clearly linked to investigative journalism. See annex 1 of Myers and Juma (2018). This is a small amount compared with the net benefits associate with individual investigative journalism projects. See examples in Hamilton (2016) and Sullivan (2016).
Source: Human Development Report Office based on Brunwasser (2019) and Schiffrin (2019).

Living Conditions database (see spotlight 1.3 at the end of the chapter for more sources).[17]

These databases have helped researchers, policymakers, journalists and the general public focus on the evolution of inequality over the past decades. There is no one perfect database on inequality, and there will never be: The different datasets support complementary insights on inequality, and whether to use one or another depends largely on the specific issues to be studied.[18] Some, such as PovcalNet have been used to compute global poverty measures. Others, such as the LIS database, have been used by generations of researchers to study economic inequality

and its interactions with other dimensions of welfare in an international perspective. Regional databases, such as the Socio-Economic Database for Latin America and the Caribbean and the European Union Statistics on Income and Living Conditions database, enable detailed regional analyses of inequality, while the Commitment to Equity Data Center can be used to analyse the impact of tax and transfer policies.

Most of these databases rely almost exclusively on one type of information source—household surveys with face-to-face or virtual interviews that ask individuals about their consumption, income, wealth and other socioeconomic aspects

of their lives. Surveys, like any other data source, have pros and cons in the measurement of inequality (table 3.1). One way of overcoming the limitations of each data source is to combine data from different types of sources, particularly combining administrative tax data with survey data.

For example, consider the level and evolution of inequality in Brazil and India. In Brazil household surveys show that the richest 10 percent received just over 40 percent of total income in 2015, but when all forms of income are considered—not just income reported in surveys—the revised estimates suggest that the top 10 percent actually received more than 55 percent of total income. In India estimates based on administrative tax data show that the top 1 percent may have an income share close to 20 percent. But

households report an income share of around 10 percent, suggesting that household survey data starkly underestimate incomes at the top of the distribution. The extent to which they do so varies by country but is likely to be substantial. In addition, surveys may also miss important evolutions. In Brazil, household surveys indicate the income share of the top 10 percent has fallen over the past two decades.[19] But revised estimates based on additional sources of information from national accounts and tax data suggest that the income share has been fairly stable. Household surveys captured fairly well the increase in wage income across most of the distribution, which has indeed taken place in Brazil since the 2000s, but failed to fully capture the dynamics of top incomes—particularly capital incomes.

TABLE 3.1

Main data sources for inequality measurement

Data source	Pros	Cons
Household survey data	• Survey data gather information about income or assets as well as social and demographic dimensions, key for human development. • Households surveys support a better understanding of the determinants of income and wealth inequality and allow income and wealth inequality to be analysed in combination with other dimensions—such as racial, spatial, education or gender inequality.	• Limited sample size is a problem. Given the small number of extremely rich individuals and of some vulnerable groups, the likelihood that they will be included in surveys is typically very small. These are called sampling errors. • Self-reported information about income and wealth is erratic. Generally, it largely underestimates the income share of the top. Oversampling cannot correct this bias. These are called nonsampling errors. • Concepts and scope may vary widely across countries and over time, rendering international and historical comparisons difficult. Surveys may be administered with uneven frequency. • Income and wealth totals generally do not match national accounts totals, so growth rates are typically lower in surveys than in macroeconomic growth statistics.
Administrative (tax) data	• In countries with sound enforcement of taxes, tax data capture the income and wealth of those at the top of the wealth distribution. • Tax data also cover longer periods than surveys. Administrative data are usually available annually starting at the beginning of the 20th century for income taxes and in some countries as far back as the early 19th century for inheritance taxes.	• Tax data have limited coverage of the lower tail of distribution. Particularly in developing countries, they typically cover only a small share of the population. • Tax avoidance and evasion affect tax data. Tax data tend to underestimate income and wealth at the top. In most cases inequality estimates based on these data should be viewed as lower-bound estimates. • Tax data are subject to changes in fiscal concepts over time and across countries, making historical and international comparisons difficult.
National accounts data (gross national product, national income, national wealth)	• National accounts data follow internationally standardized definitions for measuring the economic activity of countries, so they allow for a more consistent comparison over time and across countries than fiscal data. National account definitions, in particular, do not depend on local variations in tax legislation or other parts of the legal system.	• National accounts do not provide information on the extent to which different social groups benefit from growth of national income and gross domestic product. • National accounts are heterogeneous across countries, determined by quality of national data and country-specific assumptions.

Source: Based on Alvaredo and others (2018).

World Inequality Database and distributional national accounts

Studying inequality in a context of extreme data opacity is difficult, and results are necessarily imperfect and preliminary. Yet, income and wealth dynamics must be tracked as systematically as possible. The World Inequality Database project seeks to combine data sources transparently and consistently in order to estimate the distributions of national income and national wealth. In doing so, the project's main objective is to reconcile the macroeconomic study of income and wealth (which deals with economic growth, public debt or international capital flows) with the microeconomic study of inequality (which considers how the income and wealth growth rates actually experienced by individuals in a single country differ depending on their position in the income distribution).

The World Inequality Database project began with renewed interest in using tax data to study the long-run dynamics of inequality, following the pioneering work on income and wealth inequality series by Simon Kuznets and by Tony Atkinson and A.J. Harrison.[20] Top income shares, based on fiscal data, were initially produced for France[21] and the United States[22] and rapidly expanded to dozens of countries thanks to the contribution of more than 100 researchers.[23] These series had a large impact on the global inequality debate because they made it possible to compare the income shares of top groups (say, the top 1 percent) over long periods of time, revealing new facts and refocusing the discussion on long-run historical evolutions of income and wealth inequality.

More recently, the World Inequality Database project has sought to go beyond the top income shares based on tax data to produce distributional national accounts, relying on a consistent and systematic combination of fiscal, household survey, wealth and national accounts data sources.[24] The objective of the distributional national accounts is to make the most of all data sources (see table 3.1). Tax data are used to track the top of the distribution properly—and when available, information on tax evasion is also used.[25] Survey data are used to obtain information not available from administrative records. And national accounts data are used as the overarching framework, since they provide the most universally recognized concepts of income and wealth to date.

The World Inequality Database project emphasizes the distribution of national income and national wealth equally. There are two main reasons for this. First, it is impossible to properly track income inequality, particularly at the top of the distribution, without a sound measure of wealth inequality dynamics. Indeed, where there has been a recent rise in income inequality, it has often been due largely to the surge in capital income (rents, dividends, retained earnings and so on) among the wealthy.[26] Second, rates of return on wealth have been much higher than macroeconomic income growth over the past four decades, implying that wealth is taking an increasingly important place in 21st century economies.[27] How the fast growth of wealth is distributed across the population becomes a pressing question. Unfortunately, available official data are even scarcer for wealth than for income, so distributional national accounts estimates for wealth inequality cover only a few countries at this stage.

For transparency, the distributional national accounts project releases distributional national accounts estimates and the methods used to compute them. Technical details and the computer codes used to produce the estimates (including those presented in this chapter) are published online on the World Inequality Database website.[28] This level of transparency should become the norm for existing economic statistics databases.

Inequality series published online should also be as comprehensive as possible, given the limitations of summary measures of inequality (as discussed in the introduction to part II of the Report), which can mask relevant inequality dynamics behind a veil of stability. Beyond offering summary measures and a limited set of decile shares, the World Inequality Database project publishes average income and wealth levels for each 1 percent of the population in a given country or region (that is, income and wealth percentiles). Given the importance of the very top groups in income and wealth growth, the project decomposes the top 1 percent itself into smaller subgroups (up to the

> The World Inequality Database project seeks to combine data sources transparently and consistently in order to estimate the distributions of national income and national wealth

top 0.001 percent) and estimates income and wealth levels for each.

Currently, the United Nations System of National Accounts includes standards and guidance only for aggregate indicators.[29] The next revision, due sometime in 2022–2024, might consider how to cover distribution of income and wealth growth across the population, in line with the recommendations of the 2008 Report of the Commission on the Measurement of Economic Performance and Social Progress.[30] Such an evolution would represent significant progress for global public statistics and global public debates on growth and inequality. The distributional national accounts framework considered in this chapter provides a concrete model of how this shift beyond averages could work.

The elephant curve of global inequality and growth

The release of new tax data and the recent methodological developments by researchers collaborating with the World Inequality Database and at the World Inequality Lab make it possible to produce new inequality estimates (see boxes 3.2 and 3.3 for definitions of income and consumption concepts used throughout the Report).[31] A starting place in tracking the evolution of income inequality over time and across countries is to estimate the share of total income received by the richest 10 percent of the population. But such an indicator should be complemented by others—ideally, the income level or growth of each percentile, or 1 percent of the population, as below.

What income concepts are we measuring?

This chapter focuses on the distribution of national income, which is the sum of all income received by individuals in an economy. This corresponds to gross domestic product, to which are added net income from abroad (when a Brazilian citizen owns a company in India, the income from the capital of the company is counted in Brazil) and from which are subtracted the amounts required to replace any productive apparatus (roads, machines, computers) that has become obsolete.

There are two broad ways to measure income received by individuals in a country: before taxes and government transfers (pretax income) and after taxes and government transfers (post-tax income). There are different ways to define pre- and post-tax incomes, and definitions can affect the results substantially. In the World Inequality Lab's distributional national accounts framework, pretax national income is defined as the sum of all personal income flows, before taking into account the tax and transfer system but after taking into account pension and unemployment insurance systems. This concept adjusts traditional computations of "market income," as explained in spotlight 3.3. Contributions to pension and unemployment insurance schemes are considered deferred income and therefore deducted, but the corresponding benefits are included.

The adjustment is crucial for good comparability of pretax inequality across countries. Otherwise a country with a public pension system would appear to have artificially high pretax inequality (because retired individuals would have no pretax income and would appear as "virtual poor" before taxes), while a country with private pensions would have positive pretax income for the elderly (because they would benefit from pretax income from their pension plans). Differences in inequality measures between the countries would not reflect differences in income concentration or the effectiveness of pension systems but simply different choices made for organizing the pension system.

In the end, pretax income is similar to the taxable income of many countries, but its definition is usually broader and more comparable across countries. Several variants of pretax income should be looked at, and the distributional national accounts guidelines discuss them in more detail. Unless stated otherwise, the income concept in this chapter is pretax income.[1]

Post-tax national income equals pretax income after subtracting all taxes and adding all forms of government transfers. In line with the distributional national accounts methodology, all forms of government spending are allocated to individuals, so that post-tax income sums to national income. Not doing so would make countries with a stronger provision of public goods appear mechanically poorer. By definition, at the aggregate or macroeconomic level—when summing all income of all individuals in a country—post-tax national income is exactly equal to pretax national income and to national income.

Note
1. See Alvaredo and others (2016) for a technical description of income concepts and methods used for this chapter.

BOX 3.3

What about consumption?

For the distributional national accounts project of the World Inequality Lab and its network of partners, the objective is a fully integrated representation of the economy. It would link the microeconomic study of income and wealth inequality (typically focusing on household wages, transfers and poverty or inequality) with macroeconomic issues such as capital accumulation, the aggregate structure of property and privatization or nationalization policies. Too often, "micro" and "macro" issues have been treated separately.

To be clear, however, a lot of progress is needed before it will be possible to publish a fully integrated approach to these issues, analysing the joint evolution of inequality of income and wealth in all countries. Indeed, that approach requires careful measurement not only of pretax and post-tax income inequality but also of the distribution of savings rates across different income groups.

The production of such series—pretax inequality, post-tax inequality and savings rate inequality—will make it possible to systematically relate income, wealth and eventually consumption (income minus savings). In our view, however, it would be a mistake to overemphasize the consumption perspective, as the literature on poverty has sometimes done. Consumption obviously is a very important indicator of wealth, particularly at the bottom of the distribution. The problem is that household surveys routinely used to measure consumption tend to underestimate income, consumption and wealth at the top.

In addition, consumption is not always well defined for top income groups, which generally save a very large share of their income, choosing to consume more in later years, but more generally to consume the prestige or economic or political power conferred by wealth ownership. To develop a consistent and global perspective on economic inequality—one that views economic actors not only as consumers and workers but also as owners and investors—requires putting equal emphasis on income and wealth.

Source: Extracted from Alvaredo and others (2018).

Income inequality based on the top 10 percent's income share has risen since 1980 in most regions but at different rates

The European Union stands out as the most equal region based on the top 10 percent's share of pretax income, with 34 percent. The Middle East is the most unequal, with the top 10 percent holding 61 percent of pretax income.[32] In between are a variety of inequality levels that do not appear to be correlated with average income. The top 10 percent received an estimated 47 percent of income in the United States, 41 percent in China and 55 percent in India.[33]

Income inequality based on the top 10 percent's income share has risen since 1980 in most regions but at different rates (figure 3.2). The rise was extreme in the Russian Federation, which was one of the most equal countries in 1990 (at least by this measure) and became one of the most unequal in just five years. The rise was also pronounced in India and the United States, though not as sharp as in the Russian Federation. In China, after a sharp rise, inequality stabilized in the mid-2000s. The rise in inequality in Europe was more moderate than in other regions. Inequality in Sub-Saharan Africa, Brazil and the Middle East stayed extremely high, with the 10 percent's 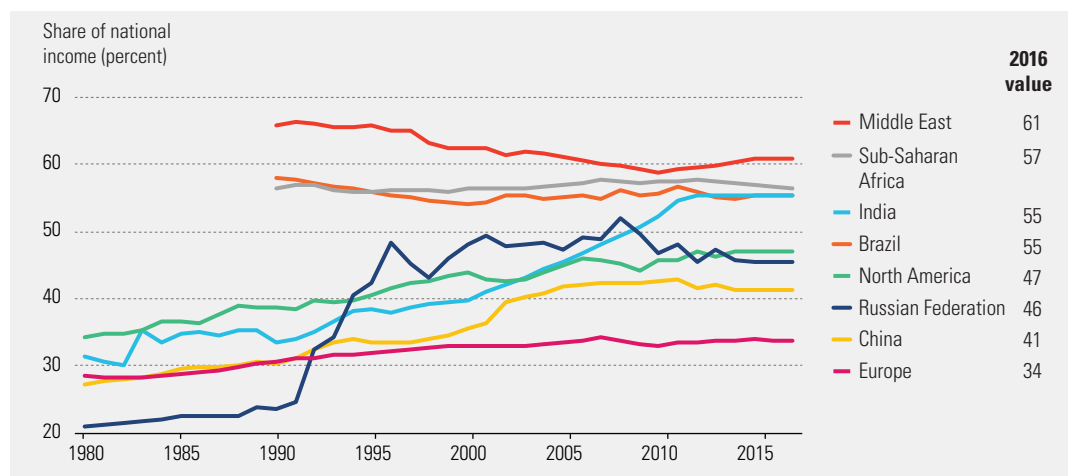income share around 55–60 percent. These extreme inequality levels in low- and middle-income countries also deserve particular attention.[34]

The diversity of patterns across countries since 1980 shows that the extreme rise in inequality in some parts of the world was not inevitable but resulted from policy choices. Openness to trade and the digitalization of the economy are often put forward to explain the rise in inequality in a country, but such arguments fail to fully account for the diversity of trajectories just presented. The radical divergence of the United States and Europe—despite similar exposures to technological change and trade openness—shows that other factors were at play—specifically, factors related to national policies. Differences between the United States and Europe were due less to direct taxes and transfers and more to other policy mechanisms, particularly health, education, unemployment and pensions systems, as well as labour market institutions.[35] Fiscal redistribution and monetary transfers to the worse-off indeed helped low-income groups in Europe but did not play the main role in restraining the increase in income inequality.[36]

What happened to inequality among individuals globally—treating the world as just one

FIGURE 3.2

Income inequality based on the top 10 percent's income share has risen since 1980 in most regions but at different rates

Share of national
income (percent)

	2016 value
Middle East	61
Sub-Saharan Africa	57
India	55
Brazil	55
North America	47
Russian Federation	46
China	41
Europe	34

Source: Based on Alvarado and others (2018), with data from the World Inequality Database (http://WID.world).

The global top 1 percent, the economic elite of rich and poor countries, made huge gains over 1980–2016

single country? Branko Milanovic pioneered such analysis, arguing for its relevance in a more integrated and globalized world.

A graph of income growth from 1980 to 2016 for the world population, ranked from the poorest to the richest,[37] presents the silhouette of an elephant with a raised trunk (figure 3.3).[38] At the bottom of the global income distribution (the left side), the low- and middle-income emerging countries had high growth: above 100 percent—for a doubling of income per adult since 1980. In some countries, such as China, the bottom 50 percent of the population saw growth of around 400 percent—incomes quintupled.[39]

The dynamics illustrate how hundreds of millions of individuals were lifted out of income poverty and saw improvements in their living standards. Note that the figure represents relative gains, which for the bottom of the distribution are from very low levels—a figure representing absolute gains looks essentially flat except for a spike for people at the very top.[40] In India the absolute poverty rate was more than halved over the period, and at the global level the share of people living in absolute poverty was reduced by a factor of more than three.[41] In the upper half of the distribution, however, incomes grew much less rapidly, with less than 50 percent since 1980. That segment of the global income distribution corresponds to the bottom and middle-income

groups in Europe and North America. In the United States the situation was even worse: The bottom 50 percent was almost entirely left out of economic growth.

At the very top of the global income distribution, growth rates were extremely high—more than 200 percent. The global top 1 percent, the economic elite of rich and poor countries, made huge gains over 1980–2016. In China and India, for instance, growth rates at the top of the income ladder reached triple digits. These results, based on new and more precise data (combining tax, survey and national accounts data), magnify the results of previous studies using fewer sources of data.[42]

The top 1 percent alone received 27 percent of income growth over the period, compared with the 12 percent received by the bottom 50 percent. A huge share of global growth thus benefited the top of the global income distribution.

Was such a concentration of global growth in the hands of a fraction of the population necessary to trigger growth among bottom income groups? Country and regional case studies provide very little empirical support to the trickle-down hypothesis over recent decades.[43] Higher income growth at the top of the distribution are not correlated with higher growth at the bottom. The comparison between the United States and Europe is an illustration. As

FIGURE 3.3

The elephant curve of global inequality and growth

Real income growth
per adult (percent)
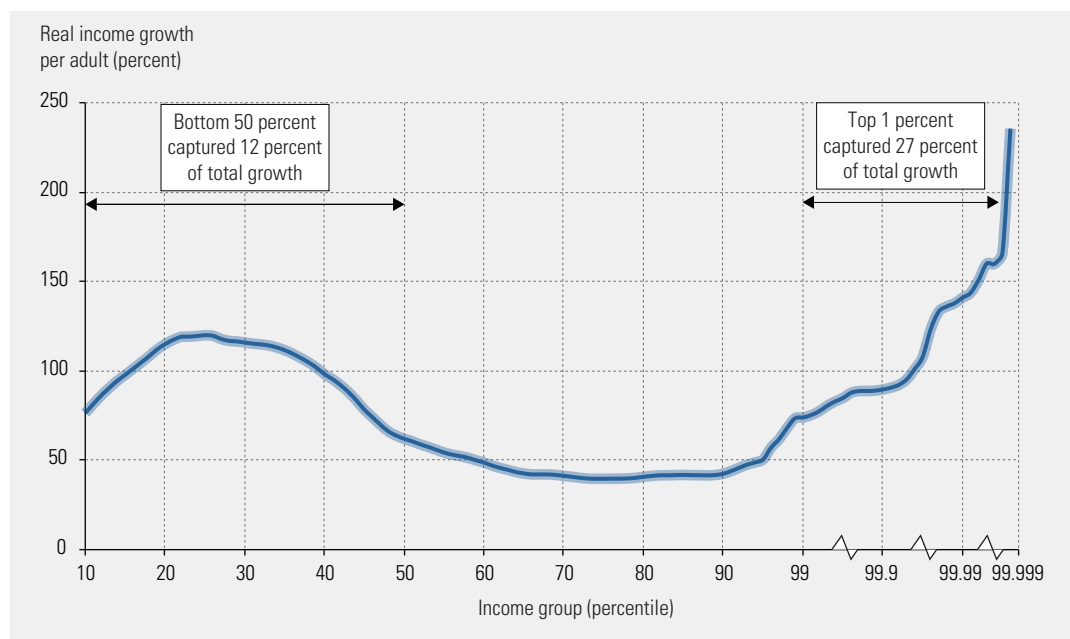
Note: On the horizontal axis the world population is divided into 100 groups of equal population and sorted in ascending order from left to right by each group's income. The top 1 percent group is divided into 10 groups, the richest of which is also divided into 10 groups of equal population and the richest of that group is again divided into 10 groups of equal population. The vertical axis shows the total income growth of an average individual in each group between 1980 and 2016. For percentile group p99p99.1 (the poorest 10 percent among the world's richest 1 percent), growth was 74 percent between 1980 and 2016. The top 1 percent captured 27 percent of total growth over this period. Income estimates account for differences in the cost of living between countries. Values are net of inflation. The composition of each group evolved between 1980 and 2016.
Source: Based on Alvaredo and others (2018), with data from the World Inequality Database (http://WID.world).

noted, growth at the top was much higher in the United States than in Europe, but the bottom 50 percent benefited little from growth, while Europe was more successful at triggering growth for the majority of its people, despite lower growth at the top.

Between-country convergence versus within-country divergence

To understand the dynamics of global income inequality over the past four decades, it is also useful to decompose global inequality into two components.[44] One is the evolution of global inequality between countries, driven by the rise in productivity in emerging countries and the technological catch-up with countries at the frontier. The other is inequality within countries. Both forces have been at play over the past four decades, but the latter appears to have dominated.

The share of global income held by the top 10 percent rose from less than 50 percent in 1980 to 55 percent in 2000 and slipped from the mid-2000s to 52 percent in 2016 (figure 3.4). Consider two counterfactual scenarios. The first is a world with no differences in average income across countries (all countries have converged to the same average income) but with within-country inequality matching the levels observed in reality since 1980. The second is a world with no within-country inequality (all individuals in a country have the same income) but with countries' average incomes differing exactly as observed in reality since 1980.[45]

In the first counterfactual the income share of the top 10 percent increases significantly over the period because of the rise of income inequality in most countries. In the second scenario the income share of the top 10 percent increases slightly, falls then recovers in the recent period to its 1980 level. Since the mid-2000s the reduction in between-country inequality has dominated but not enough to bring global inequality back to its early 1980s level.

Another way to look at the relative importance of within- and between-country

FIGURE 3.4

In 2010 the top 10 percent of income earners received 53 percent of global income, but if there had been perfect equality in average income between countries, the top 10 percent would have received 48 percent of global income
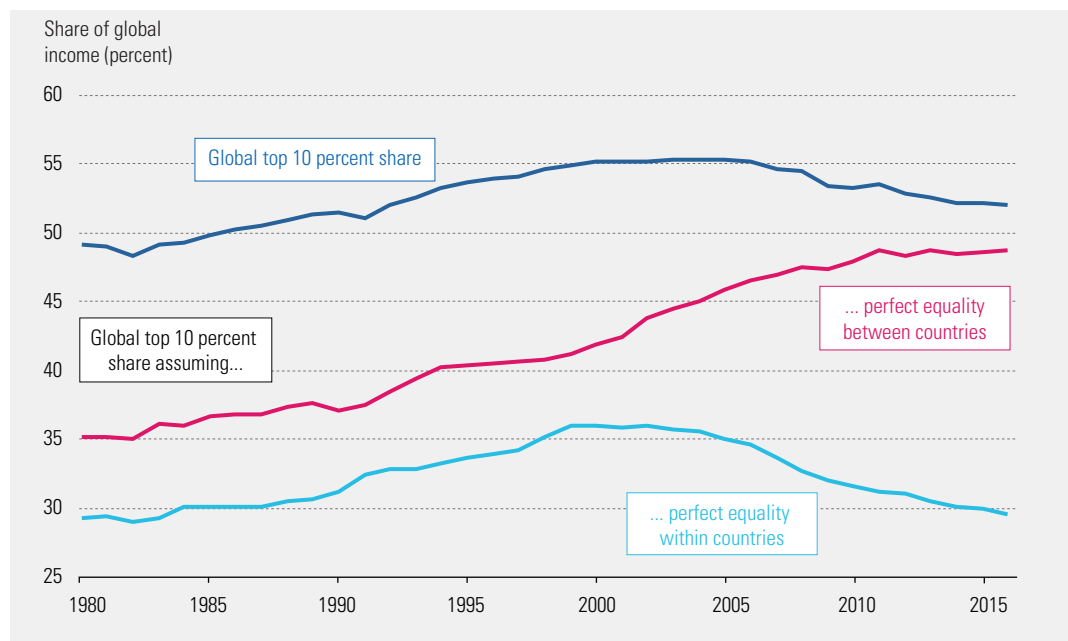
Share of global
income (percent)

Source: Based on Alvaredo and others (2018), with data from the World Inequality Database (http://WID.world).

The decline in between-country inequality has not been enough to counter the rise of within-country inequality since 1980 or 1990

inequalities is to focus on the Theil index, which provides a measure of inequality that can be decomposed into a between-country and a within-country component. The two components sum to an overall measure of global inequality. The decomposition confirms and amplifies the results above: The decline in between-country inequality has not been enough to counter the rise of within-country inequality since 1980 or 1990. Global inequality according to the Theil Index rose from 0.92 in 1980 to 1.07 in 2016, peaking in 2007 before a slight decline and then a plateau since the early 2010s.[46]

Going beyond summary measures of inequality

The dynamics of global income inequality over the past decades are the result of the dynamics of between-country and within-country inequalities. These are not well captured by an oft-used measure of inequality: the Gini coefficient. Since 1980 the Gini coefficient for global income has hovered around 0.65, with a peak of 0.68 in 2005–2006. This summary measure of inequality thus masks the catch-up of low-income groups with the middle of the global income (reduction in between-country inequality) as well as the relative decrease of the middle compared with the top (rising within-country inequality in rich countries). From 1980 to 2016 the income gap between the top 10 percent and the middle 40 percent increased by 20 percentage points (figure 3.5). But the gap between the middle 40 percent and the bottom 50 percent fell by more than 20 percentage points. In short: The Gini coefficient masks a lot of movement.

The changing geography of global income inequality

Understanding the dynamics of global inequality also entails looking at the changing geographic distribution (box 3.4). The geographic breakdown of each percentile of the global distribution of income has evolved. In 1990 Asians were mostly absent from top global income groups, and massively represented at the bottom of the global distribution (figure 3.6), while Americans and Canadians were the

FIGURE 3.5

The ratio of the average income of the top 10 percent to that of the middle 40 percent increased by 20 percentage points between 1980 and 2016, but the ratio of the average income of the middle 40 percent to that of the bottom 50 percent decreased by 27 percentage points
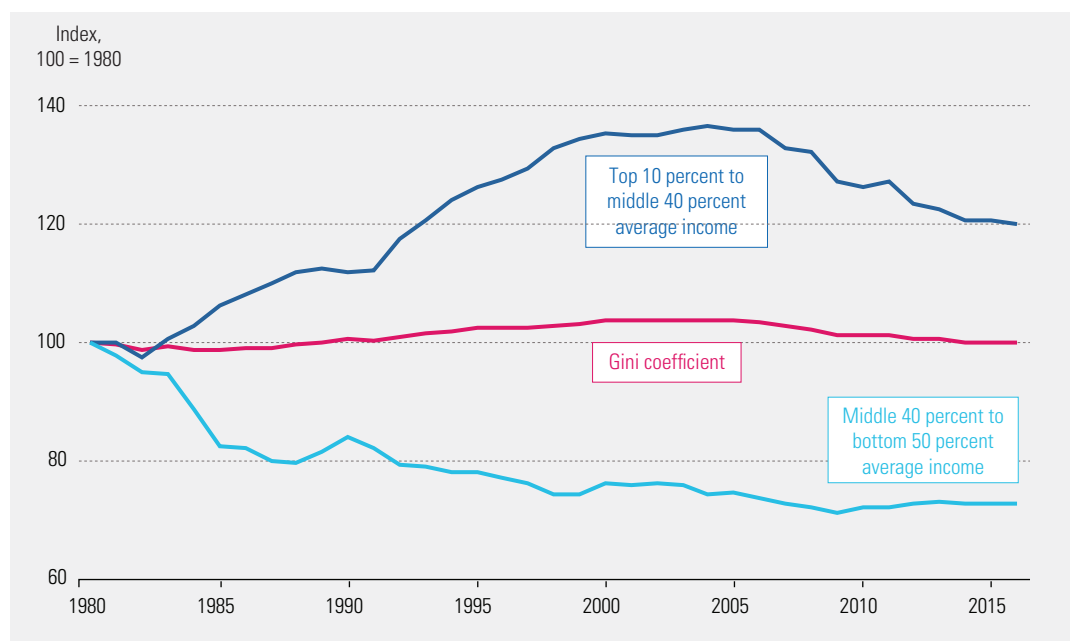
Source: Based on Alvaredo and others (2018), with data from the World Inequality Database (http://WID.world).

BOX 3.4

Where do you stand in the global distribution of income?

Who is part of the global top 1 percent? And how much does one need to make to belong to the global middle 40 percent? It is not always clear how much income one needs to belong to different income groups discussed in academic or public debates on inequality.

The World Inequality Database's online simulator allows anyone to position their income relative to that of others throughout the world. With $1,000 a month,

for instance, an adult individual is part of the top 8 percent of earners in Côte d'Ivoire (see table). The same income would place an individual in the top 33 percent in China and in the bottom 22 percent in the United States. At the world level, that individual belongs to the top 33 percent. The global top 1 percent entry threshold is $11,990 per adult per month.
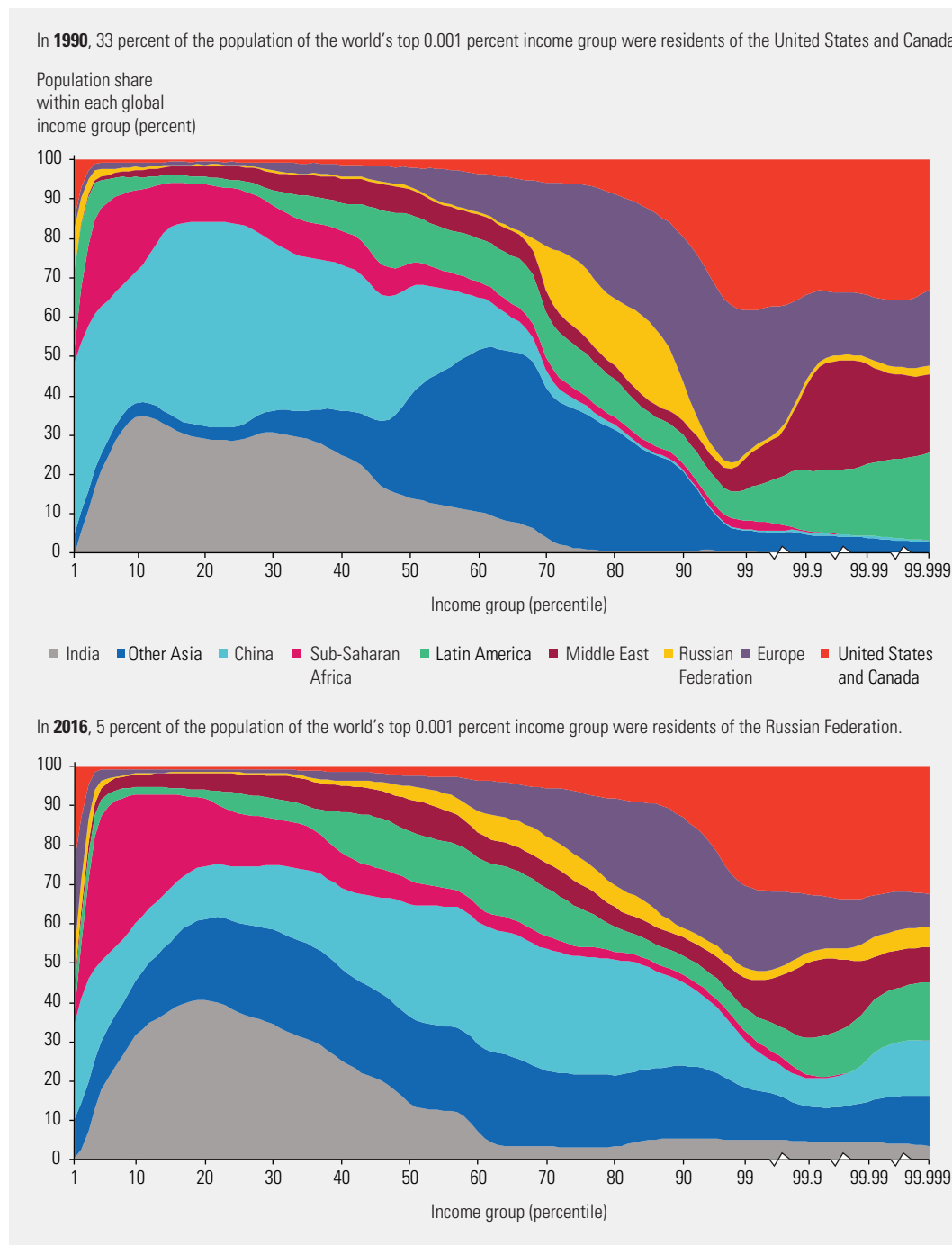
On different rungs in different countries

Monthly income per adult (PPP $)	Côte d'Ivoire	China	United States	World
$100	Bottom 20 percent	Bottom 7 percent	Bottom 5 percent	Bottom 8 percent
$1,000	Top 8 percent	Top 33 percent	Bottom 22 percent	Top 33 percent
$2,0000	Top 3 percent	Top 12 percent	Bottom 42 percent	Top 18 percent
$5,000	Top 1 percent	Top 4 percent	Top 24 percent	Top 5 percent
$12,000	Top 1 percent	Top 1 percent	Top 5 percent	Top 1 percent

Source: World Inequality Database website (http://WID.world/simulator).

FIGURE 3.6

The geographic breakdown of each percentile of the global distribution of income evolved from 1990 to 2016

In **1990**, 33 percent of the population of the world's top 0.001 percent income group were residents of the United States and Canada.

Population share
within each global
income group (percent)

Income group (percentile)

■ India ■ Other Asia ■ China ■ Sub-Saharan Africa ■ Latin America ■ Middle East ■ Russian Federation ■ Europe ■ United States and Canada

In **2016**, 5 percent of the population of the world's top 0.001 percent income group were residents of the Russian Federation.

Income group (percentile)

Source: Based on Alvaredo and others (2018), with data from the World Inequality Database (http://WID.world).

largest contributors to global top income earners and almost absent at the very bottom of the distribution. Europe was well represented in the upper half of the global distribution but less so in the very top groups. Middle Eastern and Latin American elites were disproportionately among the very top global groups, as they each made up about 20 percent of the population of the top 0.001 percent earners.

The situation had changed considerably by 2016. Chinese earners are now present throughout the income distribution. Indians remain

concentrated at the bottom. Russian earners are also stretched throughout, from the poorest to the richest income groups, in contrast to 1990. Africans, present throughout the bottom half of the distribution, are now even more concentrated in the bottom quarter, due to Africa's slow growth relative to Asian countries. At the top of the distribution, both North America's and Europe's shares fell (leaving room for their Asian counterparts), Europe's share fell much more. The reason? Most large European countries followed a more equitable growth trajectory over the past decades than the United States and Asian giants.

How unequal is Africa?

Based on survey data for African countries,[47] the income share of the top 10 percent is typically around 30–35 percent (except in Southern African countries), compared with 34 percent in Europe, 45–55 percent in North and South America and 40–55 percent in Asia.[48] The comparison could thus suggest that most African countries have low inequality.[49]

But there are good reasons to think that survey-based data significantly underestimate inequality across Africa. First, the concepts to measure inequality and growth (at times consumption, at times income) are often compared indiscriminately, even though using consumption typically underestimates inequality by 25–50 percent compared with using income.[50] Second, individuals at the top of the distribution are largely under-represented in surveys, particularly in developing countries.[51] Available global and African evidence shows that the average income of the top 1 percent of earners is typically 1.5–2 times higher than what is reported in surveys.[52]

So, are African countries characterized by low or high inequality? The question, as simple as it may be, is difficult to answer due to the dissimilarity of data sources. Applying, to the extent possible, distributional national accounts methods to Africa yields estimates that are more in line with recent ones for developed and emerging countries. Such estimates, however, are still far from perfect and will be greatly improved as more administrative data are released, as has occurred with Côte d'Ivoire, Senegal, South Africa and Tunisia.

New estimates combining survey, fiscal and national accounts data suggest that inequality remains very high in most African countries. The income received by the top 10 percent ranges from 37 percent in Algeria to 65 percent in South Africa, while that received by the bottom 40 percent is at most 14 percent in Algeria and about 4 percent in South Africa.

Regional differences across Africa are significant.[53] Southern Africa is clearly the most unequal. The share of national income received by the top 10 percent is highest in South Africa (65 percent in 2014) and Namibia (64 percent in 2015), while the bottom 40 percent received 4 percent of national income in both countries.

On average, income inequality is lower in Central Africa but still very high. For instance, in 2011 the top 10 percent of income earners in Congo received 56 percent, while the bottom 40 percent received 7 percent. East African countries are a bit less unequal, especially at the bottom. In Kenya in 2015 the top 10 percent received 48 percent of national income, while the bottom 40 percent received 9 percent.

Income inequality tends to decrease towards the north and the west of the continent. In Sierra Leone in 2011 the top 10 percent received 42 percent of national income, while the bottom 40 percent received 12 percent, and its neighbours show similar income shares. The lowest inequality is in North Africa: In Algeria, the least unequal country in Africa for which estimates are available, the top 10 percent of earners received 37 percent of national income in 2011, while the bottom 40 percent received 14 percent.

Heterogeneous trajectories: Inequality trends from 1995 to 2015

There is no single African trend in inequality, not even clear regional trends. Income distributions evolved in a wide variety of ways across countries, which underlines the role of national institutions and policies in shaping inequality. Given the important differences in data quality across African countries, the lack of harmonization of data collection instruments and welfare concepts, and the irregularity of survey availability, comparing inequality trends is a perilous exercise, and the results must be interpreted with great caution. (In this section, countries

with an asterisk [*] have data available only from 1995 to 2005, and countries with two asterisks [**] have data available only after 2005.)

On average, it appears that inequality, as measured by the share of income going to the top 10 percent and to the bottom 40 percent, increased in Southern Africa but fell in East Africa in the late 1990s before stabilizing in the 2000s and stagnated in North, Central and West Africa, despite small fluctuations (figure 3.7).

In Southern Africa the dramatic rise of the income share of the top 10 percent occurred at the expense of both the middle and the bottom of the distribution, whose income shares fell. Indeed, Southern Africa's performance between 1995 and 2015 was highly negative (on average, the incomes of the bottom 40 percent grew 70 percentage points less than the average) and is the worst among African subregions (table 3.2). This trend was very much driven by South Africa (by far the most populous country in Southern Africa), which saw a strong increase in income inequality (table 3.3)—despite declining poverty rates.[54] Based on these estimates, it is possible to present evidence on the evolution of inequality, comparing the growth in income of the bottom 40 percent with that of the entire population

(box 3.5). For Botswana, Lesotho, Eswatini* and Namibia** inequality fell: The incomes of the bottom 40 percent grew at different paces: from 10 percentage points to 88 percentage points more than the average.

In East Africa the income share of the top 10 percent fell significantly from 1995 to 2000, and the incomes of the bottom 40 percent grew more than the average. Since the beginning of the 2000s, however, the distribution has remained rather stable: Income shares fell only slightly at the top and grew slightly at the bottom (see figure 3.7).

This general trend can be explained by the decline of inequality in two of the most populous countries, Ethiopia and Kenya. The overall decline was drastic in Ethiopia, where the incomes of the bottom 40 percent grew 48 percentage points more than the average. Inequality rose in most other countries in the subregion. The increase was modest in Madagascar and more significant in Djibouti**, Tanzania and Uganda, where the incomes of the bottom 40 percent grew 6–15 percentage points less than the average. In Mozambique** the incomes of the bottom 40 percent grew 40 percentage points less than the average, and in Zambia they grew 60 percentage points less.

Inequality, as measured by the share of income going to the top 10 percent and to the bottom 40 percent, increased in Southern Africa but fell in East Africa in the late 1990s before stabilizing in the 2000s and stagnated in North, Central and West Africa

FIGURE 3.7

Between 1995 and 2015 the income share of the top 10 percent in North Africa and West Africa remained relatively stable, while the share of the bottom 40 percent in Southern Africa declined
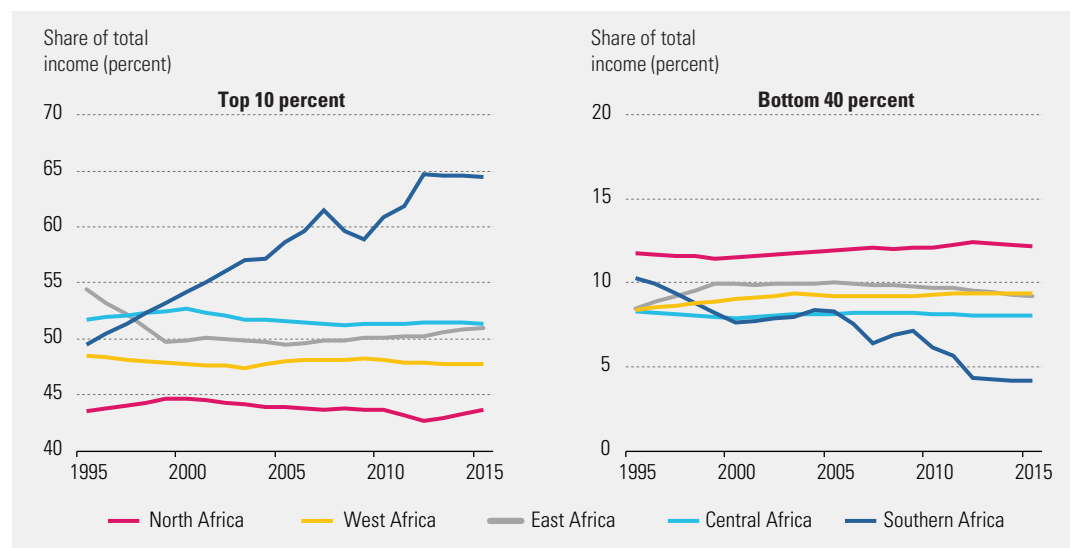
Note: Data are weighted by population. Estimates combine survey, fiscal and national accounts data.
Source: Chancel and others (2019), based on data from the World Inequality Database (http://WID.world).

TABLE 3.2

Difference between income growth of the bottom 40 percent and average income growth in Africa's five subregions, 1995–2015 (percentage points)

Subregion	1995–2015	1995–2005	2005–2015
East Africa	47.2	40.5	−4.9
Central Africa			11.4
North Africa	18.3	7.8	8.0
Southern Africa	−70.3	−19.2	−54.8
West Africa	25.0	18.8	0.6

Note: Estimates combine survey, fiscal and national accounts data. Estimates combine survey, fiscal and national accounts data and are derived from panregional distributions; they are not averages of national indicators. Green (red) cells indicate where the income growth rate of the bottom 40 percent was higher (lower) than the average.
Source: Chancel and others (2019), based on data from the World Inequality Database (http://WID.world).

TABLE 3.3

Difference between income growth of the bottom 40 percent and average income growth in selected African countries, 1995–2015 (percentage points)

Country	1995–2015	1995–2005	2005–2015
Algeria	32.5	19.6	9.6
Angola		−26.1	
Botswana	56.4	−9.8	71.8
Cameroon			−19.3
Côte d'Ivoire	−21.2	−22.1	8.2
Egypt	−7.1	−5.5	−0.6
Ethiopia	48.3	75.1	−46.8
Gabon			10.4 [a]
Ghana	−24.1	−13.7	−4.5
Kenya	12.6	−8.6	25.7
Madagascar	−0.0	10.4 [a]	−8.4
Mali		70.6	
Nigeria		19.2	
South Africa	−74.4	−22.7	−57.8
Zambia	−59.6	−24.7	−20.9

Note: Estimates combine survey, fiscal and national accounts data. Green (red) cells indicate where the income growth rate of the bottom 40 percent was higher (lower) than the average.
a. Average income fell.
Source: Chancel and others (2019), based on data from the World Inequality Database (http://WID.world).

In North Africa the incomes of the bottom 40 percent grew 18 percentage points more than the average from 1995 to 2015. The decline in inequality resulted from two opposite trends. Inequality fell significantly in Algeria, where the incomes of the bottom 40 percent

grew 33 percentage points more than the average, and in Tunisia, where the incomes of the bottom 40 percent grew 54 percentage points more than the average. The decline of the income share of the top was driven much more by the very top of the distribution in Tunisia, while inequality stagnated in Morocco and increased modestly in Egypt.

In West Africa the incomes of the bottom 40 percent grew 25 percentage points more than the average. But this hides a wide diversity of trajectories. Inequality rose in Côte d'Ivoire, Ghana and Guinea-Bissau, with the incomes of the bottom 40 percent growing 20 percentage points less than the average, and even more so in Benin**, with the incomes of the bottom 40 percent growing 30 percentage points less than the average.

Inequality declined elsewhere in the subregion. In Senegal the improvement was mild (the incomes of the bottom 40 percent grew only 2 percentage points more than the average). In Mauritania the incomes of the bottom 40 percent grew 21 percentage points more than the average. In Nigeria* the incomes of the bottom 40 percent grew 19 percentage points more than the average. In Niger inequality fell substantially, as the incomes of the bottom 40 percent grew 35 percentage points more than the average.

Inequality fell in Gambia, Guinea and Mali*, where the incomes of the bottom 40 percent grew 60–80 percentage points more than the average. The largest inequality declines were in Burkina Faso, where the incomes of the bottom 40 percent grew 93 percentage points more than the average, and Sierra Leone, where they grew 117 percentage points more than the average.

Data for Central Africa are scarce and cover a short time span. No country showed a strong trend in inequality, up or down, especially at the top. For most countries the data cover only 2000 and 2010. In Cameroon**, Chad** and Congo** inequality increased, as the incomes of the bottom 40 percent grew 13–19 percentage points less than the average. Inequality stagnated in Sao Tome and Principe** and decreased markedly in Gabon**, where the average income fell: the incomes of the bottom 40 percent grew around 12 percentage points more than the average. The two countries with data for 1995 and 2005 are Angola* and

BOX 3.5

Income growth of the bottom 40 percent—higher than the national average?

Sustainable Development Goal target 10.1 reads, "By 2030 progressively achieve and sustain income growth of the bottom 40 percent of the population at a rate higher than the national average."[1]

Including that inequality target in the list of Sustainable Development Goals was not straightforward. Several countries initially opposed it, arguing that only poverty reduction mattered.[2] Its inclusion thus marks an important shift in how countries think about sustainable development.

What is the income inequality target about? It seeks to ensure that people in the bottom income groups see growth that is at least as high as the average. While the target is meant to be achieved by 2030, it is useful to look at the past to consider how countries have fared on the indicators relevant to the target. The United States, despite high overall economic growth, the bottom 40 percent of the population has seen pretax income per adult fall by 2 percent, from $13,700 in 1980 to $13,400 in 2017.[3] During the same period the average income in the United States grew 66 percent, from $41,900 to $61,400. If the bottom 40 percent's income had grown as fast as the average, it would be $22,600 today.

Ensuring that the bottom 40 percent sees growth that is at least as high as the average may not be enough to contain rising inequalities. Take another example: At the global level, average annual pretax income increased 95 percent (net of inflation) for the bottom 40 percent, from €1,300 in 1980 to €2,500 in 2017, but increased 40 percent overall, from €11,100 to €16,600. Thus, the global bottom 40 percent saw growth that was 45 percentage points higher than the global average.

At the other end of the distribution, the top 0.1 percent's average annual pretax income increased 117 percent, from €671,600 to €1,462,000. Despite its small size, the 0.1 percent saw a larger share of total growth than the bottom 40 percent of the population—about 12 percent versus about 8.5 percent. Indeed, it is mathematically impossible for all groups to see growth that is higher than the average. At the global level, those who lost were the middle 40 percent, whose average income rose just over 33 percent, from €11,900 in 1980 to €15,600 in 2016. So, their share in global income was reduced. This shows that ensuring that the bottom 40 percent grows at the same rate as the average may be insufficient for tackling inequality at all segments of the distribution.

> In China the incomes of the bottom 40 percent grew at an impressive 263 percent between 2000 and 2018, which contributed to the fast reduction of extreme poverty

Notes
1. www.un.org/sustainabledevelopment/inequality/. 2. For a discussion of the debates surrounding inclusion of the income inequality target, see Chancel, Hough and Voituriez (2018). 3. All figures are net of inflation. Since distributional national accounts data for 2014–2016 are not yet available, it was assumed that since 2014, the bottom 40 percent has seen growth that is at least as high as the average—a very optimistic assumption since that occurred only six times between 1980 and 2014, two of which were recessions.
Source: World Inequality Lab.

Central African Republic*. In Angola inequality increased at both ends of the distribution. In Central African Republic inequality fell, but so did average incomes.

Inequality in BRIC countries since the 2000s

This section presents the income growth of the bottom 40 percent and the top 1 percent compared with average income growth for the four BRIC countries—Brazil, the Russian Federation, India and China (table 3.4).

In China the incomes of the bottom 40 percent grew at an impressive 263 percent between 2000 and 2018, which contributed to the fast reduction of extreme poverty and to the decline of the global extreme poverty rate. But that growth was significantly below the average for China (361 percent) and just half the rate of the top 1 percent. Such different

growth rates led to a rise in income inequality in China. From 2007 to 2018, however, the 135 percent growth rate of the bottom 40 percent and the 138 percent average in China were much closer, and the rise of inequality halted (this stabilization could partly reflect data limitations). The more recent period in China is also characterized by wages growing more than output, to the benefit of low-income groups.

In India the income growth of the bottom 40 percent—58 percent between 2000 and 2018—was significantly below the average. At the other end of the spectrum the top 1 percent saw their incomes grow significantly more than the average since 2000 and since 2007.

In Brazil the incomes of the bottom 40 percent grew 14 percentage points more than the average between 2000 and 2018. But the top 1 percent also saw higher growth than the average. Since all groups cannot grow more than the average, this means that middle-income groups (between the bottom 40 percent and

TABLE 3.4

Inequality and growth in the BRIC countries

Country	2000–2018				2007–2018			
	Average income growth (percent)	Bottom 40 percent growth (percent)	Difference between income growth of the bottom 40 percent and average income growth (percentage points)	Top 1 percent growth (percent)	Average income growth (percent)	Bottom 40 percent growth (percent)	Difference between income growth of the bottom 40 percent and average income growth (percentage points)	Top 1 percent growth (percent)
Brazil	5	20	14	16	−3	3	6	−2
China	361	263	−97	518	138	135	−3	117
India	122	58	−64	213	68	41	−27	78
Russian Federation	72	121	49	68	6	35	29	−20

Note: Distribution of per adult pretax national income growth. See http://wid.world/methodology for country-level information on the series. Income growth between 2016 and 2018 is assumed to be distribution neutral (all groups benefit from average national income growth). Green (red) cells indicate where the income growth rate of the bottom 40 percent was higher (lower) than the average.
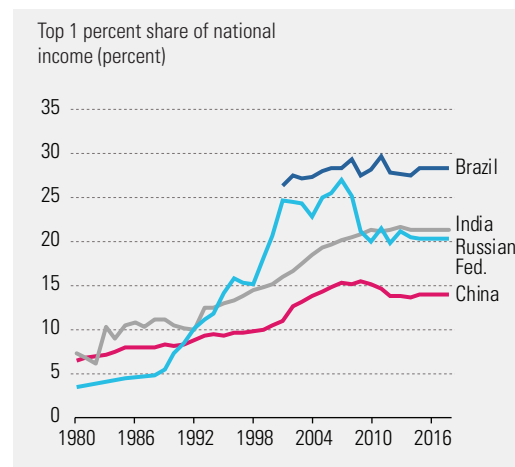Source: Based on data from the World Inequality Database (http://WID.world).

the top 1 percent) were squeezed with lower than average growth.

In the Russian Federation the incomes of the bottom 40 percent grew more than the average between 2000 and 2018, while the incomes of the top 1 percent grew at a rate close to the average. The top 1 percent actually saw their incomes fall between 2007 and 2018. Between 1980 and 2018 the top 0.01 percent saw four-digit income growth rates. Income and wealth inequality today remain extreme by global standards, and the recent decline of the top 1 percent has not gone nearly far enough to reverse this.[55]

A rapid review of growth and inequality trajectories in the BRIC countries shows that the evolution of the indicators underpinning Sustainable Development Goal target 10.1 must be interpreted with care. Complementing the bottom 40 percent target with other indicators (such as the income growth rate of the top 1 percent) more fully accounts for the dynamics of growth in a given country. Assessing dynamics over various timeframes is also enriching. Good performance over a short time may mask a huge increase in income and wealth inequality in the longer run. The income share of the top 1 percent has significantly increased in China, India and the Russian Federation since the early 1980s (figure 3.8). In Brazil the income share of the top 1 percent has been broadly stable since the early 2000s but at a high level.

FIGURE 3.8

The income share of the top 1 percent has significantly increased in China, India and the Russian Federation since the early 1980s

Top 1 percent share of national income (percent)

Note: Distribution of per adult pretax national income growth. See http://wid. world/methodology for country-level information on the series. Income growth between 2016 and 2018 is assumed to be distribution neutral.
Source: Based on data from the World Inequality Database (http://WID.world).

Inequality and redistribution in Europe and the United States

Income inequality in European countries and the United States has risen to varying degrees and at different speeds.[56] Inequality, both at the top and at the bottom of the distribution, varies widely across developed countries. These

heterogeneous dynamics are linked to different institutional trajectories, policy choices and patterns of inclusive growth.

By combining surveys, tax data and national accounts, it has become possible to produce estimates tracking inequality dynamics across individuals from the bottom to the top 0.001 percent in a way fully consistent with national accounts.[57] How have European countries and the United States performed in promoting inclusive growth in the past decades?

Since the beginning of the 1980s almost no country considered in the analysis has seen the incomes of the bottom 40 percent grow more than the average (table 3.5). Growth has been either distributionally neutral or associated with rising inequality. In Norway, Spain, France and Croatia the difference is close to zero: The bottom 40 percent saw their incomes grow at a rate similar to that of the average income. In Norway and France, however, the top 1 percent of incomes grew more than the average, meaning that the income share of the groups in between was squeezed. In all other countries, especially in Eastern Europe and the United States, poorer individuals have lagged far behind national averages between 1980 and 2007, and richer people have benefited from a disproportionate share of income growth, although the income growth of the bottom 40 percent has been higher than the national average for several countries since 2007, especially in Eastern Europe.

Income inequality has risen more in the United States than in any other developed country since 1980

Driving the rising inequalities in the United States since the 1980s has been a surge in top incomes combined with little or no pretax income growth among poorer individuals. The current income inequality in the United States is vastly different from the levels seen at the end of World War II. Indeed, changes in inequality since 1945 can be split into two phases (figure 3.9). From 1946 to 1980 inequality fell. During that period the average incomes of the bottom 50 percent more than doubled. By contrast, the 1980–2014 period coincided with lower and much more skewed growth, with the average income of the bottom half essentially stagnating (it grew less than 2 percent, while that of the bottom

> Driving the rising inequalities in the United States since the 1980s has been a surge in top incomes combined with little or no pretax income growth among poorer individuals

TABLE 3.5

Post-tax average and bottom 40 percent growth in Europe and the United States, 1980–2017 and 2007–2017

Country	1980–2017				2007–2017			
	Average income growth (percent)	Income growth of the bottom 40 percent (percent)	Difference between income growth of the bottom 40 percent and average income growth (percentage points)	Income growth of the top 1 percent (percent)	Average income growth (percent)	Income growth of the bottom 40 percent (percent)	Difference between income growth of the bottom 40 percent and average income growth (percentage points)	Income growth of the top 1 percent (percent)
Eastern Europe								
Albania					17.8	20.0	2.2	5.4
Bosnia and Herzegovina	318.7	229.8	−89.0	475.5	16.7	15.4	−1.3	16.8
Bulgaria	102.2	39.6	−62.6	583.3	36.6	30.1	−6.6	51.9
Croatia	3.8	2.2	−1.6	77.5	0.8	5.0	4.2	−2.2
Czechia	37.3	17.6	−19.7	382.5	10.3	9.5	−0.9	21.0
Estonia	88.1	44.4	−43.6	202.7	7.4	8.3	0.9	−18.8
Hungary	47.1	2.3	−44.8	426.0	11.8	6.4	−5.3	2.9
Latvia	48.0	10.4	−37.7	212.2	12.5	15.2	2.8	19.8
Lithuania	66.9	15.1	−51.8	318.4	20.8	12.1	−8.7	31.5

(continued)

TABLE 3.5 (CONTINUED)

**Post-tax average and bottom 40 percent growth in Europe and the United States, 1980–2017 and 2007–2017**

Country	1980–2017				2007–2017			
	Average income growth (percent)	Income growth of the bottom 40 percent (percent)	Difference between income growth of the bottom 40 percent and average income growth (percentage points)	Income growth of the top 1 percent (percent)	Average income growth (percent)	Income growth of the bottom 40 percent (percent)	Difference between income growth of the bottom 40 percent and average income growth (percentage points)	Income growth of the top 1 percent (percent)
Moldova (Republic of)					36.5	54.6	18.1	23.7
Montenegro	−20.1	−33.4	−13.4	16.7	16.2	17.2	1.0	22.3
North Macedonia	−0.2	−19.3	−19.1	16.0	22.3	39.1	16.8	10.5
Poland	94.8	33.6	−61.2	551.2	30.8	28.0	−2.8	18.0
Romania	69.9	21.0	−48.9	242.0	30.6	43.0	12.4	−3.2
Serbia	−8.1	−27.1	−19.0	44.4	10.5	9.0	−1.5	40.6
Slovakia	69.1	57.7	−11.4	198.0	19.1	19.7	0.6	7.3
Slovenia	12.4	−7.3	−19.7	127.7	−1.1	−5.6	−4.5	35.3
Southern Europe								
Cyprus					−15.5	−19.1	−3.6	−6.8
Greece					−31.3	−43.8	−12.5	5.9
Italy	16.5	−3.5	−20.0	69.5	−10.6	−16.3	−5.7	−16.6
Malta					28.8	13.4	−15.3	183.2
Portugal	60.1	34.1	−26.0	54.4	−0.3	4.3	4.6	−14.7
Spain	61.1	68.5	7.4	60.0	3.1	1.1	−2.0	31.0
Western Europe								
Austria	53.2	45.6	−7.7	118.2	−0.1	−2.2	−2.1	20.8
Belgium	51.3	43.1	−8.2	79.1	1.6	−0.6	−2.2	−2.5
France	42.3	42.9	0.6	71.0	0.6	1.0	0.5	−5.5
Germany	40.9	21.2	−19.7	97.9	9.8	3.7	−6.0	10.7
Ireland	182.0	141.3	−40.7	323.3	2.9	0.6	−2.2	4.3
Luxembourg	93.4	63.4	−30.0	163.5	−32.6	−35.9	−3.3	−33.0
Netherlands	36.1	26.8	−9.3	90.6	−0.6	−4.2	−3.7	−17.6
Switzerland	26.2	21.0	−5.2	58.4	0.7	4.7	4.0	1.8
United Kingdom	77.9	75.7	−2.2	136.8	1.3	10.7	9.4	−23.0
Northern Europe								
Denmark	64.7	43.1	−21.6	263.2	2.4	−8.6	−11.0	60.3
Finland	68.0	58.7	−9.4	179.7	−6.7	−9.5	−2.8	−7.7
Iceland					6.9	15.4	8.6	−41.4
Norway	84.9	91.9	7.1	158.4	−2.1	−0.2	1.9	−9.6
Sweden	95.5	70.2	−25.2	172.6	10.5	4.8	−5.7	−0.9
United States	63.2	10.8	−52.4	203.4	3.1	−0.1	−3.2	7.6

Note: Green cells indicate countries that achieved Sustainable Development Goal target 10.1 over the period considered and red cells indicate countries that did not.
Source: Blanchet, Chancel and Gethin (2019), based on data from the World Inequality Database (http://WID.world).

FIGURE 3.9

The pretax income share of the top 10 percent in the United States rose from around 35 percent in 1980 to close to 47 percent in 2014
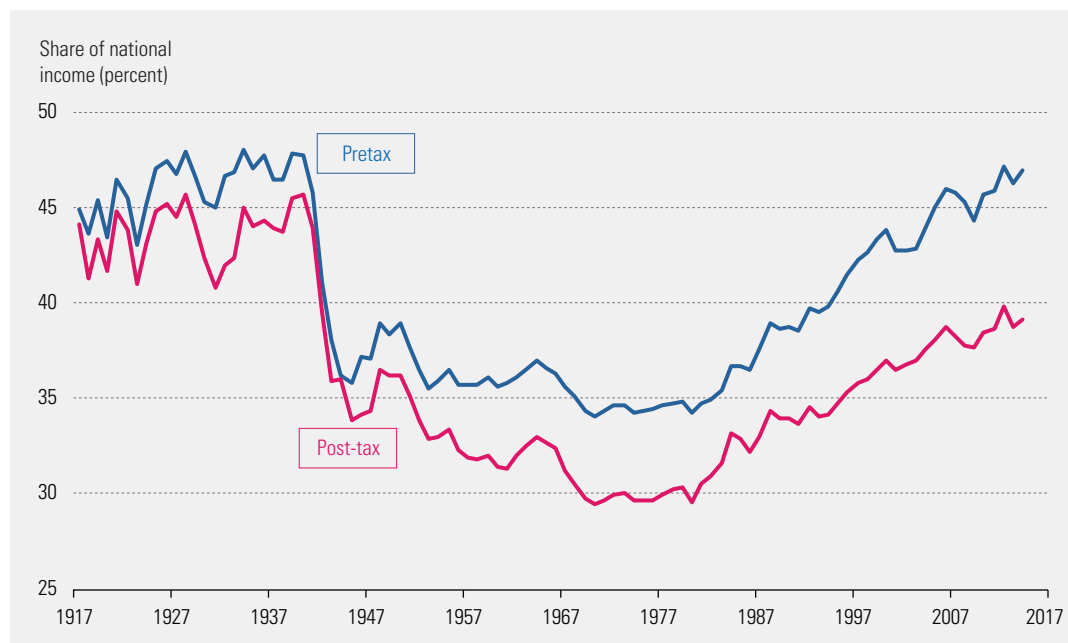
Source: Piketty, Saez and Zucman 2018.

Rising inequalities in the United States coincide with a gradual decrease in the progressiveness of the US tax system over the past few decades

40 percent fell 5 percent), and the income of the top 1 percent more than tripled. Accordingly, the share of pretax national income received by the top 10 percent grew from 34 percent to more than 45 percent, and that received by the top 1 percent grew from 10 percent to 20 percent.

Accounting for the redistributive effects of taxes and transfers does not change the dynamics. Between 1980 and 2014 the share of post-tax national income received by the top 10 percent grew from 30 percent to about 40 percent. During the same period the post-tax income of the bottom 50 percent grew a meagre 20 percent, driven entirely by Medicare and Medicaid. Only through in-kind health transfers and collective expenditures did the incomes of the bottom half of the distribution rise.

Rising inequalities in the United States co-incide with a gradual decrease in the progressiveness of the US tax system over the past few decades, a trend present in many other countries (see chapter 7). The country's share of total taxes in national income, including federal, state and local taxes, increased from 8 percent in 1913 to 30 percent in the late 1960s, where it has remained since. Effective tax rates paid by

individuals (total taxes paid as a share of total income) have become more compressed. In the 1950s the top 1 percent of income earners paid 40–45 percent of their pretax income in taxes, while the bottom 50 percent of earners paid 15–20 percent. Today the gap is much smaller. Top earners paid about 30–35 percent, while the poorest half paid around 25 percent.

Inequality has increased in a majority of European countries

Although inequalities remain lower in Europe than in the United States, European countries have also seen increases in the concentration of income at the top. In 1980 income disparities were generally higher in Western Europe than in Scandinavia and Eastern Europe (figure 3.10). The gap increased between 1980 and 1990 as income inequality rose in Germany, Portugal and the United Kingdom. In 1990–2000, by contrast, top income inequality rapidly increased in Finland, Norway and Sweden and in Eastern European countries. As a result, income inequality is higher today in nearly all European countries than at the beginning of the 1980s.

FIGURE 3.10

Between 1980 and 2017 the share of post-tax national income received by the top 10 percent rose from 21 percent to 25 percent in Northern Europe, while the share received by the bottom 40 percent fell from 24 percent to 22 percent
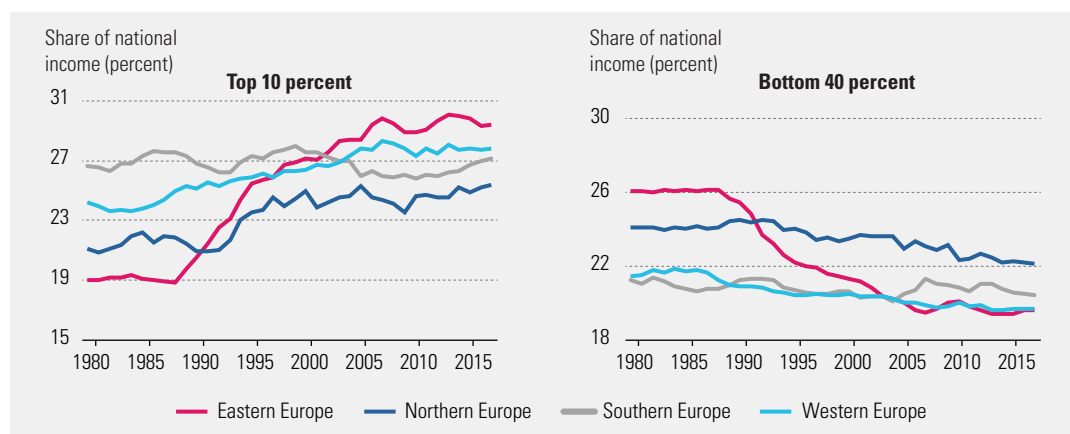
Source: Blanchet, Chancel and Gethin (2019), based on data from the World Inequality Database (http://WID.world).

European countries have also seen increases in the concentration of income at the top. The incomes of the top 0.1 percent of earners more than doubled during the period, and the incomes of the top 0.001 percent nearly tripled

In 2017 the top 10 percent of income earners received more than 30 percent of national income in most Western European countries and 25–35 percent in East European countries.[58]

The income share of the top 10 percent in Southern Europe was slightly higher than in other regions in the 1980s but increased less (see figure 3.10). Income gaps widened in Italy and Portugal, for instance, but remained stable in Spain and fluctuated in Greece. In Northern Europe and Western Europe, by contrast, income inequality increased more linearly. Eastern Europe is the area where income inequality has risen the most, due to increases at the top of the distribution in the 1990s and the early 2000s.[59] Today post-tax income inequality remains, on average, slightly lower in Northern Europe than in other regions of the continent.

Top income earners have thus been the primary beneficiaries of income growth in Europe since the 1980s. And between 1980 and 2017 the at risk of poverty rate remained stable or rose in most countries.[60]

Inequality has risen in Europe as a whole

Taking the European countries as a whole, the top 10 percent pretax income earners in Europe received 29 percent of total regional income in 1980, while the bottom 50 percent received 24 percent. In 2017 the income share of the top 10 percent had risen to 34 percent, while the poorest half of the population received only a fifth. In the past 37 years the incomes of the poorest 40 percent of Europeans increases 30–40 percent (figure 3.11). The European middle class benefited only slightly more from growth than the poorer groups, as the incomes of those between percentiles 40 and 90 increased 40–50 percent. For the more advantaged sections of society, however, total growth rates are markedly higher. The incomes of the top 0.1 percent of earners more than doubled during the period, and the incomes of the top 0.001 percent nearly tripled.

While income inequality has increased significantly in Europe, poverty has more or less stagnated. Some 20 percent of Europeans lived on less than 60 percent of the European median income in 1980, compared with 22 percent in 2017. In recent years moderate convergence across countries, due to higher growth in Eastern Europe, has slightly reduced the percentage of people at risk of becoming poor in Europe as a whole, but the trend has been fully offset by rising percentages in other European countries, particularly in Southern Europe. Convergence would be insufficient to address the percentage of people at risk of poverty in Europe: If all countries fully converged to the same average national income, the European-wide percentage would remain as high as 17 percent.

FIGURE 3.11

Between 1980 and 2017 the post-tax incomes of the poorest 80 percent of the European population grew close to 40 percent, while those of the top 0.001 percent grew more than 180 percent
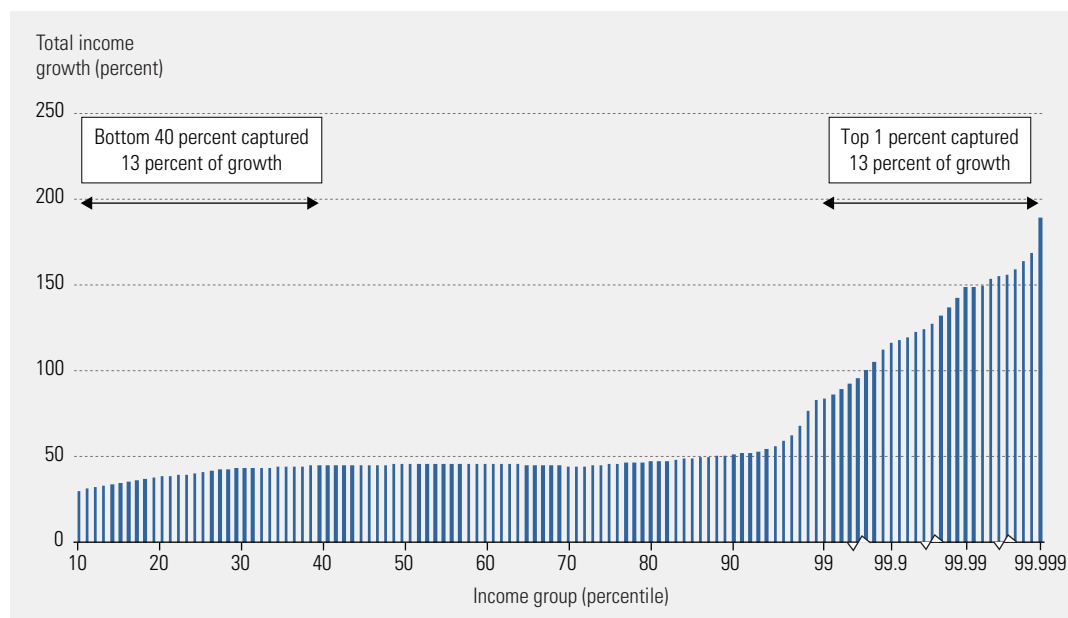
Note: After the 90th percentile the scale on the horizontal axis changes. The composition of income groups changes from 1980 to 2017, so the estimates do not represent the changes in income of the same individuals over time.
Source: Blanchet, Chancel and Gethin (2019), based on data from the World Inequality Database (http://WID.world).

The US–Europe comparison points to predistribution and redistribution policies to address inequalities

Since 1980 the United States and Europe have experienced diverging inequality trajectories. In 2017 the share of national income received by the top 1 percent in the United States was more than twice as large as that received by the poorest 40 percent. In Europe, by contrast, the share received by the bottom 40 percent exceeded that received by the top 1 percent (figure 3.12). This was not always the case: In 1980 the share of the bottom 40 percent in the two regions was similar, about 13 percent (figure 3.13).

The divergence in trajectories cannot be accounted for by either trade or technology, which are often invoked to explain the evolution in inequality in developed countries, given that all countries under analysis have been similarly exposed to both. Instead, the difference in inequality dynamics appears to be more the outcome of policy choices and institutional arrangements.

The findings reported here allow for a better understanding of the determinants of the

differences between Europe and the United States. These differences are due mainly to a rise in pretax inequality (income measured before direct taxes and transfers, see box 3.3), which has been much more marked in the United States. In 1980 the average income of the top 10 percent was 10 times higher than that of the bottom 40 percent in the United States. In 2017 this multiple jumped above 26. In Europe the same indicator rose from 10 to 12 over the same period.
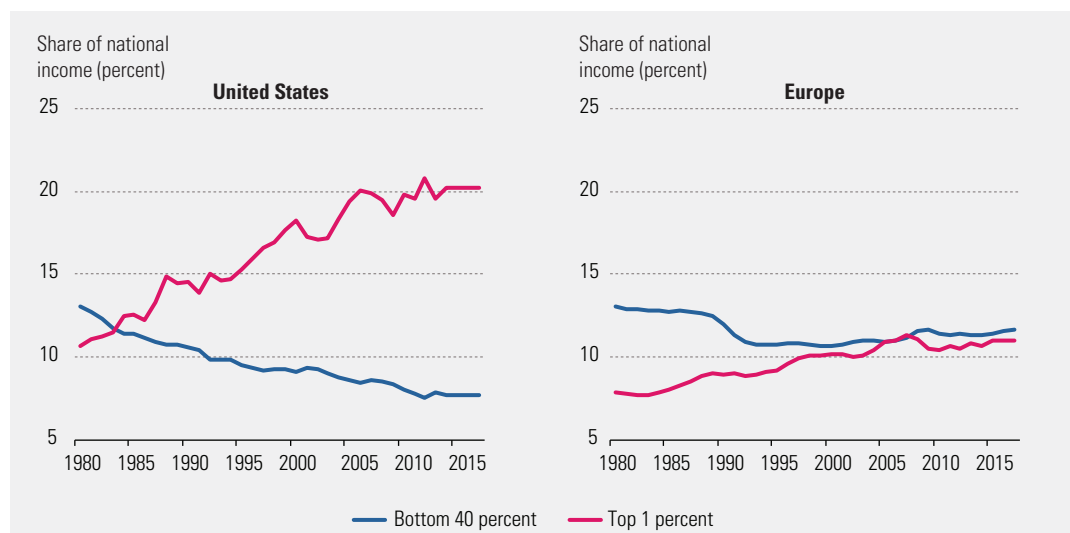
For post-tax inequality the ratio rose from 7 to 14 in the United States between 1980 and 2017 and from 8 to 9 in Europe (figure 3.14). So, the national systems of taxation (which include taxes on income and wealth) and the systems of social transfers (such as disability benefits or housing support) have therefore not enabled the rise in inequalities to be contained either in the United States or in Europe.

The combined operation of all the mechanisms acting on pretax incomes enabled Europe to contain the rise of the ratio of the top 10 percent to the bottom 40 percent. Social spending—including mainly public spending on education, health and retirement pensions—plays an important role. In particular, quality and affordable

> The combined operation of all the mechanisms acting on pretax incomes enabled Europe to contain the rise of the ratio of the top 10 percent to the bottom 40 percent
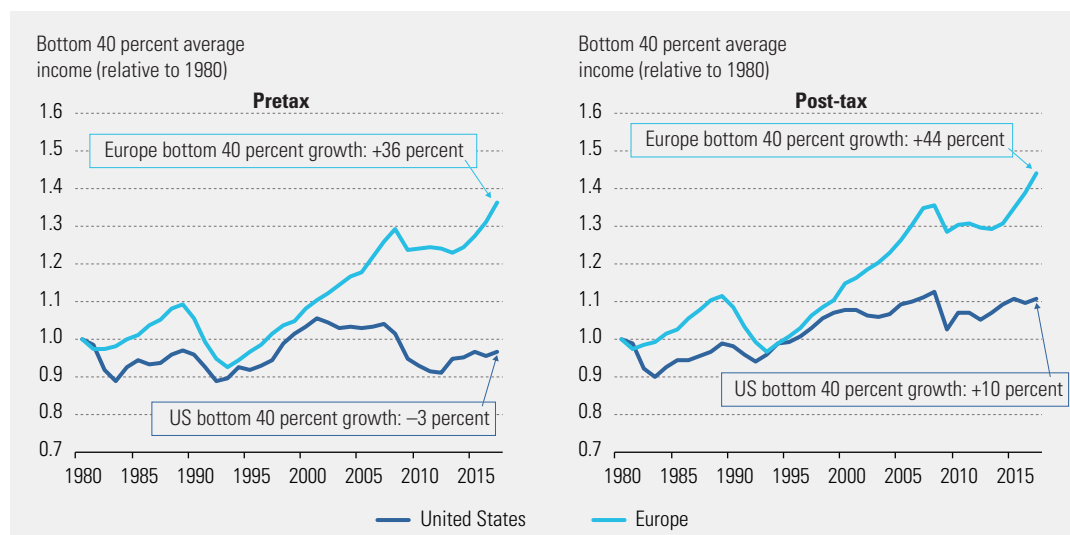
FIGURE 3.12

Between 1980 and 2017 the pretax income share of the bottom 40 percent in the United States fell from about 13 percent to 8 percent, while the share of the top 1 percent rose from about 11 percent to 20 percent

Share of national
income (percent)

United States

Share of national
income (percent)

Europe

── Bottom 40 percent ── Top 1 percent

Source: Blanchet, Chancel and Gethin (2019), based on data from the World Inequality Database (http://WID.world).

FIGURE 3.13

Between 1980 and 2017 the average pretax income of the bottom 40 percent grew 36 percent in Europe, while it declined 3 percent in the United States

Bottom 40 percent average
income (relative to 1980)

Pretax

Europe bottom 40 percent growth: +36 percent

US bottom 40 percent growth: –3 percent

Bottom 40 percent average
income (relative to 1980)

Post-tax

Europe bottom 40 percent growth: +44 percent

US bottom 40 percent growth: +10 percent

── United States ── Europe

Source: Blanchet, Chancel and Gethin (2019), based on data from the World Inequality Database (http://WID.world).

education and health systems are key to ensure that individuals from low-income backgrounds can access economic opportunities.
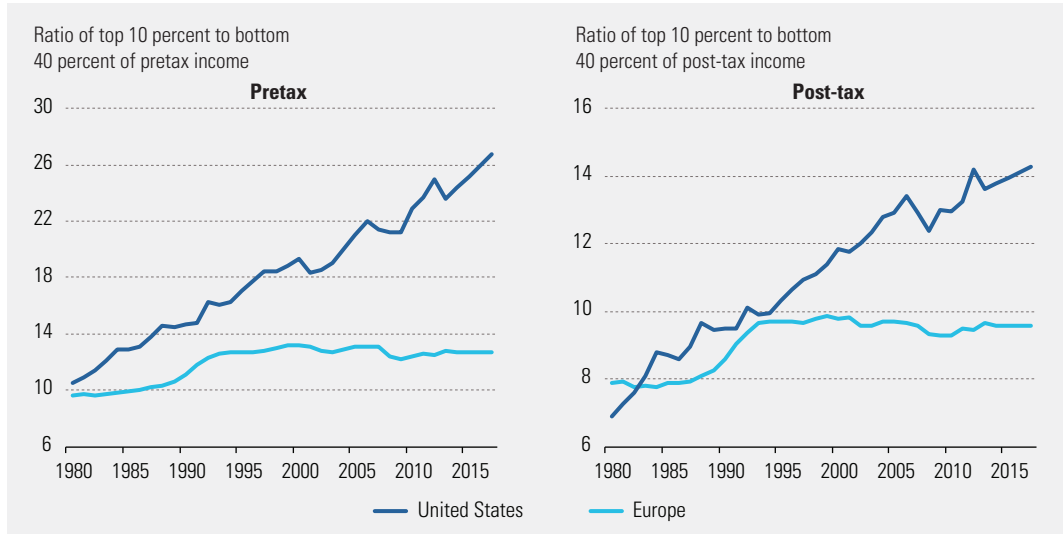
Social spending remains markedly higher in Europe than in the United States and the rest of the world. It amounts to 25–28 percent of GDP in most countries of continental Europe, compared with 19 percent in the United

States.[61] Furthermore, access to health and education is usually more egalitarian in Europe than in the United States, particularly through free or low-cost health care and vocational training in Europe, which contributes to a less unequal distribution of pretax incomes.

Other important dynamics help account for higher income growth at the bottom of the

FIGURE 3.14

The average pretax income of the top 10 percent in the United States was about 11 times higher than that of the bottom 40 percent in 1980 and 27 times higher in 2017, while in Europe the ratio rose from 10 to 12


Ratio of top 10 percent to bottom 40 percent of pretax income

Pretax

Ratio of top 10 percent to bottom 40 percent of post-tax income

Post-tax

— United States — Europe

Source: Blanchet, Chancel and Gethin (2019), based on data from the World Inequality Database (http://WID.world).

distribution in Europe. For example, between 1980 and 2017 the minimum wage fell from 42 percent of average earnings to 24 percent in the United States. In many European countries movement has been in the opposite direction, with the minimum wage maintained at a high level (as in France, where it is about 50 percent of the average wage) or introduced (as in the United Kingdom in the 1990s and more recently in Germany).[62]

Still, there has been a reduction in tax progressiveness in Europe in recent decades, with the top corporate tax rate having fallen from almost 50 percent at the beginning of the 1980s to 25 percent today—this is part of a global trend common to developed and developing countries (see chapter 7). The top marginal income tax rate has also fallen in most European countries. And the value added tax, which disproportionately hits those with low incomes, has risen on average by more than 3 percentage points since the beginning of the 1980s. While Europe as a whole has been able to have more moderate increases in inequality than the United States, these developments may eventually limit the capacity of governments to get the winners in European growth to contribute to financing public services, which have been so key to sustain incomes at the middle and bottom of the distribution (figure 3.15).

FIGURE 3.15

Between 1981 and 2017 the average top corporate tax rate in the European Union fell from about 50 percent to 25 percent, while the average value added tax rate rose from about 18 percent to more than 21 percent

Average top corporate tax rate (percent)

Average standard consumption tax rate (percent)

Top corporate tax rate

Standard value added tax rate
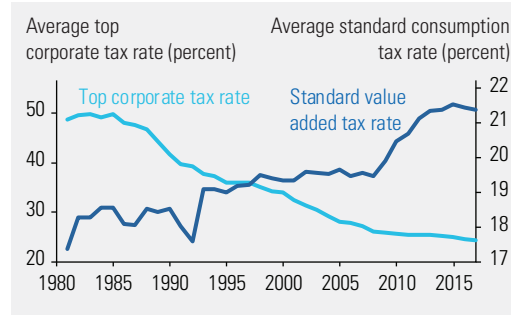
Source: Eurostat (standard VAT rate) and Organisation for Economic Co-operation and Development (top corporate tax rate).

Global wealth inequality: Capital is back

To properly track the dynamics of economic inequality, focusing on income alone is not enough.[63] It is also necessary to track the dynamics of wealth concentration. Although wealth data remain particularly scarce (even more than income data), recent research has unveiled findings on the evolution and composition of

Still, there has been a reduction in tax progressiveness in Europe in recent decades, with the top corporate tax rate having fallen from almost 50 percent at the beginning of the 1980s to 25 percent today

countries' national wealth. Analysing the composition of an economy's national wealth, assets that are both privately and publicly owned, is a prelude to understanding the dynamics of wealth inequality among individuals.

The renewed effort in studying wealth inequality is crucial because it is linked to the increase in income inequality at the top of the distribution observed since 1980, since capital income tends to be concentrated among wealthier people. The prominence of wealth in driving the income distribution is linked to its relative importance in many economies, with national wealth as an aggregate having grown significantly more than income in many countries.[64]

Because most countries do not tax wealth directly, producing reliable estimates of wealth inequality requires combining different data sources, such as billionaire rankings and income tax and inheritance tax data.[65] The globalization of wealth management since the 1980s raises new challenges, with a growing amount of world wealth held in offshore financial centres. Indeed, offshore assets are disproportionately owned by the wealthiest, so accounting for these offshore assets has large implications for measuring wealth at the very top of the distribution.[66] More generally, measuring the inequality of income and wealth from a global perspective, and not simply at the country level, is becoming critical.

Understanding the evolution of the level and structure of national capital (or national wealth)[67] and its relationship to national income is key to addressing several economic and public policy issues. Wealth is a "stock" concept: It is the sum of all assets accumulated in the past (particularly housing, business and financial assets) net of debt. Private wealth is always more concentrated than income, while public wealth, owned by a government, greatly affects the government's capacity to implement redistributive policies. This is why looking at the evolution of national wealth-to-income ratios and at the partition of wealth between the private and the public sectors can help in understanding the evolution of economic inequality. Keep in mind, though, that the definitions of public and private property vary across countries.[68]

Reliable macroeconomic data on wealth are scarce across the globe. Only in 2010 did Germany start to publish official national balance sheets with information on the total stock of wealth and its evolution. In many emerging and developing countries there is no macroeconomic wealth information. Lack of wealth data is an issue in itself, since precise information on wealth dynamics can prove critical to preventing financial crises or to fine-tuning tax policies. Lack of data also makes it impossible to properly track the dynamics of wealth at the micro level—among individuals. So, macroeconomic discussion of wealth is limited to developed economies and a few emerging economies with wealth data.

Ratios of private wealth to national income have risen sharply in all countries since 1970, with substantial regional variations

Country trajectories in Western Europe have been roughly similar: Net private wealth rose from 250–400 percent of national income in 1970 to 450–750 percent in 2016 (figure 3.16). The highest increases were in Italy and the United Kingdom, where the ratios more than doubled. The private wealth–income ratio also increased greatly in Canada (from 250 percent to more than 550 percent) and a bit less (but still substantially) in Australia. It rose by half in the United States (from less than 350 percent to around 500 percent) and almost doubled in Japan (from 300 percent to almost 600 percent).

China and the Russian Federation had the largest increases. In China private wealth rose from 110 percent of national income in 1978 (when the opening-up policy started) to 490 percent of national income in 2015. In the Russian Federation the ratio tripled between 1990 and 2015 (from 120 percent to 370 percent).

Note that the 2008 financial crisis did not significantly disturb this trend: Though wealth–income ratios dipped following the crash, they recovered, at various speeds and to various extents.

But public wealth to national income ratios underwent a strong and steady decline almost everywhere. Public wealth became negative in the United Kingdom and the United States and now amounts to only 10–20 percent of national income in France, Germany and Japan. By contrast, in China the value of public wealth

FIGURE 3.16

Net private wealth in Western European countries rose from 250–400 percent of national income in 1970 to 450–750 percent in 2016
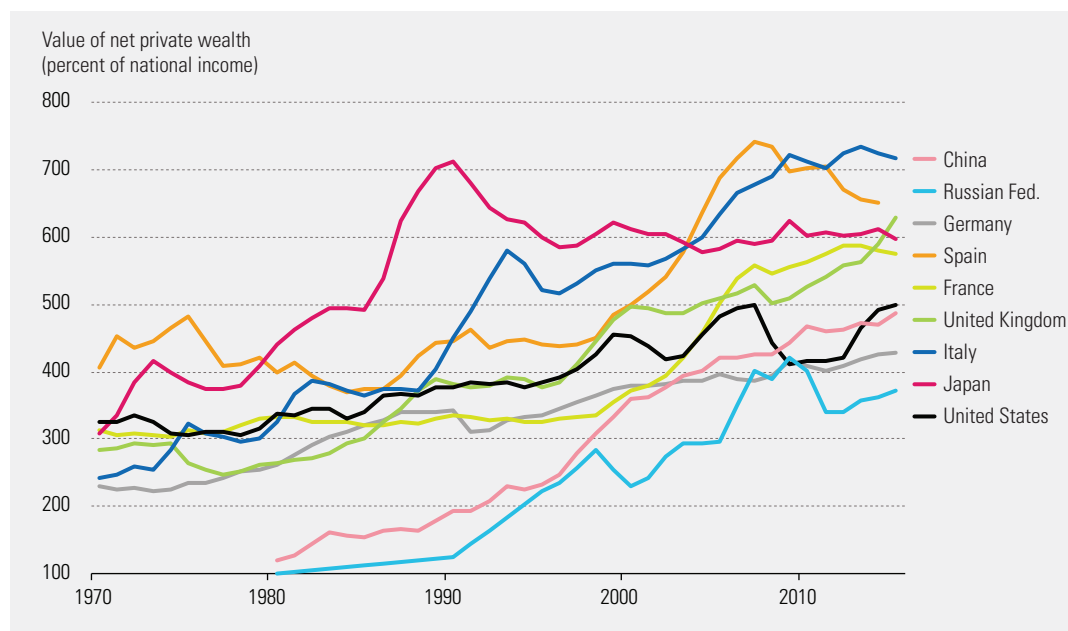
Source: Alvaredo and others (2018), based on data from the World Inequality Database (http://WID.world).

Public wealth to national income ratios underwent a strong and steady decline almost everywhere

remained fairly constant relative to national income (250 percent in 1978 and 230 percent in 2015), and in the Russian Federation it fell dramatically from more than 230 percent of national income in 1990 to around 90 percent in 2015.

These two trends have radically modified the structure of national wealth in most countries. In the late 1970s the value of public wealth was about 50–100 percent of national income in developed countries; it is now negative in the United Kingdom and the United States and only marginally positive in France, Germany and Japan. This domination of private wealth in national wealth is a marked change from the 1970s (figure 3.17).

Zero or negative public wealth is exceptional by historical standards. Governments tend to adopt various strategies to recover positive public wealth levels, such as inflation, debt cancellation or progressive wealth taxes—as after World War II in Europe (France and Germany). To understand what a zero or negative net public wealth situation implies, consider the following: A government with negative public wealth willing to repay its debts would have to sell all its financial assets (such as stocks) and nonfinancial assets (such as roads) but would still be indebted. Taxpayers would thus have to continue to pay taxes to reimburse owners of the debt, and citizens would also have to pay a rent to the new owners of the stock of capital that was formerly public (roads, energy or water systems, or health or education infrastructure). Such a situation arguably leaves government with little room to invest in the future (in, say, education or environmental protection) and thus tackle current and future income and wealth inequality.

A combination of factors accounts for these trends. The reduction in the share of public wealth accounts for a part of the rise of private wealth. The decline in net public wealth is also due largely to the rise of public debt. The ratio of public assets to national income has remained fairly stable because a significant chunk of public assets was privatized (particularly shares in public or semipublic companies) and the market value of the remaining assets increased. But the long-run decline in the share of public wealth in total wealth, in no way inevitable, is the result of public policy choices (privatizing public assets, expanding public debt or running fiscal deficits).

FIGURE 3.17

Countries are getting richer, but governments are becoming poor
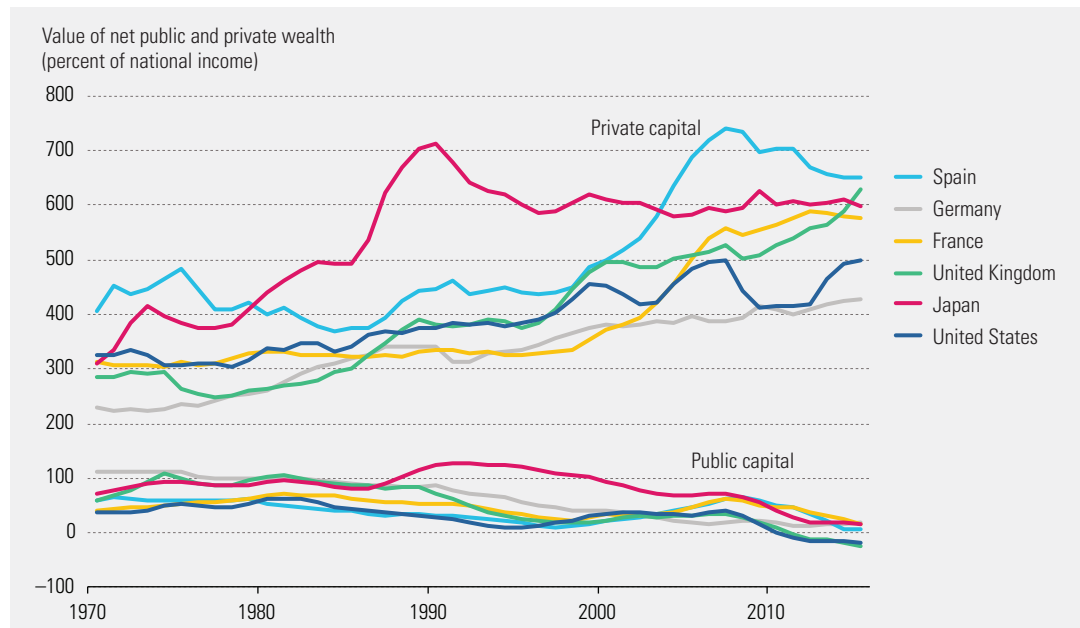
Value of net public and private wealth
(percent of national income)

Source: Alvaredo and others (2018), based on data from the World Inequality Database (http://WID.world).

High wealth–income ratios imply that wealth inequality is going to play a growing role in the overall structure of economic inequality

Overall, the evolution of national wealth (public and private) to national income ratios is determined by the interplay between national savings, economic growth (quantity factor) and relative asset prices (price factor). The higher the savings rate, the larger the accumulation of assets. And the higher the economic growth rate, the lower the accumulation of assets relative to national income. Relative asset prices depend on institutional and policy factors (rent control, for instance) and on the patterns of saving and investment strategies. In developed countries quantity effects contributed to about 60 percent of wealth accumulation between 1970 and 2010 and price effects to about 40 percent, with cross-country variations.

The differences in privatization strategies and in price and volume factors also explain the widely divergent patterns of national wealth accumulation in the Russian Federation and China. Indeed, Russia's national wealth increased weakly, from 400 percent of national income in 1990 to 450 percent in 2015, while China's doubled from 350 percent of national income in 1978 to 700 percent in 2015.

The Russian Federation opted to transfer wealth from the public to the private sector as quickly as possible. So the increase in private wealth was the exclusive driver for the rapid rise of national wealth, at the expense of public wealth. By contrast, China's privatization of public assets was much more gradual, enabling public wealth to remain constant while private wealth was increasing. In addition, savings rates were markedly higher in China. And Chinese savings financed mostly domestic capital investment (leading to more domestic capital accumulation), whereas about half of Russian savings financed foreign investments. Relative asset prices also increased more in China.

In the long run the low ratios of the mid-20th century may have been due to very special circumstances, perhaps unlikely to recur.[69] So savings and growth rates, the main long-run determinants of these ratios, will matter greatly in the near future. And given their current levels, national wealth to national income ratios may be returning to those in the 19th century's Gilded Age. High wealth–income ratios imply that wealth inequality is going to play a growing role in the overall structure of economic inequality. Because wealth tends to be very concentrated, this raises new issues about capital taxation and regulation. These issues emerge in a context where the ability of governments to regulate and redistribute income may be limited by the decline of public wealth.

Global wealth inequality between individuals

The dynamics of wealth inequality between individuals are linked to the evolution of income inequality and the evolution of public and private capital inequality. In the long run wealth inequality between individuals also depends on the inequality of savings rates across income and wealth groups, the inequality of labour incomes and rates of returns to wealth—and on the progressiveness of income and wealth taxes.

How have these factors affected the process of wealth concentration in the past, and what can they tell about potential future dynamics? Recent research has shown that relatively small changes in savings behaviours, returns to wealth or tax progressiveness can have rather large impacts on wealth inequality.[70] This instability reinforces the need for better data quality to properly study and understand the dynamics of income and wealth.

Given the low availability of data on wealth inequality among individuals, estimates of the global distribution of wealth come from only a handful of countries: France, Spain, the United Kingdom and the United States and to less extent China. Less certain estimates are also available for the Russian Federation and countries in the Middle East.

Wealth is substantially more concentrated than income: In 2017 the global top 10 percent (the richest 10 percent in the United States, Europe and China) owned more than 70 percent of the total wealth, and the top 1 percent owned 33 percent, while the bottom 50 percent owned less than 2 percent.[71] These estimates are a lower bound, since inequality would probably be higher if Africa, Latin America and the rest of Asia were included.

Wealth inequality has been increasing since 1980, unaffected by the 2008 crisis. The evolution of the global distribution of wealth depends on the disparity of average wealth between countries and within countries. Since 1980 the rise of average private wealth has been faster in large emerging economies, such as China,[72] than in developed countries, because of faster economic growth and massive wealth transfers from the public to the private sector. This has greatly increased the wealth of the bottom 75 percent of the global distribution.

This rise was more than offset at the top by the rise in within-country wealth inequality everywhere, so wealth increased much faster at the top of the global distribution: While the average wealth growth was 2.8 percent a year per adult over 1987–2017, it was 3.5 percent for the top 1 percent, 4.5 percent for the top 0.1 percent and 5.7 percent for the top 0.01 percent.

The factors affecting wealth inequality (income inequality, inequality of savings rates and asset rates of return) are affected by public policies. For example, progressive taxation influences income and savings inequality, while financial regulation and innovation can have an impact on asset rates of return. Privatization can also play a role when it benefits mostly a specific part of the distribution, as in many countries since the 1980s and particularly in emerging countries. So there is nothing inevitable about the rise of wealth inequality within countries.

In the Russian Federation and China the concentration of wealth increased since the 1990s. The share of the top 1 percent doubled (from 22 percent in 1995 to 43 percent in 2015 in the Russian Federation and from 15 percent to 30 percent in China, although with some volatility; figure 3.18). The divergences between the two countries come from the differences between their privatization strategies: The fast pace of privatizing public assets in the Russian Federation favoured the wealthiest even more than in China. In the Russia Federation housing had a small dampening effect on the rise of inequality. In China housing wealth was privatized through a very unequal process, whereas the approach was more gradual and equitable in the Russia Federation.

The United States has had a less abrupt but no less significant rise of wealth inequality since the mid-1980s, after a considerable decline in the 1930s and 1940s, then due particularly to the policies of the New Deal (see figure 3.18). The share of wealth owned by the top 1 percent grew from a historic low of 22 percent in 1978 to almost 39 percent in the 2010s. The key driver of this increase was the upsurge of very top incomes, enabled by financial deregulation and lower top tax rates. Inequality of savings rates and of asset return rates amplified the phenomenon in a snowballing trend. Meanwhile,

Wealth is substantially more concentrated than income: In 2017 the global top 10 percent (the richest 10 percent in the United States, Europe and China) owned more than 70 percent of the total wealth, and the top 1 percent owned 33 percent, while the bottom 50 percent owned less than 2 percent

FIGURE 3.18

Trends in wealth inequality
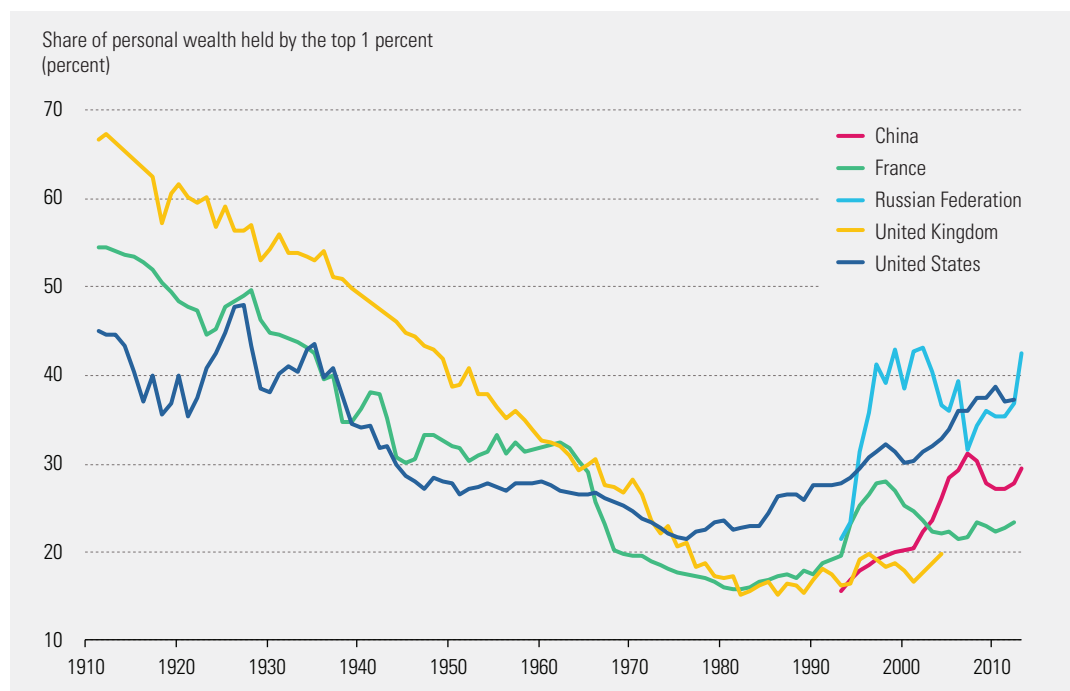
Share of personal wealth held by the top 1 percent
(percent)

Source: Alvaredo and others (2018), based on data from the World Inequality Database (http://WID.world).

Wealth inequality
has been increasing
since 1980, unaffected
by the 2008 crisis

the income of the middle and the bottom of the distribution stagnated, and household debt (mortgages, student loans and credit card debt, among others) sharply increased. This led to a substantial fall of the wealth share of the middle 40 percent—from a historic high of 37 percent in 1986 to 28 percent in 2014.

In France and the United Kingdom wealth inequality also increased after a historical decline, but at a much slower pace than in the United States. The top 1 percent share rose from 16 percent in both countries in 1985 to 20 percent in the United Kingdom in 2012 and 23 percent in France in 2015. This was due to greater earnings disparities, amplified by a fall in tax progressiveness, the privatization of formerly state-run industries and, most important, the growing inequality of asset return rates, as the returns on financial assets, disproportionately owned by the wealthy, increased.

Small changes in savings rate differentials across wealth groups, or in progressive taxation patterns, can have a very large impact on wealth inequality, though it may take several decades for the impacts to play out. This raises many issues for the future of wealth inequality: If the

current trends in savings, income and return rate inequality persist, within-country wealth inequality could be returning to 19th century Gilded Age levels in the coming decades. On a global scale, if current trends continue, by 2050 the global top 0.1 percent could end up owning as much of the world's wealth as the middle 40 percent of the world's population (figure 3.19).
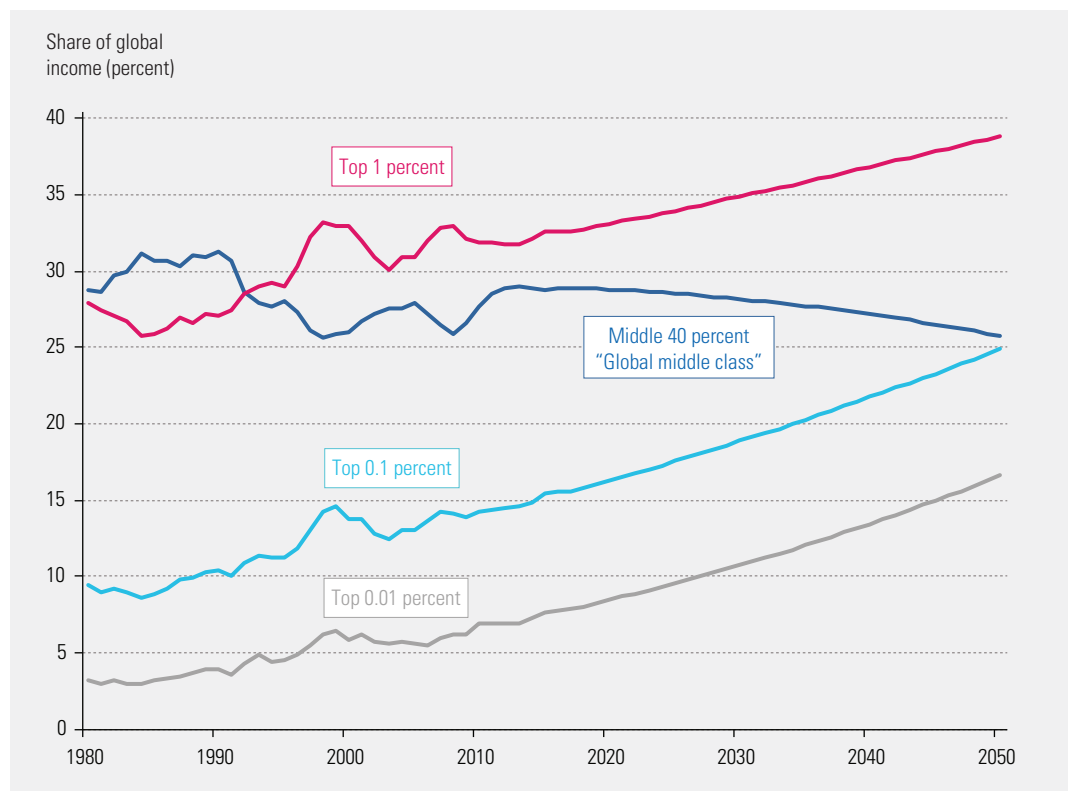
Afterword: Data transparency as a global imperative

This chapter has discussed recent advances in methodology and data collection to fill a public debate data gap. Such information is necessary for peaceful and deliberative debates over income inequality and growth. Worryingly, in the few years of the digital age the quality of publicly available economic data on these issues has been deteriorating in many countries, particularly for fiscal data on capital income, wealth and inheritance.

To provide historically and internationally comparable estimates of income and wealth

FIGURE 3.19

If current trends continue, by 2050 the global top 0.1 percent could end up owning as much of the world's wealth as the middle 40 percent of the world's population

Share of global
income (percent)

Source: Alvarado and others (2018), based on data from the World Inequality Database (http://WID.world).

Today's knowledge of global income and wealth inequality remains limited and unsatisfactory. Much more data collection lies ahead to expand the geographical coverage of inequality data—and to provide more systematic representations of pretax and post-tax income and wealth inequality

inequality, new efforts require the use of the best available data sources from household surveys, administrative tax data, national accounts or financial leaks.

To be sure, today's knowledge of global income and wealth inequality remains limited and unsatisfactory. Much more data collection lies ahead to expand the geographical coverage of inequality data—and to provide more systematic representations of pretax and post-tax income and wealth inequality. Despite these data limitations, the rise of income and wealth inequality observed across the world over the past decades is not destiny. It arises from economic and institutional policy choices. As part III shows, different pathways can be followed in the coming decades—if there is political will. For the policies of tomorrow to reflect a sound debate on national and global economic inequalities clearly requires the continuing publication of transparent and timely data on inequalities in income and wealth.

Spotlight 3.1

Looking within countries and within households

Understanding inequality beyond averages implies looking at what is happening subnationally: within a nation, within a group or even within households. It is particularly important to have a better grasp of who and where those furthest behind and at the very bottom of the income distribution are. One way of looking within countries is to identify the hotspots, the subnational districts, states or provinces set not to have a GDP per capita of $4,000 or more in 2005 purchasing power parity terms in 2030.[1] There are 840 such poverty hotspots globally, among more than 3,600 districts, states and provinces. Moreover, 102 countries have at least one region that qualifies. In other words, people are being left behind in a large, diverse group of countries.

But there is considerable variation within countries. Over half of low-income countries have at least one region that is not a poverty hotspot; 36 of 46 lower-middle-income countries have at least one region that is. Even among upper middle-income countries some 30 percent of regions are hotspots.[2]

Another way of identifying diversity within countries is to consider the Human Development Index (HDI) at a subnational level.[3] By this measure, there are "clusters" of hotspots that

cross national borders (see figure S3.1.1 for an example with a group of countries in the Gulf of Guinea). Clusters of low subnational HDI values exist in Latin America, including parts of Central America. In Central–South Asia subnational areas stretch from Tajikistan and Kyrgyzstan to most of Afghanistan, and in Southeast Asia, sections of Cambodia and Viet Nam. Not all in a hotspot are necessarily poor, of course. Within any area the next step implies identifying households most in need of social assistance. Most countries apply some sort of test to decide who is eligible for assistance, tests that generally are flawed. A critical challenge for the tests is their high exclusion errors (not including individuals or households who are eligible but do not receive a benefit) and their high inclusion errors (of individuals or households who are not eligible but do receive a benefit). The inclusion and exclusion errors for a set of African economies are striking (table S3.1.1). For instance, Ghana has an estimated inclusion error of 35 percent (35 percent of the identified poor households are nonpoor) and an exclusion error of 63 percent (63 percent of the poor are not identified as poor using the proxy means test).

Finally, it is important to go even deeper to look within households. As noted, many countries try to identify poor and vulnerable households. There are good reasons for using households as a general proxy. One reason is that data on income and consumption are often better collected—and understood—at the household level. A second is that the average well-being of a household is correlated with individual well-being among those within it. And so while household identification inevitably comes with inclusion and exclusion errors, it has been the standard for decades.

The outliers to this pattern are significant and often comprise people with disabilities, orphans and widows, migrants and mobile populations, and the homeless. The numbers of such cases are considerable. In 30 Sub-Saharan countries roughly three-quarters of underweight women and undernourished children are not in the poorest 20 percent of households, and around half are not in the poorest 40 percent

Contiguous human development patterns, cutting across national borders: The Gulf of Guinea

■	(0.65,0.69]
■	(0.64,0.65]
■	(0.60,0.64]
■	(0.60,0.60]
■	(0.59,0.60]
■	(0.53,0.59]
■	(0.49,0.53]
■	(0.44,0.49]
■	(0.41,0.44]
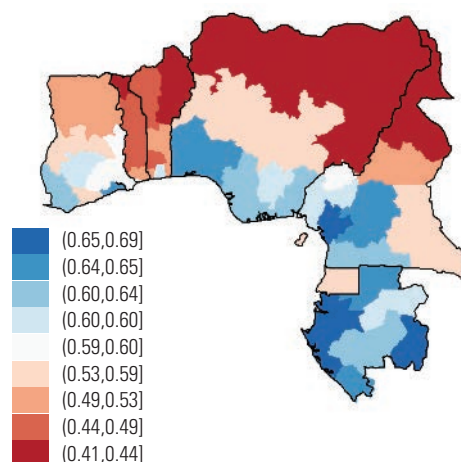
Source: Permanyer and Smits 2019.

Targeting errors of inclusion and exclusion: Proxy means tests

| Country	Inclusion error rate	Exclusion error rate	Inclusion error rate	Exclusion error rate	Targeting error	Targeting error
	Fixed poverty line				**Fixed poverty rate**	
	$z = F^{-1}(0.2)$		$z = F^{-1}(0.4)$		**H = 0.2**	**H = 0.4**
Burkina Faso	0.401	0.751	0.304	0.375	0.522	0.329
Ethiopia	0.515	0.945	0.396	0.362	0.621	0.413
Ghana	0.354	0.628	0.257	0.350	0.428	0.288
Malawi	0.431	0.880	0.333	0.451	0.353	0.373
Mali	1.000	1.000	0.348	0.485	0.553	0.375
Niger	0.539	0.875	0.384	0.340	0.584	0.362
Nigeria	0.332	0.348	0.247	0.243	0.392	0.244
Tanzania, United Republic of	0.396	0.822	0.323	0.291	0.513	0.314
Uganda	0.357	0.663	0.350	0.294	0.455	0.335
Mean	0.481	0.807	0.309	0.359	0.505	0.319

Note: $F^{-1}(x)$ indicates the poverty line consistent with fixing the poverty rate at x. $H = x$ means headcount poverty rate of x.
Source: Brown, Ravallion and van de Walle 2018.

Adult female malnutrition and child stunting can be high in nonpoor households
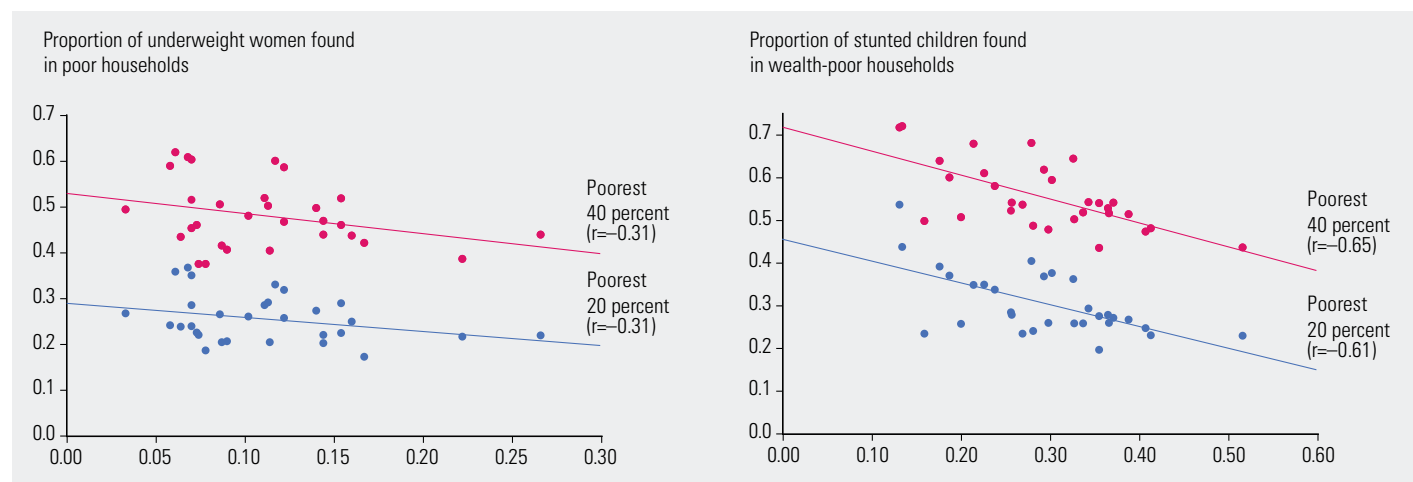
Source: Brown, Ravallion and van de Walle 2017.

(figure S3.1.2). Countries with higher rates of undernutrition tend to have a higher share of undernourished individuals in nonpoor households.[4]

Notes

1   This threshold of $4,000 represents twice the ceiling for a low-income country, as defined by the World Bank in 2015. It corresponds roughly to a daily income where the probability of falling below the national poverty line is less than 10 percent (Lopez-Calva and Ortiz-Juarez 2014).

2   Cohen, Desai and Kharas 2019.

3   Permanyer and Smits (2019).

4   New individual consumption data reveal that within-household inequality accounts for nearly 16 percent of total inequality in Senegal. One of the consequences of such unequal repartition of resources within households is the potential existence of "invisible poor" in households classified as nonpoor. As many as 12.6 percent of poor individuals live in nonpoor households. The evidence from Senegal suggest that the more complex the household structure and the bigger the household size, the more inequality is likely to be underestimated when computed using standard consumption surveys (Lambert and de Vreyer 2017).

Spotlight 3.2

Choosing an inequality index

James Foster, Professor of Economics and International Affairs at the George Washington University, and Nora Lustig, Samuel Z. Stone Professor of Latin American Economics and Director of the Commitment to Equity Institute at Tulane University

A useful way to describe the distribution of income is the Lorenz curve, constructed as follows.[1] First, the population is ranked according to income (or consumption, wealth or another measure of resources) from the lowest to the highest. Then the cumulative shares of individuals in the population are plotted against their respective cumulative share in total income. The curve drawn is called the Lorenz curve. The horizontal axis of the Lorenz curve shows the cumulative percentages of the population arranged in increasing order of income. The vertical axis shows the percentage of total income received by a fraction of the population. For example, the (80 percent, 60 percent) point on the Lorenz curve means that the poorest 80 percent of the population receives 60 percent of total income while the richest 20 percent receives 40 percent of total income.[2]

Figure S3.2.1 shows two Lorenz curves: L_1 and L_2. If everybody has the same income, the Lorenz curve will coincide with the 45-degree line. The greater the level of inequality, the farther the Lorenz curve will be from the 45-degree line. In the figure, L_2 lies below and to the right of L_1, so an inequality index would be expected to indicate greater inequality in the L_2 case. Another way to see this is that the poorest x percent of the population will always have an equal or greater share of income under L_1 than under L_2, regardless of what x is. This is called the Lorenz dominance criterion or Lorenz criterion for short.

What constitutes a "good" inequality index? One approach is to require the measure to be consistent with the Lorenz criterion: that is, to be Lorenz consistent. For a measure to be Lorenz consistent the following two conditions must hold: First, inequality rises (declines) when the Lorenz curve lies everywhere below (above) the original Lorenz curve as with L_2 compared with L_1 (L_1 compared to L_2) in the figure. Second, inequality is the same when Lorenz curves are identical. For a measure to be Weakly Lorenz Consistent, condition 1 becomes the following: 1'. inequality rises (declines) or stays the same when the Lorenz curve lies everywhere below (above) the original Lorenz curve.

A second approach is to require the inequality index to fulfil the following four principles:

1 Symmetry (or anonymity). If two people switch incomes, the index level should not change.
2 Population invariance (or replication invariance). If the population is replicated or "cloned" one or more times, the index level should not change.
3 Scale invariance (or mean independence). If all incomes are scaled up or down by a common factor (for example, doubled), the index level should not change.
4 Transfer (or the Pigou-Dalton Transfer Principle). If income is transferred from one person to another who is richer, the index level should increase. In other words, in the face of a regressive transfer, the index level must rise.

Lorenz curve
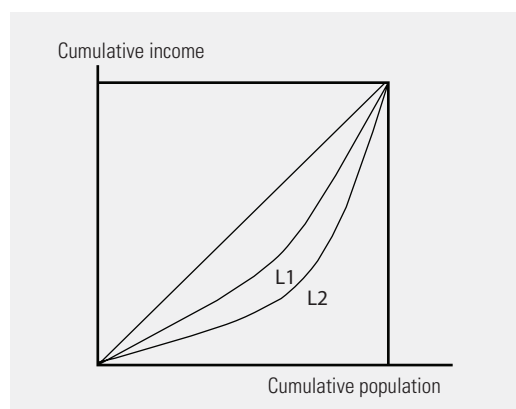
Source: Authors' creation.

It can be shown that indices satisfying these four principles are Lorenz Consistent and vice versa.

These indices include:

- **Summary indices** based on relatively complex formulas designed to capture inequality along the entire distribution. The most commonly used are (in alphabetical order): the Atkinson, Gini and Theil measures (and the generalized entropy measures, more generally).

While inequality measures that satisfy the transfer principle are in common use, there are also simpler indices that do not satisfy 1–4 but are popular. These include:

- **Partial indices** based on simple formulas that focus on inequality across certain parts of the distribution. These include the Kuznets ratios expressed as the income share of top x percent over the income share of bottom y percent. There are, of course, many possible Kuznets ratios. The one proposed by the Nobel Laureate Simon Kuznets was 20/40.[3] Partial indices also include the top income shares, expressed as the income share of the top x percent. Common examples include the income share of the top 1 percent or of the top 10 percent.[4] The top income shares are, in fact, limiting cases of Kuznets ratios obtained by setting the "bottom" income share to cover the entire population: that is, by setting y percent = 100 percent.[5]

Such partial Indices satisfy the following principle:

4' Weak transfer principle: If income is transferred from one person to another who is richer (or equally rich), the index level should increase or remain unchanged.

In other words, in the face of a regressive transfer, the inequality index can never decline, but it may remain unchanged. It can be shown that indices satisfying 1–3 and 4' principles are weakly Lorenz consistent and vice versa.

In sum, the summary indices of Atkinson, Gini and Theil (and the whole family of Generalized Entropy Indices) satisfy principles 1–3 and 4 and thus are Lorenz consistent (and vice versa). This guarantees that in the face of a regressive (progressive) transfer anywhere along the distribution, inequality measured by any of these indices will rise (decline). In contrast, the Kuznets ratios and

top income shares focus on limited ranges of incomes and thus violate the transfer principle (and thus violate Lorenz consistency). The latter means that transfers entirely within or entirely outside the relevant ranges have no effect on measured inequality. For example, the 10/40 ratio is insensitive to regressive transfers that stay within the poorest 40 percent, within the richest 10 percent or within the remaining 50 percent in the middle, while the income share of the top 1 percent is insensitive to transfers within the top 1 percent and within the bottom 99 percent. Despite disagreeing with the transfer principle, and thus the Lorenz criterion, these partial indices are useful for conveying easily understood information about the extent of inequality. Importantly, they satisfy the weak transfer principle and thus guarantee that in the face of a regressive transfer anywhere along the distribution, inequality measured by any of these indices will never decline but, notably, it can stay the same.

In contrast, other common inequality indices do not even fulfil the weak transfer principle (transfer principle 4'). Examples include the quantile ratios (such as the income of percentile 90 to the income of the 10th percentile also known as the p90/p10 ratio) and the variance of logarithms. For example, a transfer from the 5th percentile to the 10th would reduce the p90/p10 ratio despite the fact that the transfer is clearly regressive because it redistributes income from the very poor to the less poor. Regressive transfers at the upper end of the distribution can lower the variance of logarithms and lead to extreme conflicts with the Lorenz criterion.[6]

Finally, the mean to median ratio (mean divided by the median) is a measure of skewness that can also be interpreted as a partial index of inequality. Virtually every inequality measure is a ratio of two "income standards" that summarize the size of the income distributions from two perspectives: one that emphasizes higher incomes and a second that emphasizes lower incomes.[7] So long as only distributions that are skewed to the right are considered, the mean exceeds the median, and the mean to median ratio takes on this form. This index satisfies the first three principles but can violate the weak transfer principle when the regressive transfer

raises the median income. Like the other partial indices, it is weaker in terms of the properties it satisfies but has the advantage of simplicity and is often used in political economy.[8]

How to apply the above in practice? When making pairwise comparisons, first graph the Lorenz curves. If the Lorenz curves do not cross, an unambiguous Lorenz comparison can be made. One can conclude from this that any reasonable (that is, Lorenz consistent) measure would agree that inequality has unambiguously increased or declined, according to what the Lorenz curves indicates. However, it is also possible that the Lorenz curves cross, in which case reasonable inequality measures can disagree. What can be done when Lorenz curves cross? One approach is to narrow the set of reasonable inequality measures using an additional criterion. For instance, transfer-sensitive measures are Lorenz consistent measures that emphasize distributional changes at the lower end over those at the upper end. The Atkinson class and the two Theil measures (including the mean log deviation) are transfer-sensitive measures. By contrast, the coefficient of variation (standard deviation divided by the mean) is neutral with respect to where transfers occur, while many other generalized entropy measures emphasize distributional changes at the upper end and thus are not in the set of transfer-sensitive measures.

When do all transfer-sensitive measures agree? As a subset of Lorenz-consistent measures, they agree when Lorenz curves do not cross as well as in many cases when they do cross. For example, suppose that Lorenz curves cross once and that the first Lorenz curve is higher at lower incomes than the second. There is a simple test: The first has less inequality than the second, according to all transfer-sensitive measures exactly when the coefficient of variation for the first is no higher than that for the second.[9] An even simpler approach is to select a (finite) set of particularly relevant inequality measures for making inequality comparisons. If all agree on a given comparison, the result is robust. If not, the conclusion is ambiguous for that set of measures, with inequality ranked one way for some measures and reversed for others.

Table S3.2.1 shows the statistics most frequently published in commonly used international databases.[9]

Statistics most frequently published in 10 commonly used international databases

Statistic	Frequency
Gini	9
Quantile ratio 90/10	4
Theil	3
Top 10 percent	3

Source: Authors' creation.

Thus, the most frequently reported inequality measures include two that are Lorenz consistent (the Gini and Theil measures), one that is weakly Lorenz consistent (the top 10 percent) and one that is neither (the 90/10 quantile ratio). In addition to inequality measures, international datasets report other statistics. Among those, the most frequent is the distribution of income by decile.[10]

Notes

1   Named after Max Otto Lorenz, a US economist who developed the idea of the Lorenz curve in 1905.
2   Often, especially with historical data, we only have grouped-data or information on equal-sized population groups such as quintiles or deciles (5 or 10 groups, respectively). The resulting Lorenz curve is an approximation of the actual Lorenz curve where inequality within each group has been suppressed.
3   Some international databases report the 20/20 (sometimes called S80/S20) and 10/40 ratios.
4   The top 1 percent has been the focus of the recent literature on top incomes. See, for example, Atkinson, Piketty and Saez (2011).
5   By definition, 100 percent of the population receives 100 percent of the income so the denominator of the Kuznets ratio becomes 100/100 = 1, and thus the 1/100 Kuznets ratio equals 1 percent.
6   Foster and Ok 1999.
7   Foster and others (2013, p. 15). For example, one Atkinson measure compares the higher arithmetic mean to the lower geometric means; the 1 percent income share effectively compares the higher 1 percent mean to the lower arithmetic mean.
8   The mean to median ratio is the inequality measure used by Meltzer and Richards (1981) in their model to predict the size of government. The greater the ratio, the higher the taxes and redistribution.
9   For details, see Shorrocks and Foster (1987). See also Zheng (2018), who presents additional criteria for making comparisons when Lorenz curves cross.
10   The complete set of measures reported in international databases and their properties can be found in supplemental material for this spotlight available at http://hdr.undp.org/en/2019-report.

Spotlight 3.3

Measuring fiscal redistribution: concepts and definitions

A number of databases publish indicators of the extent of income redistribution due to taxes and transfers. For example, they publish prefiscal and postfiscal Gini coefficients and other indicators of inequality and poverty. In alphabetical order, the multicountry and multiregional databases most frequently used are the Commitment to Equity Institute's (CEQ) Data Center on Fiscal Redistribution (Tulane University), the Organisation for Economic Co-operation and Development's (OECD) Income Distribution Database, the LIS Cross-National Data Center in Luxembourg and the World Inequality Database (Paris School of Economics). In addition, there are two regional databases: EUROMOD (Institute for Social and Economic Research, University of Essex), a tax-benefit microsimulation model for the European Union, and the OECD–Eurostat Expert Group on Disparities in a National Accounts Framework (EGDNA).[1]

One feature these databases have in common is that they rely on fiscal incidence analysis, the method used to allocate taxes and public spending to households so that incomes before taxes and transfers can be compared with incomes after them. Standard fiscal incidence analysis just looks at what is paid and what is received without assessing the behavioural responses that taxes and public spending may trigger for individuals or households. This is often referred to as the "accounting approach."[2]

The building block of fiscal incidence analysis is the construction of income concepts. That is, starting from a prefiscal income concept, each new income concept is constructed by subtracting taxes and adding the relevant components of public spending to the previous income concept. While this approach is broadly the same across all five databases mentioned, the definition of the specific income concepts, the income concepts included in the analysis and the methods to allocate taxes and public spending differ. This spotlight focuses on comparing the definition of income concepts—that is, on the types of incomes, taxes and public spending included in the construction of the prefiscal and postfiscal income concepts. There are important differences, and some can have significant implications for the scale of redistribution observed.

The following table compares the definitions of income used by the six databases mentioned above.

There are five important differences:

- While all six databases start out with similar definitions of factor income, the additional components included in prefiscal income differs. This is important because the prefiscal income is what each database uses to rank individuals prior to adding transfers and subtracting taxes and will thus affect the ensuing redistribution results (see point on the treatment of pensions below). For example, EUROMOD does not include the value of consumption of own production as part of prefiscal income, while the rest of the databases do. EUROMOD, the Income Distribution and LIS do not include the (imputed) value of owner-occupied housing, while the other three do. There is also a fundamental difference in the treatment of contributory pensions (see the next paragraph). Finally, the World Inequality Database also includes undistributed profits in its definition of prefiscal income.

- Second, EGDNA, EUROMOD, the Income Distribution Database and the LIS treat old-age pensions from social security as pure transfers, while the World Inequality Database treats them (together with unemployment benefits) as pure deferred income. The CEQ Data Center on Fiscal Redistribution presents results for both scenarios. This assumption can make a significant difference in countries with a high proportion of retirees whose main or sole income stems from old-age pensions. For example, in the European Union the redistributive effect with contributory pensions as pure transfers is 19.0 Gini points while it is 7.7 Gini points when old-age pensions are treated as pure deferred income.[3] In the United States the values are 11.2 for pure transfers and 7.2 for pure deferred income.[4]

- Third, EUROMOD, the Income Distribution Database and the LIS present information on fiscal redistribution for direct taxes and direct transfers while the CEQ Data Center on Fiscal Redistribution also includes the impact of indirect taxes and subsidies and transfers in kind, and the World Inequality Database includes all government revenues and spending. EGDNA does not include indirect taxes and subsidies but includes transfers in kind (education, health and housing).
- Fourth, in the published information on preconstructed variables, the CEQ Data Center on Fiscal Redistribution reports indicators based on income per capita, EGDNA, EUROMOD, the Income Distribution Database and LIS report them based on equivalized income[5] and the World Inequality Database reports them based on income per adult.[6]
- Fifth, all but EGDNA and the World Inequality Database report incomes as they appear in the microdata, while EGDNA and the World Inequality Database adjusts all variables to match administrative totals in tax records and national accounts.

Source: Lustig forthcoming.

Notes

1   Details on the methodologies applied by each database can be found in the following: CEQ Data Center on Fiscal Redistribution: Lustig 2018a, chapters 1, 6 and 8; EGDNA: Zwijnenburg, Bournot and Giovannelli 2017; EUROMOD: Sutherland and Figari 2013; OECD Income Distribution Database: OECD 2017b; LIS: forthcoming DART methodology document; World Inequality Database: Alvaredo and others 2016.
2   For an in-depth discussion of the fiscal incidence methodology, see, for example, Lustig (2018a).
3   The data for EU 28 are from EUROMOD statistics on distribution and decomposition of disposable income, accessed at www.iser.essex.ac.uk/euromod/statistics/ using EUROMOD version G3.0. The difference is probably an overestimation because in many cases one cannot distinguish between contributory and social pensions.
4   See chapter 10 in Lustig (2018a).
5   Equivalized income is equal to household income divided by square root of household members excluding domestic servants.
6   An adult is defined by the World Inequality Database as an individual older than 20 years of age.

Comparison of income concepts in databases with fiscal redistribution indicators

Income concept	CEQ	EGDNA	EUROMOD	IDD	LIS	WID.World
Prefiscal	Market income plus pensions	Market income	Primary income	Market income	Market income	Market income	Pretax income
	Factor income	Factor income	Factor income	Factor income	Factor income	Factor income	Factor income
							PLUS Undistributed profits
	PLUS Old-age pensions from social security schemes						PLUS Old-age pensions and unemployment benefits from social security schemes
	PLUS Transfers received from nonprofit institutions and other households, payments from employment-related pension schemes, imputed value of owner-occupied housing services and consumption of own production	PLUS Transfers received from nonprofit institutions and other households, imputed value of owner-occupied housing services and consumption of own production	PLUS Imputed value of owner-occupied housing services and consumption of own production	PLUS Transfers received from nonprofit institutions and other households	PLUS Transfers received from nonprofit institutions and other households and consumption of own production	PLUS Transfers received from nonprofit institutions and other households and consumption of own production	PLUS Transfers received from nonprofit institutions and other households, payments from employment-related pension schemes, imputed value of owner-occupied housing services and consumption of own production
	MINUS Contributions to old-age pensions in social security schemes						MINUS Contributions to old-age pensions and unemployment in social security schemes

(continued)

Comparison of income concepts in databases with fiscal redistribution indicators

Income concept	CEQ	EGDNA	EUROMOD	IDD	LIS	WID.World
Postfiscal: disposable	Disposable income	Disposable income	Disposable income	Disposable income	Disposable income	Disposable income	Post-tax disposable income
	Market income	Market income	Primary income	Market income	Market income	Market income	Market income
	PLUS Other cash benefits (excluding old-age pensions) from social security and social assistance benefits	PLUS Old-age pensions and other cash benefits received from social security systems and social assistance benefits	PLUS Old-age pensions and other cash benefits received from social security systems, social assistance benefits and transfers received from (paid to) nonprofit institutions and other households	PLUS Old-age pensions and other cash benefits received from social security systems and social assistance benefits	PLUS Old-age pensions and other cash benefits received from social security systems and social assistance benefits	PLUS Old-age pensions and other cash benefits received from social security systems and social assistance benefits	PLUS Other cash benefits (excluding old-age pensions and unemployment benefits) from public social insurance and social assistance benefits
	MINUS Contributions to other (excluding old-age pensions) social security schemes	MINUS Contributions to old-age pensions, unemployment and other benefits in social security schemes	MINUS Contributions to old-age pensions, unemployment and other benefits in social security schemes	MINUS Contributions to old-age pensions, unemployment and other benefits in social security schemes	MINUS Contributions to old-age pensions, unemployment and other benefits in social security schemes	MINUS Contributions to old-age pensions, unemployment and other benefits in social security schemes	MINUS Contributions to other (excluding old-age pensions and unemployment) in social security schemes schemes
	MINUS Direct personal income and property taxes	MINUS Direct personal income taxes	MINUS Direct personal income taxes	MINUS Direct personal income taxes	MINUS Direct personal income taxes	MINUS Direct personal income taxes	MINUS Direct personal income and property taxes
Postfiscal: consumable	Consumable income	Consumable income	na	na	na	na	na
	Disposable income	Disposable income					
	PLUS Indirect consumption subsidies	PLUS Indirect consumption subsidies					
	MINUS Indirect consumption taxes (value added, excise, sales and the like)	MINUS Indirect consumption taxes (value added, excise, sales and the like)					

(continued)

Comparison of income concepts in databases with fiscal redistribution indicators

Income concept	CEQ		EGDNA	EUROMOD	IDD	LIS	WID.World
Postfiscal: including transfers in kind	Final income	Final income	Adjusted disposable income	na	na	na	Post-tax national income
	Consumable income	Consumable income	Disposable income				Post-tax disposable income
	PLUS Public spending on education and public spending on health	PLUS Public spending on education, health and housing	PLUS Public spending on education, health and housing				PLUS Indirect consumption subsidies
							MINUS Indirect consumption taxes (value added, excise, sales and the like) and other taxes.
							PLUS Public spending on education, health, defense, infrastructure and other public spending

Memo items

Contributory pensions	Deferred income	Government transfer	Government transfer	Government transfer	Government transfer	Government transfer	Deferred income
Welfare indicator[a]	Income	Income	Income	Income	Income	Income	Income
Total values	As implied by microdata	As implied by microdata	Match national accounts	As implied by microdata	As implied by microdata	As implied by microdata	Match national accounts
Unit	Per capita	Per capita	Equivalized[b]	Equivalized[b]	Equivalized[b]	Equivalized[b]	Per adult[c]

na is not applicable. CEQ is the Commitment to Equity Institute Data Center on Fiscal Redistribution. EGDNA is the Organisation for Economic Co-operation and Development (OECD)–Eurostat Expert Group on Disparities in a National Accounts Framework. IDD is the OECD Income Distribution Database. LIS is the LIS Cross-National Data Center. WID.world is the World Inequality Database.

a. When household surveys include only consumption expenditures (no information on income), CEQ Data Center on Fiscal Redistribution assumes that consumption expenditures equal disposable income and constructs the other income concepts as specified above, while the World Inequality Database transforms consumption distributions into income distributions using stylized savings profiles in countries where income data are not available.

b. Equivalized income equals household income divided by the square root of household members (excluding domestic help).

c. An individual is classified as an adult if he or she is older than age 20.

Source: CEQ Data Center on Fiscal Redistribution: Lustig 2018a, chapter 6 (http://commitmentoequity.org/publications-ceq-handbook); OECD–Eurostat Expert Group on Disparities in a National Accounts Framework: www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/DOC(2016)10&docLanguage=En; EUROMOD: www.euromod.ac.uk/publications/euromod-modelling-conventions; https://www.euromod.ac.uk/using-euromod/statistics; LIS: forthcoming DART methodological document; OECD Income Distribution Database: www.oecd.org/els/soc/IDD-ToR.pdf; World Inequality Database: https://wid.world/document/dinaguidelines-v1/.