

## INEQUALITY – An Investors' Perspective



Dr. Martin Moryson  
Chief Economist Europe

### IN A NUTSHELL

- Too high inequality hampers growth, as does too low inequality. Clearly, this matters for investors. If the right amount of inequality can drive a better outcome in an economy, then that ought to make these countries more attractive for capital allocation too.
- But investors should look at inequality also from a social, a humanitarian, a Rawlsian, and a societal acceptance perspective. To this end, we construct an index that incorporates these perspectives.
- In addition, our results are of interest to investors and companies seeking to leverage their capital and influence for positive social change.

## 1 / Equality – it's not just justice

This is the second paper of our series on the critical topic of inequality.

The first paper of the series ([ESG Special – Societal Inequality](#)) dealt with inequality conceptually, looking at it from three different perspectives - as an economic, a social, and a political problem.

Building on that analysis, the key question that we want to tackle in this piece is why (and how) an investor should think about, and aim to address, inequality. In our view, there are three main reasons. First, inequality matters from a return perspective. If there is a relationship between inequality and growth – and we will demonstrate that there is – then investors should add this to their criteria for country evaluation and consider over-weighting countries with “superior” levels of inequality. This question is addressed in the first part of this paper where we will explain, perhaps counterintuitively, why some inequality is optimal.

Second, investors might want to weigh questions of inequality from an ESG perspective. Among the United Nations' 17 Sustainable Development Goals (SDGs), one explicitly calls on states to “reduce inequality within, and among, countries”. Other goals also touch on inequality, such as the first which has the simple, laudable aim of “no poverty”, or the eighth which calls for “decent work and economic growth”. ESG investors might prefer to invest their money in countries where inequality is low – or at least where governments are credibly trying to reduce it to a tolerable level.

Third, in a forthcoming report “*Engaging for change from micro to macro*”, DWS colleagues highlight how investors are increasingly aiming to use their capital and influence to accelerate real world change on environmental and social issues. Investors are increasingly focusing on macro or systems level engagement aiming to shift the ‘rules of the game’ to increase the chances of humanity achieving the Sustainable Development Goals. Investors are taking this approach due to the Universal Ownership theory and the financial importance of market or ‘beta’ returns which are increasingly influenced by environmental and social factors.

The Equity report you are reading now, thus complements the *Engaging for change* DWS report and the Principles for Responsible Investment (PRI)'s case for why and how investors can respond to income inequality (UNPRI, 2018). Namely, we will guide investors on how different countries perform in the context of inequality by constructing a simple ranking system which combines different aspects of inequality into a single score.

## 2 / Inequality and Growth

Perhaps the best place to start is with the relationship between a nation's inequality, and its growth. As one might expect, there is a vast literature on this topic.<sup>1</sup> Some economists – mainly from the conservative camp – argue that inequality creates better incentives to work hard, and to invest in both physical, and human, capital (e.g., in education). By the same token, they view redistributive efforts by governments to reduce inequality as inevitably reducing the incentive to work hard and to invest, ultimately lowering output. Consequently, they would claim that higher levels of inequality are in fact associated with higher levels of GDP growth.

Countering this view, more left-leaning economists might argue that higher inequality disincentivizes poor people from really engaging in the labor market, because the chances to succeed are so limited. At the same time, it is argued, those already at the top also have limited incentives, because they don't fear a descent of the social ladder. If one can live comfortably from inherited wealth, the thinking goes, then why would one work?

In addition, the data shows that richer people have a higher propensity to save rather than spend. According to Mian et. al. (2021), it is this effect that contributed to the often-touted “global savings glut” that, in turn, led to very low interest rates. And, although nominal interest rates have risen dramatically in recent months, this should not obscure the fact that real interest rates – and it's these that matter for growth – are still very low, and indeed, in many cases, even negative.

Moreover, there is also a demand side problem with too high a level of inequality. Because richer people tend to consume less as a percentage of their incomes, demand can falter when wealth is too concentrated at the upper end of the income ladder.<sup>2</sup> For these reasons, this other camp of economists would argue that high inequality in fact leads to slower growth. Indeed, one of the most often-cited papers on inequality and growth, namely Dabla et al. (2015), concludes that if the share of total income of a country's wealthiest 20% increases GDP growth will be a little lower in the subsequent five years, whereas an increase in the income share of the poorest 20% is associated with significantly higher growth. That would imply that any redistribution from rich to poor increases growth.

### 2.1 Left or right – who is right?

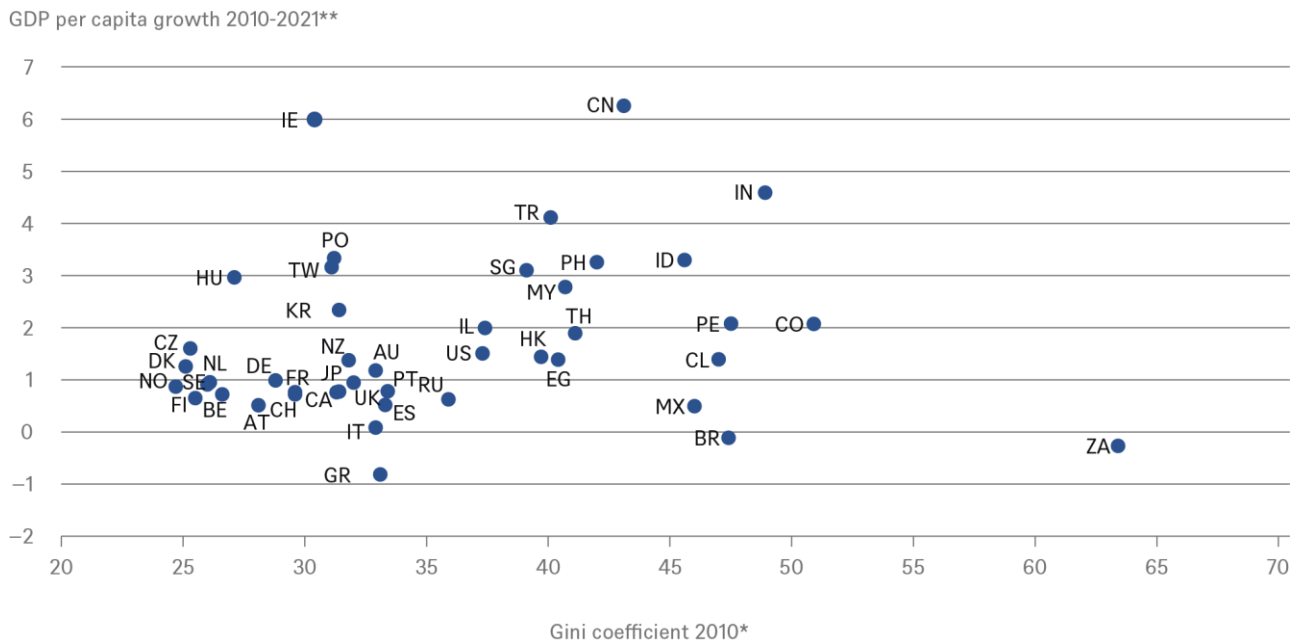
Figure 1 shows the relationship between inequality in 44 countries in 2010 (*x*-axis) and their subsequent economic performance (*y*-axis). Inequality is measured using the Gini coefficient of the income distribution after tax and transfers (where a lower number represents a more equal distribution). Economic performance is defined by using the real GDP per capita growth in the following decade, so from 2010-2021.<sup>3</sup>

<sup>1</sup> For an overview see Cerra (2021) or Kolev (2016).

<sup>2</sup> See, e.g., Gordon (2016).

<sup>3</sup> Note that it's important to use per capita growth so that population growth doesn't confound the issue. The analysis includes the year 2021 to also capture the catch-up effects after the year 2020, which was dominated by the pandemic.

**FIGURE 1: TOO HIGH OR TOO LOW -INEQUALITY AND GROWTH**



\* Gini coefficient of household income after taxes and transfers, 2010. \*\* CAGR of GDP per capita 2010-2021 (%).  
Sources: IMF, OECD, DWS Investment GmbH as of November 2022.

At a first glance, both sides could claim victory. With a little bit of imagination – and perhaps by dropping South Africa (ZA) and Ireland (IE) from the sample – one could see a positively sloped relationship between the two series. However, if one were to remove a few of the smaller European countries from the sample at the lower left-hand side, then a more negatively sloped relationship arguably emerges.

This result seems a little unsatisfactory. But the truth is that it's largely due to some substantial shortcomings from trying to gauge the relationship so simply. First, this approach tries to explain growth solely by inequality – something that no serious economist would try to do. And second, it makes only a cross-country comparison, where potentially important changes in income distribution in one country *over time* are neglected. Finally, it also assumes that the relationship between inequality and growth is linear – and this may not be right.

Kuznet (1955) for example argued for a non-linear relationship between income and inequality. Although, that said, he was examining the reverse relationship, i.e., how the income level of a society impacts inequality, arguing that, in the shift from an agricultural economy, to an industrial one, inequality should increase, but that in the next stage, from an industrial economy to one with a highly educated workforce, income inequality should then come down again. The empirical evidence for this theoretical relationship is mixed at best. In our first paper we showed quite clearly that within-country inequality is, in fact, on the rise in many countries – including advanced economies.

## 2.2 A more advanced approach

So, what can we do to overcome these shortcomings? First, we must improve the model by adding other variables that also explain economic growth. We can then use this more nuanced, and better specified model, to isolate the impact of inequality on growth *after correctly accounting for the other factors*. Classic economics tells us that there are two components that really help to explain the differences in production – human capital and physical capital. Hence, as we are concerned with growth, we take investments in human capital and investments in physical capital as a proxy.

The most important factor to explain productivity growth, however, is simply the starting *level* of GDP per capita. When countries are poor, and therefore start from a relatively lower level, improving growth is relatively easy to do. Effectively there is low hanging economic fruit that can be plucked for some simple wins. However, once the economy reaches a certain level of development, those easy wins disappear, and the challenge of plucking the higher fruit looms large. Let us consider China for example. After the disastrous Mao era, the country was mired in absolute poverty, and its economy effectively lay in tatters. But, at this point, sparse reforms, such as allowing even a small degree of economic freedom, worked effectively, and allowed growth rates to rise meaningfully. The next easy win was equally successful – the previously closed Chinese economy was opened to the world markets. As we look today, the growth outlook in China is far bleaker.<sup>4</sup> If high growth were to remain the priority, the cheap labor, high investment, and low environmental standards of the past will no longer be enough. As it stands today, productivity gains will more likely have to come from trickier sources, such as entrepreneurship and innovation – and these are far harder to conjure. The point we are making is that, effectively, as GDP per capita grows, so productivity *growth* slows.

In terms of these other two factors, we measure human capital by using the Human Capital Index (HCI) of the World Bank. For physical capital we use total investment as a percentage of GDP, as calculated by the IMF. Because we are looking at GDP per capita *growth rates* we also use relative changes of the HCI and the investment ratio as explanatory variables for our regression model to be consistent. Our final variable is the Gini-coefficient of post-tax-and-transfer income distribution as calculated by the OECD.

The second improvement we need to make is that, as well as introducing more explanatory variables, we also need to introduce a time component (in technical terms we are moving from a cross-sectional regression to a panel regression). We model GDP per capita growth within a framework of 44 countries, covering a time range of 40 years, from 1980 to 2020. So that we eliminate potential short-term fluctuations in GDP growth (that realistically could not be explained by long term factors such as human capital or inequality) we aggregated the data into eight distinct five-year blocks. So, summarizing, we are modelling the GDP per capita growth rate of a five-year period in each of 44 countries as a function of four components:

- the starting level of GDP per capita,
- the growth rate of the Human Capital Index (HCI),
- the investment ratio, and
- the inequality of the country itself.

As the cause should always come before the effect, all explanatory variables are taken from the previous five-year period.

Third, and perhaps most important, we allow for a non-linear relationship between inequality and growth. Our argument is analogous to the derivation of the infamous Laffer-curve. Put simply, Laffer (1981) argued that if a government set tax rates at 0%, then they should expect zero tax revenue, since workers would keep all they earned. Similarly, but for a very different reason, at a tax rate of 100%, government revenues would also be zero, on the basis that no-one would work if all their salary had to be paid away in taxes. If the two extremes resulted in no revenue, then it was clear that there must be an optimal tax rate somewhere between 0% and 100%. Even more powerfully, this result means that if the current tax rate is

<sup>4</sup> Potential *growth* is far lower for the years to come, countless Chinese have entered the middle class from the rise in wealth and are now still better off under a slower growing bigger economy, than a rapidly growing smaller one.

too far to the right from the optimum, then, in a very surprising result, Laffer argued that *lowering* the tax rate should actually *raise* revenue.<sup>5</sup>

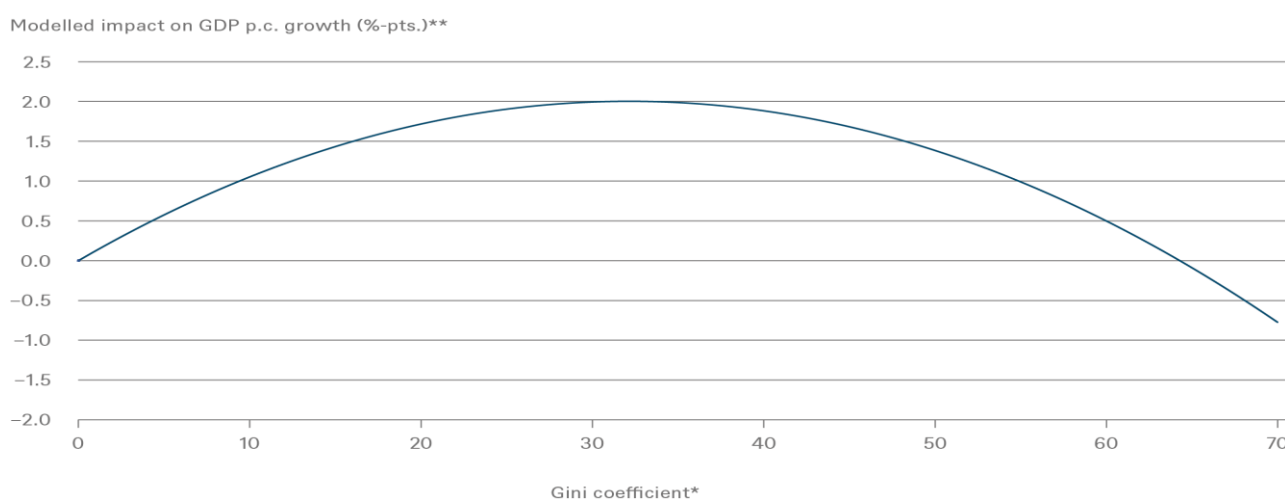
Our argument operates in the same spirit as Laffer's. In a society with complete redistribution – where everyone has the same income whether they work or not – there is very little incentive to work, and GDP growth would be hampered as a result. And the same would be true in a completely unjust society where all income accrues to one person. All of which leads us to a surprising and powerful conclusion –there must be an “optimal” level of inequality. One that is high enough to incentivize people to work, but not so high as to completely deter them, nor to allow unproductive capital accumulation. To keep things simple therefore, we further follow Laffer's lead, and use a parabolic relationship between inequality and growth.<sup>6</sup>

## 2.3 Results

Our results are detailed in the appendix but may be summarized as follows. A doubling of the initial GDP per capita results on average in a 1%-point lower growth rate in the following years. An increase of investment by 2% of GDP leads to a growth rate that is roughly a tenth of a percentage point higher. Finally, increasing the HCI by 10% leads to a higher growth rate of 0.6%-points in the subsequent years. All coefficients are plausible by sign and magnitude, effectively meeting the twin standards that we apply - economic intuition, and statistical significance.<sup>7</sup>

In addition, the results for the impact of inequality on growth are very plausible. All else equal, increasing inequality from a very low level, e.g., a Gini-coefficient of 20, say, to a moderate level of 30, should push productivity, as measured by GDP per capita growth, by some 25 basis points. A Gini-coefficient of 30 seems to be the optimal level of inequality (as can be seen in Figure 2, where the maximum impact on GDP growth occurs at around this level). If inequality is reduced from 50 to 40, productivity growth is enhanced by 50 basis points. If inequality reaches intolerable levels, such as those witnessed in South Africa, it directly subtracts from growth (i.e., above a certain level of Gini, around 65, the curve drops below 0% on the y-axis). So, if you'll forgive the pun, who is right: the left or the right? Clearly both, according to our analysis. When it comes to its impact on growth, inequality can be too high (perhaps the more obvious result), but it can also be too low. One of the few examples of too little inequality would be in the Czech Republic. According to our model, the Czech Republic could increase its annual GDP per capita growth by some 10 basis points if they were to allow more inequality. However, it is interesting to observe that roughly two thirds of the countries we analyzed have too much inequality. Put differently, two thirds of these countries could have higher and more inclusive growth if their governments redistributed more generously.

**FIGURE 2: JUST RIGHT, INEQUALITY AND GROWTH – RESULTS FROM A PANEL REGRESSION 1980-2020**



\* Gini coefficient of household income after taxes and transfers. Low values indicate low inequality, high values show higher income concentration.

\*\* Modelled impact on CAGR of GDP per capita in the following five years (%-pts). Sources: IMF, OECD, DWS Investment GmbH as of November 2022.

<sup>5</sup> This simple argument, which Laffer is said to have drawn on a restaurant napkin, apparently convinced Reagan at least. Empirical results were at best mixed. During the presidency of Ronald Reagan, lowering tax rates lead to higher public deficits.

<sup>6</sup> Details are given in the technical appendix.

<sup>7</sup> Our results are also in line with similar analyses such as Niehues et al. (2021), Petersen et al. (2015).

# 3 / Inequality and Investment

Translating this result for investors, our important conclusion is that the potential for superior country selection could arise from three steps.

First, you can be guided in choosing which countries to invest your money in by how close their inequality is to optimal (see Figure 1).

Second - thinking one step further - it can also be profitable to invest in those countries where the level of inequality is currently not optimal, but - and this is important - whose governments are making promising efforts to move toward significantly better (i.e. mostly lower) inequality. Finally, investors should assume - as we do - that there is a long-term relationship between economic growth and asset class returns. The nature of this relationship is beyond the scope of this paper, but in our [Long View](#) we detail why we think GDP growth is the right foundation for examining long run returns.

Third, it isn't only the question of growth and asset class returns that may matter. Many investors today are, laudably, concerned with ESG issues. And, while the "E" - environmental - currently receives a lot of attention, the "S" - social - arguably does not. As our DWS colleagues set out in their forthcoming report *Engaging for change*, investors increasingly are aiming to use their influence and capital to help accelerate societal change on environmental and social topics, as a strategy to enhance long-term returns.

The Principles for Responsible Investment (PRI) has set out the case for why and how investors should act on income inequality. Recently, they launched an investor collaboration on human rights and social issues<sup>8</sup>. The investor statement concludes that *"issues, from inequality and discrimination to labor rights violations, undermine not just individual rights but also the societal infrastructure which the global economy relies on for delivering sustainable long-term growth. Prioritizing common goals- that is, systemic sustainability issues - in our stewardship activities to advance human rights is not only our responsibility as set out in international standards, but it is also of primary importance to safeguard the common societal assets on which returns rely"*.

With this idea in mind, we now construct a country rating index from an inequality perspective. This will, we hope, be useful for investors who want to think about countries from both a macro, and a societal perspective. There are five ingredients to our approach - inequality, redistribution, poverty, social mobility, and democracy.

## 3.1 Inequality

The first ingredient obviously is inequality itself as measured by the Gini-coefficient after tax and transfers. A ranking of the 44 countries involved can be found in our first paper (or in Figure 1). From a purely social point of view, i.e., ignoring growth effects, the lower the Gini-coefficient the better. We do not distinguish between the different sources of inequality. One reason for this is that we want to keep things simple. Gender pay-gaps, racial discrimination, unregulated markets, tax and transfer systems, there are so many contributors to inequality that it would make it impossible to give sensible weights to the different causes. Moreover, to build an index one must ensure that only such data are used that are available for all countries. Therefore, a one size-fits-all measure is used. Gini-coefficients are the industry norm, they are simple to understand and interpret, and they are available for all countries.<sup>9</sup>

## 3.2 Redistribution

As we stated above, one should not only pay attention to the result, but also to the effort a country is undertaking to move in the right direction.<sup>10</sup> Therefore, as a second ingredient to our index, we take the proportion of redistribution by the

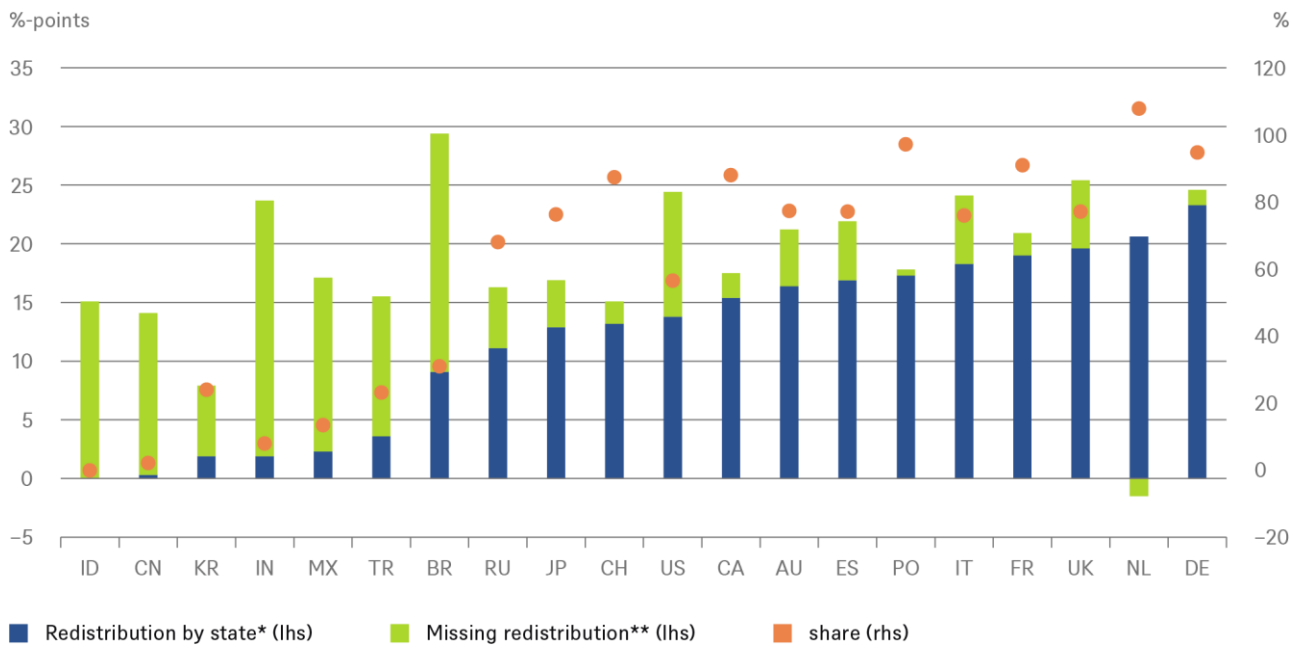
<sup>8</sup> UNPRI (2022) [Advance: a stewardship initiative for human rights and social issues](#)

<sup>9</sup> The World Inequality database has recently been updated and has an abundance of data available (Chancel et al., 2022). Also Solt (2022) has updated data. We, however, stick to the "more official" OECD data.

<sup>10</sup> There is a huge literature on how states should re-distribute. In general, most income re-distribution is done via transfers, not taxes. (Causa et al., 2018).

government as a percentage of the redistribution necessary to get from the pre-tax and transfer distribution to the optimal level of inequality. The optimal level is estimated by our panel regression above and is a Gini-coefficient of roughly 30. Because some countries arguably go too far in the regard such as the Netherlands, we take the square of the difference. This also leads to the nice result that relatively smaller differences are given less weight, which seems plausible as the exact value of the optimum is, after all, an estimate. However, countries that are far away from their optimum, and do little or nothing to address that, such as India or Brazil, score relatively less well from a squared function.

**FIGURE 3: GETTING THE JOB DONE, REDISTRIBUTION AS SHARE OF OPTIMAL REDISTRIBUTION**



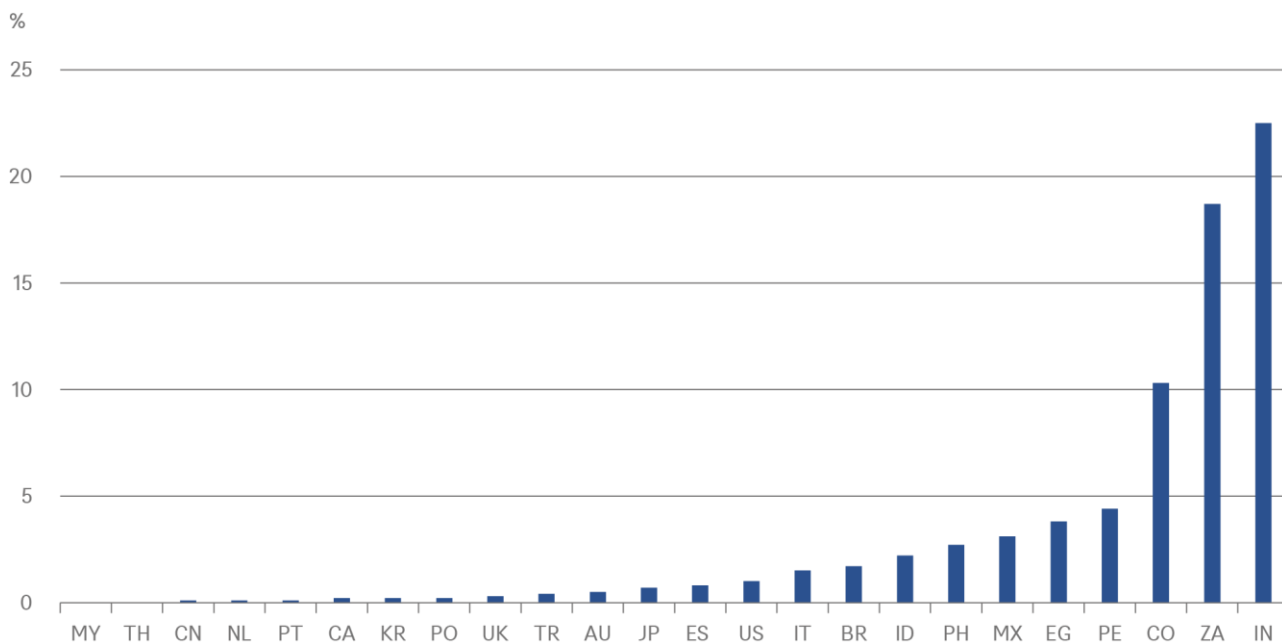
\* Difference of Gini coefficient before and after tax and transfers. \*\* Difference between post tax and transfer Gini coefficient and optimal post tax Gini coefficient. Sources: OECD, DWS Investment GmbH as of November 2022.

### 3.3 Poverty

As we outlined already in our first paper, there is quite simply no optimal poverty rate other than zero. Absolute poverty is unconscionable (see Figure 4 for an idea of which countries are most impacted by this scourge). Because of this, the United Nations has rightly called on the world to end poverty in all its forms everywhere. Here, we use as a measure of poverty the percentage of the population that must live under the severest conditions, specifically on less than 1.90 dollars per day.<sup>11</sup>

<sup>11</sup> 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.

FIGURE 4: FAR LEFT BEHIND, EXTREME POVERTY RATES\* IN SELECTED COUNTRIES



\* 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: World Bank, DWS Investment GmbH as of November 2022

### 3.4 Social mobility

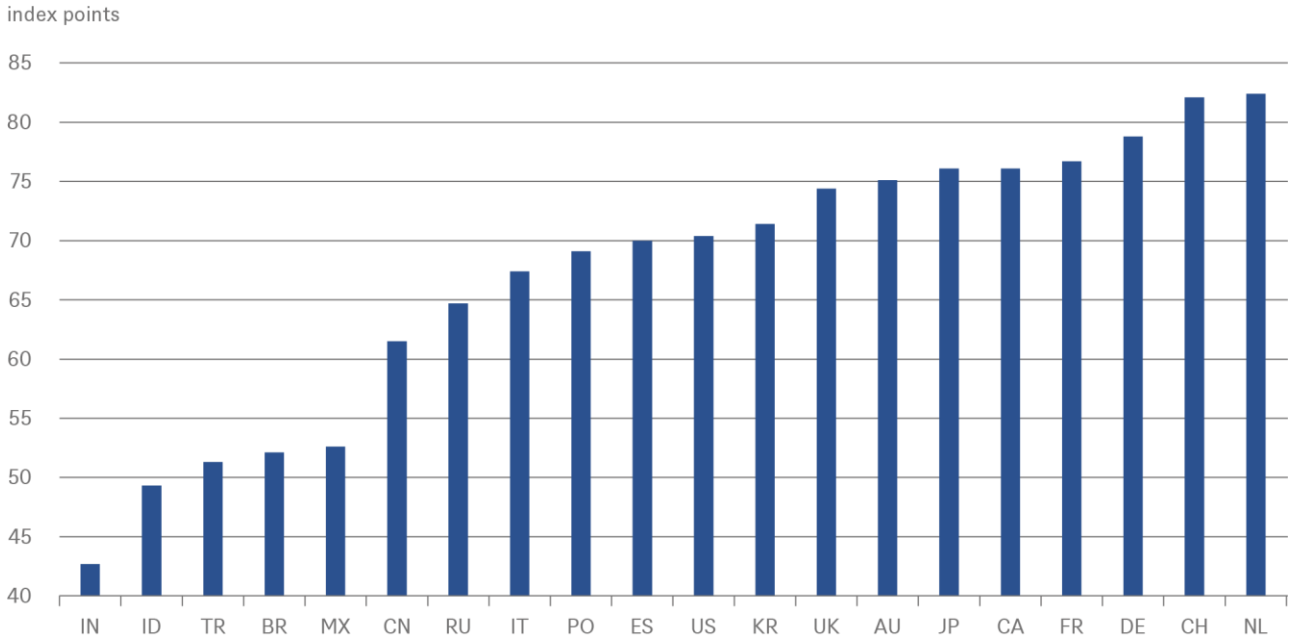
Apart from being the severest form of inequality there is another reason to include poverty in such an index. As we outlined in the first part of this paper, a society must accept a certain level of inequality in order to become prosperous. Society might find it easier to accept any such inequality if its severest form could be eliminated.

A similar argument probably follows for social mobility. In our view, societies will likely tolerate higher economic inequality in a meritocracy, but less so in a class society. For example, if even the very poor have a chance to improve their lot in life, then a society may tolerate this higher level of inequality as potentially transitory. If, on the other hand, wealth can only be achieved through descent or inheritance, then the social acceptance of inequality is liable to shrink, it quickly becomes unjust, discriminatory, and unattainable. There is also a foundation from Rawls' political philosophy as to why a society should not want any ungrounded inequality.<sup>12</sup> Interestingly, this trade-off between social mobility and acceptance of inequality actually has the potential to be a win-win-situation. As we showed in our first paper, social mobility and the reduction of inequality very often go hand in hand. Higher mobility can lead to more just income distributions, and thus a more level playing field, giving the poor more chances to advance, ultimately leading to more social mobility. All of which are good reasons, in our judgement, to include social mobility in our analysis. We use the social mobility index constructed by the World Economic Forum (see Figure 5).

<sup>12</sup> In his famous *Theory of Justice* Rawls (1971) argues that a good society could be thought of one where the basic rules are set up by rational individuals behind a "veil of ignorance", i.e. not knowing what their own position in that society will be.



**FIGURE 5: MOVING UP (OR DOWN), SOCIAL MOBILITY IN SELECTED COUNTRIES**

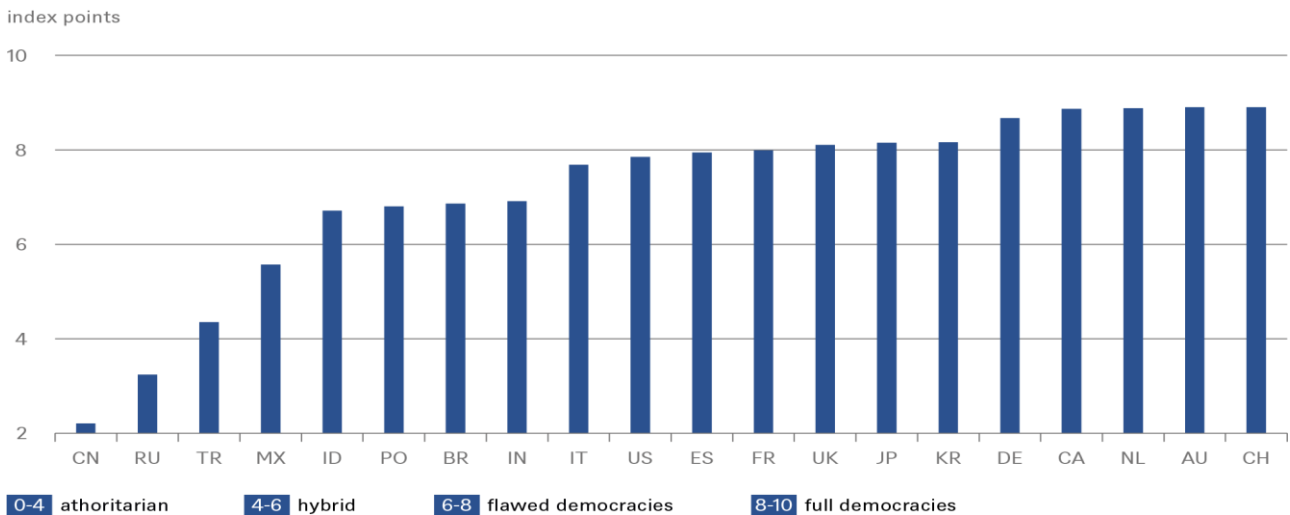


Higher values indicate higher social mobility. Sources: World Economic Forum, DWS Investment GmbH as of November 2022.

### 3.5 Democracy

In our estimation, there is still another important factor that may make any (inevitable) inequality more tolerable - namely whether it is the result of a society's freedom of choice. Where high inequality is witnessed in a democratic country such as in the UK for example, one can argue that at least society has had an opportunity to shape this outcome. However, the even higher levels of inequality we witness in China, Russia or Turkey for example are relatively more imposed than assented to. This, in our view, makes them likely to be less societally acceptable (on the commonsense basis that we likely have more tolerance for outcomes that we can help shape). As for social mobility, this potential trade-off also turns out to be a win-win-situation, as democracies have a higher preference for redistribution (as shown in our first paper). Our data for the degree of democracy present in each of our 44 countries is taken from *The Economist*.

**FIGURE 6: WHO CARES, DEMOCRACY INDEX**



Sources: The Economist, DWS Investment GmbH as of November 2022

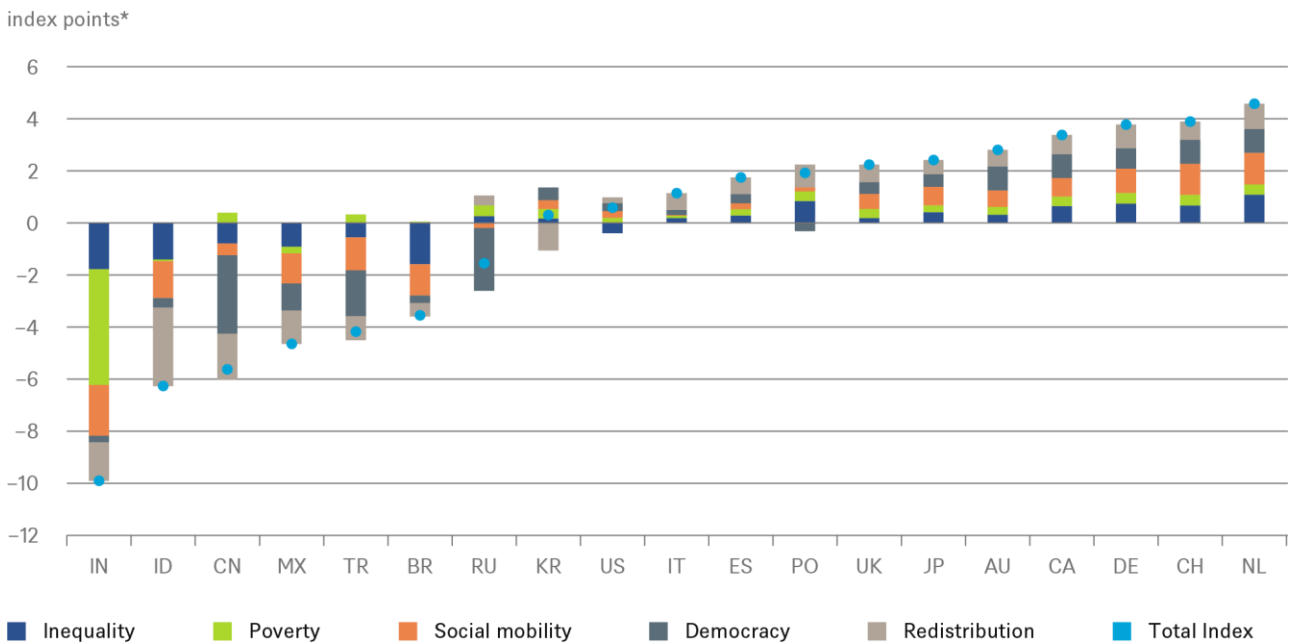
### 3.6 Aggregating the results

So, we now have five different measures, each with a different perspective on inequality - a social or ESG perspective, a productivity growth perspective, a humanitarian perspective, a Rawlsian perspective, and a perspective of societal acceptance. The question becomes, how to aggregate such diverse data? We chose a so-called “z-score” approach. First, all five datasets are standardized. In this standard statistical approach, we first deduct the mean from each observation in the dataset, and then we divide the result by the standard deviation. The result is a dataset that retains all its important characteristics, but which has, in technical terms, had its location and scale changed so that its average is now zero, and its standard deviation is one. And the reason for this step is that it enables all five of our datasets to be thought of in the same terms, but in a more mathematically meaningful, and tractable, way (one can think of using a z-score as translating data into the same common language). It is then a simple matter to aggregate our five indicators after they have been reordered according to whether high values are favorable (such as for high social mobility or public redistribution), or unfavorable, (such as for poverty rates).

The following chart (see Figure 7) shows the results for the twenty largest economies in the world. India and Indonesia perform very poorly due to high poverty rates and low redistribution, and most authoritarian or hybrid regimes also perform poorly. This is not surprising, as we have already shown in our first paper that more democracy leads to higher redistribution and thus more equal distribution. This in turn promotes social mobility, which is beneficial for reducing inequality. This also explains why the very advanced democracies in Europe perform so well.

It does not come as a surprise, all variables that enter the index are positively correlated with each other. We have already described that most potential trade-offs turn out to be win-win situations. This raises the question of whether one or the other index component could not be omitted. Since there are good theoretical reasons for each of the five dimensions of our inequality index, we stick to our approach. Moreover, omitting a variable always leads to different results. In this respect, none of the variables is redundant. Interestingly, the dominant input factor, i.e., the one with the highest correlation with the final outcome, is social mobility.

**FIGURE 7: THE FINAL BREAKDOWN, OVERALL INDEX**



\* Sum of z-scores of individual factors. Sources: IMF, World Bank, OECD, The Economist, WEF, DWS Investment GmbH as of November 2022.

## 6 / Summary and Outlook

Investors should consider the issue of inequality in their investment decisions, not only for ethical reasons, but also because “fairer” societies tend to have better growth prospects - all other things being equal. This last caveat is important. Many of the countries on the left side of Figure 7 have posted impressive growth rates in recent years. But this is mainly because emerging markets simply have more potential to catch up. So, their high growth rates are not *due* to high inequality; on the contrary, they are growing strongly *despite* high inequality, simply because they are still in the early stages of the catch-up process.

But apart from the growth effect, there are more reasons to pay attention to inequality. It 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 serious, and commendable, interest. We hope that with our inequality index a first helpful yardstick for gauging these issues is now at the hands of investors.

# A / Technical Appendix

## 2.1 Growth regression

Our analysis is based on the following growth model

$$\hat{y}_{i,t}^{LC} = c + \alpha \log(y_{i,t-1}^{USD}) + \beta_1 gini_{i,t-1} + \beta_2 gini_{i,t-1}^2 + \gamma_1 \widehat{hci}_{i,t-1} + \gamma_2 inv_{i,t-1} + \varepsilon_{i,t},$$

where  $y$  denotes GDP per capita,  $LC$  is local currency, while  $USD$  denote GDP per capita in USD using PPP conversion,  $gini$  is the Gini-coefficient of the disposable income of households after taxes and transfers,  $hci$  denotes the human capital index provided by the world bank and  $inv$  is the gross investment ratio as calculated by the IMF. The country index  $i$  runs from 1 to 44 covering 44 countries, namely most advanced economies and some larger emerging markets. The time index  $t$  runs from 1 to 8. It covers eight non-overlapping 5-year time periods from (1980-1985) to (2015-2020). Hatches ( $\widehat{X}$ ) denote growth rates or to be more precise annualized log differences. The error term  $\varepsilon_{i,t}$  is assumed to be independently identically distributed. Using a panel regression, we get the following results.

### RESULTS OF PANEL REGRESSION 1985-2020

Variable	Coefficient	Std. Error	t-statistic	Prob
<b>Dependent variable:</b> $\hat{y}_{i,t}^{LC}$				
$c$	10.49	2.80	3.75	0.00
$\log(y_{i,t-1}^{USD})$	-1.08	0.20	-5.29	0.00
$inv_{i,t-1}$	0.06	0.02	2.50	0.01
$\widehat{hci}_{i,t-1}$	0.62	0.18	3.41	0.00
$dummy$ (China)	4.13	0.95	4.35	0.00
$gini_{i,t-1}$	0.10	0.08	1.25	0.21
$gini_{i,t-1}^2$	-0.002	0.00	-2.04	0.04

$R^2 = 0.33$ ,  $T = 8$ ,  $N = 44$ , Number of observations: 337

Sources: World Bank, IMF, OECD, Haver Analytics Inc., DWS Investment GmbH as of November 2022

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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.

## 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.

## Gini coefficient

is an inequality measure. At absolute equality the value is 0, at maximum concentration 1 or 100 (percent).

## 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.

#### 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".

#### US Dollar

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

#### 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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## The author



**Dr. Martin Moryson**  
**Chief Economist Europe**  
martin.moryson@dws.com