The elephant curve of global inequality and growth

This presentation:
Lucas Chancel
Codirector, World Inequality Lab | Lead coordinator, World Inequality Report

Report edited by:
Facundo Alvaredo, Lucas Chancel, Thomas Piketty, Emmanuel Saez, Gabriel Zucman
Income inequality growing within many countries over the globe... but emerging economies are catching up

Is global income inequality increasing or decreasing?

Hard question to answer due to:
• Lack of comparable data across countries
• Difficulty of measuring top incomes in surveys

In this paper and in the World Inequality Report 2018 (Harvard U. Press; Le Seuil; Beck; + 11 other languages), we use new consistent data from World Inequality Database to generate global inequality estimates since 1980
History of the World inequality Database (WID.world)

- Based on the pioneering work of Kuznets in the 1950s, Atkinson and Harrison in the 1970s
  - Kuznets, 1953 and Atkinson and Harrison, 1978

- WID.world started with the publication of historical inequality series using tax data

- In 2011, we published the World Top Incomes Database, gradually extended to over sixty countries and to wealth
  - Alvaredo et al., 2013, Saez-Zucman, 2016, Alvaredo-Atkinson-Morelli, 2016, etc.
WID.world today

- Most extensive database on the historical evolution of income & wealth (110+ researchers; 60+ countries covered)

- 100% transparent, open source, reproducible data

- Available in English, Chinese, Hindi, French, Spanish (reaching 3bn people in their own language)

- New website WID.world launched January 2017: constantly evolving geographical and conceptual scope (gender inequality / environmental inequality, ...)

WORLD VIEW

Compare inequality between countries on an interactive world map

COUNTRY GRAPHS

Follow the evolution of inequality within countries with user-friendly graphs

DATA TABLES

Download our open-access datasets
WID.world key novelty: we distribute national income

- We cover the full support of the distribution (not just the top)
- We distribute total national income (not just fiscal income) using tax data, surveys and national accounts → bringing together growth & inequality analysis
- We cover emerging countries (not just rich countries): China, India, Brazil, Russia, S. Africa
- We provide R/Stata tools for inequality research
We show that income inequality has increased in nearly all world regions in recent decades, but at different speeds. The fact that inequality levels are so different among countries, even when countries share similar levels of development, highlights the important roles that national policies and institutions play in shaping inequality.

Income inequality varies greatly across world regions. It is lowest in Europe and highest in the Middle East.

Inequality within world regions varies greatly. In 2016, the share of total national income accounted for by just that nation’s top 10% earners (top 10% income share) was 37% in Europe, 41% in China, 46% in Russia, 47% in US-Canada, and around 55% in Sub-Saharan Africa, Brazil, and India. In the Middle East, the world’s most unequal region according to our estimates, the top 10% capture 61% of national income (Figure E1).

In recent decades, income inequality has increased in nearly all countries, but at different speeds, suggesting that institutions and policies matter in shaping inequality.

Since 1980, income inequality has increased rapidly in North America, China, India, and Russia. Inequality has grown moderately in Europe (Figure E2a). From a broad historical perspective, this increase in inequality marks the end of a postwar egalitarian regime which took different forms in these regions.

Source: World Inequality Report 2018, Figure 2.1.1. See wir2018.wid.world for data sources and notes.
There are exceptions to the general pattern. In the middle east, Subsaharan Africa, and Brazil, income inequality has remained relatively stable, at extremely high levels (Figure E2b). Having never gone through the postwar egalitarian regime, these regions set the world “inequality frontier.”

The diversity of trends observed across countries since 1980 shows that income inequality dynamics are shaped by a variety of national, institutional and political contexts. This is illustrated by the different trajectories followed by the former communist or highly regulated countries, China, India, and Russia (Figure E2a and b). The rise in inequality was particularly abrupt in Russia, moderate in China, and relatively gradual in India, reflecting different types of deregulation and opening-up policies pursued over the past decades in these countries.

The divergence in inequality levels has been particularly extreme between Western Europe and the United States, which had similar levels of inequality in 1980 but today are in radically different situations. While the top 1% income share was close to 10% in both regions in 1980, it rose only slightly to 12% in 2016 in Western Europe while it shot up to 20% in the United States. Meanwhile, in the United States, the bottom 50% income share decreased from more than 20% in 1980 to 13% in 2016 (Figure E3).

The income-inequality trajectory observed in the United States is largely due to massive educational inequalities, combined with a tax system that grew less progressive despite a surge in top labor compensation since the 1980s, and in top capital incomes in the 2000s. Continental Europe meanwhile saw a lesser decline in its tax progressivity, while wage inequality was also moderated by educational and wage-setting policies that were relatively more favorable to low- and middle-income groups. In both regions, income inequality between men and women has declined but remains particularly strong at the top of the distribution.

In 2016, 47% of national income was received by the top 10% in US-Canada, compared to 34% in 1980. Source: WID.world (2017). See wir2018.wid.world for data series and notes.
How has inequality evolved in recent decades among global citizens? We provide the first estimates of how the growth in global income since 1980 has been distributed across the totality of the world population. The global top 1% earners has captured twice as much of that growth as the 50% poorest individuals. The bottom 50% has nevertheless enjoyed important growth rates. The global middle class (which contains all of the poorest 90% income groups in the EU and the United States) has been squeezed.

At the global level, inequality has risen sharply since 1980, despite strong growth in China. The poorest half of the global population has seen its income grow significantly thanks to high growth in Asia (particularly in China and India). However, because of high and rising inequality within countries, the top 1% richest individuals in the world captured twice as much growth as the bottom 50% individuals since 1980 (Figure E4). Income growth has been sluggish or even zero for individuals with incomes between the global bottom 50% and top 1% groups. This includes all North American and European lower- and middle-income groups.

The rise of global inequality has not been steady. While the global top 1% income share increased from 16% in 1980 to 22% in 2000, it declined slightly thereafter to 20%. The income share of the global bottom 50% has oscillated around 9% since 1980 (Figure E5). The trend break after 2000 is due to a reduction in between-country average income inequality, as within-country inequality has continued to increase.

In 2016, 55% of national income was received by the Top 10% earners in India, against 31% in 1980. Source: WID.world (2017). See wir2018.wid.world for data series and notes.
In 2016, 12% of national income was received by the top 1% in Western Europe, compared to 20% in the United States. In 1980, 10% of national income was received by the top 1% in Western Europe, compared to 11% in the United States.


In 2016, 22% of national income was received by the Bottom 50% in Western Europe.


Figure E3
Top 1% vs. Bottom 50% national income shares in the US and Western Europe, 1980–2016: Diverging income inequality trajectories

US vs Europe: globalization and trade openness cannot fully explain the rise in pretax income inequality; little support for trickle down (huge top 1% US growth, near 0 at the bottom)

Source: World Inequality Report 2018, Figure 2.1.3. See wir2018.wid.world for data sources and notes.
India vs. China: Similar growth rates at the top but v. different growth rates at the bottom since mid-2000s led to diverging inequality paths

**Top 1% vs. bottom 50% in China vs. India, 1980-2016**

![Graph showing the evolution of top 1% and bottom 50% income shares in China and India, 1980–2015.](Image)

Source: World Inequality Report 2018, Appendix Figure A4. See wir2018.wid.world for data sources and notes.
Diverging trajectories among similar regions highlight importance of policy

- **US vs. EU**: similar levels of development, size, exposure to globalization and to new technologies in 1980. Radically diverging inequality trajectories due to different institutional and policy choices (less progressive taxation, unequal education, falling minimum wage, etc.).
  - US-Canada: average income grew by 63% btw 1980 and 2016, and bottom 50% by 5%; Europe: average income grew by 40%, and bottom 50% by 26%.

- **China vs. India**: rise in inequality in both countries but was extreme in India, moderate in China. More investments in education, health, infrastructure for the bottom 50% in China.
  - China: average income grew by 831%, and bottom 50% by 417%; India: average income grew by 223%, and bottom 50% by 107%.

- **NB**: none of the above countries meets new SDG targets (bottom 40% is supposed to grow faster than the average)
We follow a step-by-step approach towards a consistent global distribution of income and wealth.

We start with countries for which we have Distributional National Accounts Income series (2/3 world population).

For other countries, we use information on average national income per adult and survey data, or we assume distribution within countries is the same as other countries in same region.

We pool country distributions using PPP exchange rates.
This graph is scaled by population size, meaning that the distance between different points on the x-axis is proportional to the size of the population of the corresponding income group. For example, the income group p0p1 (lowest percentile) occupies 1% of the size of the x-axis. On the horizontal axis, the world population is divided into a hundred groups of equal population size and sorted in ascending order from left to right, according to each group's income level. The Top 1% group is divided into ten groups, the richest of these groups is also divided into ten groups, and the very top group is again divided into ten groups of equal population size. 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% among the richest 1% of global earners), growth was 74% between 1980 and 2016. The Top 1% of income earners captured 27% of total growth over this period. Income estimates account for differences in the cost of living between countries. Values are net of inflation.

Total income growth by percentile across all world regions, 1980–2016: Scaled by share of growth captured

The bottom 50% grew... but the top 1% captured twice more total growth.

Total income growth by percentile across all world regions, 1980–2016

Source: World Inequality Report 2018, Figure 2.1.4. See wir2018.wid.world for data sources and notes.
We start with the distribution of growth in a region regrouping Europe and North America (Figure 2.1.2). These two regions have a total of 880 million individuals in 2016 (520 million in Europe and 360 million in North America) and represent most of the population of high-income countries. In Europe, cumulative per-adult income growth over the 1980–2016 period was +28%, which is relatively low as compared to the global average (+66%). While the bottom 10% income group saw their income decrease over the period, all individuals between percentile 20 and percentile 80 had a growth rate close to the average growth rate. At the very top of the distribution, incomes grew very rapidly; individuals in the top 1% group saw their incomes rise by more than 100% over the time period and those in the top 0.01% and above grew at more than 200%.

How did this translate into shares of growth captured by different groups? The top 1% of earners captured 28% of total growth—that is, as much growth as the bottom 81% of the population. The bottom 50% earners captured 9% of growth, which is less than the top 0.1%, which captured 14% of total growth over the 1980–2016 period. These values, however, hide large differences in the inequality trajectories followed by Europe and North America. In the former, the top 1% captured as much growth as the bottom 51% of the population, whereas in the latter, the top 1% captured as much growth as the bottom 88% of the population. (See chapter 2.3 for more details.)

The next step is to add the population of India and China to the distribution of Europe, the total income growth by percentile in US-Canada and Western Europe, 1980–2016.

Source: World Inequality Report 2018, Figure 2.1.2. See wir2018.wid.world for data sources and notes.
Total income growth by percentile in India and China, 1980-2016

Bottom 50% captured 10% of total growth

Top 1% captured 18% of total growth

Source: World Inequality Report 2018, Figure 2.9.4. See wir2018.wid.world for data sources and notes.
The first half of the distribution is now marked by a “rising tide” as total income growth rates increase substantially from the bottom of the distribution to the middle. The bottom half of the population records growth rates which go as high as 260%, largely above the global average income growth of 146%. This is due to the fact that Chinese and Indians, who make up the bulk of the bottom half of this global distribution, enjoyed much higher growth rates than their European and North American counterparts. In addition, growth was also very unequally distributed in India and China, as revealed by Table 2.1.1.

Between percentiles 70 and 99 (individuals above the poorest 70% of the population but below the richest 1%), income growth was substantially lower than the global average, reaching only 40–50%. This corresponds to the lower- and middle-income groups in rich countries which grew at a very low rates. The extreme case of these is the bottom half of the population in the United States, which grew at only 3% over the period considered. (See Chapter 2.4.) Earlier versions of this graph have been termed “the elephant curve,” as the shape of the curve resembles the silhouette of the animal. These new findings confirm and amplify earlier results.

At the top of the global distribution, incomes grew extremely rapidly—around 200% for the top 0.01% and above 360% for the top 0.001%. Not only were these growth rates important from the perspective of individuals, they also matter a lot in terms of global inequality.
The top 1% captured 23% of total growth over the period—that is, as much as the bottom 61% of the population. Such figures help make sense of the very high growth rates enjoyed by Indians and Chinese sitting at the bottom of the distribution. Whereas growth rates were substantial among the global bottom 50%, this group captured only 14% of total growth, just slightly more than the global top 0.1%—which captured 12% of total growth. Such a small share of total growth captured by the bottom half of the population is partly due to the fact that when individuals are very poor, their incomes can double or triple but still remain relatively small—so that the total increase in their incomes does not necessarily add up at the global level. But this is not the only explanation. Incomes at the very top must also be extraordinarily high to dwarf the growth captured by the bottom half of the world population.

The next step of the exercise consists of adding the populations and incomes of Russia (140 million), Brazil (210 million), and the Middle East (410 million) to the analysis. These additional groups bring the total population now considered to more than 4.3 billion individuals—that is, close to 60% of the world total population and two thirds of the world adult population. The global growth curve presented in Appendix Figure A2.3 is similar to the previous one except that the “body of the elephant” is now shorter. This can be explained by the fact that Russia, the Middle East, and Brazil are three regions which recorded low growth rates over the period considered. Adding the population of the three regions also slightly shifts the “body of the elephant” to the left, since a large share of the population of the countries incorporated in the analysis is neither very poor nor very rich from a global point of view and thus falls in the middle of the distribution.

On the horizontal axis, the world population is divided into a hundred groups of equal population size and sorted in ascending order from left to right, according to each group’s income level. The Top 1% group is divided into ten groups, the richest of these groups is also divided into ten groups, and the very top group is again divided into ten groups of equal population size. 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% among the world’s richest 1%), growth was 74% between 1980 and 2016. The Top 1% captured 27% of total growth over this period. Income estimates account for differences in the cost of living between countries. Values are net of inflation.

Global top 1% and bottom 50% income shares, 1980–2016


In 2016, 22% of global income was received by the Top 1% against 10% for the Bottom 50%. In 1980, 16% of global income was received by the Top 1% against 8% for the Bottom 50%.
Global income inequality projections

- **Growth**: UN and OECD produce long-term population and economic growth forecasts

- **Distribution**: We simulate dynamics of global inequality and growth between 2017-2050 following different scenarios

1. **« Business as usual »**: we assume that income growth per adult will be distributed across percentiles within countries as in 1980-2016
2. **Very unequal growth** in every country as in the US 1980-2016
3. **Relatively equal growth** in every country as in the EU 1980-2016
Business as usual: global income inequality will continue to rise, despite high growth in emerging world. Between country convergence not enough to counter within-country trend.

Global income share projections of the Bottom 50% and Top 1%, 1980–2050

- **Global Top 1% income share**
  - Under the business-as-usual scenario (scenario 1), the income share held by the bottom 50% of the population slightly decreases from approximately 10% today to less than 9% in 2050. At the top of the global income distribution, the top 1% income share rises from less than 21% today to more than 24% of world income. Global inequality thus rises steeply in this scenario, despite strong growth in emerging countries.

- **Global Bottom 50% income share**
  - In Africa, for instance, we assume that average per-adult income grows at sustained 3% per year throughout the entire period (leading to a total growth of 173% between 2017 and 2050).

- **Scenario 1**... all countries follow their own 1980–2016 inequality trend
- **Scenario 2**... all countries follow US's 1980–2016 inequality trend
- **Scenario 3**... all countries follow EU 1980–2016 inequality trend

Different inequality trajectories at the national level matter enormously for global poverty eradication.

Within country inequality trends are critical for global poverty eradication. What do these different scenarios mean in terms of actual income levels, and particularly for bottom groups? It is informative to focus on the dynamics of income shares held by different groups, and how they converge or diverge over time. But ultimately, it can be argued that what matters for individuals—and in particular those at the bottom of the social ladder—is their absolute income level. We stress again here that our projections do not pretend to predict how the future will be, but rather aim to inform on how it could be, under a set of simple assumptions.

Figure 5.1.2 depicts the evolution of average global income levels and the average income of the bottom half of the global population in the three scenarios described above. The evolution of global average income does not depend on the three scenarios. This is straightforward to understand: in each of the scenarios, countries (and hence the world as a whole) experience the same total income and demographic growth. It is only the matter of how this growth is distributed within countries that changes across scenarios.

Let us reiterate that our assumptions are quite optimistic for low-income countries, so it is indeed possible that global average income would actually be slightly lower in the future than in the figures presented. In particular, the global bottom 50% average income would be even lower.

In 2016, the average per-adult annual income of the poorest half of the world population was €3,100, in contrast to the €16,000 global average—a ratio of 5.2 between the overall average and the bottom-half average. In 2050, global average income will be €35,500 according to our projections. In the business-as-usual scenario, the gap between average income and the bottom would widen (from a ratio of 5.2 to a ratio of 5.6) as the bottom half would have an income of €6,300.

If all countries follow the inequality trajectory of Europe between 1980 and 2016, the average income of the Bottom 50% of the world population will be €9,100 by 2050.

Income estimates are calculated using Purchasing Power Parity (PPP) euros. For comparison, €1 = $1.3 = ¥4.4 at PPP. PPP accounts for differences in the cost of living between countries. Values are net of inflation.

CONCLUSION: need for **distributional national accounts** for informed public debates on growth and inequality

- The WID.world project: more than 100 researchers over the five continents. All the data is entirely open source + transparent to feed public debates.

- This report: first systematic assessment of globalization in terms of inequality. Global top 1% captured twice as much growth as bottom 50% since 1980. Under Business as usual, even with optimistic growth assumptions in the emerging world, global inequality will continue to rise.

- Rising inequality is not inevitable: different types of policies can be implemented to promote equitable growth pathways in the coming decades.
VISIT WIR2018.WID.WORLD FOR THE ONLINE VERSION OF THE REPORT.
2017 tax reforms in the US/France: continuation of the 1980s tax agenda

Figure 5.2.2

Top income tax rates in rich countries, 1900–2017

Between 1963 and 2017, the top marginal tax rate of income tax (applying to the highest incomes) in the US fell from 91% to 40%.

Sources: Piketty (2014) and updates. See wir2018.wid.world for data series and notes.
income tax rate from 40% to 50% in 2010 in part to curb top pay excesses. In the United States, the occupy Wall Street movement and its famous "We are the 99%" slogan also reflected the view that the top 1% gained too much at the expense of the 99%. Whether this marked the beginning of a new tax policy cycle that will counterbalance the steep fall observed since the 1970s remains a question.

In the UK, the 2010 increase in top income tax rate was followed by slight reduction down to 45% in 2013. As we are writing these lines, the new US republican administration and congress are preparing a major tax overhaul plan. The French government also projects to reduce tax rates on top incomes and wealth owners.

Top inheritance tax rates were recently increased in France, Japan, and the United States, as shown on Figure 5.2.3. In Japan and in the United States, this increase halted a progressive reduction in top inheritance tax rates initiated in the 1980s. In France and Germany, top inheritance tax rates have been historically lower than in the United States, UK, and Japan.

In earlier chapters of this report we described the two world wars and various economic and political shocks of the twentieth century. These durably reduced wealth concentration through other means than tax policy. As with the question of income tax progressivity, it is impossible to know whether this increase marks a new era of progressivity. The US tax overhaul plan plans to abolish the inheritance tax.

Inheritance is exempted from tax while the poor face high consumption taxes in emerging countries. While the past ten years saw some increases in tax progressivity in rich countries, it is worth noting that major emerging economies still do not have any tax on inheritance, despite the extreme levels of inequality observed there. Inheritance is taxed at a particularly small rate in Brazil (at a national average of around 4%, 0%
Additional slides
Part III
PUBLIC VERSUS PRIVATE CAPITAL DYNAMICS

- Economic inequality is largely driven by the unequal ownership of capital, which can be either privately or public owned.

- We show that since 1980, very large transfers of public to private wealth occurred in nearly all countries, whether rich or emerging.

- While national wealth has substantially increased, public wealth is now negative or close to zero in rich countries. Arguably this limits the ability of governments to tackle inequality; certainly, it has important implications for wealth inequality among individuals.
Countries have become richer, but governments have become poor.

The rise of private capital and the fall of public capital in rich countries, 1970–2016

In 2015, the value of net public wealth (or public capital) in the US was negative (-17% of net national income) while the value of net private wealth (or private capital) was 500% of national income. In 1970, net public wealth amounted to 36% of national income while the figure was 326% for net private wealth. Net private wealth is equal to new private assets minus net private debt. Net public wealth is equal to public assets minus public debt.

... in China the share of public capital in national capital is now comparable to rich countries during the mixed-economy period (1950-1980).

The decline of public capital, 1970-2016

Source: World Inequality Report 2018, Figure E7. See wir2018.wid.world for data sources and notes.
Part IV
GLOBAL WEALTH INEQUALITY DYNAMICS

- The combination of rising income inequality and large transfers of public to private wealth contributed to the steep rise in wealth inequality. Wealth data however remains particularly opaque.

- We observe a rise in global wealth inequality over the past decades. At the global level (China, Europe, and the US) the top 1% share of wealth increased from 28% in 1980 to 33% today, while the bottom 75% share hovered around 10%.
Rise in wealth inequality since the 1980s in most countries after a historical decline

Top 1% personal wealth share in emerging and rich countries, 1913–2015

Source: World Inequality Report 2018, Figure 4.2.1. See wir2018.wid.world for data sources and notes.