World Inequality Lab – Working Paper N° 2021/19

Global Income Inequality, 1820-2020:

The Persistence and Mutation of Extreme Inequality

Lucas Chancel

Thomas Piketty

This version: December 2021

WID.WORLD
THE SOURCE FOR
GLOBAL INEQUALITY DATA

World Inequality Lab

Global Income Inequality, 1820-2020: The Persistence and Mutation of Extreme Inequality

Lucas Chancel[1,2], Thomas Piketty[1,3]

First version: July 2021
This version: December 2021

Abstract. In this paper, we mobilize newly available historical series from the *World Inequality Database* to construct world income distribution estimates from 1820 to 2020. We find that the level of global income inequality has always been very large, reflecting the persistence of a highly hierarchical world economic system. Global inequality increased between 1820 and 1910, in the context of the rise of Western dominance and colonial empires, and then stabilized at a very high level between 1910 and 2020. Between 1820 and 1910, both between-country and within-country inequality were increasing. In contrast, these two components of global inequality have moved separately between 1910 and 2020: within-country inequality dropped in 1910-1980 (while between-country inequality kept increasing) but rose in 1980-2020 (while between-country inequality started to decline). As a consequence of these contradictory and compensating evolutions, early 21st century neo-colonial capitalism involves similar levels of inequality as early 20th century colonial capitalism, though it is based upon a different set of rules and institutions. We also discuss how alternative rules such as fiscal revenue sharing could lead to a significant drop in global inequality.

JEL Codes: D31, N30, O15
www.wid.world/longrun

[1] *World Inequality Lab, Paris School of Economics*
[2] *Sciences Po*
[3] *Ecole des Hautes Etudes en Sciences Sociales*
lucas.chancel@psemail.eu and piketty@ens.fr

Section 1. Introduction

In this paper, we mobilize newly available historical series on country-level population, income and income distribution in order to construct world income distribution estimates from 1820 to 2020. We start from the long-run distributional series that are available in the *World Inequality Database* (WID.world). We make simple assumptions for missing years, regions and countries on the basis of all available information, and we ensure that our main results are robust to alternative assumptions.

Our main conclusions are the following. First, we find that the level of global income inequality has always been very large, reflecting the persistence of a highly hierarchical world economic system. The global top 10% income share has oscillated around 50-60% of total income, while the bottom 50% share has generally been around 5-10%. The global top 1% share alone has generally been between three to four times larger than the bottom 50% share, which is typically of the same order of magnitude as the top 0.1% share. Whether we look at indicators such as the T10/B50 ratio between the average incomes of the top 10% and the bottom 50% or indexes like the Gini coefficient, we find that global inequality increased between 1820 and 1910, in the context of the rise of Western dominance and colonial empires, and then stabilized at a very high level between 1910 and 2020. Between 1820 and 1910, both between-country and within-country inequality were increasing. In contrast, both components have moved separately between since 1910: within-country inequality dropped sharply between 1910 and 1980 (while between-country inequality kept increasing), before rising again between 1980 and 2020 (while between-country inequality finally started to decline). As a consequence of these contradictory evolutions and compensating trends, early 21th century neo-colonial capitalism involves similar levels of inequality as early 20th century colonial capitalism, though it is based upon a different set of rules and institutions. We also discuss how alternative rules such as fiscal revenue sharing could lead to a significant drop in global inequality.

Our paper contributes to the existing literature in several ways. First, this work stands in the continuation of the new wave of historical research on long-run inequality trends that has emerged since 2000. This literature first constructed long-run inequality series (especially top income shares series) for a large number of Western countries.[1] The methodology of "Distributional National Accounts" (DINA) was then developed in order to cover the full distribution and to combine in a systematic and consistent manner all

[1] See Piketty (2001), Piketty and Saez (2003), Atkinson and Piketty (2007, 2010), Piketty (2013). This work largely follows the pioneering work of Kuznets (1953) and Atkinson and Harrison (1978).

available data sources (especially household surveys, tax data, inheritance records, national accounts).[2] New inequality series covering other parts of the world were constructed, including for India, China, Africa, Eastern Europe, Russia, Latin America and the Middle East.[3] While the income tax data available in most countries does not usually start before the early 20th century or the late 19th century, some of the wealth and inheritance records allows us in some cases to begin our analysis in the early 19th century or the late 18th century (more on this in section 2 below). This collective research program led during the past two decades to the development of the *World Inequality Database* (WID.world), a project now involving over 80 researchers from all continents and offering a global historical coverage of income and wealth distributions. This database was used to study global inequality trends since 1980 in the context of the *World Inequality Report* 2018 and other reports originating from this project.[4]

The novelty of the present paper is that we go back through time and attempt to expand the longitudinal global coverage of WID in order to construct world income distribution estimates from 1820 to 2020. To our knowledge, the only other works attempting to construct world income distribution estimates going back to 1820 are the papers by Bourguignon and Morrisson (2002) and van Zanden et al. (2013). We share a lot in common with this research. In particular, we both rely heavily on the aggregate population and income series by country and region put together by Maddison (2001), and we both find a similar pattern for global inequality trends in the long-run (namely, rising inequality during the 19th century, and a mixture of stabilization and contradictory movements in the 20th century). There are two important differences between our work and previous research on historical global inequality, however. First, this work was mostly carried out before the new wave of research on long-run inequality trends at the country level started to develop, so that they relied heavily on assumptions on within-countries distributions. We also rely on a number of assumptions, but we start from a much more extensive set of well-established countries on the distribution of income and wealth. As a consequence our estimates are more precise and generally lead to higher levels of inequality. Next, Bourguignon and Morrisson cover the 1820-1992 period,[5] while we cover the 1820-2020 period. By adding the last three decades into the picture, we are able to quantify the mixture of declining within-country inequality

[2] See Blanchet et al (2020).
[3] See e.g. Alvaredo, Assouad and Piketty (2019); Alvaredo, Cogneau and Piketty (2021); Blanchet, Chancel and Gethin (2019); Chancel, Cogneau, Gethin and Myczkowski (2019); Chancel and Piketty (2019); De Rosa, Flores and Morgan (2020); Morgan and Neef (2019); Moshrif (2020); Novokmet, Piketty and Zucman (2018); Piketty, Yang and Zucman (2019); Robillard (2020).
[4] See Alvaredo et al (2018). See also Chancel and Piketty (2015) and Chancel (2021).
[5] Van Zanden et al. (2013) use similar sources as Bourguignon and Morrisson but cover the 1820-2000 period.

and rising within-country inequality that is observed in the recent period and to put this period into a global historical perspective.

The rest of the paper is organized as follows. We briefly outline our methodology and data sources in section 2. We present our main results on global inequality dynamics over the 1820-2020 period in section 3. We discuss possible interpretations for our findings in section 4, and offer concluding comments and research perspectives in section 5. A methodological appendix offering additional details on methods and sources is provided at the end of the present paper. All data files and computer codes are available in a WIDLongRun zip file available on-line at wid.world/longrun, so that all our findings can be easily reproduced and extended using alternative sets of assumptions on countries, regions and years.

Section 2. Methodology and Data Sources

Our new database on global inequality include regional series covering nine world regions (East Asia, Europe, Latin America, Middle East/North Africa, North America, Oceania, Russia/Central Asia, South/South-East Asia, Sub-Saharan Africa) and thirty-three individual country and sub-regions (see Table 1).

In order to build this database, we start from the country series on income distribution that are currently available in World Inequality Database (WID.world). These country series were constructed by combining all available data sources for the various countries and sub-periods, including household surveys, tax data, inheritance records and national accounts. They cover all g-percentiles and follow the Distributional National Accounts Guidelines (DINA).[6] The WID currently includes income distribution series covering all world countries on an annual basis from 1980 onward. It also covers most countries in Europe, North America and Oceania since 1900-1920 (including Britain, France, Germany, Sweden, USA, Canada, Australia, New Zealand), as well as a large number of countries in other world regions since 1910-1930 (including India, Japan, South Africa, Argentina, Chile, Brazil and Russia). Generally speaking, we have a relatively good coverage of income distribution in most world regions regarding the period going from 1910 to 2020. This allows us to provide estimates for our thirty-three

[6] See Blanchet et al (2020). Generalized percentiles (or g-percentiles) refer to the 127 quantiles defined by the bottom 99 percentile, the 9 tenth-of-percentile at the top 1%, the 9 hundredth-of-percentile at the bottom of the top 0.1% and the 10 thousandth-of-percentile within the top 0.01%. Lower threshold and average income for each of the 127 g-percentiles provide the basic distributional data that is being stored in WID.world for each country-year. Country-level and sub-regional-level data by g-percentile can be aggregated up to the regional and world levels using the gpinter (generalized Pareto interpolation) facility available online at wid.world/gpinter.

countries and sub-regions for years 1910, 1920, 1930, 1940, 1950, 1960 and 1970. These series are then linked to the annual 1980-2020 series available in WID.

The coverage is much weaker for the period going from 1820 and 1910, which is why we only provide estimates for 1820, 1850, 1880 and 1910. In some countries (e.g. Germany, Denmark, Sweden), income inequality series begin as early as 1870-1880, thanks to the early introduction of a modern income tax system. In addition, thanks to early availability of historical inheritance records, we also have wealth distribution series starting around 1750-1800 for a number of European countries (in particular France, Sweden and Britain).[7] All available 19th century series show a small gradual rise in wealth and income concentration over the 1820-1910 period (starting from a very high inequality level), so we make a similar assumption regarding trends in income distribution in all countries and regions during this period. In practice, this has very little impact on our main findings. More generally, we make simple assumptions for missing years, regions and countries on the basis of all available information, and we ensure that our results are robust to alternative assumptions.[8]

Regarding historical aggregate population and income series, we rely for the most part on the series constructed by Maddison (2001), unless some more refined series have been developed and are available in WID. The changing structure of world population is well-known and is described on Table 2.[9] The changing structure of per capita income is also relatively well-known and is described on Table 3.[10] For instance, per capital income in China dropped from 82% of world average in 1820 down to 20% in 1980, before rising to 109% in 2020. Per capita income in India dropped from 57% of world average to 16% in 1980, up to 41% in 2020. In Indonesia, it dropped from 57% in 1820 to 16% in 1950, up to 68% in 2020. There is of course considerable uncertainty about the exact numbers, but the general pattern is pretty clear. Most countries in Asia and Africa lost touch with Western Europe and North America between 1820 and 1900, in the context of the rise of Western dominance and colonial empires. Some countries like Japan started to recover relatively to world average between 1900 and 1950, but

[7] See e.g. Piketty, Postel-Vinay and Rosenthal (2006) and Bengtsson et al (2017).
[8] See the discussion in section 3.5 and footnote 14 below.
[9] The large decline of China's share in world population between 1820 and 1900 (from 37% to 26%) corresponds to the fact that China's population barely increased in absolute numbers between these two dates. According to available estimates it was already close to 400 million in 1820 and was still around 400 million in 1900. This demographic stagnation (at a time when world population rose from 1 billion to nearly 1.6 billion) is usually accounted for by the heavy human toll of the Taiping Rebellion in 1851-1864 (with casualties between 30 and 50 million according to available estimates).
[10] The method we use to estimate national income (net national product) from gross domestic product series is described in Blanchet and Chancel (2016) and Blanchet et al (2020). In particular, missing series on capital depreciation were estimated on the basis of depreciation ratios observed in countries with similar levels of per capita output and sectoral structures.

most countries recovered after 1950 (like Indonesia) and mostly after 1980 (like China or India). In Sub-Saharan Africa, the recovery started around 2000-2010 or has not yet started (depending on the country). We will later see that global between-country inequality remains very high in 2020; in particular it is still much larger than in 1820.

The distribution of aggregate world income is described in Table 4. As is well-known, the share of Western Europe in world income peaked around 1900, the share of North America peaked around 1950, and China supplanted the USA as world economic superpower between 2010 and 2020 (in aggregate PPP terms).

Finally, Tables 5-9 presents inequality levels for our main regions and countries[11]. By definition, in a country with perfect equality between individuals, the top 10% income share is equal to 10% and this value is of 100% in a country with absolute inequality. While no country or region has ever reached these extreme points, the past two hundred years exhibit a fair amount of variation of country-level and regional-level income inequality. In practice, since 1820, the top 10% income share varied from a minimum around 25% and a maximum of 60-65%. Lowest inequality levels are observed in the 1950-1980s, both in socialist and communist economies such as China and Russia, as well as in mixed-economy regimes such as Germany, France and Japan. Maximum inequality levels are observed in Sub-Saharan Africa and in the Middle-East North region during the colonial period (e.g. Egypt, early 1950s) as well as in contemporary societies (e.g. contemporary South Africa today and to a somewhat lesser extent Mexico or India). Beyond country-level trajectories, a general pattern emerges: a slight increase in inequality between 1820 and 1920, a reduction up to 1980 and a rise after. From a historical standpoint, the 1900s strike as being particularly unequal everywhere and to some extent the 2020s as well. We discuss the effects of country-level inequality trajectories on global inequality in section 3. These effects depend not only on country-or regional-level inequality trends but also on the population and average income dynamics.

Section 3. Main Results: the Extreme Level of Global Income Inequality

Section 3.1. Key inequality indicators and decompositions

We start with the basic decomposition between the shares of world income going to the global top 10%, middle 40% and bottom 50% groups (see Figure 1). The first

[11] Our online appendix presents other inequality indicators such as bottom 50% shares and ratio of the top 10% and bottom 50% share (see Appendix Table 1A-B). See also Appendix Table 2 for inequality estimates for all our regions and countries between 1820 and 2020.

striking finding is that the level of global income inequality has always been very large. The global top 10% income share has oscillated around 50-60% of total income between 1820 and 2020, while the bottom 50% share has generally been around 5-10%. This corresponds approximately to the level of inequality that we currently observe in the most unequal countries in the world, such as South Africa, Brasil, Mexico or the United Arab Emirates (see the world maps available on WID.world).

One can also see on Figure 1 a clear rise in global inequality between 1820 and 1910. The top 10% share rose from 50% to 60%, while the bottom 50% share dropped from 14% to 7%. In contract, the evolution observed between 1910 and 2020 involves a number of contradictory evolutions and compensating trends. The bottom 50% share further dropped from 7% in 1910 to 5% in 1980, before rising to 7% in 2020[12], so that it is today very close to what it was in 1910. The top 10% share dropped from 60% in 1910 to 54% in 1970, before rising back to 61% by 2000, and declining again to 55% in 2020. If we look at the overall evolution between 1910 and 2020, there is no clear long-run trend in inequality, either downward or upward, except maybe a small improvement in the share of the global middle 40%.

We reach the same conclusion if we look at global inequality indicators such as the ratio T10/B50 between the average incomes of the top 10% and the bottom 50%. Note first that if the top 10% income share was equal to 50% and the bottom 50% income share to 10%, then by construction the ratio T10/B50 should be exactly equal to 25. This stems from the fact that top 10% income holders would have an income share that is 5 times bigger in spite of the fact that they are 5 times less numerous, which means that their average income must be 25 times larger. In other words, the T10/B50 ratio is higher than 25 when the top 10% share is higher than 50% and the bottom 50% is less than 10%, and lower than 25 is the opposite happens. In practice, we find that the global T10/B50 ratio more than doubled over the 1820-1910 period, from 18 in 1820 to 41 in 1910 (see Figure 2). It reached an all-time high of 53 in 1980 and 50 in 2000, before declining to 38 in 2020. It is striking to see that the decline in the global T10/B50 ratio occurred for the most part after the 2008 financial crisis. It is too early to say whether the decline will continue in the future.

[12] All our benchmark series are based on income per capita values. For additional series, see our online datasets. Focusing on income per adult, we find a global bottom 50% income share slightly above 8% today. The difference is due to the fact that low income countries have relatively less adults than rich countries. This contributes to (slightly) increasing the global bottom 50% income per adult share vs. per capita values. We prefer per capita values as benchmark series to be consistent with Maddison's population data.

We also reach the same conclusion if we look at other indicators such as the global Gini coefficient. In effect, the global Gini increased from 0,60 in 1820 to 0,72 in 1910, again 0,72 in 2000 and 0,67 in 2020 (see Figure 3). Note that the global inequality peak is reached in 2000 if we look at the Gini coefficient, while it is reached in 1980 (almost on par with 2000) if we look at the T10/B50 ratio. Whatever the indicator, the global inequality peak was reached twice, first around 1910 and then in 1980-2000, and most of the global inequality decline took place after the 2008 financial crisis. In all cases, global indicators indicate very high inequality levels in 2020 (close to those observed around 1900-1910, and substantially larger than those observed in 1820).

Our most important result and decomposition is presented on Figure 4. Here we compute two versions of the T10/B50 inequality ratio: the “within-country” ratio and the “between-country” ratio. The “within-country” T10/B50 inequality ratio was computed by cancelling the between-country inequality component, i.e. by assuming that all countries have the same average income and by aggregating the resulting country-level distributions. In effect, this is almost equivalent to computing some form of average of all country-level T10/B50 inequality ratios (weighted by country population size). We find that within-country inequality (as measured by this indicator) increased gradually between 1820 and 1910, then sharply declined between 1910 and 1980, and finally rose again between 1980 and 2020. This is the familiar pattern found in the United States and in Western Europe in the context of the new wave of historical research on inequality. A similar pattern has also been found in Japan, India, Russia, China, Latin America, South Africa, etc., so it is not surprising that we find it here at the global level. Note that the rise of within-country inequality since 1980 seems to have reached a sort of plateau between 2010 and 2020 (but with no turning back so far). This within-countries inequality plateau appears to be comparable in magnitude (or slightly lower) to the plateau of 1910.

In contrast, the “between-country” T10/B50 inequality ratio follows a very different pattern. It was computed by cancelling the within-country inequality component, i.e. by assuming that all inhabitants in any given country have the same income as their country average and by aggregating the resulting country-level (Dirac) distributions. We find that between-country inequality (as measured by this indicator) increased continuously between 1820 and 1980. In particular, it increased enormously between 1820 and 1950, during the period of colonial empires. In effect, the between-country T10/B50 more than quadrupled, from less than 4 in 1820 to almost 16 in 1950. It continued to increase at a smaller pace between 1950 and 1980. The between-country T10/B50 ratio was over 20 in 1980, after which it started to decline speedily, so that it

is slightly above 9 in 2020. It is worth noting that China has ceased to be part of the bottom 50% of the world in 2010, so that the continuation of this decline after 2010 is due to the high-growth performance of countries like India, Indonesia, Vietnam and a number of Sub-Saharan African countries (but not all) relatively to rich countries. We should also stress that in spite of this decline, between-country inequality remains very high in absolute terms in 2020: it is roughly at the same level as in 1900.

By comparing the evolution of the global T10/B50 ratio (Figure 2) with the evolution of the within-country and between-country components (Figure 4), we now have a clear picture of the long-run transformation of the world income distribution over the past two centuries. Between 1820 and 1910, both components were rising: between-country inequality was rising, as Western countries were establishing their economic and political supremacy over the rest of world, and within-country inequality was also rising (or was quasi-stable at a very high level of domestic inequality), reflecting very unequal and hierarchical domestic political and economic systems. Between 1910 and 1980, within-country inequality was reduced enormously, largely due to rising social spending and progressive taxation, but between-country inequality continued to increase, so that the impact on global inequality was ambiguous. The opposite situation occurred between 1980 and 2020: within-country inequality started to rise again, while between-country inequality declined, so that the effect on synthetic inequality indicators like the global T10/B50 ratio was again ambiguous. In the most recent period, however, and especially since the 2008 financial crisis, the declining inequality effect clearly appears to dominate. This is because the rise of within-country inequality seems to have reached a plateau in 2010-2020 (both in the North and in the South), while at the same time the decline in between-country inequality accelerated (due in part to a relatively poor growth performance of rich countries post-2008, especially in Europe, as compared to developing and emerging countries). At the same time, global inequality remains very high in absolute terms: in 2020 it is close to the level observed around 1900.

We reach the same conclusion regarding the decomposition of global inequality trends into within-countries and between-countries components if we use other indicators such as the Theil index (which allows for additive decompositions, see Figure 5). Namely, the between-countries component was relatively small in 1820 (around 10% of global inequality). It rose substantially between 1820 and 1980 (when it was

quantitatively larger than the within-countries component, reaching more than 55% in 1980), before declining sharply since then (around 30% today).[13]

Section 3.2. Other inequality indicators

Our global inequality series also allow us to study finer inequality indicators focusing on specific segments of the distribution such as very top incomes. According to our estimates, the global top 1% share rose from 20% of total income in 1820 to 26% in 1910, before dropping to 16% in 1970 and rising again to 20% in 2020. Between 1880 and 2020, the global top 1% share has generally been between three to four times larger than the bottom 50% share (6%-8% of total income), which has typically been of the same order of magnitude as the top 0.1% share (see Figure 6). For instance, both the bottom 50% income share and the top 0.1% share are about 8% of total income in 2020. This exemplifies the extreme level of global income inequality. E.g. it implies that a redistributive policy based upon a reduction of one quarter or one third of the incomes of the top 0.1% could have a very large impact on the incomes of the bottom 50% and on global poverty rates.

If we look at the ratio between the averages incomes of the global top 1% and the global bottom 50%, we find that this inequality indicator rose from about 70 in 1820 to 180 in 1910, and then stabilized around 150 between 1910 and 2020 (see Figure 7). Note that the T1/B50 ratio is always much larger than 50, which is simply another way to say that the top 1% share is much bigger than the bottom 50% share. If we look at the ratio between the averages incomes of the global top 0.1% and the global bottom 50%, we find that this indicator rose from about 300 in 1820 to 900 in 1910, before stabilizing around 500-700 between 1910 and 2020 (see Figure 8). By construction a ratio T0.1/B50 equal to 500 would mean that both social classes have the same income share. It is striking to see that the T0.1/B50 ratio reached its historical peak in 1910, while other inequality indicators like the T10/B50 ratio, the Gini coefficient or the T1/B50 ratio reached their historical peaks around 1980-2010. This illustrates the fact that top-end inequality never fully returned to its *Belle Époque* 1910 highest point, especially in European countries, which dominated the world economy and the top of the distribution at that time.

[13] Technically, one advantage of using the Theil index is that it allows for additive decompositions, i.e. the global Theil index is exactly equal to the sum of the within-country Theil index and the between-country Theil index (which is not the case with other inequality indexes such as the T10/B50 ratio or the Gini coefficient). See e.g. Shorrocks (1980). However we prefer to focus the attention on inequality indicators based upon income ratios as they are more intuitive and easier to grasp. All substantial conclusions that we present in this paper hold independently of the specific inequality indicator.

The evolution of the global T1/B50 ratio can also be broken down into two components: inequality between the top and the middle of the distribution, as measured by the ratio T1/M40, and inequality between the middle and the bottom of the distribution, as measured by the ratio M40/B50. If we do this, it is striking to find that both components have moved in opposite directions between 1980 and 2020: global inequality increased between the top and the middle of the distribution, but it declined between the middle and the bottom of the distribution (see Figure 9). Another way to visualize this is the well-known "elephant curve" of global inequality between 1980 and 2020.[14] That is, if we look at cumulated income growth over the 1980-2020 period, we find that the two groups that have benefited from the highest growth performance are the bottom 50% and the top 1% (see Figure 10). In contrast, if we look at the growth incidence curve over the entire 1820-2020 period, we find that it is upward sloping: the global top 30% have benefited from more a rise of their purchasing power over the past two centuries that has been roughly twice as large as the global bottom 50% (see Figure 11). This reflects the fact that global inequality in 2020 is still substantially larger than in 1820.

Section 3.3. Regional decompositions

Finally, our global inequality series allow us to provide detailed regional decompositions for the various income quintiles. For instance, if we look at the regional composition of the global top 10%, we find that Europe's undisputed dominant position between 1880 and 1910 has been shared with North America since 1920-1930 (see Figure 12). The share of top 10% income holders coming from East Asia and South/South-East Asia has increased gradually since 1950, with an acceleration since 1980, but the Western dominance within the global top 10% is still very striking.

We find the same general pattern for the regional composition of the global top 1%, with two interesting caveats (see Figure 13). First, the dominant position of Europe largely collapsed after World War I (and never fully recovered), so that North America has been the undisputed leader of the global top 1% since 1920-1930. Next, it is worth noting that the global top 1% includes in recent decades a relatively large fraction of individuals coming from the Middle East, Latin America and Russia. In effect, these regions play a substantially bigger role in the global top 1% than in the global top 10%, reflecting the fact that they are characterized by very high within-countries inequality.

If we look at the regional composition of the global bottom 50%, one can notice the declining importance of East Asia and the rising share of South/South-East Asia and

[14] For a more detailed discussion, see the World Inequality Report 2018 and Alvaredo et al (2018).

especially Sub-Saharan Africa in recent decades (see Figure 14). Note also that almost nobody from Europe or North America has set foot in the global bottom 50% since the mid-20th century, whereas the European poor did constitute a significant fraction of this group back in the 19th century. In contrast, the global middle 40% today is very diverse and draws significant populations from all regions: the regional shares are relatively close to the shares in total population (see Figure 15). Figure 16 presents the evolution of the global income distribution between 1820 and 2020. The vertical axis is scaled such that the colored wedges correspond to the total population of each region at different points of time.

Section 3.5. Robustness checks

We have performed a large number of robustness checks for our findings. Generally speaking, all of our main findings appear to be very robust. In particular, the fact that global inequality rose between 1820 and 1910 and then stabilized at a very high level between 1910 and 2020, as well as the changing roles of within-countries and between-countries components across the 1820-2020 period, seem to be very well established. We have tried different variants regarding the evolution of within-countries inequality between 1820 and 1910 (which is by far the period when our raw data sources on within-countries inequality are the most fragile). In practice, this has relatively little impact on the overall pattern. As one can see from Figure 4, the really striking trend over the 1820-1910 period is the rise of between-countries inequality, and this pattern is very well documented: this corresponds to the rise of Western industrial capitalism and can be quantified using multiple sources. All available data sources (inheritance records, income tax returns) also suggest that within-inequalities inequality was also rising over this period. But even if we were to replace this rising within-inequalities trend by the assumption of flat within-countries inequality between 1820 and 1910, the point is that this would have very little effect on the global inequality trend during this period.[15]

We have also performed a number of robustness checks with respect to the income concept. Our benchmark income concept is pretax, post-replacement national income, which in the framework of distributional national accounts refers to income before taxes and transfers, except for the operation of the social insurance system (pensions and

[15] In order to undo the between-countries effect, one would need to assume an enormous decline in within-countries inequality between 1820 and 1910, which would be both inconsistent with all available sources and materially quasi-impossible (given the very high inequality levels observed in 1910 and the very low average incomes of 1820). All data series and computer codes are available on-line so that interested users can reproduce them and test alternative assumptions.

unemployment benefits), which in practice constitutes in most countries the largest component of redistribution. All series presented so far follow this income concept. We have also produced estimates using the concept of post-tax national income, where we deduct all taxes and add all transfers (including in-kind transfers and collective expenditures).[16] These computations involve a number of assumptions and should be viewed as exploratory and incomplete. Our main finding is described on Figure 17. The bottom line is that taxes and transfers (other than pensions and unemployment benefits) have very little impact on 1820-1910 series and a limited impact on 1910-2020 series. In particular, whether we look at pretax post-replacement national income or at post-tax national income, we find that the level of global inequality in 2020 is close to the level observed around 1880-1900. The results on between-countries and within-countries inequality trends and on regional decomposition are virtually unchanged.

Section 4. Interpretation: Global Wealth Patterns & Center-Periphery Relations

We now come to the discussion and interpretation of our findings. The general question is the following: how can we account for the rise of global inequality between 1820 and 1910 and for the persistence of very high levels of global inequality between 1910 and 2020, and we are the lessons for the future? To sum up, our main conclusion is that political and institutional factors and the ideological confrontation between competing state powers and social classes have played a major role in past evolutions and that this is likely to be the same in the future.

We should first stress that countries with lower average income also tend to work longer hours, both in the cross-section and over time, so that the global inequality of hourly income is even higher than the global inequality of income and has followed the same long run evolution (in an even more pronounced manner).[17] From the viewpoint of standard neoclassical economics, the most obvious explanation for the enormous and persistent inequality in hourly income (productivity) is the inequality in capital endowments. That is, if the poorest economic groups at the global level were to receive sufficient capital investment, both in terms of physical capital (equipment, machinery, infrastructure, etc.) and human capital (education, skills, technical knowledge, health, etc.), then global income inequality would shrink enormously. At some level, this must be right. If there was sufficient redistribution of wealth from the richest global economic groups to the poorest ones, allowing for massive investment in physical and human capital benefiting to the world's poorest groups, then global inequality would certainly

[16] See Blanchet, Chancel et al (2020, 2021).
[17] See Ahmed (2021).

shrink. However there are obvious political-economy reasons why this is unlikely to take place in the form of simple wealth transfer. Unless they are forced to, through a revolution, a land reform or a permanent system of progressive taxation and redistribution of wealth, the richest economic groups are unlikely to give away their assets. They will rather attempt to lend resources and earn the highest possible returns out of their capital investment. This entails several consequences. First, the fact that the poorest groups are borrowers who need to repay large sums rather than asset owners implies that they have less economic autonomy and lower incentives to produce. Next, because lenders fear expropriation (and often rightly so), they will tend to regulate their relation with the poorest groups through colonial and military domination and to organize investment patterns so as to keep control of the most valuable production processes (e.g. by restraining the diffusion of certain capital goods and technologies and by specializing less developed countries as supplies of raw commodities, natural resources and unskilled labor).

There is ample evidence that the development of “center-periphery” relations is very much what happened between 1800 and 1950 with the establishment of Western dominance and colonial empires, and that this process largely explains the enormous rise of between-countries inequality over this period. In particular, Pomeranz (2000) has shown how much the Industrial Revolution of the late 18th and 19th century, first in Britain and then in the rest of Europe, depended on large-scale extraction of raw material (especially cotton) and energy (especially in the form of wood) from the rest of the world – extraction achieved through coercive colonial occupation. In Pomeranz's view, the more advanced parts of China and Japan had attained a level of development in the period 1750-1800 more or less comparable to corresponding regions of Western Europe. Specifically, one finds similar forms of economic development, based in part on demographic growth and intensive agriculture (made possible by improved agricultural techniques and a considerable increase in cultivated acres thanks to land clearing and deforestation); one also finds comparable process of proto-industrialization, particularly in the textile industry. Two key factors caused European and Asian trajectories to diverge. First, European deforestation, coupled with the presence of readily available coal deposits, especially in England, led Europe to switch quite rapidly to sources of energy other than wood and to develop corresponding technologies. More than that, the fiscal and military capacity of European states, largely a product of their past rivalries and reinforced by technological and financial innovations stemming from interstate competition, enabled them to organize the international division of labor and supply chains in particularly profitable ways. The exploitation of land in North America, the West Indies, and South America using slave

labor imported from Africa produced the raw material that not only earned handsome profits for the colonizers but also fed the textile factories that began to develop rapidly in the period 1750-1800. Military control of long-distance shipping routes allowed the development of large-scale complementarities. By 1830, British imports of cotton, wood, and sugar required the exploitation of more than 10 million hectares of cultivable land, according to Pomeranz's calculation, or 1.5-2 times all the cultivable land available in the UK. If the colonies had not made it possible to circumvent the ecological constraint, Europe would have needed to find other sources of supply. One is of course free to imagine scenarios of historical and technological development that would have enabled an autarkic Europe to achieve a similar level of industrial prosperity, but it would take considerable imagination to envision fertile cotton plantations in Lancashire and soaring oaks springing from the soil outside Manchester. In any case, this would be the history of another world, having little to do with the one we live in.

Subsequent work has largely confirmed the central role of military and colonial domination in accounting for the rise of global inequality during the 19th century. Beckert (2014)'s work on the “empire of cotton” has shown the crucial importance of slave extraction and cotton production in the seizure of control of the global textile industry by the British and other Europeans. Half of the African slaves shipped across the Atlantic between 1492 and 1882 sailed in the period 1780-1860 (especially between 1780 and 1820). This late phase of accelerated growth in the slave trade and cotton plantations played a key role in the rise of the British textile industry. The natural reproduction of slaves also played a major role, particularly on U.S. soil, where the number of slaves quadrupled between 1800 and 1860, and the production of cotton was multiplied by ten. On the eve of the American Civil War, 75 percent of the cotton imported by European textile factories came from the southern United States. Parthasarathi (2011) also emphasized the role played by anti-India protectionist policies in the emergence of the British textile industry in the 18th and early 19th century. It is only after acquiring a clear comparative advantage in textiles that the U.K. began in the mid-19th century to adopt a more full-throated free trade rhetoric (though not without ambiguities, as in the case of opium exports to China). The British also relied on protectionist measures in the shipbuilding industry, which was flourishing in India in the 17th and 18th centuries. According to available estimates, the Chinese and Indian share of global manufacturing output, which was still 53 percent in 1800, had fallen to 5 percent by 1900, largely as a consequence of military and colonial coercion.[18]

[18] Note that the role of slave and colonial extraction in the development of industrial capitalism was already analyzed by numerous 19th-century observers (beginning with Karl Marx) as well as by Eric Williams (prime minister of Trinidad from 1956 to 1981) in *Capitalism and Slavery* (1944). By contrast, Max Weber, in *The Protestant Ethic and the Spirit of Capitalism* (1905) stressed cultural and religious

Between 1820 and 1910, at the same time as global between-countries inequality was rising at an accelerated pace, within-countries inequality was also very high and rising, though in a moderate manner (see Figure 4). One needs to wait until World War 1 to see the beginning of a significant decline of income and wealth inequality within Western countries and in other parts of the world. The reason why within-countries inequality remained so high until 1910-1920 can be accounted for by a mixture of ideological and institutional factors. In a country like Sweden, for instance, the electoral system that was applied between 1865 and 1910 was the living embodiment of proprietarian ideology: only the top 20% (male) property owners, and within this group voters were granted between one and one hundred voting rights, depending on the size of their *fyrkar* (a fomula based upon asset ownership, income and tax payments). In a few decades, the entire system was turned upside down: universal suffrage was imposed, the Social-Democrats took power in 1932 and put the country's state capacity to the service of a completely different political project, based upon socioeconomic equality.[19] More generally, the large decline in within-countries inequalities that took place between 1910 and 1980 was the consequence of large-scale political mobilization and institutional change. In little more than thirty years (1914-1945), the balance of power between capital and labor was considerably transformed, thanks to worker mobilization as well to the combined impact of World Wars I and II, the Great Depression and a number of revolutionary events (including the Bolshevik Revolution). Various coalitions of Social-Democrats, Labour, Democrats, Socialists and Communists took power in a large number of countries and implemented a combination of redistributive policies, including the rise of the welfare state and the development of progressive taxation of income and wealth. Maybe unsurprisingly, the large and inclusive investment policies in public infrastructures, education and health which followed contributed not only a sharp reduction in inequality but also to increased growth and prosperity in post-war Western countries.[20]

The political shocks that occurred between 1914 and 1945 also contributed to the end of colonial empires and Western dominance, but with some substantial delay. In a first step, Europe's colonial expansion actually reached its peak between 1910 and 1950, especially regarding the British and French Empires, which inherited from the remains of the Ottoman Empire and the German colonies in 1919-1920. In the longer run, World

---

factors, whereas Fernand Braudel in *Civilisation matérielle, économie et capitalisme* (1979) focused on the role of high finance in both Catholic and Protestant Europe. The recent work of Pomeranz, Parthasarathi, and Beckert is much less Eurocentric; to some extent it represents a return to Marx and Williams but with the richer tools and sources associated with global and connected history.

[19] See Bengtsson (2018).

[20] See Piketty (2013, 2019). See also Lindert (2004).

Wars I and II strongly contributed to the weakening of European state powers, the development of strong independence movements and finally the end of European colonialism in 1950s-1960s. Between 1950 and 1980, North-South inequality continued to rise, first because it was a period of exceptionally rapid growth in the North, and next because it took a few decades for the newly independent countries to emerge from independence wars and civil unrest and to design suitable development strategies, which then led in some cases to the reduction of between-countries inequality between 1980 and 2020 (as illustrated for instance by the case of China or Vietnam). Within-countries inequality started to rise again globally around 1980-1990, following the demise of state-led socialism in China and Russia and the conservative revolution in the West (leading to large cuts in progressive taxation, union power, minimum wages and an historical interruption in the rise of Social State). After the 2008 financial crisis, neoliberal policies became less and less attractive and within-countries inequality seems to have reached a plateau. It is too early to tell whether the 2020 pandemic and the growing awareness of the environmental crisis will lead to a new wave of state intervention and inequality reduction in the future.

From the viewpoint of inequality among world citizens, our findings offer a novel perspective on the relative importance of within and between country inequality. Bourguignon and Morrisson (2002) found that most of global inequality was explained by between-country differentials over the 1950-1990 period. This finding was also supported by Lakner and Milanovic (2016) who extended Bourguignon and Morrisson's series up to the early 2010s. Our new series reveal that, around the turn of the 21st century, the within-country component of global inequality has in fact come to dominate the between-country component[21]. In contemporary capitalism, individuals' own income group (i.e. whether they belong to the bottom 50, top 1%, etc. in their own country) now matters more than their nationality (where they live) in the determination of global inequality levels. The basic consequence of this finding is that the redistribution of incomes and capital within nations, both rich and emerging, is paramount to reducing global inequality. We should stress however that between-countries inequality is still very high in absolute terms in 2020 (roughly at the same level as in 1900) and reducing average income (or capital endowment) differences between countries still matters significantly. Put differently, within-country inequalities now dominate in relative terms, but between-country disparities are still very large, which explains why overall inequalities are so massive, in a way that is comparable to

[21] The main difference with earlier series is the use of historical tax data, more precise than household surveys used in earlier long run studies on global inequality. For an overview of our methodology, see Section 2, the online appendix as well as Blanchet, Chancel et al. (2021) a detailed description of the various sources mobilized.

the situation in 1900-1910. In addition, while between-countries inequality has been declining since 2008, there is no guarantee at all that it will keep declining in the future.

In the context of colonial empires, the world economic system was explicitly organized in a highly hierarchical manner, and the reproduction of inequality directly derived from there. For instance, in the context of French Algeria, the children of Muslim Algerians received until 1962 an educational expenditure that was on average 40 times smaller than that received by the children of European settlers.[22] This specific type of political structure is now gone, but this obviously does not mean that enormous inequalities in educational expenditures and other capital investments have disappeared. In particular, center-periphery relations are still very much alive and well, in the sense that dominant economic state powers, whether they come from Europe, North America, Japan or China, tend to organize the international division of labor in a way that best suits their interest, and which often involves selective state protection and support for the production sectors which they view as crucial for their national interest and development strategy.[23] In contrast, periphery countries and weaker states, especially in Sub Saharan Africa and South Asia, tend to be relegated to less productive activities requiring less equipment and human capital. E.g. they obtain loans for certain types of capital investment and not others. Although this type of neo-colonialism takes very different institutional forms than classical colonialism, one can easily imagine circumstances where this would lead to a stabilization of between-countries inequality at a very high level. This will happen if this fits the interest and world views of dominant powers and if periphery countries are not powerful enough to obtain the capital investments that would be needed to upgrade their position.

While he was writing in the 1980s, prominent historian and theorist of comparative development and core-periphery relations Immanuel Wallerstein famously hypothesized that the relative position of the world's bottom 50% individuals might have deteriorated continuously between 1500 and 1980, thereby demonstrating the validity of Marxist predictions about rising polarization under capitalism at the global level.[24] Things look somewhat different from the viewpoint of 2020, but they do not look completely different. I.e. between-countries inequality declined sharply between 1980 and 2020, but it is still much larger in 2020 than in 1820. Whether the trend toward more global equality will continue depends on a large number of political, social and

[22] See Cogneau, Dupraz and Meslée-Comps (2021) and Piketty (2019, figure 7.8).
[23] See Chang (2002) and Mazzacuto (2013).
[24] See Wallerstein (1974-1989). See also Balibar and Wallerstein (1988), where Wallerstein hinted that the absolute position (and not only the relative position) of the world's bottom 50% might also have deteriorated since the beginning of capitalism, while at the same time mentioning the existence of communist and socialist alternatives led to some limited absolute progress in some cases.

economic factors. Between 1910 and 1980, the march toward more within-countries equality was led by socialist political movements which were also pushing to some extent for more equality at the international level, at least through their support for independence and the end of colonialism. New forms of internationalist-egalitarian political mobilization around alternative economic system and grassroots movements like *Black Lives Matter*, *Fridays for Future* and *MeToo* might play a similar role in the future. Novel challenges like climatic disasters, migration pressures and competition between China, Europe and the USA might also trigger major political, ideological and institutional change. What seems relatively clear, however, is that an accelerated compression of inequality between and within countries would require a massive redistribution of wealth. For instance, one could think of allocating a fraction of global tax revenues paid by multinationals and billionaires to all countries on the basis of their population. In Sub-Saharan Africa or in South Asia, this would radically transform the capacity of national states to finance investment in human capital, equipment and infrastructure.[25] Short of that, historical evidence suggest that extreme levels of global inequality can be highly persistent.

Section 5. Concluding Comments

In this paper, we have mobilized newly available historical series from the *World Inequality Database* in order to construct world income distribution estimates from 1820 to 2020. We find that the level of global income inequality has always been very large, reflecting the persistence of a highly hierarchical world economic system. Global inequality increased between 1820 and 1910, in the context of the rise of Western dominance and colonial empires, and then stabilized at a very high level between 1910 and 2020. Between 1820 and 1910, both between-country and within-country inequality were increasing. In contrast, these two components of global inequality have moved separately between 1910 and 2020: within-country inequality dropped in 1910-1980 (while between-country inequality kept increasing) but rose in 1980-2020 (while between-country inequality started to decline).

Our results are suggestive, but it is clear that our work should be supplemented by extensive additional research in order to reach a deeper understanding of global inequality dynamics. First, we need more refined country studies on income inequality trends, both from a long-run perspective and for the recent evolutions. In particular, access to adequate tax data is very limited in large parts of the world, so that in a number of regions our corrections to raw survey data often rely on a limited set of

[25] See Piketty (2021).

countries where we have access to more diverse data sources (household surveys, tax data, inheritance and wealth records, national accounts). As better country series become available, we will refine our estimates of global inequality dynamics. The many robustness checks that we have performed demonstrate that this will not affect our general conclusions regarding the long-run evolution of global inequality. But this can certainly affect some of the finer decompositions for the more recent period and allow us to better understand the mechanisms behind global inequality trends.

Next, a deeper understanding of the transformation of global inequality would also require detailed decompositions by production sector. For instance, we emphasized the key role of the power structure of the global textile sector (Beckert's empire of cotton) in order to understand changing power structures and core-periphery relations during the 19th century. It would be equally instructive to look more closely at the changing global dominance structure for the automobile sector in the 20th century or the high-tech digital sector in the early 21st century. In relation to this perspective on global production systems, it is also critical to analyze the evolution of the structure of energy extraction and consumption, carbon emissions and environmental damages.[26] This material perspective on global inequality is highly complementary to the income perspective adopted in this paper. Indeed, factoring in environmental pollution may reinforce the level of global inequality between countries in 2020 (as the effects of climate change are more pronounced in low-income countries)[27] as well as within countries (as low-income groups also tend to be disproportionately impacted by environmental damages).[28]

Finally, the global income inequality perspective ought to be supplemented by a global wealth inequality perspective. We already know from previous research that private wealth-income ratios have increased enormously in recent decades and are now close to their early 20th century peak (around 500-600% of national income by 2020, as opposed to about 300% of national income in 1970-1980, about 600% of national income in 1910).[29] At the eve of World War I, net foreign wealth held by British property owners was as large as 200% of national income. It was over 100% of national income for their French counterparts. A very large of top incomes around 1910 was made of capital income flows coming from colonial assets and other foreign investment. In other words, the between-countries inequality structure and the within-countries inequality

[26] See e.g. Chancel (2021).
[27] See Diffenbaugh and Burke (2019), Burke et al. (2015)
9808–9813
[28] See e.g. Hallegatte and Rozenberg (2017) and Chancel (2020)
[29] See Piketty and Zucman (2014).

structure were deeply intertwined at the time of colonial empires.[30] Net foreign assets held by China, Germany and Japan have increased significantly over the 1990-2020 period, but they remain at much more modest level than those held by Britain and France in 1910.[31] One major difference, however, is that gross foreign positions have reached much higher levels in today's financial globalization than in any previous era. One needs to look more closely at gross positions in different production sectors (and not only at aggregate net foreign wealth), e.g. Chinese or Western investment patterns in construction, transportation or mining in various African and Asian countries, in order to properly analyze the dynamics of ownership and power structures in the recent period. More research is needed on global wealth dynamics in order to reach a better understanding of global inequality trends.[32]

References

A. Ahmed, "Global Inequality of Hourly Income, 1980-2020", PSE, 2021

F. Alvaredo, L. Assouad, T. Piketty, "Measuring Inequality in the Middle East: the World's Most Unequal Region?", *Review of Income and Wealth*, 2019

F. Alvaredo, A. Bergeron, G. Cassan, "Income concentration in British India, 1885–1946", *Journal of Development Economics*, 2017

F. Alvaredo, L. Chancel, T. Piketty, E. Saez, G. Zucman, *World Inequality Report 2018*, WIL, 2018

F. Alvaredo, L. Chancel, T. Piketty, E. Saez, G. Zucman, "The Elephant Curve of Global Inequality and Growth", *AEA Papers and Proceedings*, 2018

F. Alvaredo, D. Cogneau, T. Piketty, "Inequality under Colonial Rule: Evidence from French Algeria, Cameroon, Tunisia, Vietnam and comparisons with British colonies 1920-1960", *Journal of Development Economics*, 2021

A. Atkinson, A. Harrison, *Distribution of Personal Wealth in Britain*, CUP, 1978

A. Atkinson, T. Piketty, *Top Incomes over the Twentieth Century: a Contrast between Continental European and English-speaking Countries*, OUP, 2007

[30] See Piketty, Postel-Vinay and Rosenthal (2006) and Piketty (2019, Table 4.1).
[31] See Piketty (2019, Figure 7.9).
[32] For a global perspective on wealth, see Bauluz, Blanchet and Martinez-Toledano (2021).

A. Atkinson, T. Piketty, *Top incomes: a global perspective*, OUP, 2010

E. Balibar, I. Wallerstein, *Race, nation, classe. Les identités ambigües*, La découverte 2018 (1988)

L. Bauluz, T. Blanchet, C. Martinez-Toledano, « Global Wealth Dynamics », WIL, 2021

S. Beckert, *Empire of Cotton. A Global History*, Knopf 2014

E. Bengtsonn, « The Swedish Sonderweg in Question: Democratization and Inequality in Comparative Perspective, c. 1750–1920 », *Past and Present*, 2018

E. Bengtsson, A. Missiaia, M. Olssson, P. Svensson, "Wealth Inequality in Sweden, 1750-1900", *Economic History Review*, 2017

T. Blanchet, L. Chancel, "National Accounts Series Methodology", WIL, 2016

T. Blanchet, L. Chancel, A. Gethin, "How Unequal Is Europe? Evidence from Distributional National Accounts, 1980-2017", WIL, 2019

T. Blanchet, L. Chancel, I. Flores, M. Morgan, *Distributional National Accounts Guidelines: Methods and Concepts used in the World Inequality Database*, WIL, 2020

T. Blanchet, L. Chancel, C. Durrer, M. Fisher-Post, T. Piketty, "Post-Tax vs Pre-Tax Income Inequality: A Global Perspective, 1980-2020", WIL, 2021

F. Bourguignon, C. Morrisson, "Inequality among World Citizens: 1820-1992", American Economic Review, 2002

L. Chancel, « Unsustainable Inequalities: Social Justice and the Environment », Harvard University Press, 2020

L. Chancel, « Global Carbon Inequality in the Long Run », WIL, 2021

L. Chancel, D. Cogneau, A. Gethin, A. Myczkowski, "How Large Are African Inequalities? Towards Distributional National Accounts in Africa", WIL, 2019

L. Chancel, T. Piketty, « Carbon and Inequality: From Kyoto to Paris », WIL, 2015.

L. Chancel, T. Piketty, “Indian Income Inequality, 1922-2015: from British Raj to Billionaire Raj?”, *Review of Income and Wealth*, 2019

H.J. Chang, *Kicking Away the Ladder: Development Strategy in Historical Perspective*, Anthems, 2002

D. Cogneau, Y. Dupraz, S. Mesplé-Somps, « Fiscal Capacity and Dualism in Colonial States: The French Empire 1830-1962 », *Journal of Economic History*, 2021

M. De Rosa, I. Flores, M. Morgan, “Inequality in Latin America Revisited: Insights from Distributional National Accounts”, WIL, 2020

N. Diffenbaugh, M., Burke, “ Global warming has increased global economic inequality” Proceedings of the National Academy of Science 116, 2019

S., Hallegatte, J., Rozenberg “Climate change through a poverty lens.” Nature Climate Change, 7, 250–256, 2017

S. Kuznets, *Shares of Upper Income Groups in Income and Saving*, NBER, 1953

C. Lakner, B. Milanovic, "Global income distribution: from the fall of the Berlin Wall to the Great Recession." The World Bank Economic Review 30.2 (2016): 203-232.

P. Lindert, *Growing Public. Social Spending and Economic Growth since the 18th Century*, Cambridge University Press, 2004

A. Maddison, *The World Economy: A Millennial Perspective*, OECD 2001

M. Mazzucatto, *Entrepreneurial State: Debunking Public vs Private Sector Myths*, Anthems, 2013

M. Morgan, T. Neef, “What’s New About Income Inequality in Europe?”, WIL, 2019

R. Moshrif, “What’s New About Income Inequality in the Middle-East?”, WIL, 2019

F. Novokmet, T. Piketty, G. Zucman, “From Soviets to Oligarchs: Inequality and Property in Russia, 1905-2016”, *Journal of Economic Inequality*, 2018

P. Parthasarathi, *Why Europe Grew Rich and Asia Did Not. Global Economic Divergence 1600-1850*, Cambridge UP 2011

T. Piketty, *Les Hauts revenus en France au 20e siècle*, Grasset, 2001 (*Top Incomes in France over the 20th century*, HUP, 2018)

T. Piketty, *Le capital au 21e siècle*, Seuil, 2013 (*Capital in the 21st century*, HUP, 2014).

T. Piketty, *Capital et idéologie*, Seuil, 2019 (*Capital and ideology*, HUP, 2020)

T. Piketty, *Une brève histoire de l'égalité*, Seuil, 2021 (*A Brief history of equality*, 2022)

T. Piketty, G. Postel-Vinay, J.L. Rosenthal, “Wealth Concentration in a Developing Economy: Paris and France, 1807-1994”, *American Economic Review*, 2006

T. Piketty, E. Saez, “Income Inequality in the United States, 1913-1998”, *Quarterly Journal of Economics*, 2003

T. Piketty, L. Yang, G. Zucman, “Capital Accumulation, Private Property and Rising Inequality in China, 1978-2015”, *American Economic Review*, 2019

T. Piketty, G. Zucman, “Capital is Back: Wealth-Income Ratios in Rich Countries 1700-2010”, *Quarterly Journal of Economics*, 2014

K. Pomeranz, *The Great Divergence. China, Europe and the Making of the Modern World Economy*, Princeton UP, 2000

A.S. Robilliard, “What’s New About Income Inequality in Africa?”, WIL, 2020

A. Shorrocks, “The Class of Additively Decomposable Inequality Measures”, *Econometrica*, 1981, 48(3), 613-625.

I. Wallerstein, *The Modern World-System*, 3 volumes, Academic Press, 1974-1989

J. L. van Zanden, J. Baten, P. Foldvari, B. van Leeuwen. (2013). The Changing Shape of Global Inequality 1820-2000; Exploring a New Dataset. Review of Income and Wealth, 1–19.

Methodological Appendix

This appendix summarizes the sources and methods used to construct our long run global income inequality estimates. For more details, readers should refer to the online XLS appendix ("ChancelPiketty2021.xlsx"), which details region-by-region series and assumptions. Additional details are available in the ChancelPiketty2021.zip file. We summarize methodological choices below to help readers navigate through our set of online appendix documents.

1. Regions

We distinguish 9 macro world regions, namely (i) Russia/Central Asia, (ii) East Asia, (iii) Europe, (iv) Latin America, (v) Middle East and North Africa, (vi) North America, (vii) Oceania, (viii) South and South East Asia, (ix) Sub Saharan Africa. In each region, we identify a set of large countries for which we have sufficiently detailed national-level macro or distributional statistics (see Table 1 in Section 2 above).

2. Population estimates

2.1. General methods and concepts

Country and region-level population estimates are provided in Appendix Table 2.

Total population: We use WID.world population estimates until 1950 as a general rule – these estimates are based on UN Population Division statistics and on national level sources collected by WID.world researchers (see Blanchet and Chancel, 2016). For certain countries estimates are available for 1950 on WID.world as of January 1, 2021, in which cases these estimates are used. When WID.world population data is not available, we use Maddison population growth rates to extend historical population series. Using growth rates rather than levels provided by Maddison ensures that there is no discontinuity at the year of junction of the two series. In practice, differences between UN population estimates and Maddison estimates at the year of junction are minimal.

2.2. Specific country or regional level assumptions regarding population

- **Central Asia:** Before 1950 there are no population growth estimates for Russia in the 2020 Maddison tables (which only provides population estimates for the USSR as a

whole), we therefore assume that the Russia population grows at the same rate as the population of the ex-USSR block, for which aggregate population data is available back to 1820.

- **Europe:** German population growth rates before 2000 are taken from Maddison.

3. National income estimates

Country and region-level aggregate and per capita income estimates are provided in Appendix Tables 3-4.

3.1. General methods and income concepts

National Income: we use WID.world national income series (see Blanchet and Chancel, 2016) from 1950 as a general rule. These estimates are obtained from UN Stats, national statistical offices, the IMF or the World Bank. We see them as the benchmark to compare incomes and growth across the world from 1950 onwards. Some countries on WID.world have national income estimates which go back to the early or mid 19th century (e.g. France, Sweden, Germany, UK). In those cases, WID.world estimates are used as far as possible in the past. To reconstruct national income series before 1950 (or before the earliest available data on WID.world), we use the growth rates of GDP provided by the Maddison project in order to ensure continuity in the levels of national income measured.

Consumption of Fixed Capital and Net Foreign Income: The above method amounts to assuming that the share of Consumption of Fixed Capital and Net Foreign Income are fixed in Gross Domestic Product in the longer run. For low income countries, we typically observe CFC values of 5-10% in the recent period. Similar values are observed in Western countries in the first half of the 19th century (See Blanchet and Chancel, 2016).

3.2. Specific country or regional level assumptions regarding national income

For most countries, we use the general methodology described in section 3.1. In certain cases, specific assumptions are made[33].

[33] Cf. do file “2a_Create_WID_Long_Run_Table.do”, section “Specific country assumptions”

- **Russia, Ukraine and Central Asia:** Before 1885, there are no income growth estimates for this region corresponding to former USSR in Maddison[34]. We assume that per capita incomes grow at the same rate as in the Maddison "Eastern European" region, (i.e. 20.4% overall between 1820 and 1850, 59.9% between 1850 and 1870, 71.4% between 1870 and 1900).

- **East Asia:** For 1820, we assume that the per capita income level of the Other East Asia Region is equal to the average of the corresponding values for China and Japan. Between 1850 and 1950, we use Maddison growth rates. After 1950 we use WID.world aggregates.

- **Europe:** We prefer WID.world long-run income estimates for France, Great Britain, Germany and Sweden to Maddison's. These estimates are based on detailed country-level work using the best available national income series in those countries. Our results present some differences to Maddison in terms of overall growth rates in the long run (see Table 1). The relative position of European countries in 1820 is, overall, unchanged. In the case of Italy, to preserve the relative position of European countries in 1820 with respect to one another, we assume that its per capita income level is equal to the French and British average. Between 1850 and 1950, we assume that Italy's per capita income level relative to the French and British average is the same as in Maddison. After 1950, we use WID.world levels and growth rates. **For the Other Western Europe region**, before 1950, we assume that its per capita income level is equal to the average of Great Britain, Germany, France, Italy, Spain and Sweden.

- **Sub Saharan Africa:** Using WID.world 1950 per capita income levels and applying Maddison's 1820-1950 growth rates yields very high per capita incomes relative to world average in 1820 for African countries (2x higher than India or China). As stated above, we assume that per capita incomes in 1950 provided by the UN and major organizations are correct. In order to keep relative income levels in 1820 in line with Maddison's, we assume higher growth rates for Africa over the 1820-1950 period than in Maddison. More precisely, we assume that SSA's per capita income between 1820 and 1950 grows at the same rate as the world average. In 1950, SSA per capita income is roughly 50% of world average income. For **South Africa:** Before 1940, we ensure that South Africa's per capita income relative to the rest of Sub Saharan Africa is the same as in Maddison.

[34] Estonia, Latvia, Lithuania are pare of F. USSR and not in our WID.world Central Asia region.

- **South and South East Asia:** We use WID.world per capita income growth rates for India, available back to 1922. Our growth rates are higher than in Maddison (see Table 1), leading to a lower per capita income level (relative to world average) in our new series than in Maddison's tables. For Indonesia, between 1820 and 1910, we ensure that income per capita relative to India falls in the same range of values as the those found in Maddison (see appendix tables)[35].

4. Regional and country-level inequality series

Country and region-level aggregate and per capita income estimates are provided in Appendix Tables 1 and 5.

We start with pretax income distributions available on WID.world as of February 2021. See Appendix tables for available top shares on WID.world at this date. Historical inequality data mostly takes the form of top income shares (top 1%, top 0.1% or smaller fractiles). Our general methods consists in reconstructing the distribution of income within the bottom 99% or 99.9% based on the latest available data for the full distribution in a given country. We proceed as follows. For country A, top 1% shares are available until year X, full distribution (bottom 50%, middle 40%, next 9%, shares and all g-percentiles) are available from year Y only (Y>X). We assume that the share of bottom 50% within the bottom 99% is constant before year Y: in this way, we keep the information on the dynamics of inequality provided by the historical top 1% series, and assume a plausible repartition of incomes within the bottom 99%.

[35] More precisely, we assume that income per capita in 1820 is €PPP2019 400, 390 in 1850, 410 in 1880, 420 in 1900.

Table 1. A new database on global income inequality: regions, countries, years

Regions	Countries	Years
East Asia	China, Japan Other East Asia	**1820, 1850, 1880, 1900, 1910, 1920, 1930, 1940, 1950, 1960, 1970, 1980-2020**
Europe	Britain, France, Germany, Italy, Spain Sweden, Other Western Europe Other Eastern Europe	
Latin America	Argentina, Brasil, Chile, Colombia Mexico, Other Latin America	
Middle East/North Africa	Algeria, Egypt, Turkey Other Middle East/North Africa	
North America	USA Canada	
Oceania	Australia, New Zealand Other Oceania	
Russia/Central Asia	Russia Other Russia/Central Asia	
South/South-East Asia	India, Indonesia Other South/Sout-East Asia	
Sub Saharan Africa	South Africa Other Sub-Saharan Africa	

Interpretation. The global income inequality database covers 9 world regions and 33 individual countries and sub-regions over the 1820-2020 period. Sources and series: Chancel and Piketty (2021). Chancel and Piketty (2021). See wid.world/longrun

Table 2. Global population by region, 1820-2020 (% global population)

	1820	1900	1950	1980	2020
Global population (millions)	1 044	1 559	2 521	4 433	7 665
World	**100%**	**100%**	**100%**	**100%**	**100%**
East Asia	**42%**	**31%**	**27%**	**27%**	**21%**
inc. China	37%	26%	22%	22%	18%
inc. Japan	3%	3%	3%	3%	2%
Europe	**16%**	**20%**	**16%**	**11%**	**7%**
inc. Great Britain	2%	3%	2%	1%	1%
inc. France	3%	3%	2%	1%	1%
inc. Germany	2%	3%	3%	2%	1%
Latin America	**2%**	**4%**	**6%**	**8%**	**8%**
inc. Brasil	0%	1%	2%	3%	3%
inc. Mexico	1%	1%	1%	2%	2%
Middle East & North Africa	**3%**	**4%**	**4%**	**5%**	**7%**
incl. Egypt	0%	1%	1%	1%	1%
incl. Turkey	1%	1%	1%	1%	1%
North America/Oceania	**1%**	**5%**	**7%**	**6%**	**5%**
incl. USA	1%	5%	6%	5%	4%
Russia/Central Asia	**5%**	**8%**	**7%**	**6%**	**4%**
inc. Russia	3%	5%	4%	3%	2%
South and South East Asia	**24%**	**23%**	**26%**	**28%**	**33%**
inc. India	20%	18%	15%	16%	18%
inc. Indonesia	1%	2%	3%	3%	4%
Sub Saharan Africa	**6%**	**6%**	**7%**	**9%**	**14%**
incl. South Africa	0%	0%	1%	1%	1%

Interpretation. The share of Europe in world population dropped from 16% in 1820 to 7% in 2020, while that of Sub-Saharan Africa rose from 6% to 14%. Sources and series: Chancel and Piketty (2021). See wid.world/longrun

Table 3. Global per capita income by region, 1820-2020 (% global per capita income)

	1820	1900	1950	1980	2020
Global per capita income (2020 PPP EUR)	*703*	*1 589*	*2 569*	*5 571*	*11 131*
World	**100%**	**100%**	**100%**	**100%**	**100%**
East Asia	**84%**	**43%**	**29%**	**45%**	**123%**
inc. China	82%	40%	20%	20%	109%
inc. Japan	100%	71%	85%	237%	226%
Europe	**192%**	**210%**	**201%**	**257%**	**239%**
inc. Great Britain	233%	315%	294%	212%	240%
inc. France	225%	254%	254%	339%	264%
inc. Germany	175%	234%	188%	315%	295%
Latin America	**113%**	**85%**	**113%**	**125%**	**90%**
inc. Brasil	129%	58%	91%	136%	89%
inc. Mexico	129%	103%	123%	151%	106%
Middle East & North Africa	**173%**	**144%**	**117%**	**173%**	**121%**
incl. Egypt	151%	110%	63%	57%	80%
incl. Turkey	178%	113%	104%	106%	151%
North America/Oceania	**255%**	**341%**	**404%**	**351%**	**346%**
incl. USA	263%	350%	411%	354%	354%
Russia/Central Asia	**71%**	**98%**	**144%**	**166%**	**110%**
inc. Russia	74%	102%	150%	212%	149%
South and South East Asia	**62%**	**29%**	**25%**	**22%**	**47%**
inc. India	57%	25%	22%	16%	41%
inc. Indonesia	57%	26%	16%	20%	68%
Sub Saharan Africa	**62%**	**57%**	**56%**	**39%**	**23%**
incl. South Africa	92%	100%	159%	134%	75%

Interpretation. Average per capita income in East Asia dropped from 84% of world average in 1820 to 29% in 1950, before rising to 123% in 2020. Sources and series: Chancel and Piketty (2021). See wid.world/longrun

Table 4. Global income by region, 1820-2020 (% global income)

	1820	1900	1950	1980	2020
Global income (billions 2020 PPP EUR)	*734*	*2 477*	*6 477*	*24 696*	*85 318*
World	**100%**	**100%**	**100%**	**100%**	**100%**
East Asia	**36%**	**13%**	**8%**	**12%**	**26%**
inc. China	30%	10%	4%	4%	20%
inc. Japan	3%	2%	3%	6%	4%
Europe	**32%**	**41%**	**32%**	**29%**	**17%**
inc. Great Britain	5%	8%	6%	3%	2%
inc. France	7%	6%	4%	4%	2%
inc. Germany	4%	8%	5%	6%	3%
Latin America	**2%**	**3%**	**7%**	**10%**	**8%**
inc. Brasil	1%	1%	2%	4%	2%
inc. Mexico	1%	1%	1%	2%	2%
Middle East & North Africa	**6%**	**6%**	**5%**	**9%**	**8%**
incl. Egypt	1%	1%	1%	1%	1%
incl. Turkey	2%	1%	1%	1%	2%
North America/Oceania	**3%**	**18%**	**27%**	**20%**	**17%**
incl. USA	3%	17%	25%	18%	15%
Russia/Central Asia	**4%**	**7%**	**10%**	**9%**	**4%**
inc. Russia	2%	5%	6%	7%	3%
South and South East Asia	**15%**	**7%**	**7%**	**6%**	**15%**
inc. India	11%	5%	3%	2%	7%
inc. Indonesia	1%	1%	0%	1%	2%
Sub Saharan Africa	**4%**	**3%**	**4%**	**3%**	**3%**
incl. South Africa	0%	0%	1%	1%	1%

Interpretation. The share of North America/Oceania in world income rose from 3% in 1820 to 27% in 1950, and then dropped to 17% in 2020. **Sources and series**: see wid.world/longrun

Table 5. Inequality by region, 1820-2020 (Top 10% income share)

	1820	1900	1950	1980	2020
World	**50%**	**60%**	**55%**	**56%**	**55%**
East Asia	**46%**	**51%**	**37%**	**59%**	**44%**
inc. China	46%	51%	27%	28%	42%
inc. Japan	45%	47%	28%	35%	43%
Europe	**50%**	**54%**	**39%**	**30%**	**36%**
inc. Great Britain	50%	56%	49%	30%	36%
inc. France	49%	50%	34%	28%	32%
inc. Germany	47%	53%	30%	29%	38%
Latin America	**53%**	**57%**	**58%**	**55%**	**55%**
inc. Brasil	53%	55%	58%	55%	57%
inc. Mexico	54%	55%	58%	53%	59%
Middle East & North Africa	**53%**	**56%**	**53%**	**67%**	**57%**
incl. Egypt	53%	58%	61%	51%	49%
incl. Turkey	53%	54%	55%	55%	51%
North America	42%	40%	39%	34%	45%
incl. USA	42%	40%	39%	34%	45%
Russia/Central Asia	**45%**	**48%**	**27%**	**26%**	**46%**
inc. Russia	45%	48%	27%	26%	46%
South and South East Asia	**47%**	**52%**	**39%**	**46%**	**54%**
inc. India	48%	54%	35%	32%	57%
inc. Indonesia	41%	42%	46%	40%	41%
Sub Saharan Africa	**49%**	**54%**	**55%**	**58%**	**56%**
incl. South Africa	49%	53%	53%	47%	65%

Interpretation. In East Asia in 1980, the top 10% income share was equal to 59% of total income. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Table 6. Inequality by region, 1820-2020 (Bottom 50% income share)

	1820	1900	1950	1980	2020
World	**14%**	**7%**	**7%**	**5%**	**7%**
East Asia	**18%**	**17%**	**20%**	**12%**	**13%**
inc. China	19%	17%	25%	25%	14%
inc. Japan	18%	17%	25%	21%	18%
Europe	**15%**	**14%**	**20%**	**20%**	**19%**
inc. Great Britain	16%	14%	16%	22%	20%
inc. France	14%	13%	19%	24%	22%
inc. Germany	17%	15%	23%	23%	19%
Latin America	**11%**	**10%**	**10%**	**9%**	**10%**
inc. Brasil	12%	11%	10%	11%	10%
inc. Mexico	11%	10%	10%	8%	8%
Middle East & North Africa	**14%**	**13%**	**12%**	**7%**	**10%**
incl. Egypt	15%	14%	13%	16%	17%
incl. Turkey	14%	13%	13%	13%	15%
North America	**14%**	**14%**	**17%**	**19%**	**13%**
incl. USA	14%	15%	17%	19%	13%
Russia/Central Asia	**16%**	**15%**	**23%**	**21%**	**14%**
inc. Russia	16%	15%	23%	27%	17%
South and South East Asia	**16%**	**14%**	**17%**	**15%**	**12%**
inc. India	16%	14%	20%	21%	13%
inc. Indonesia	18%	17%	16%	18%	16%
Sub Saharan Africa	**13%**	**12%**	**10%**	**7%**	**9%**
incl. South Africa	13%	12%	12%	13%	6%

Interpretation. In East Asia in 1980, the bottom 50% income share was equal to 12% of total income. **Sources and series**: see wid.world/longrun

Table 7. Inequality by region, 1820-2020 (Top 10% avg. income divided by bot. 50% avg. income)

	1820	1900	1950	1980	2020
World	**18**	**40**	**40**	**52**	**37**
East Asia	**12**	**15**	**9**	**25**	**16**
inc. China	13	15	5	6	15
inc. Japan	12	14	4	8	12
Europe	**17**	**19**	**10**	**7**	**9**
inc. Great Britain	16	20	16	7	9
inc. France	18	19	9	6	7
inc. Germany	14	17	7	6	10
Latin America	**23**	**29**	**29**	**29**	**28**
inc. Brasil	23	25	28	25	28
inc. Mexico	25	27	30	33	34
Middle East & North Africa	**19**	**21**	**21**	**48**	**27**
incl. Egypt	18	21	24	16	14
incl. Turkey	19	20	21	21	16
North America / Oceania	**15**	**14**	**11**	**9**	**16**
incl. USA	15	14	11	9	17
Russia/Central Asia	**14**	**16**	**6**	**6**	**16**
inc. Russia	14	16	6	5	14
South and South East Asia	**15**	**19**	**11**	**15**	**22**
inc. India	15	19	9	8	22
inc. Indonesia	12	12	14	11	13
Sub Saharan Africa	**19**	**23**	**26**	**42**	**32**
incl. South Africa	19	23	23	18	56

Interpretation. In East Asia in 1980, top 10% average income was 25 times higher than the bottom 50% average income. **Sources and series**: see wid.world/longrun

Table 8. Inequality by region, 1820-2020 (Top 1% income share)

	1820	1900	1950	1980	2020
World	**20%**	**25%**	**19%**	**18%**	**21%**
East Asia	**16%**	**18%**	**7%**	**20%**	**16%**
inc. China	16%	18%	5%	7%	14%
inc. Japan	16%	18%	9%	10%	12%
Europe	**22%**	**26%**	**12%**	**8%**	**12%**
inc. Great Britain	25%	31%	14%	8%	13%
inc. France	20%	22%	10%	7%	10%
inc. Germany	18%	23%	9%	10%	13%
Latin America	**24%**	**26%**	**28%**	**23%**	**26%**
inc. Brasil	26%	26%	30%	25%	28%
inc. Mexico	24%	25%	27%	21%	29%
Middle East & North Africa	**22%**	**24%**	**22%**	**32%**	**23%**
incl. Egypt	26%	28%	30%	19%	19%
incl. Turkey	21%	22%	22%	22%	18%
North America	**16%**	**15%**	**16%**	**10%**	**19%**
incl. USA	16%	16%	17%	10%	19%
Russia/Central Asia	**16%**	**18%**	**6%**	**5%**	**20%**
inc. Russia	16%	18%	6%	5%	21%
South and South East Asia	**16%**	**17%**	**15%**	**18%**	**20%**
inc. India	16%	17%	12%	8%	22%
inc. Indonesia	14%	14%	21%	10%	11%
Sub Saharan Africa	**19%**	**21%**	**19%**	**20%**	**22%**
incl. South Africa	19%	21%	17%	10%	19%

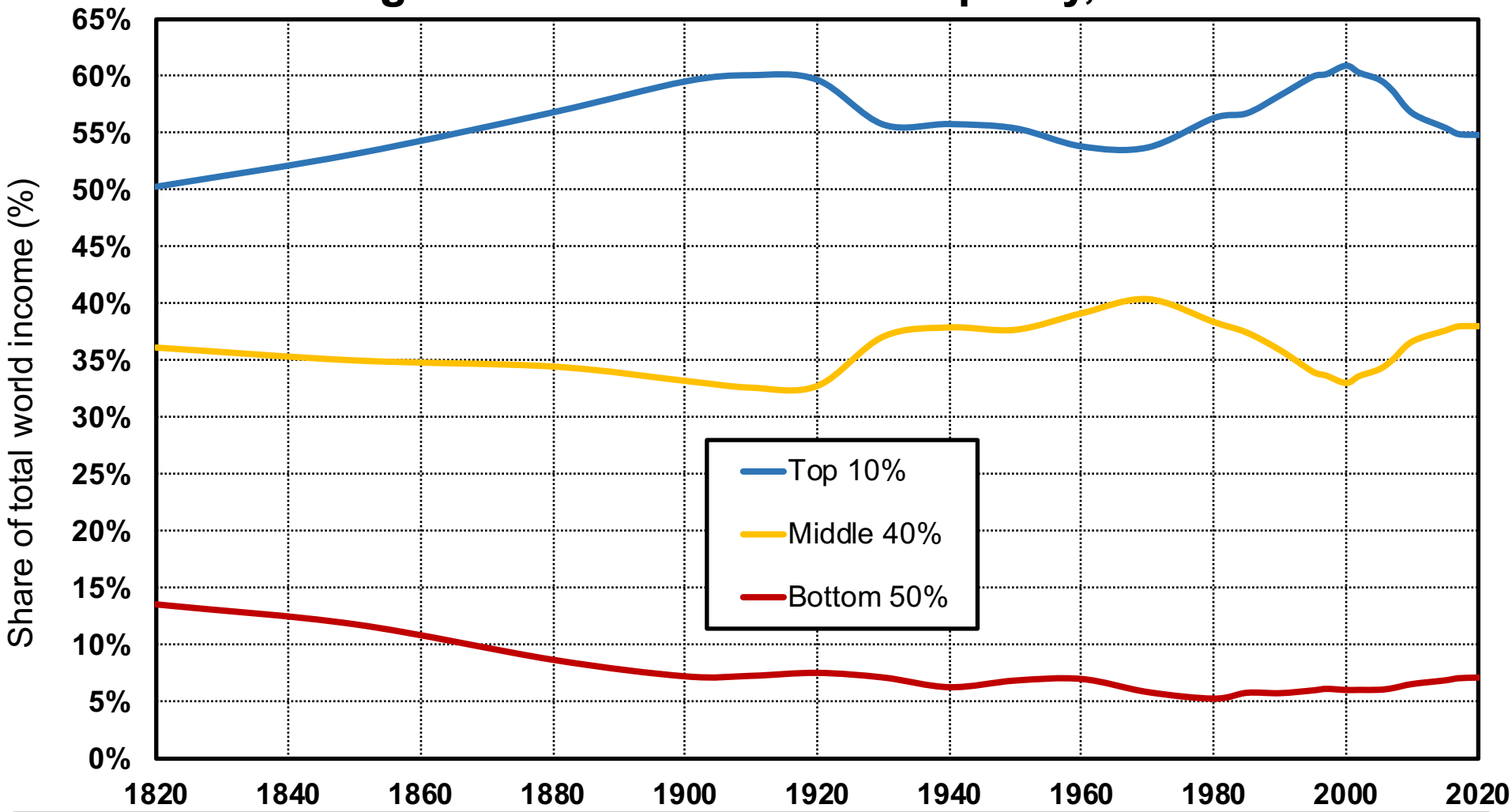
Interpretation. In East Asia in 1980, the top 1% income share was equal to 20% of total income. **Sources and series**: see wid.world/longrun

Table 9. Inequality by region, 1820-2020 (Top 1% avg. income divided by bot. 50% avg. income)

	1820	1900	1950	1980	2020
World	**73**	**170**	**140**	**169**	**144**
East Asia	**44**	**54**	**19**	**85**	**60**
inc. China	44	52	10	13	49
inc. Japan	45	53	17	23	33
Europe	**75**	**93**	**32**	**20**	**31**
inc. Great Britain	79	113	43	19	32
inc. France	75	83	27	15	23
inc. Germany	53	74	21	22	35
Latin America	**110**	**134**	**145**	**124**	**136**
inc. Brasil	111	119	144	112	134
inc. Mexico	113	121	141	132	169
Middle East & North Africa	**78**	**92**	**93**	**233**	**114**
incl. Egypt	88	105	120	61	55
incl. Turkey	76	81	85	85	60
North America / Oceania	**59**	**54**	**47**	**28**	**69**
incl. USA	57	53	48	27	70
Russia/Central Asia	**52**	**61**	**13**	**12**	**72**
inc. Russia	51	61	13	8	63
South and South East Asia	**52**	**63**	**43**	**59**	**83**
inc. India	50	59	29	18	83
inc. Indonesia	39	41	64	29	33
Sub Saharan Africa	**75**	**89**	**92**	**150**	**127**
incl. South Africa	75	88	72	38	166

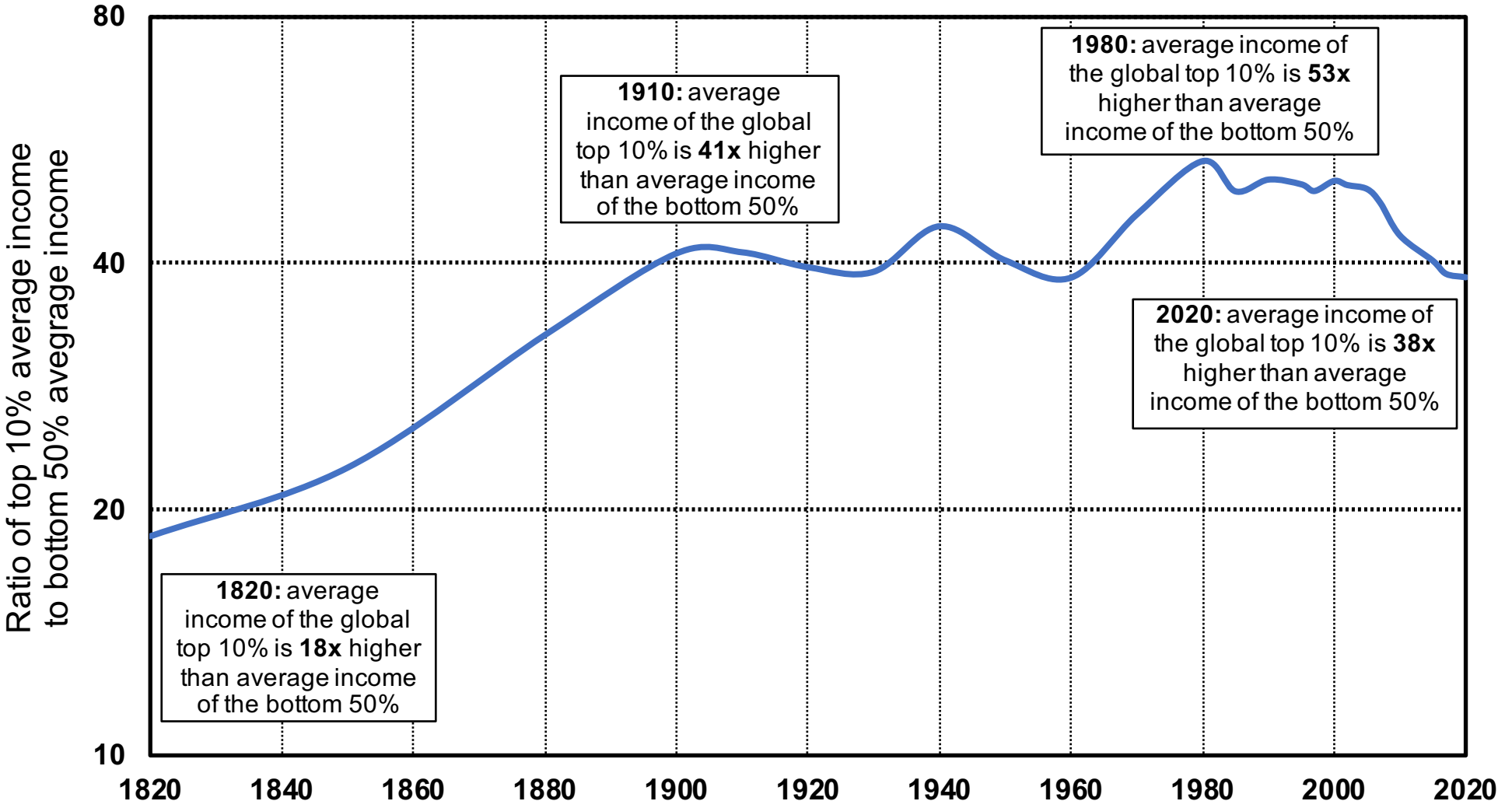
Interpretation. In East Asia in 1980, top 1% average income was 85 times higher than the bottom 50% average income. **Sources and series**: see wid.world/longrun

Figure 1. Global income inequality, 1820-2020



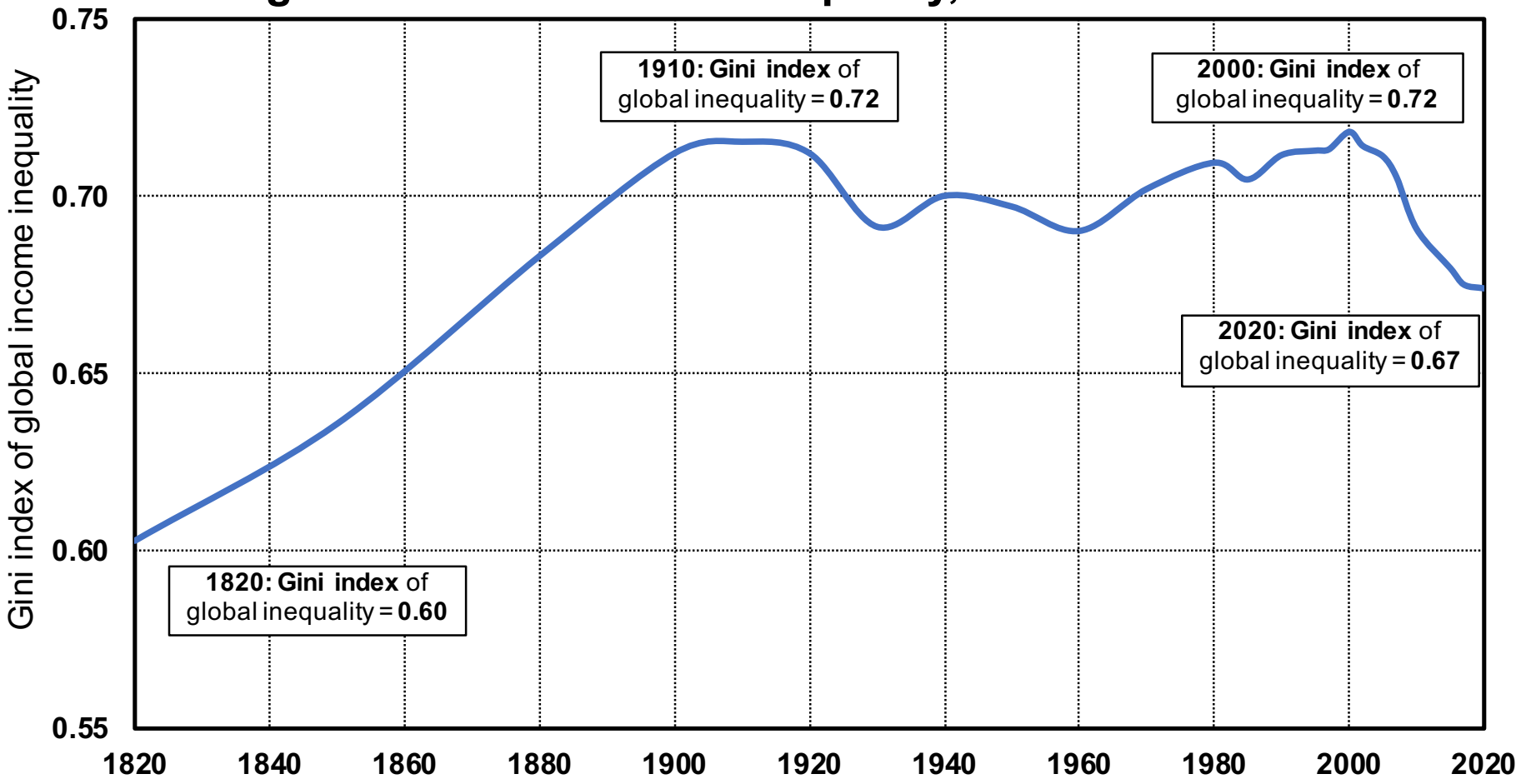
Interpretation. The share of global income going to top 10% highest incomes at the world level has fluctuated around 50-60% between 1820 and 2020 (50% in 1820, 60% in 1910, 56% in 1980, 61% in 2000, 55% in 2020), while the share going to the bottom 50% lowest incomes has generally been around or below 10% (14% in 1820, 7% in 1910, 5% in 1980, 6% in 2000, 7% in 2020). Global inequality has always been very large. It rose between 1820 and 1910 and shows little long-run trend between 1910 and 2020. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 2. Global income inequality, 1820-2020: ratio T10/B50



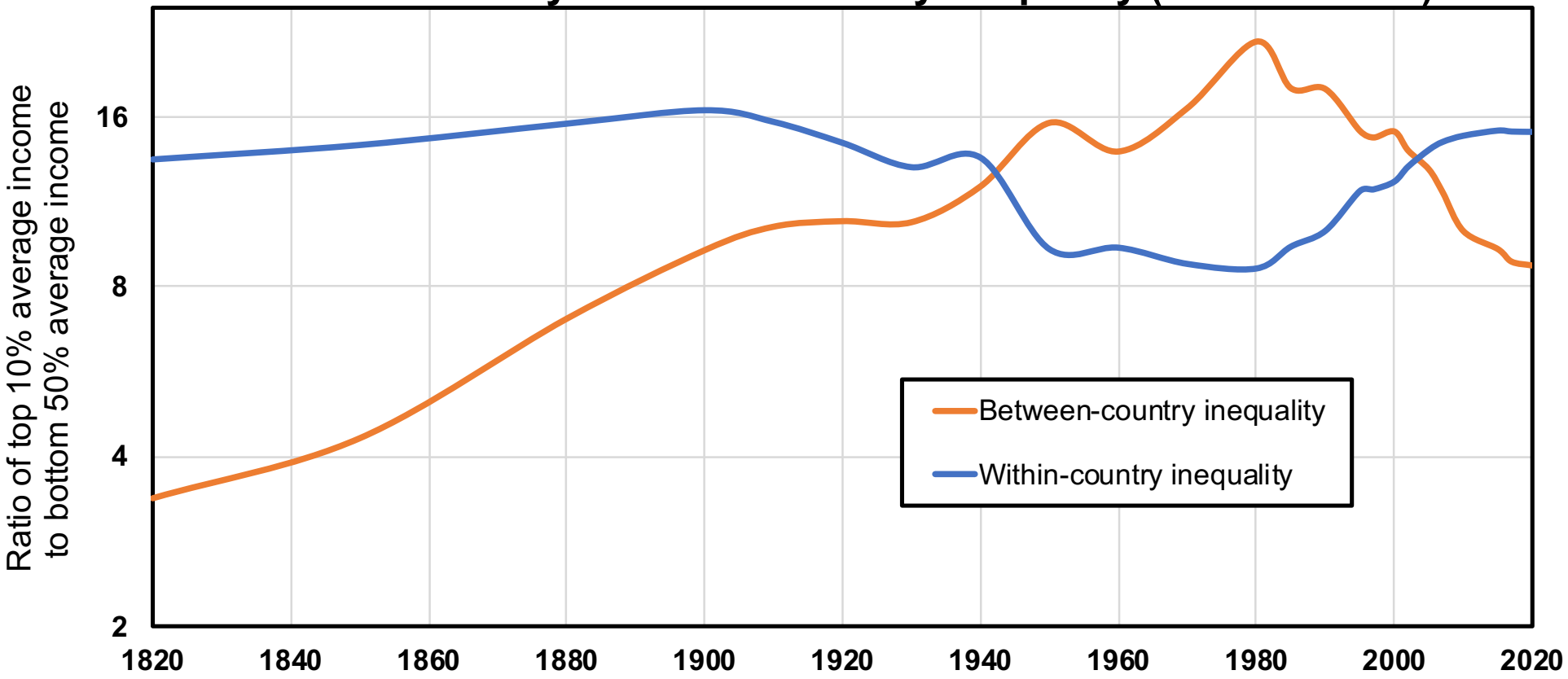
Interpretation. Global inequality, as measured by the ratio T10/B50 between the average income of the top 10% and the average income of the bottom 50%, more than doubled between between 1820 and 1910, from less than 20 to about 40, and stabilized around 40 between 1910 and 2020. It is too early to say whether the decline in global inequality observed since 2008 will continue. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 3. Global income inequality, 1820-2020: Gini index



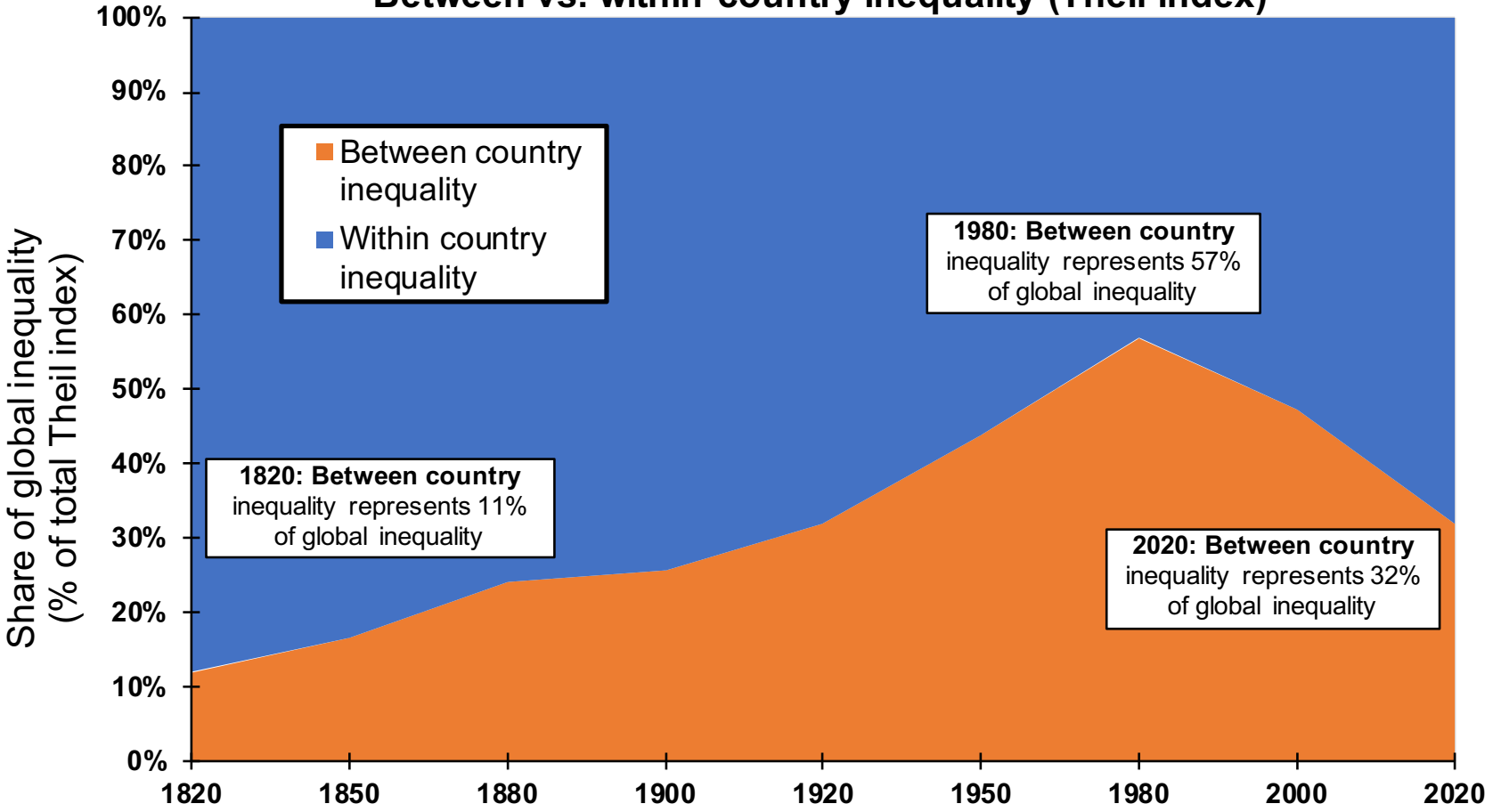
Interpretation. Global inequality, as measured by the global Gini coefficient, rose from about 0,6 in 1820 to about 0,7 in 1910, and then stabilized around 0,7 between 1910 and 2020. It is too early to say whether the decline in the global Gini coefficient observed since 2000 will continue. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 4. Global income inequality, 1820-2020: Between-country vs. within-country inequality (ratio T10/B50)



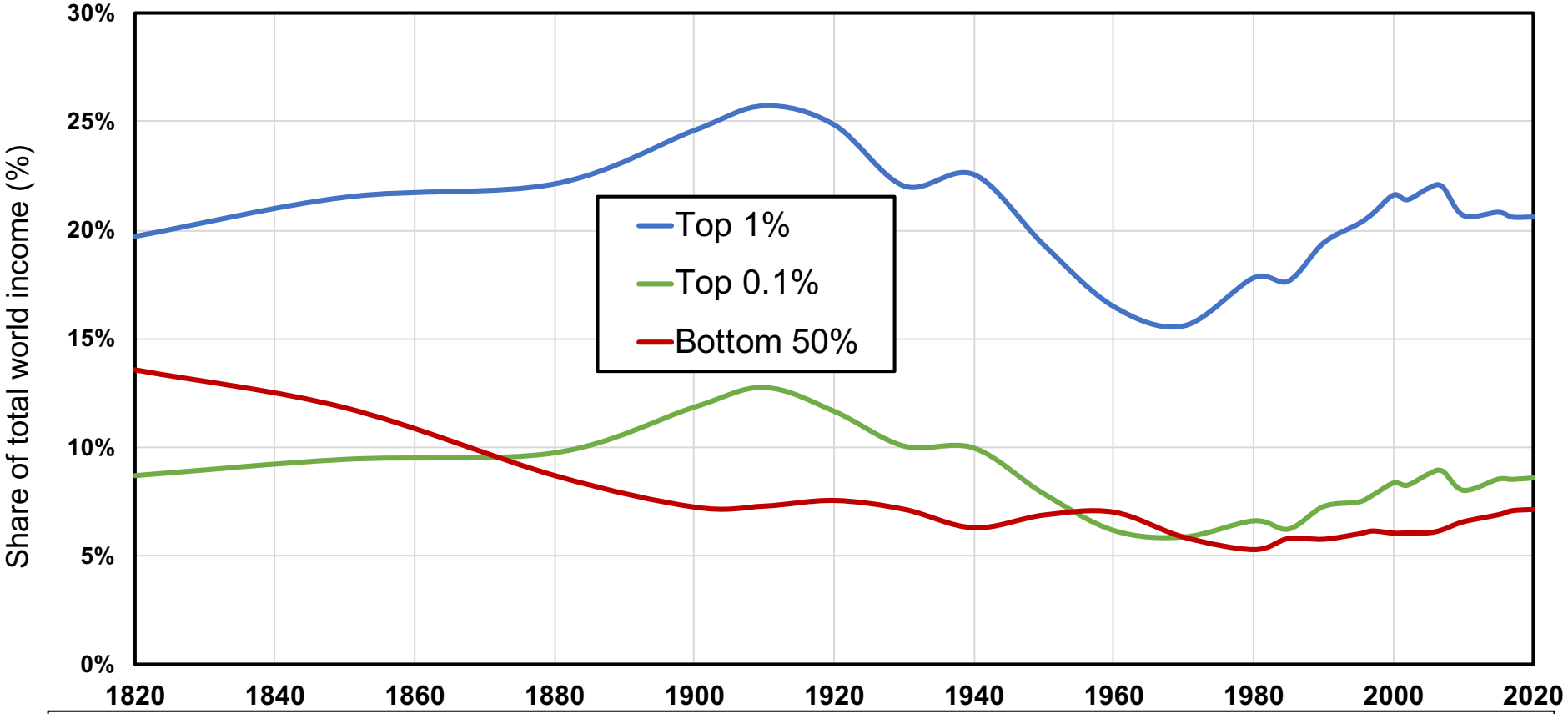
Interpretation. Between-country inequality, as measured by the ratio T10/B50 between the average incomes of the top 10% and the bottom 50% (assuming everybody within a country as the same income), rose between 1820 and 1980 and strongly declined since then. Within-country inequality, as measured also by the ratio T10/B50 between the average incomes of the top 10% and the bottom 50% (assuming all countries have the same average income), rose slightly between 1820 and 1910, declined between 1910 and 1980, and rose since 1980.
Sources and series: Chancel and Piketty (2021). See wid.world/longrun

Figure 5. Global income inequality, 1820-2020: Between vs. within country inequality (Theil index)



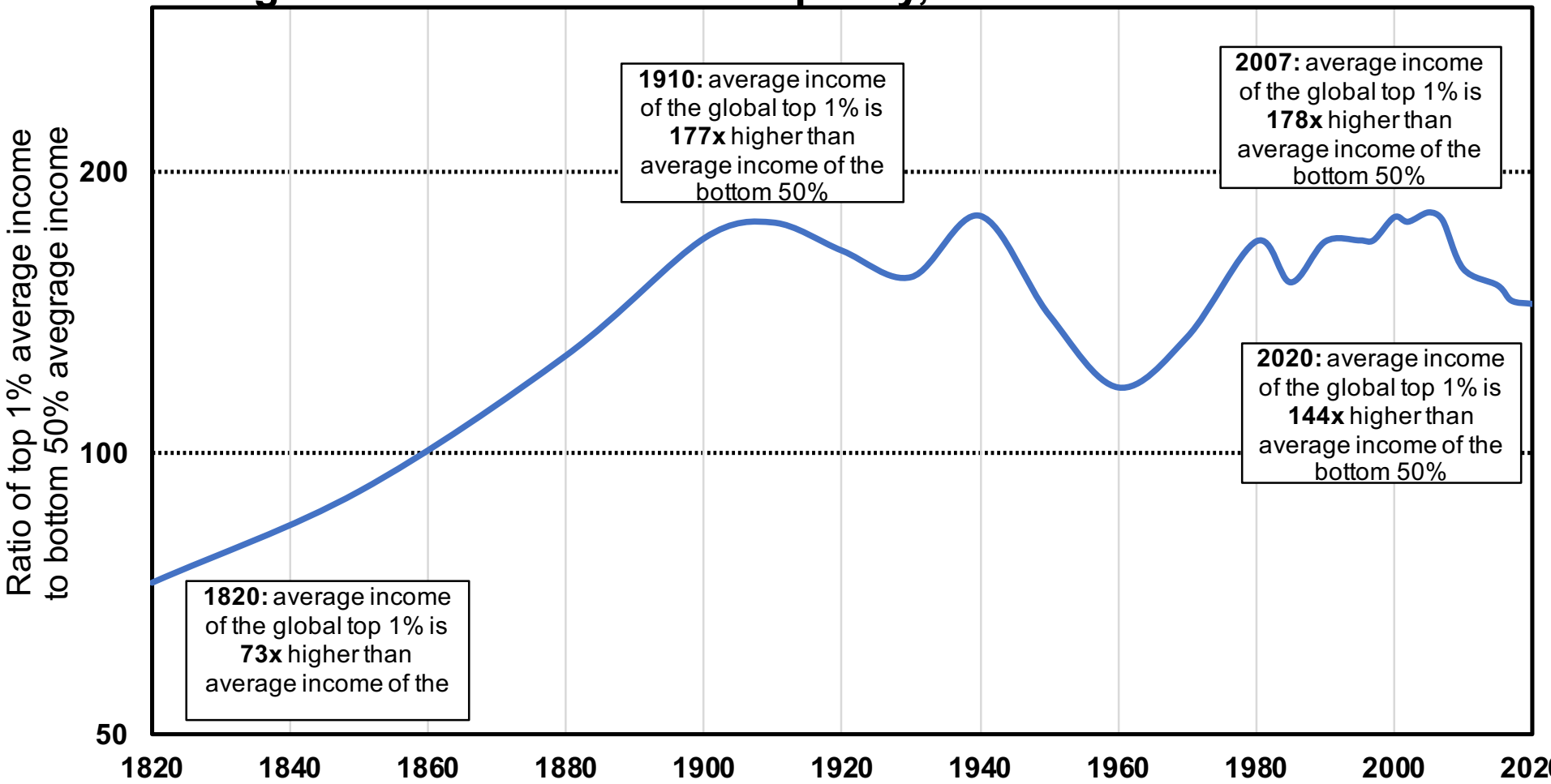
Interpretation. The importance of between-country inequality in overall global inequality, as measured by the Theil index, rose between 1820 and 1980 and strongly declined since then. In 2020, between-country inequality makes-up about a third of global inequality between individuals. The rest is due to inequality within countries. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 6. Global Inequality: Top 1% vs Bottom 50% Shares



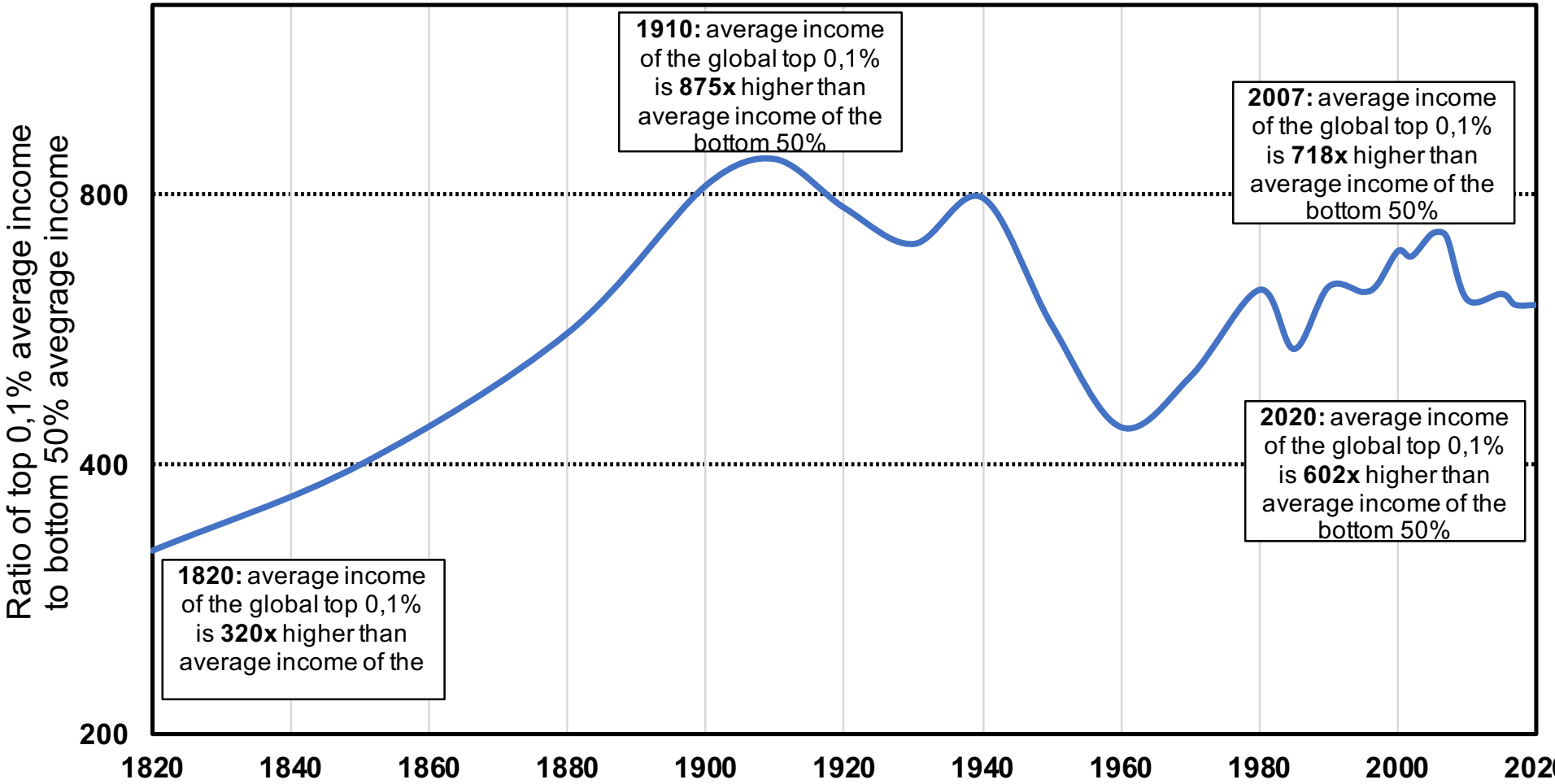
Interpretation. The share of global income going to top 1% highest incomes at the world level has fluctuated around 15-25% between 1820 and 2020 (20% in 1820, 26% in 1910, 16% in 1970, 21% in 2020) and has always been substantially larger than the share going to the bottom 50%, which gas generally been of the same order of magnitude as the share going to the top 0,1%. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 7. Global income inequality, 1820-2020: T1/B50 ratio



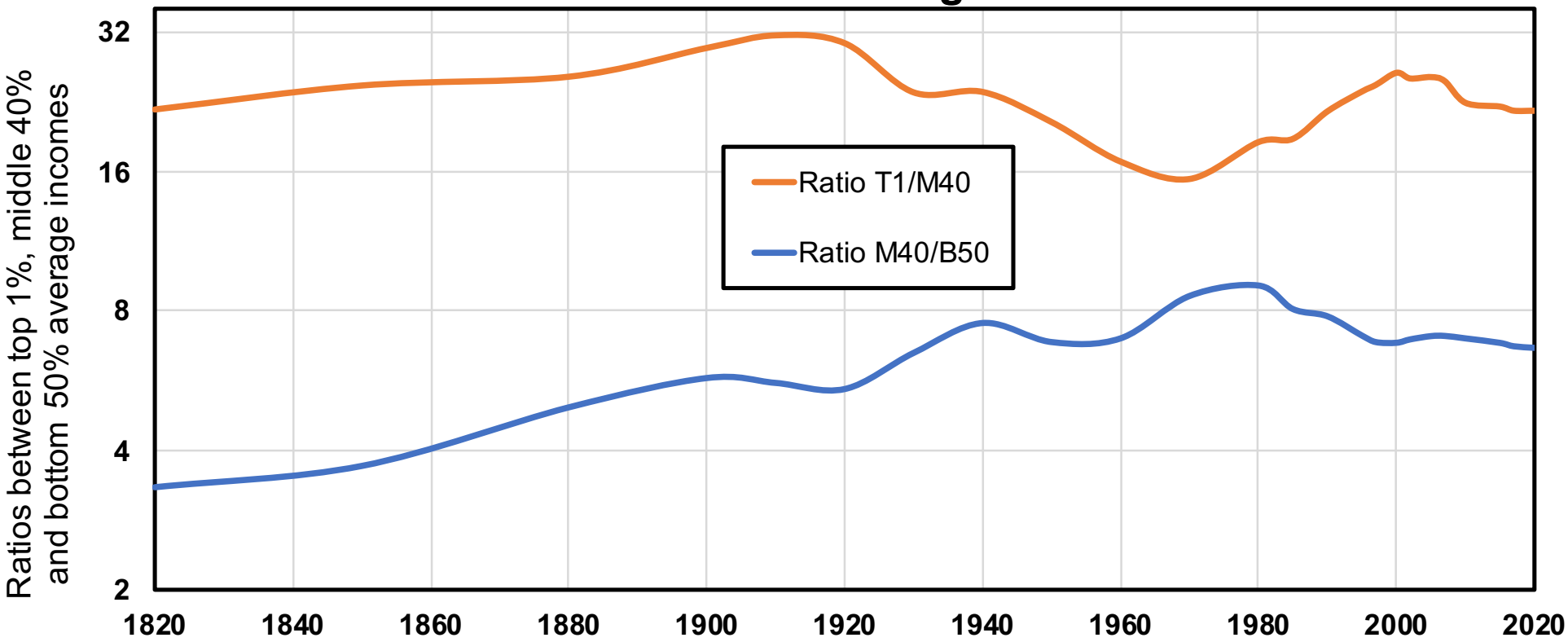
Interpretation. Global inequality, as measured by the ratio T1/B50 between the average income of the top 1% and the average income of the bottom 50%, more than doubled between between 1820 and 1910, from about 70 to about 180, and stabilized around 150 between 1910 and 2020. It is too early to say whether the decline in global inequality observed since 2008 will continue. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 8. Global income inequality, 1820-2020: T0,1/B50 ratio



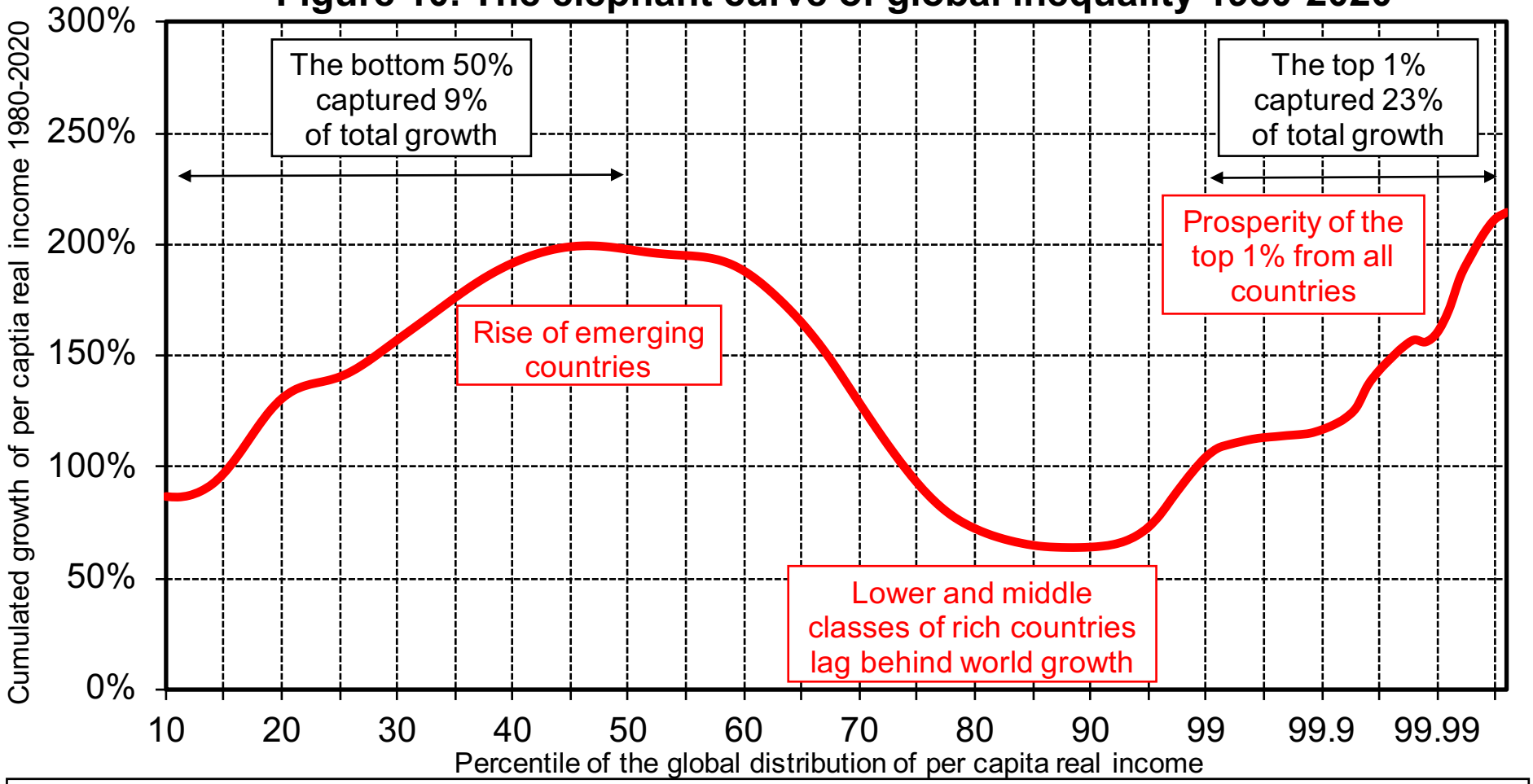
Interpretation. Global inequality, as measured by the ratio T0,1/B50 between the average income of the top 0,1% and the average income of the bottom 50%, almost tripled between between 1820 and 1910, from about 300 to about 900, and stabilized around 500-700 between 1950 and 2020. It is too early to say whether the decline in global inequality observed since 2008 will continue. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 9. Global income inequality, 1820-2020: T1/M40 vs M40/B50 average income ratios



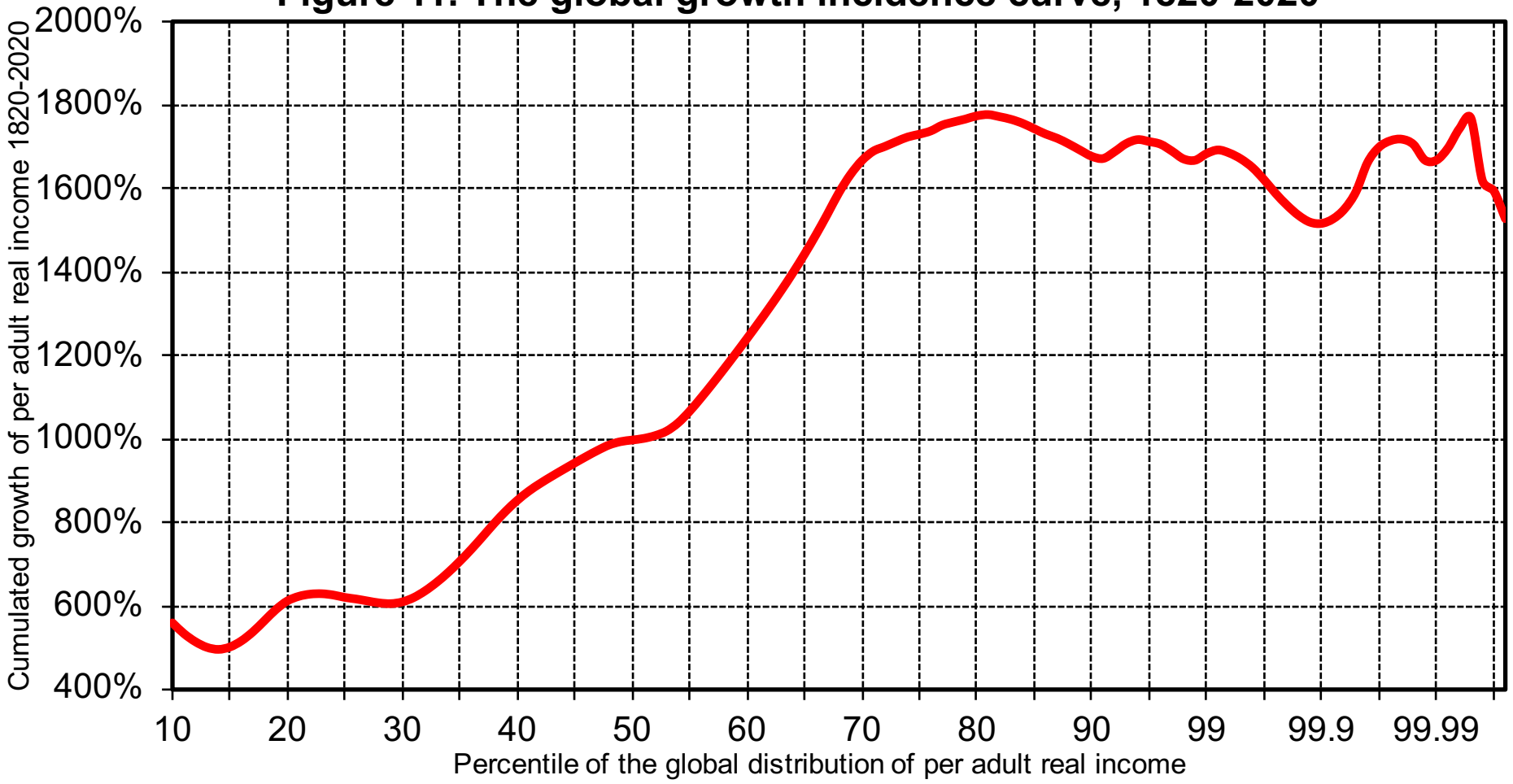
Interpretation. Bottom-end global inequality, as measured by the ratio M40/B50 between the average incomes of the middle 40% and the bottom 50%, rose from 3,3 in 1820 to 9,1 in 1980, down to 6,7 in 2020. Top-end global inequality, as measured by the ratio T1/M40 between the average incomes of the top 1% and the middle 40%, rose from 22 in 1820 to 32 in 1910, down to 15 in 1970, up to 22 in 2020. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 10. The elephant curve of global inequality 1980-2020



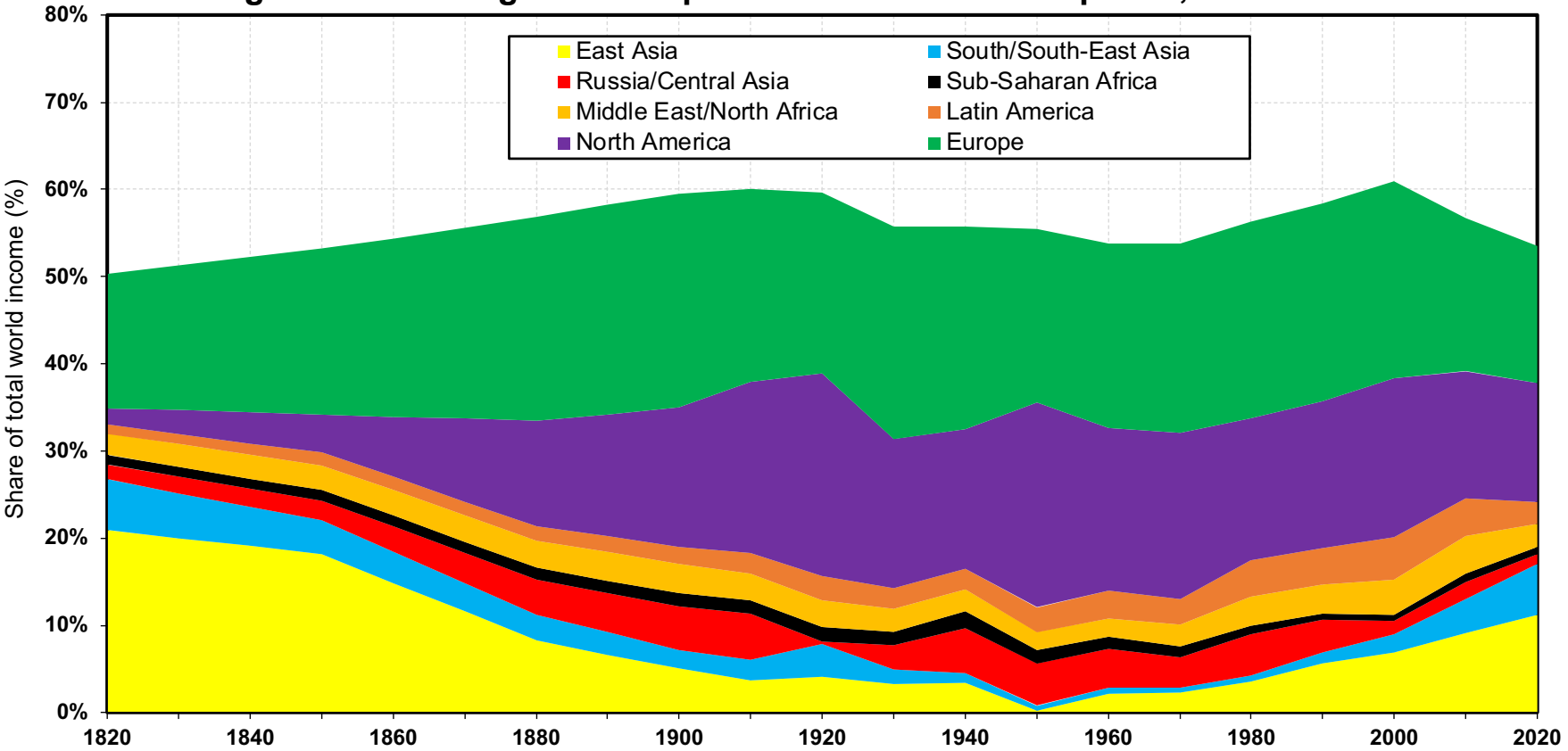
Interpretation. The bottom 50% incomes of the world saw substantial growth between 1980 and 2020 (between +50% and +200%). The top 1% incomes also benefited from high growth (between +100% and +200%). Intermediate categories grew less. In sum, inequalitiy decreased between the bottom and the middle of the global income distribution, and increased between the middle and the top. In effect, the top 1% captured 22% of total world growth between 1980 and 2020, vs 11% for the bottom 50%. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 11. The global growth incidence curve, 1820-2020



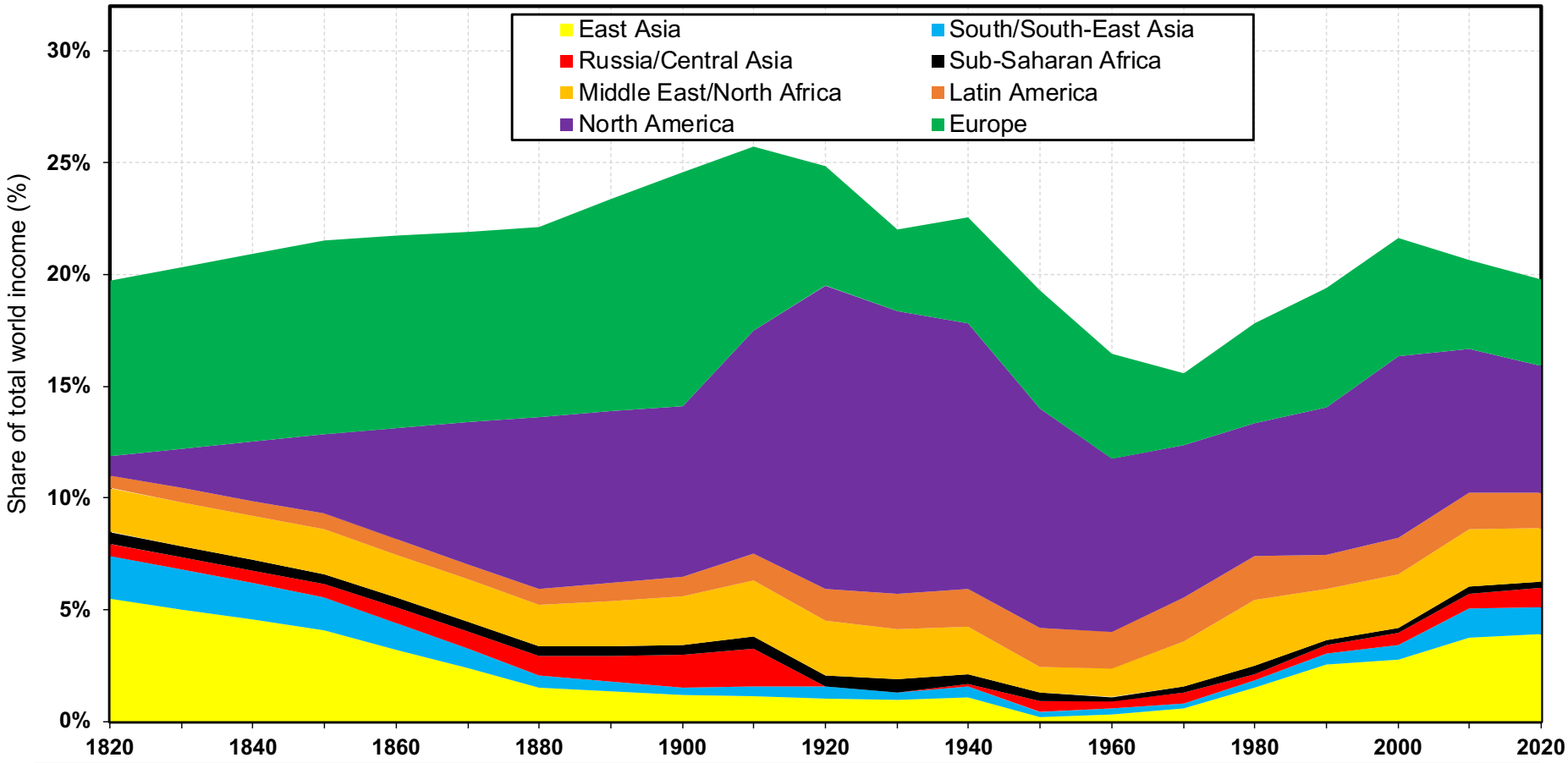
Interpretation. The bottom 50% incomes of the world saw substantial growth between 1820 and 2020 (between +600% and +1000%). The top 30% incomes benefited from even higher growth (between +1600% and +1800%). **Sources and series**: Chancel and Piketty (2021) See wid.world/longrun

Figure 12. The Regional Composition of the Global Top 10%, 1820-2020



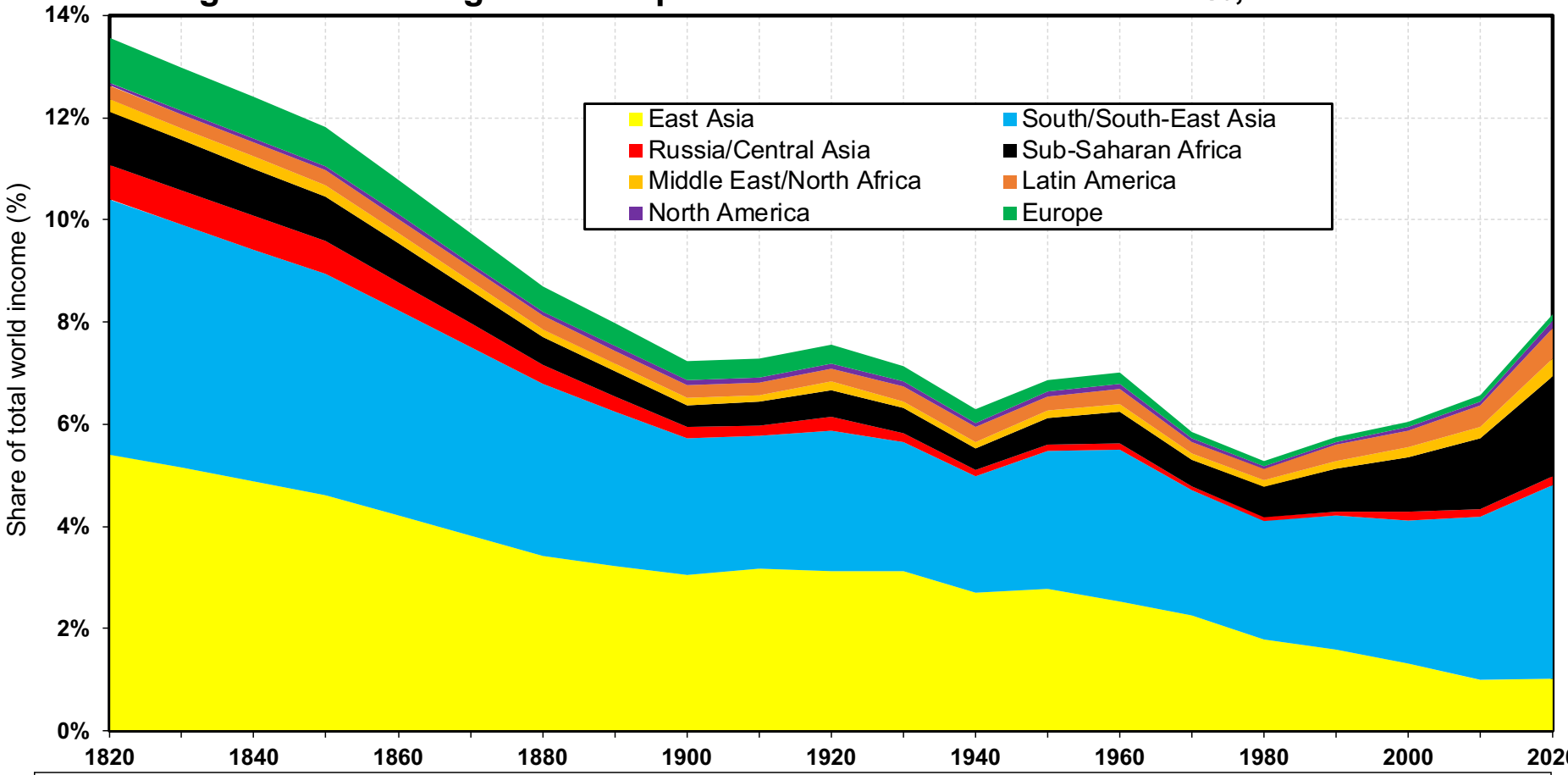
Interpretation. The regional composition of the global top 10% has changed enormously between 1820 and 2020. In particular, the share of East Asia and South/South-East Asia within the global top 10% collapsed between 1820 and 1950, before gradually rising between 1950 and 2020.
Note: Oceania is included in North America (see Tables 2-4). **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 13. The Regional Composition of the Global Top 1%, 1820-2020



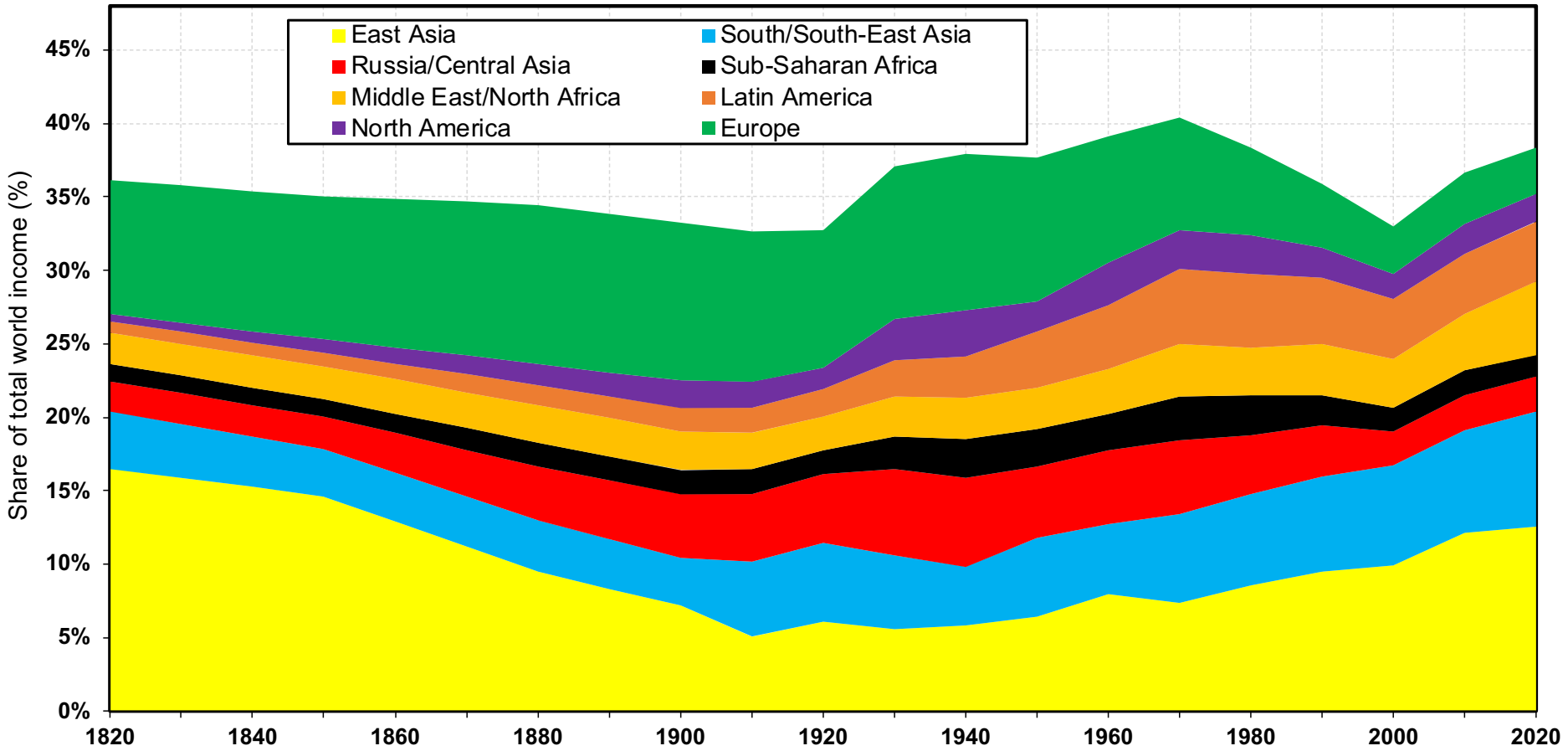
Interpretation. The regional composition of the global top 1% has changed enormously between 1820 and 2020. In particular, the share of East Asia and South/South-East Asia within the global top 10% collapsed between 1820 and 1950, before gradually rising between 1950 and 2020.
Note: Oceania is included in North America (see Tables 2-4). **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

Figure 14. The Regional Composition of the Global Bottom 50%, 1820-2020



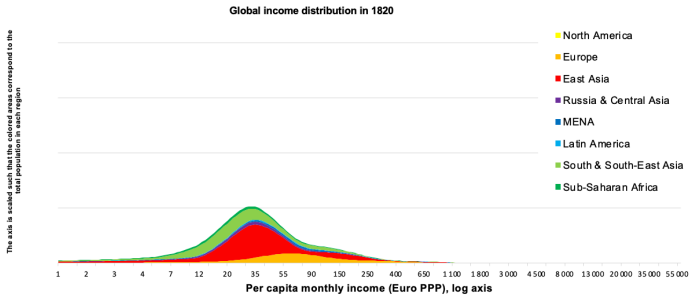
Interpretation. The regional composition of the global bottom 50% has changed singificantly between 1820 and 2020. In particular, the share of South/South-East Asia and Sub-Saharan Africa within the global bottom 50% increased substantially between 1980 and 2020.
Note: Oceania is included in North America (see Tables 2-4). **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

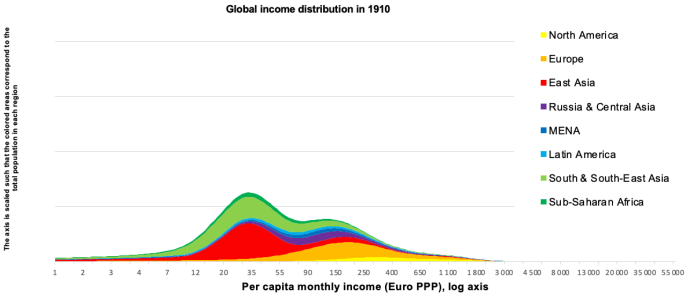
Figure 15. The Regional Composition of the Global Middle 40%, 1820-2020

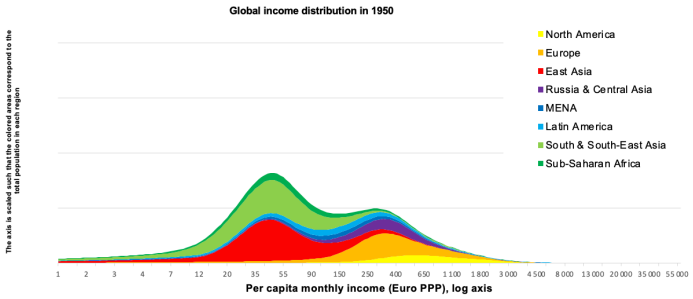


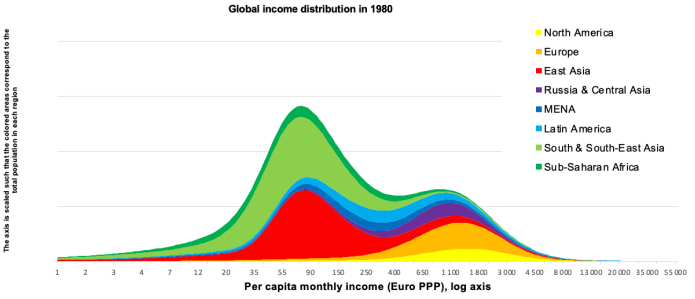
Interpretation. The regional composition of the global middle 40% has changed singificantly between 1820 and 2020. In particular, the share of East Asia and South/South-East Asia within the global middle 40% increased substantially between 1940 and 2020.
Note: Oceania is included in North America (see Tables 2-4). **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun

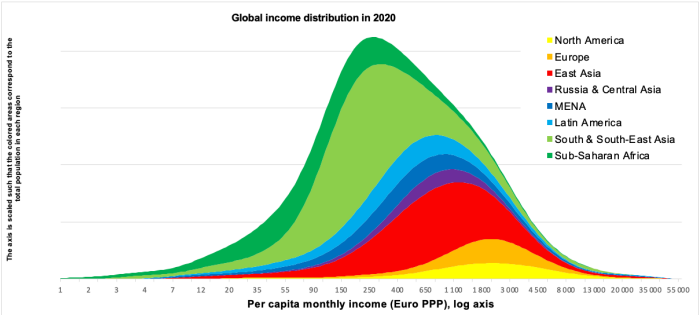
Figure 16 Global income distribution, 1820-2020





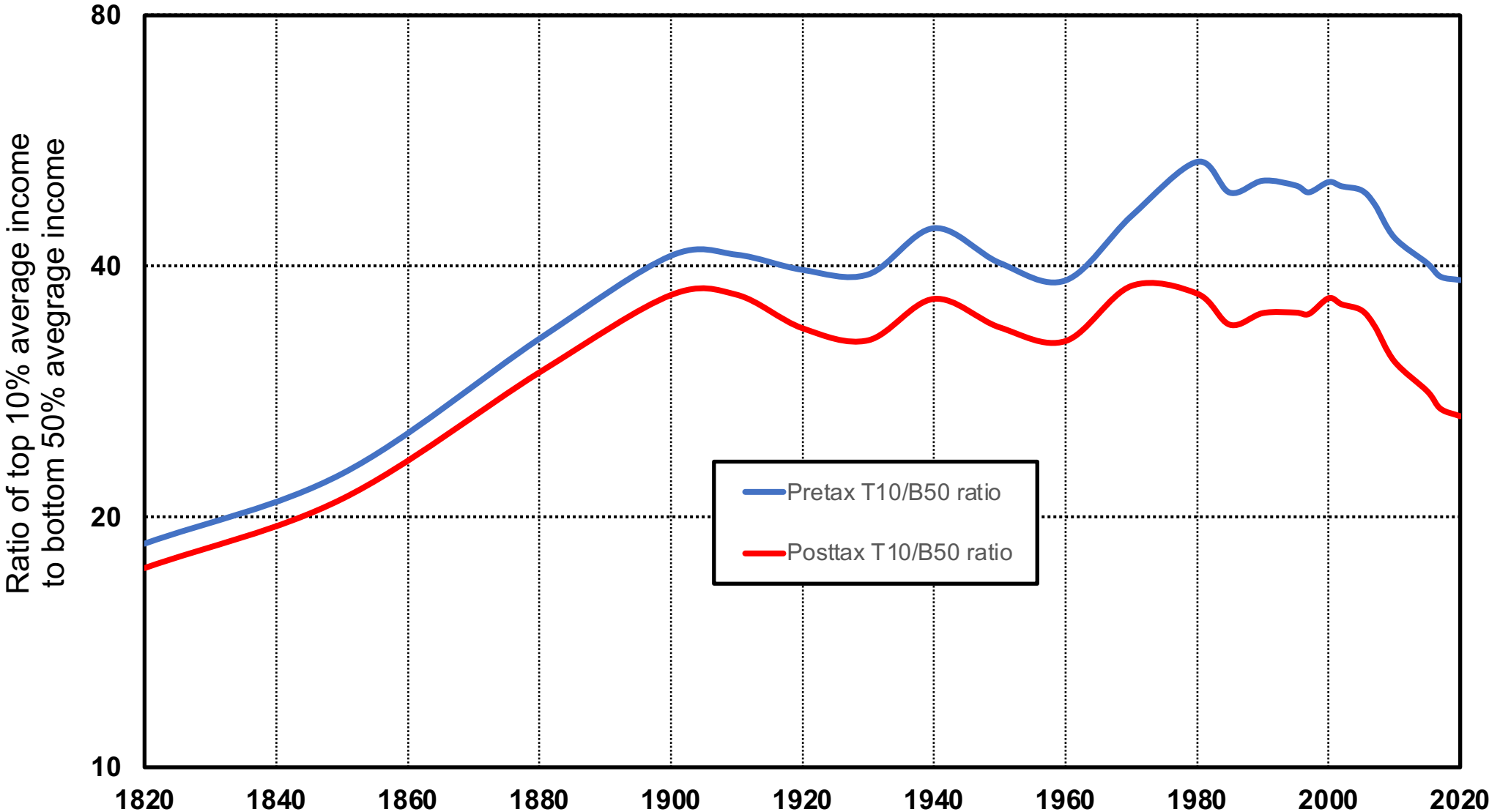






Interpretation: The graph shows the size and geographical repartition of the global population at different levels of the income distribution. The relative size of each color wedge is proportional to the relative population in a region. Incomes are measured after pension and unemployment insurance transfers and before income and wealth taxes. **Note:** Distribution of per capita incomes (for the distribution of per-adult incomes, see Chapter 1). **Sources and series:** wir2022.wid.world/methodology.

Figure 17. Global income inequality: pretax vs posttax



Interpretation. Global inequality, as measured by the posttax ratio T10/B50 between the average income of the top 10% and the average income of the bottom 50%, more than doubled between between 1820 and 1910, from less than 20 to about 40, and stabilized around 35 between 1910 and 2020. It is too early to say whether the decline in global inequality observed since 2008 will continue. **Sources and series**: Chancel and Piketty (2021). See wid.world/longrun