Marketing Material

ESG Special – Societal Inequality

Inequality – a global challenge

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IN A NUTSHELL

- Inequality is increasingly becoming a social issue, both because inequality within countries is rising and because democratic societies are becoming more sensitive to inequality.
- At the same time, inequality between countries and, as a result, extreme poverty are rapidly declining - two highly encouraging trends.
- This megatrend should also gain in importance for investors, not least from an ESG perspective.

1 / The Outrageous Village

The world is a village – or so it's sometimes said in today's digital age. But, if it were, it would be a very peculiar one. On one hand, the village would have undergone rapid advances – indeed it would have changed completely in just two generations. For example, the village's population would have grown from 58 inhabitants forty years ago to 100 today. Of the original 58 inhabitants, 25 would have been starving. Fast forward to today, and that proportion would be cut by 75%. What a success! But, on the other hand, it would still be an extremely unjust village community - of the 100 villagers today, ten would still be starving. And, whether a person lived in abject poverty, or in luxury, would hardly depend on whether they were talented, educated or industrious, but, rather, almost exclusively on which part of the village they were born. Furthermore, half of the wealth of the entire village would belong to a single person. And, together with their nine richest friends, they would own as much as 85 percent of the village's wealth and would account for around half of the entire village's income - about 500 times as much as the poorest ten put together.

Although thinking about inequality in this microcosm is insightful, it remains true that economic inequality is an extremely complex issue, and one that is often highly emotional, and politically, charged. Clearly, it will also look very different depending on where one resides in the village. Here, we want to examine the topic of economic inequality from three different angles: from an analytical perspective, from a growth perspective and from an ethical perspective. The first perspective is taken in this paper. Here we lay the foundations. This includes the definition of economic inequality, its measurement, and the most important global trends.

In a second paper, we will deal with the two other perspectives. First, we will look at the key relationship between inequality and growth. Why? Because, put simply, too much inequality, just like too much redistribution, hinders growth. Second, inequality will also be critical for investors who think about ESG criteria. Inequality is wholly embedded in the Societal aspects of ESG. For example, according to the tenth of the United Nations' seventeen Sustainable Development Goals (SDGs), the global community should "reduce inequality within and among countries." For investors wishing to better align themselves with the SDGs, allocating less of their capital in countries that are lagging in this regard and are not making serious efforts to address these problems, may be of interest.

2 / The Basics

2.1 Why is too much, or too little, inequality a problem?

A society will always have to have, and, frankly, ought to accept a certain degree of inequality. First, not all people are equal. Some are more talented, or more industrious, or indeed some lazier than others. And inequality that results from causes such as these is something that most people will tolerate. Taking the notion further, most people would likely find it deeply unjust if everyone received the same income, regardless of whether or not they worked. Artificially imposed equality could take away peoples' motivation to work hard. Experience has shown that socialist or communist states that place equality above all other goals (or at least claim to do so) do not generally have particularly good outcomes, not least because the innovative power slackens. Proof of this can be seen in countries that have been artificially separated solely in political terms, with all other factors (climate, mentality, cultural influences, etc.) kept relatively unchanged. The stark comparisons between the Federal Republic of Germany (West Germany), and the German Democratic Republic (East Germany), or that between North and South Korea speak volumes. Indeed, the economically induced collapse of Eastern Europe might also be attributable to too much egalitarianism, which stifled freedom, joie de vivre, and liberty, and with it the incentives needed for economic success.

However, the problem in much of the world today, is not too little inequality, but too much. Excessive economic inequality is problematic for three reasons – it is growth-inhibiting, unjust, and unethical.

Too much inequality is an obstacle to growth, both on the supply side of the economy and on the demand side. If inequality within an economy is too high, then the incentive for economic agents to contribute according to their abilities declines. This is especially true if the inequality is due not to differences in performance, but rather to descent, or other characteristics that the economic agent cannot change. Similarly, but at the other end of the income scale, too much inequality could mean that it is simply not worth working, either, because one has inherited wealth, or because too high an income fosters inertia. On the demand side, too much inequality weakens consumption, because poor people tend to have a higher propensity to consume than rich people. If redistribution takes place from the bottom to the top, then aggregate consumption falls because high income earners spend less of their newly acquired money for consumption purposes than low-income earners. For Robert Gordon, the U.S. economist and growth guru, rising inequality is the main cause of his rather pessimistic growth expectations over the coming years in the U.S. (Gordon, 2016). Another effect of increasing inequality in wealth distribution is the increase in savings supply. Several economists attribute the "savings glut", and its accompanying low interest rates, to the rising inequality of wealth distribution (for example, Mian et. al., 2021). We will discuss the relationship between inequality and macroeconomic growth in more detail in subsequent research.

What degree of inequality is socially acceptable, and what is perceived as fair, are tough questions to answer. However, there are two aspects that are important for striving to reach some consensus- social mobility and poverty. Generally speaking, societies will tolerate higher economic inequality if it is based on merit rather than ancestry. In essence, this is the idea of the *American Dream* - if even the very poor have a chance to get to the top, from rags to riches, then a society will tolerate a higher level of inequality. If, on the other hand, wealth can only be achieved through descent or inheritance, social acceptance of inequality shrinks, it quickly becomes simply unjust and discriminatory.

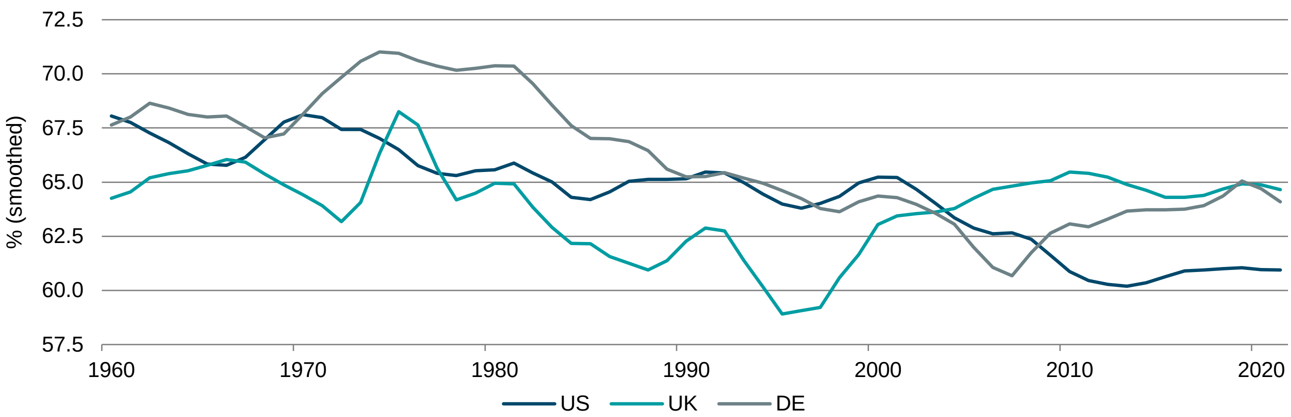
Moreover, the more poverty it produces, the less socially acceptable inequality will be. While a certain level of inequality is necessary for the development of an economy, this is not true for poverty (and especially for absolute poverty). Put simply, while the "optimal" level of inequality is certainly not zero, there is no optimal level of poverty other than zero. The better the social security system in one economy, and the lower the poverty rate, the more tolerant people will be of inequality.

2.2 What exactly is inequality?

Anyone who wants to take a serious look at the topic of inequality must first clarify which economic variable he or she wants to analyze. Generally, there are two dimensions that are considered: wealth and income.

In the literature on income distribution, again a distinction is made between personal income and functional income. The two concepts are completely different, but still interrelated. The distribution of functional income is concerned with the question of how net national income is distributed among the various factors of production (labor, capital, and, possibly, land). The wage share indicates which part of the economic output is allocated to the factor labor (wage share) and which part to the rest (profit share). Although simple at first glance, the calculation is not trivial, because imputed entrepreneurial wages must be added. After all, not all of an entrepreneur's income is accounted for by the use of capital; part of it also serves to compensate for his work. In addition, structural shifts between dependent employees and the self-employed need to be considered.

FIGURE 1: ADJUSTED LABOR SHARE OF SELECTED COUNTRIES

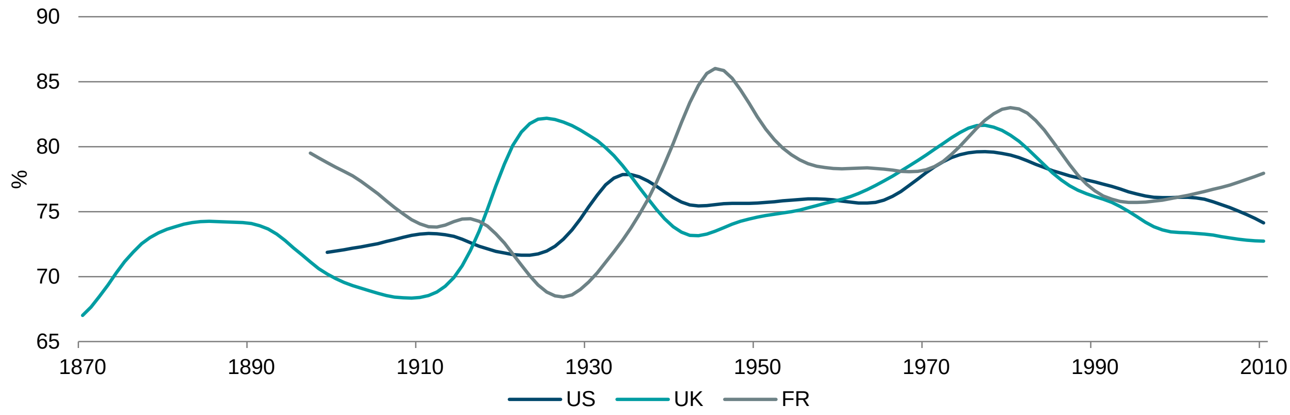


Adjusted wage share in % GDP at current factor costs. Source: AMECO database EU commission, DWS Investment GmbH as of February 2022. ISO country codes are explained in glossary.

Figure 1 shows the adjusted wage rates of the U.S., the UK, and Germany. It's clear that the wage share has fallen continuously over the last several decades, which is often taken as evidence of a permanent rise in inequality. But it is not as simple as that. For example, the data for Germany show a fairly stable picture in the last 20 years, while, over the same period, the wage share in the United Kingdom has risen. Analyses that examine the wage share over considerably longer periods, such as Charpe (2019), suggest that the wage share fluctuates over time and reverses after prolonged periods of increase or decrease, but that the underlying trends are actually quite stable (Fig.2).

In any case, it would be short-sighted to use the decline in the wage share as direct evidence of increasing inequality. Yes, it is true that for most people, labor income is the main source of total income, and profit income tends to benefit relatively few people. Therefore, taken in isolation, a falling wage share is likely to lead to greater inequality. However, it should not be underestimated, especially in the US, that many people are property owners, and the rental equivalent of owner-occupied housing is under-reported in the profit share.

FIGURE 2: LONG-TERM DEVELOPMENT OF LABOR SHARES IN SELECTED COUNTRIES

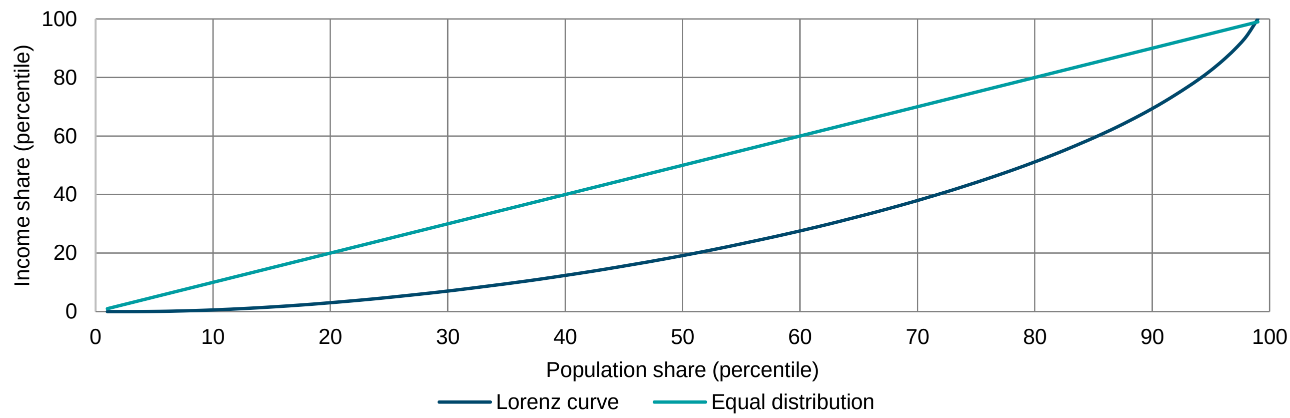


HP-filtered (λ=100) wage share. Sources: Charpe (2019), DWS Investment GmbH as of February 2022.

If one wants to analyze actual income inequality, one should look at the distribution of personal income which measures how equally, or unequally, income is distributed among households or individuals. Here, too, a distinction can be made between two variables - market income before and disposable income after taxes and transfers. In the first case the focus of analysis is on the (labor) market i.e., the question of just (or differentiated) is the distribution of (labor) income generated and distributed by markets. In the case the focus is on society i.e., the question of much inequality the society tolerates and how successful are its measures to generate the wished-for distribution.

Let us start with market income i.e., income before taxes and transfers. The most popular representation of income distributions is the so-called "Lorenz curve". It shows graphically what proportion of all income is held by the lowest-income percentile of the population (see Fig. 3). We can see, for example, that the lower-income half of the population has about one-fifth of the total income. In the case of an absolutely equal distribution, the curve runs as a perfect diagonal, since each income group then has exactly that part of the pie that corresponds to its share of the population. In the case of absolute inequality, the Lorenz curve corresponds to the lower triangle: the richest person has all the income, and everyone else has none.

FIGURE 3: LORENZ CURVE OF INDIVIDUAL MARKET INCOME BEFORE TAXES (U.S. 2021)

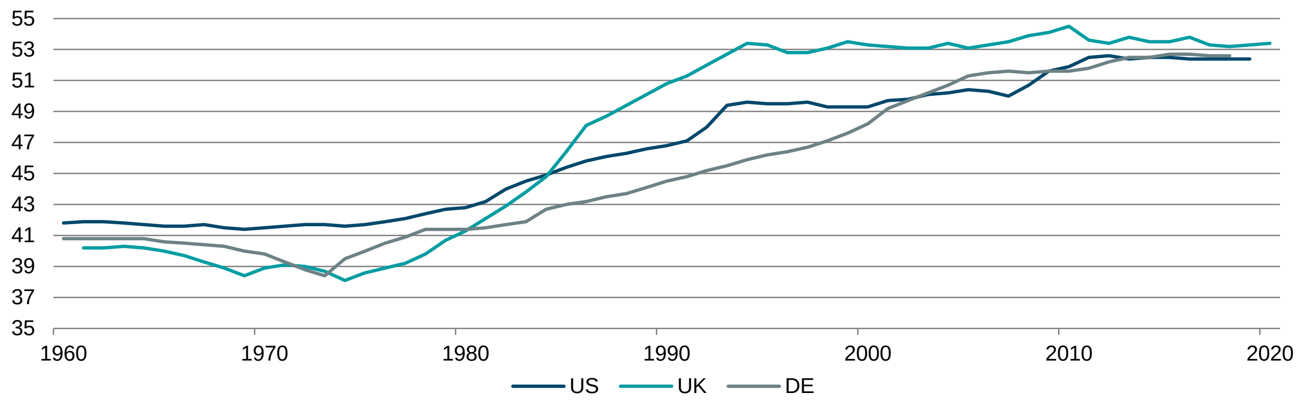


Sources: United States Census Bureau, DWS Investment GmbH as of February 2022

Following directly from this, the most common measure of income distribution, which we will use almost exclusively going forward, is the Gini coefficient. It is simply the ratio of the area between the Lorenz curve and the equal distribution curve, and the maximum possible area between the two curves (the triangle described above). The Gini coefficient thus takes a value of 0 in the case of a totally equal distribution, and a value of 1 (or 100) in the case of absolutely inequal distribution.

Over time, inequality has indeed increased significantly in Western countries. Figure 4 shows equivalence-weighted[1] market income before taxes and before transfers. In addition to wages and salaries, market income also includes rental income, profits from entrepreneurial activity, rent, interest, and dividend income. Overall, there has been a marked increase in inequality in the distribution of income in recent decades. Particularly in the period from the mid-1970s to the early 2010s. This also roughly matches the decline in wage rates over the same period.

FIGURE 4: GINI COEFFICIENT OF EQUIVALENCE-WEIGHTED MARKET INCOME (BEFORE TAXES AND TRANSFERS)



Sources: Solt (2021), DWS Investment GmbH as of February 2022

3 / Why the rich get richer

However, a discussion of wage rates is not sufficient to explain the sharp rise in inequality in market incomes. There are numerous other factors at work, some of which we will list here, without claiming to be exhaustive.

_ A key factor in the rise of inequality is **digitalization**. In a seminal article in 1981, Sherman Rosen analyzed how the two core features of **digitalization** would affect income distribution, long before **digitalization** had reached a relevant scale. His examples were not tech tycoons, of course, but track and field athletes, and the singer Maria Callas. The core insight of his *Economics of Superstars* is the combination of (1) zero marginal cost production, and (2) network effects. The latter states that users always want to join the club that already has the most members. This is particularly evident in social networks, messaging services, but also in normal software, etc. On the supply side, the first factor, zero marginal cost, comes into play: the fact that the provision of services is possible with virtually no additional costs. This eliminates price competition and thus the incentive for customers to settle for "second best". In former times, that meant that buying a record with Maria Callas or one with any less brilliant singer would cost the listener roughly the same. Additionally, being a fan of Maria Callas would let you join a greater club than e.g., being a fan of a third-class singer. In sports everybody knows who the fastest man on earth is (be it on track or in a car). Only very few know the second or third fastest man. In today's world almost everybody uses the same programs or apps on his or her computer or smartphone as the costs do not matter much (most apps are even for "free") and you can share/communicate with more people if you use the software/app that all others use (network effect). The producer can offer its service to one additional client without incurring any additional costs (zero marginal cost production). In the end, the superstar (or tech company) gets everything, while everyone else goes away empty-handed. The winner takes it all. Even if this is ultimately rarely fully observed in practice, the thought model is a useful explanatory approach. Indeed, many of the ultra-high tech incomes witnessed today would be hard to explain without digitalization and Rosen's economics of superstars.

[1] Equivalence weighting is done to account for economies of scale within a household. A multi-person household usually needs only one kitchen, one washing machine, etc. Here, the square-root method is applied - as is common internationally - i.e., each household member is assigned the sum of the household income divided by the square root of the number of household members. A four-person household then only needs twice (and not four times) the income of a one-person household to achieve the same utility level.

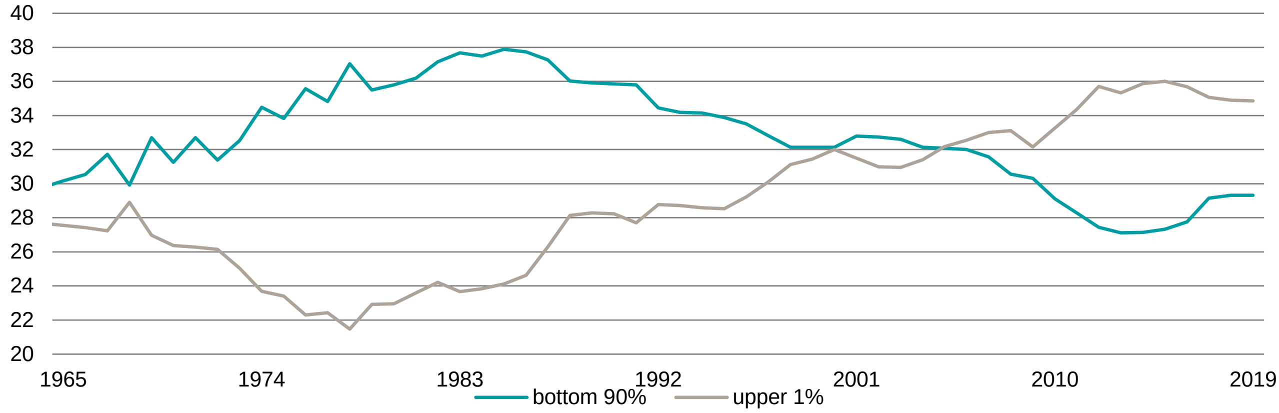
_ Similarly, **automation** allows the technical avant-garde and innovators to make ever greater profits because automation gives them ever greater leverage in the commercialization of their ideas and inventions. With automation, however, not only does the innovative top of the meritocracy gain, but people at the other end of the income scale also lose out - at least in the short term - because previously lucrative jobs are replaced by machines, and workers have to switch to lower-paying jobs. In the long run, automation, or more generally technical progress, raises aggregate income to a higher level. As a rule, the whole of society benefits from this, but mainly in the long term. In the short term, however, there can be immense adjustment problems because workers from the “old” industries or professions cannot be trained quickly enough for new job profiles, and thus lack the qualifications for the new, more attractive, jobs. This also exacerbates the shortage in these occupations, causing wages to rise and inequality to increase.

_ An essential contribution, although difficult to quantify, which is at least indirectly related to the first two, comes from the **opening of educational institutions** (SVR Report 2017). If everyone is free to develop according to his or her economic abilities, one should not be surprised that inequality then increases - as different as these very personal abilities are. If the walls (or glass ceilings) are torn down and everyone is free to develop (or at least more freely than before), then the more talented among the previously disadvantaged will have stellar careers, contributing to inequality. If people are prevented from developing freely by institutionalized walls, then that reduces inequality (and of course income as a whole). This has been observed, for example, after the collapse of the Eastern Bloc - in the former East Germany, and also in Russia, and many other countries, inequality increased enormously along with economic performance.

_ But, beyond these economic factors, there are still very different social and political factors that contribute to an increase in inequality. For example, **marriage** within the same social class is on the rise again (Greenwood, 2014). In the past, there was a stronger tendency in some countries for marriages across social classes, thus reducing inequality. Nowadays, more than ever, "like goes with like". This means that this previously equalizing factor is today less pronounced. Interestingly, however, the increase in **divorce** also increases inequality and especially (relative) poverty. Whereas in the past it was harder to separate for social and economic reasons, today in Germany more than four out of ten marriages end in divorce.

_ The growth of **wealth** also contributes to income inequality. Long periods of peace have ensured that societies have been able to accumulate more and more wealth. In very simple terms, wealth is just coagulated income. Wealth provides richer households with another source of income that poorer households lack in the absence of wealth. It is always more unequally distributed than underlying income, and wealth inequality increases almost "naturally" over time (Piketty 2014). In wars, an immense stock of capital, and thus wealth, is destroyed. In a sense, wars cause wealth distribution to reset to zero in destroyed countries. According to Piketty, the longer peacetime lasts, the more unequal - ceteris paribus - the wealth distribution. However, this thesis is controversial. For example, data for the U.S. also show that wealth inequality declined until the 1980s. Thus, the share of wealth held by the poorer 90 percent of the population rose from 30 percent in the early 1960s to about 38 percent in the 1980s. The share of wealth held by the richest one percent of households fell from about 28 percent to less than 22 percent over the same period (Figure 5). Since then, however, inequality has increased substantially again and has exceeded the levels of the 1960s. For example, the richest one percent of the population now owns more than one-third of all U.S. wealth, and thus more than the bottom 90 percent of the population. What is striking here is that the (relative) growth in wealth of the richest *one percent* is significantly greater than that of the richest *ten percent*. In other words, it appears that much of the increase in inequality is due to the disproportionate accumulation of the very richest. One reason for this increasing concentration of wealth likely lies in the *Economics of Superstars* described above: Digitalization, in particular, has caused vast increases in wealth.

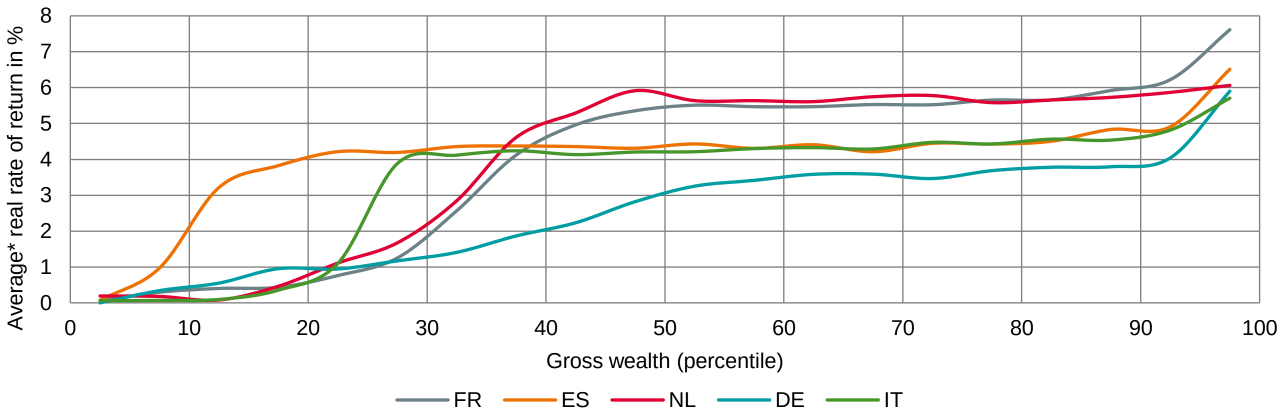
FIGURE 5: U.S.: WEALTH DISTRIBUTION



Sources: World inequality database, DWS Investment GmbH as of February 2022

_ To make matters worse, in general the success of **capital investment is** also positively correlated with the amount of wealth. As Ederer (2021) shows, it is not only the case that the rich have higher income from assets, simply because they have more assets, but they also achieve relatively higher returns from their asset investments (Fig. 6). This is probably since poorer households do not own real estate and shy away from riskier asset classes, such as equities, or do not have access to them.

FIGURE 6: LONG-TERM RETURN BY ASSET POSITION



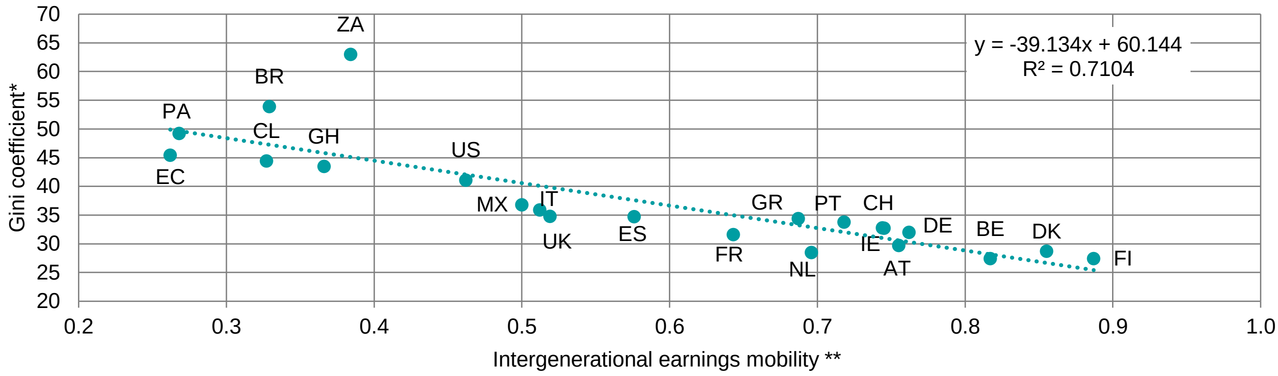
Sources: Ederer (2021), DWS Investment GmbH as of December 2021

4 / Counter Measures

Now, contrary to what Piketty (2014) postulates, rising inequality is by no means a kind of natural law. There are numerous measures that states can take to reduce the inequality of market incomes. As noted at the outset, adoption depends crucially on social mobility. Measures that increase social mobility lead to higher acceptance - if everyone is the architect of their own fortune, then society is more likely to accept that the better architect also earns more. If, however, the architect's income depends to a large extent on that of his parents, then people get heated. Surprisingly however, these goals, reducing inequality and increasing social mobility, are not in competition with each other at all, but rather complement each other.

The so-called "Great Gatsby Curve"[2] shows that, as a rule, there is a strong negative correlation between income inequality and income mobility - the higher the income mobility, the lower the inequality.[3]

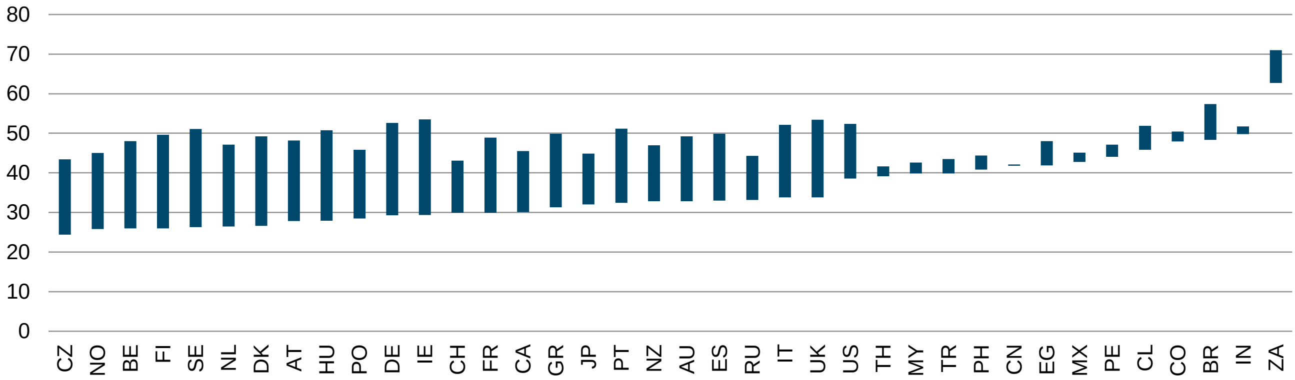
FIGURE 7: THE GREAT GATSBY CURVE



* Gini coefficient equivalence weighted market income 2018 or latest value available. ** (1- intergenerational income elasticity), low numbers indicate low mobility, high numbers show high mobility. Sources: World inequality database, Global Database on Intergenerational Mobility (World Bank), DWS Investment GmbH as of February 2022.

According to Goal 10 of the Sustainable Development Agenda, countries should reduce inequality within and between countries. Measures that reduce market income inequality, for example by increasing social mobility, are certainly very desirable, but they are complex to implement, and, by their very nature, take a long time to have a visible impact. Taxes and, above all, state transfers influence the income situation directly and without delay. For those affected, net disposable income is of much more decisive importance anyway.

FIG. 8: GINI COEFFICIENTS BEFORE AND AFTER TAXES AND GOVERNMENT TRANSFERS



The upper value indicates the Gini coefficient of market income before taxes and government transfers; the lower value indicates the Gini coefficient of disposable income after taxes and transfers. In each case, the values are based on equivalence-weighted household incomes in 2020 or the most recent disposable income. Sources: OECD, DWS Investment GmbH as of February 2022.

Figure 8 shows the Gini coefficients for equivalence-weighted income before and after taxes and government transfers. The upper point of the bar thus indicates how unequally market incomes are distributed in the country in question; the lower point

[2] This curve was first shown by Alan Krueger (2012). It is debatable whether the phrase Great Gatsby Curve is well chosen. After all, *The Great Gatsby* is a counterexample to the earnings immobility described here. The novel by F. Scott Fitzgerald deals with the story of Jay Gatsby, who managed to climb the income ladder from a poor background to the very highest echelons of society. Seen in this light, it is a success story, even though the hero does not win the heart of his beloved Daisy in the end.

[3] Income mobility is measured here as so-called intergenerational income elasticity. Roughly speaking, this value indicates how strongly income correlates with that of the parents. A value of 0.1 (Finland) or 0.66 (Brazil) means that someone whose parents earn twice as much as the parents of another earns about two-thirds (in the case of Brazil) or 10 percent (in the case of Finland) more than the descendant of those other parents. In order to avoid confusion, in the chart (1-income elasticity) is taken as a measure of income mobility, as the intergenerational income elasticity is, strictly speaking, a measure of income *immobility*.

of the bar refers to inequality after taxes and transfers; the length of the bar thus shows the strength of government redistribution.

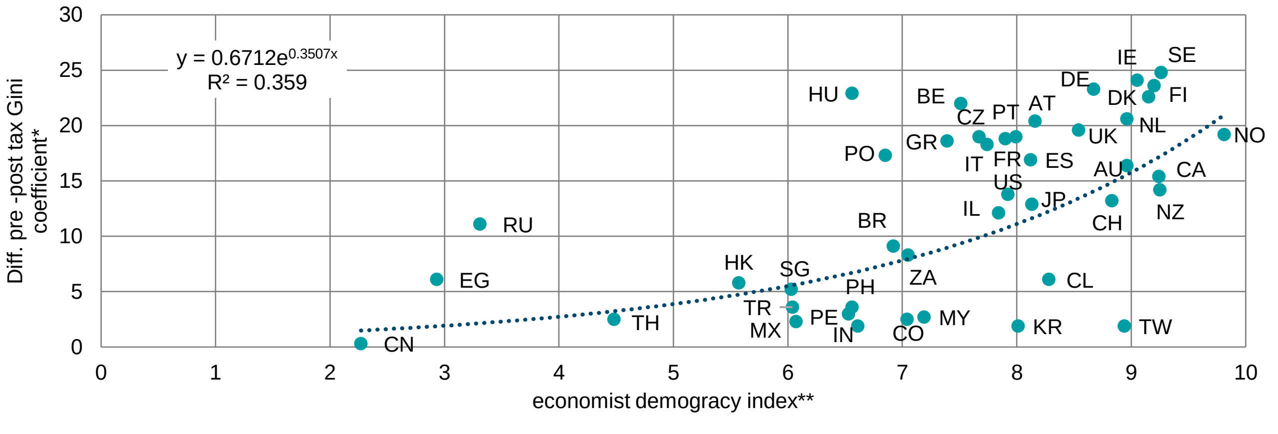
Numerous insights can be derived from this graph:

_ First, it is striking that in Europe, and especially in **Northern and Eastern Europe**, after-tax incomes are distributed much more equally than in the rest of the world. Since this is mainly due to redistribution by the state, it indicates the strong preference of European societies for equality. Germany and the U.S., for example, have roughly the same inequality in income before taxes and transfers, while the Gini coefficients of income distribution after taxes and transfers differ by about 10 percentage points. But it is perhaps less a question of the continental versus the Anglo-Saxon world, and more a question of political system. For obvious reasons, democracies tend to have a higher degree of governmental re-distribution (Fig. 9).

_ In general, it is striking that the **Gini coefficients of market incomes** (i.e., before taxes and transfers) are quite close across all regions. This is likely a feature of the market economy. It results, as mentioned at the outset, in a kind of natural inequality, simply from people's different endowments of talent, energy and capital [4]. The highly concentrated capital endowment in countries such as Germany or Sweden, where very large companies are often privately owned family businesses which are not listed on the stock exchange, is probably the cause of the high inequality in market incomes in these countries. In addition, the extent to which the different endowments of human capital are also expressed in market incomes depends on the institutional framework. In Anglo-Saxon countries, for example, market forces are generally allowed a freer i.e., less regulated, course. Differences in **Gini coefficients for disposable income** are generally larger between countries than those for market income. By and large, societies are not willing to tolerate the outcomes produced by the market. The focus is generally more on poverty reduction and less on redistribution as such. In the OECD, for example, about three quarters of the reduction in the Gini coefficient can be attributed to transfers from the state and only one quarter is due to redistribution through taxes (Causa and Hermansen, 2018).

_ It is also striking that it is mainly the **emerging and developing countries** where inequality after taxes and transfers is high. One of the main reasons is that institutions in these countries are weak. The state is often unable to enforce its demands on the economy, state revenues remain low and correspondingly few resources are available to combat poverty; moreover, in many countries there is less discernible political will to change the situation

FIGURE 9: DEMOCRACY AND RE-DISTRIBUTION



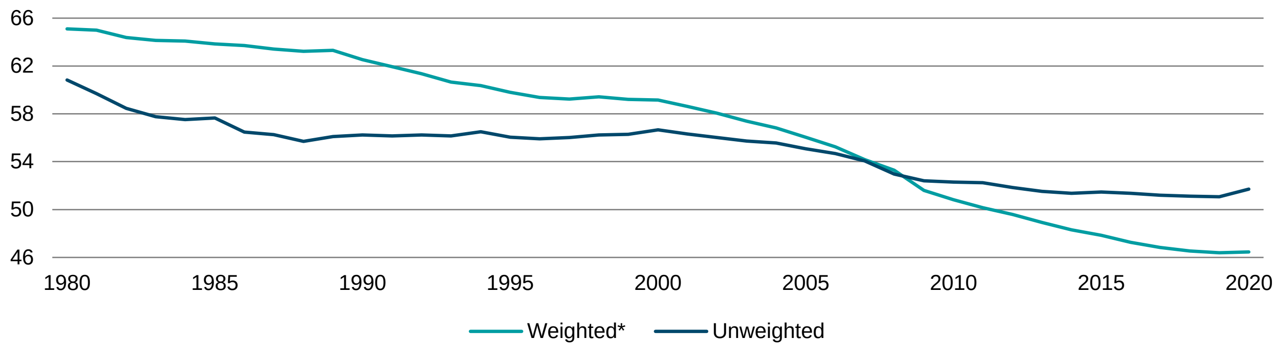
* Difference between Gini coefficient of pretax and transfer equivalence-based household income and Gini coefficient after taxes and transfers. The higher the value, the more income is redistributed.; ** Democracy index as calculated by the Economist Intelligence Unit. The higher the value, the more democratic the country is.; Sources: OECD, Economist Intelligence Unit, Haver Analytics Inc., DWS Investment GmbH as of December 2021

[4] A particularly blatant example is South Africa, whose past apartheid policies continue to shape the country's socio-economic conditions and lead to extreme inequality.

5 / Global inequality - a success story

Another reason for the high inequality in emerging markets, however, is the high growth rates there. As mentioned at the outset, dynamic growth is often followed by high inequality in income generation in the country and, conversely, the prospect of high personal gains also unleashes growth forces. We will explore the empirical link between growth and inequality in a little more detail in a follow-up paper that looks at inequality from an investor's perspective. Here we now turn to another dimension of inequality, namely that between countries.

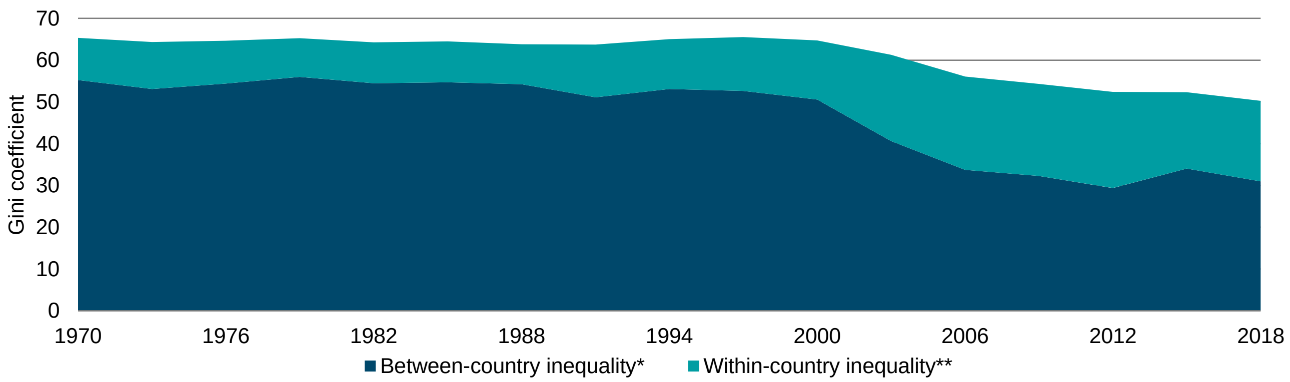
FIGURE 10: GINI COEFFICIENTS OF THE DISTRIBUTION OF GDP/CAPITA BETWEEN COUNTRIES



* Weighted by population size; Sources: Haver Analytics Inc., IMF, DWS Investment GmbH as of February 2022

The calculation of inequality between countries is usually based on gross domestic product per capita, partly because this provides the most reliable data. The perspective is now also no longer the personal income distribution within individual economies, but the question of how pronounced the inequality is between different economies. And there are two main ways of doing this. Either each country can enter with one observation (unweighted) or each country can be weighted by its population size. Thus, in the first case, San Marino has the same weight as China; in the second case, China enters with a huge share, while San Marino becomes negligible. Regardless of the method of calculation, two things stand out. First, inequality between countries is generally much higher than within-country inequality, this was especially true in the 1980s. Second, between-country-inequality has declined substantially over the past 40 years. The fact that this decline is so much greater for the weighted Gini coefficients is due to China's strong catching-up process. Overall, this extremely encouraging development raises the question of whether the decline in between-country- inequality more than compensates for the increase in within-countries-inequality, so that overall, and ignoring borders, the global income inequality is declining - i.e. that income is more evenly distributed among people regardless of national borders.

FIGURE 11: DECOMPOSITION OF GLOBAL INEQUALITY INTO INEQUALITIES WITHIN AND BETWEEN COUNTRIES

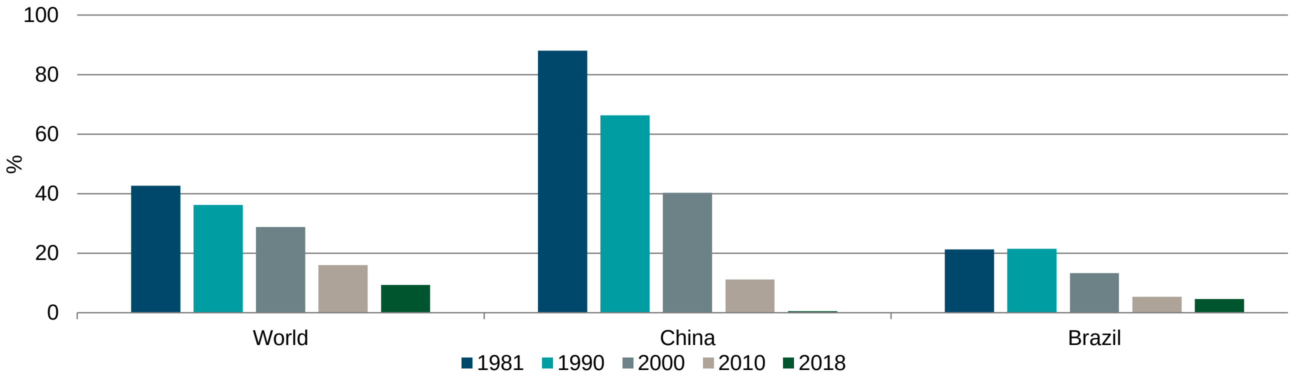


*Between-country net yearly PPP-adjusted earnings inequality (Gini coefficient), **Within-country net yearly PPP-adjusted earnings inequality (Gini coefficient); Sources: Hammar, Olle and Daniel Waldenström (2020), DWS Investment GmbH as of February 2022.

There have been only few studies on global income distribution to date. Most suggest that, over the centuries, global inequality increased steadily until the middle of the last century, then remained fairly constant over a long period, and has been declining since the turn of the millennium. The decrease is mainly due to the decline in inequality between countries (Fig. 11). [5]

This very gratifying decline is mainly due to the reduction of extreme poverty. Whereas in 1980 more than 40%of the world's population lived in absolute poverty[6], according to the latest data from the World Bank, the figure is now only nine percent. In absolute terms, back then 1.9 billion of the 4.5 billion people lived in absolute poverty. Up to today the number of absolute poor has declined to 700 million, while the world population has from 4.5 billion in 1980 to some 7.5 billion. On one hand, this is an unbelievable success story in human history, but on the other, it is still shocking that almost one in ten people live in abject poverty. The main reason for the decline, again, is the rise of China. There, within thirty years, the poverty rate has been reduced dramatically. Almost 90 percent of the Chinese population, about 880 million people, lived in absolute poverty in 1980; by 2019, that number was only about 7 million, or 0.5 percent of the population (Figure 12). So roughly 870 million Chinese have been lifted out of poverty, accounting for almost three quarters of all people who left absolute poverty behind.

FIGURE 12: ABSOLUTE POVERTY RATES*



* Proportion of the population living on an income of less than US$1.90 (2011) per day. The actual threshold is recalculated for each country and each year using purchasing power parities. Sources: Haver Analytics Inc., World Bank, DWS Investment GmbH as of February 2022.

What are the reasons for this incredible turn of events? Why has global inequality fallen so sharply over the past quarter century? The most important reason is certainly to be found in the race to catch up by the emerging and developing countries. Globalization has given those countries the chance to sell their products worldwide, and, with that far larger market to tap, the chance to improve their opportunities. The opening of the "iron curtain", the integration of China into the world economy - all these rising tides have lifted the boats in these countries. Part of the success is also standard growth theory - poor countries can still reap the low-hanging fruit.

The best example of this is China. Export-led industrialization supported by massive investment has led to breath-taking economic growth. This development has been massively supported by the World Trade Organization (WTO). For example, tariffs on finished products as well as on intermediate goods, and raw materials, have fallen precipitously in recent decades, giving these countries the opportunity to catch up internationally. These "simple" means are no longer available to advanced economies. In the long term, growth rates there are falling. The combined effect of these two factors is that around 75 percent of global growth currently comes from developing and emerging economies, a third from China alone.

The increasing prosperity in the emerging and developing countries, the successful fight against poverty and the slowdown in growth in the rich economies have led to a convergence rather than a widening of the income gap. In this sense, there is

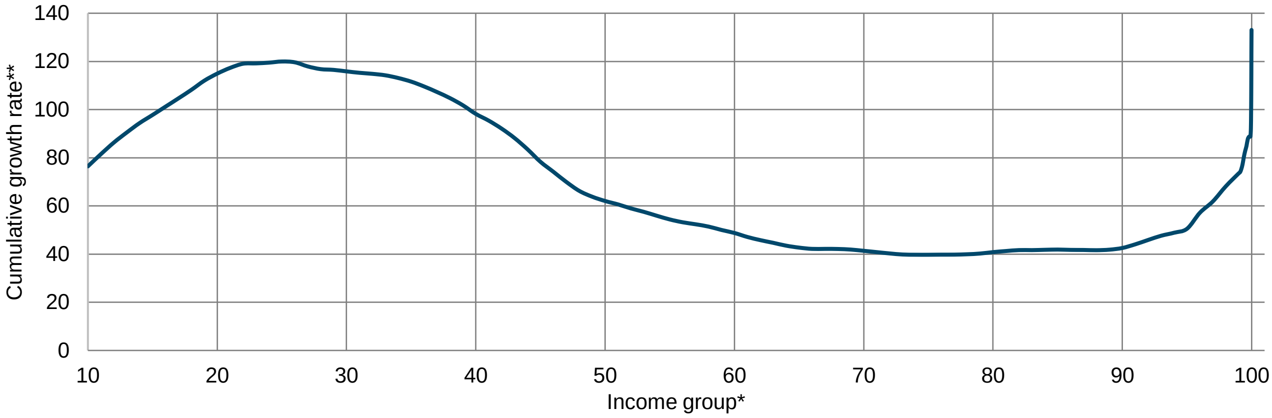
[5] Since the Gini coefficient is a sub additive measure, the decomposition into two subsegments (inequality between countries and within countries) leaves a "remainder". This has been added here to within-country inequality. The contribution of inequality between countries to global inequality thus tends to be underestimated.

[6] According to the World Bank's definition, absolute poverty is defined as living on less than 1.90 dollars per day. The local currencies are converted to international dollars using purchasing power parity, which in turn is converted back to 2011 in order to remove the effects of inflation, exchange rates and the different purchasing power in the various regions.

no widening "gap" between rich and poor. That would imply that there are many poor and many rich and only a few in between. The income distribution would then have to have two humps, which it did fifty years ago. Today, the global income distribution has only one hump - that of a global middle class. [7] Note though, that the term “middle class” is misleading for Western readers at this point. Depending on the source, membership to this club comes with income of just 10 dollars (2020) per day, and one is no longer counted at an income level of 50 dollars (2020) per day.

The main drivers of this development, which is all in all highly encouraging, are precisely those that are causing inequality within countries to increase - globalization, digitalization, and automation. Globalization, in particular, gave the countries of the global South the chance to catch up. but it has done so very unevenly with the rich within each country benefiting at a faster rate than the poor. So, while everyone has benefited, the poorer have benefited relatively less, which raises inequality in those countries. The situation is different in the advanced economies. There, globalization has also contributed to inequality, but partly by putting pressure on wages through international competition, and the associated adjustment difficulties. Put simply, inequality has increased in these countries because the incomes of the super-rich have risen sharply thanks to the *economics of superstars* associated with digitalization, while wages at the lower end of the scale have come under pressure from new competition, mainly from Asia and Mexico.

FIGURE 13: ELEPHANT CURVE: GLOBAL INEQUALITY AND GROWTH



* Percentile; ** growth of per adult real income before taxes and transfers 1980-2016 (world); Source: World Inequality Report (2018) as of February 2022.

This development is well illustrated by the so-called “elephant curve” [8] (Figure 13). While the real incomes of the poorer third of the world's population have doubled over the past 36 years, those of the global upper middle class have risen by only half as much. The incomes of the global elite, on the other hand, have risen by more than 100 percent.

6 / Summary and Outlook

Social inequality has gained considerable attention in recent decades, partly, no doubt, because more data are now available to address these distribution issues scientifically. The lessons are that global inequality has declined significantly in recent decades, and with it - and this is even more encouraging - poverty. The winners to this development are the lower and middle classes in developing and emerging countries, especially in Asia, as well as the global upper class; the relative losers are the lower income strata in the advanced economies.

[7] Very vividly explained in https://www.gapminder.org/answers/how-many-are-rich-and-how-many-are-poor/.

[8] Very clearly explained in https://www.gapminder.org/answers/how-many-are-rich-and-how-many-are-poor/.

But even if the global development is pointing in the right direction, there is still a long way to go: more than one in ten people still live in abject poverty, and global inequality is still at a level that would not be tolerated in any country on earth. And, although inequality of income and wealth within most countries of the world is far lower than the inequality between countries, it tends to either be increasing or, at best, stagnating.

However, these trends are not one-way streets. Goodhart and Pradhan (2020), for example, argue that the demographic development with its (relative) shortage of the working-age population should lead to more strongly rising wages, an increase in the wage share, and so to a decrease in global inequality.

Or demographics aside, a societal rethink and policy shift could result in real change, with even more emphasis on tackling inequality. It could be fueled by either, or both, the recent increase in inequality within countries, or the extremely high level of inequality between countries. For example, the United Nations have enshrined the reduction of inequality between and within countries in its Sustainable Development Goals (SDG).

The road ahead will be a long one, but it is becoming increasingly important for investors to follow it more closely for two main reasons First, there is the question of whether inequality within individual regions now hinders, rather than helps, growth. Second, from an ESG perspective, investors may want to underweight countries with high levels of inequality, high poverty rates, and a lack of interest in tackling them. We look forward to discussing these aspects in a second paper.

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Glossary

Iso country codes

AT	Austria	DK	Denmark	IN	India	PO	Poland
AU	Australia	EG	Egypt	IT	Italy	PT	Portugal
BE	Belgium	ES	Spain	JP	Japan	RU	Russia
BR	Brazil	FI	Finland	KR	Korea	SE	Sweden
CA	Canada	FR	France	MX	Mexico	SG	Singapore
CH	Switzerland	GR	Greece	MY	Malaysia	TH	Thailand
CL	Chile	HK	Hong Kong	NL	Netherlands	TR	Turkey
CN	China	HU	Hungary	NO	Norway	TW	Taiwan
CO	Colombia	ID	Indonesia	NZ	New Zealand	UK	United Kingdom
CZ	Czech Republic	IE	Ireland	PE	Peru	US	United States
DE	Germany	IL	Israel	PH	Philippines	ZA	South Africa

Advanced economies
The term is used by the International Monetary Fund to describe developed countries.

Correlation
is a measure of how closely two variables move together over time.

Disposable income
is the amount of money that is available for spending after taxes and social security charges are deducted.

US Dollar
is the common currency of the United States of America and is the most held reserve currency in the world.

Emerging markets (EM)
are economies not yet fully developed in terms of, amongst others, market efficiency and liquidity.

ESG
Investors increasingly take environmental, social and governance (ESG) criteria into account when analyzing companies in order to identify non-financial risks and opportunities.

Gross domestic product (GDP)
is the monetary value of all the finished goods and services produced within a country's borders in a specific time period.

Gross domestic product (GDP) per capita
is gross domestic product divided by a country's population.

Inflation
is the rate at which the general level of prices for goods and services is rising and, subsequently, purchasing power is falling.

International Monetary Fund (IMF)
created in 1945 and headquartered in Washington, D.C., is an organization of 188 countries, working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.

Megatrend
is a long-term structural trend in the economic environment.

Organization for Economic Co-operation and Development (OECD)
started in 1948 as the Organization for European Economic Co-operation (OEEC) and changed its name in 1960, now representing 34 countries with democratic governments and market economies.

R-squared (R^2)
is a statistic that indicates how closely an endogenous variable correlates with the set of exogenous or explanatory variables.

Real
In economics, a real value is adjusted for inflation.

Sustainable Development Goals (SDG)
were set in 2015 by the United Nations General Assembly. They are a collection of 17 interlinked goals designed to be a "blueprint to achieve a better and more sustainable future for all".

World Bank
is an international financial institution that provides loans and grants to the governments of emerging countries for the purpose of pursuing capital projects. The World Bank is a component of the World Bank Group.

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