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Measuring Prosperity

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Introduction

Our mission at the Legatum Institute is to build an international movement of people committed to the transformation of society and the creation of pathways from poverty to prosperity.

Prosperity is far more than wealth; it is when all people have the opportunity and freedom to thrive. Prosperity is underpinned by an inclusive society, with a strong social contract that protects the fundamental liberties and security of every individual. It is driven by an open economy that harnesses ideas and talent to create sustainable pathways out of poverty. And it is built by empowered people, who contribute and play their part in creating a society that promotes wellbeing.

The measurement of national prosperity is therefore integral for governments to understand the impact of their decisions, and for citizens to hold the government to account. The Legatum Institute's global Prosperity Index has been specifically designed as a transformational tool, so that leaders around the world can use it to help set agendas for growth and development and build prosperity. It analyses the performance of 167 countries, representing over 99% of the world's population, enabling the potential of each country to be identified and understood.

By identifying success, we can enable national and local governments, businesses, civil society, and philanthropists to identify what works, adopt best practices, and also enable others to hold them to account.

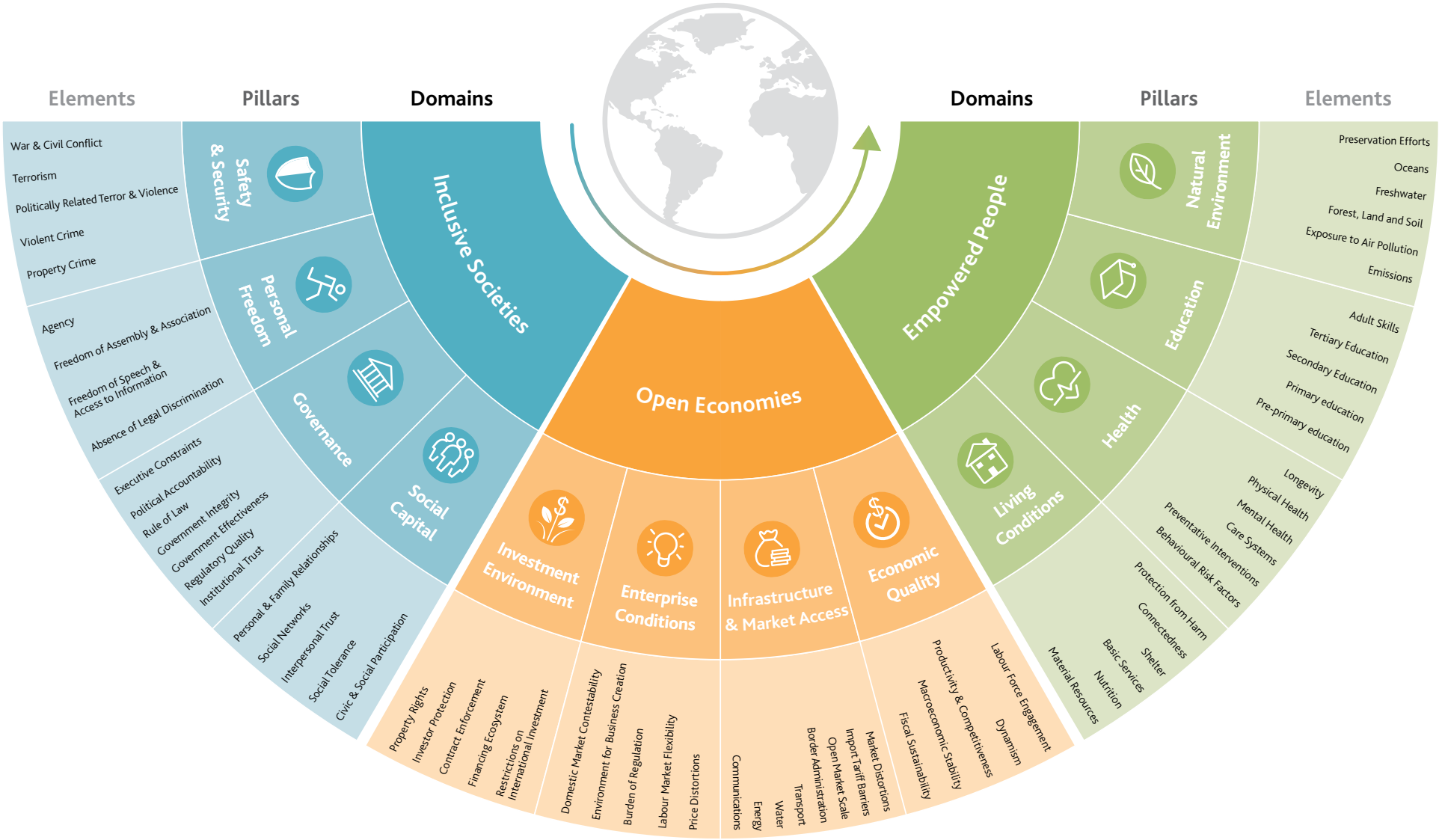
Our aim in publishing this methodology report is to provide all the information required to understand the Legatum Prosperity Index and to present it in a way that is transparent, useful, and informative.

The Prosperity Index is underpinned by a methodology that is policy-focused and improves the Prosperity Index's capacity as a transformational tool to help drive change. In building the Index, we sought the advice of more than 100 global experts, from academia and policy-focused organisations. A biography for each of the experts is available at www.prosperity.com.

This report describes the methodology underpinning the 2023 Legatum Prosperity Index. We wish to maintain stability in the production of the Index and intend to keep any changes to a minimum. That said, changes are sometimes necessary and we have outlined any changes made, and the impact of those changes, in our *Sources and Indicators* document.

This report constitutes two parts: Part I addresses and explains moving from the definition of prosperity (see accompanying *Defining Prosperity* document, which can be found on our website) to measurement, how indicators have been selected to fit the prosperity framework, and the process of going from these indicators to an overall measure of prosperity. Part II explores the statistical analyses and comparisons that were used to benchmark the Prosperity Index.

The domains, pillars, and elements of prosperity

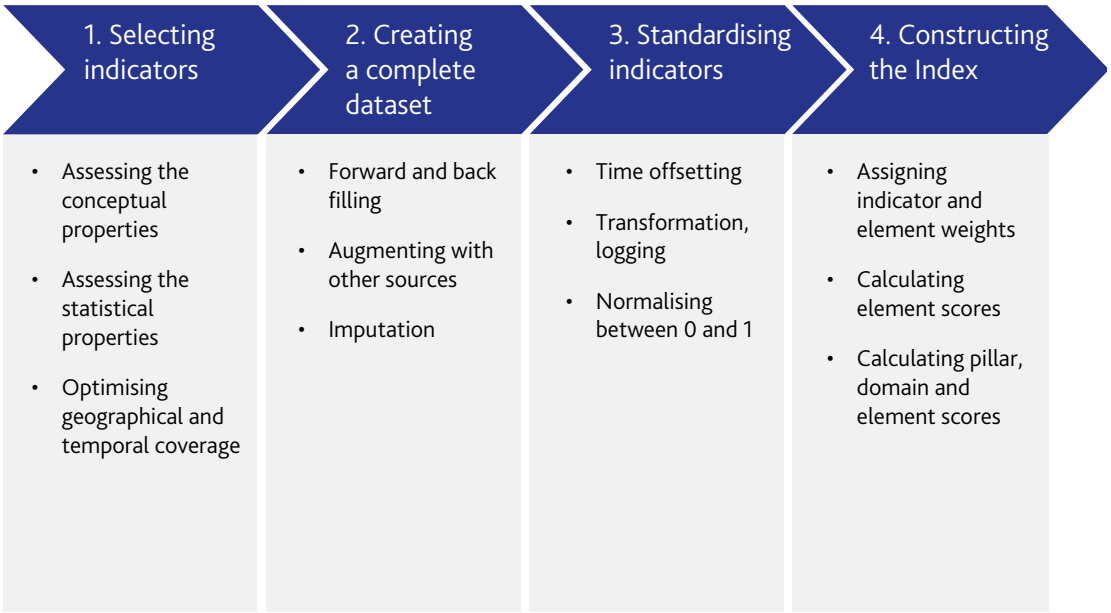


Part 1: Measuring prosperity

Using our conceptual framework for measuring prosperity across the world, comprising 3 domains, 12 pillars, and underpinned by 67 policy-focused elements (see "The building blocks of prosperity" diagram on the following page), we create a measurement system. For a full definition of each domain, pillar, and element, please refer to the *Defining prosperity* document.

The following sections describe the calculation of the Prosperity Index, broadly split into four stages: (1) the selection of indicators underpinning each of the 67 elements; (2) creating a complete dataset; (3) standardising the indicators; (4) constructing the Index through a process of transformation and aggregation. This process is outlined in the diagram below

Overview of the calculation of the Prosperity Index.



1. Selecting indicators

The goal of selecting and organising indicators underneath the framework defining prosperity has been to enable measurement of prosperity at a country level. We aim to use a set of indicators that (a) collectively act as a good proxy for the elements, and (b) have good coverage across countries and through time. Each of the 67 elements is composed of between one and eight indicators, resulting in a total of 300 indicators in the Prosperity Index.

Connection to the Element

The first set of considerations when selecting indicators for each element is how well these indicators, both in isolation and as a collective grouping, create a good interpretation of the element in question. Both conceptual and statistical reasoning were taken into consideration to identify how well a set of indicators act as a proxy for each element.

- **Supported by academic literature:** We choose indicators where there is wide consensus that they capture the underlying meaning of the element, and are important to improving prosperity. As well as undertaking our own literature review, our panels of over 100 global experts were indispensable in advising on which indicators were best in this regard;
- **Connection to productive capacity and Cantril's Ladder:*** We choose indicators that are plausibly a causal factor of both wealth and wellbeing. To explore this link, we look at two things: (1) the degree of correlation each indicator has with proxies for economic and social wellbeing, namely productive capacity and Cantril's Ladder (see Part II of this report), and (2) the research and academic literature around each indicator, and their connection to wealth and wellbeing. Considering both of these factors, we select indicators that are seen as plausible drivers of fundamental aspects of prosperity;
- **Strong internal consistency:** Whilst testing indicators against productive capacity and Cantril's Ladder informs us of the properties of these indicators in isolation, a different type of test is needed to understand the collective qualities of these indicators as part of an overall measurement. Cronbach's alpha provides a measure of internal consistency across a grouping of indicators within each element, testing whether the indicators act as a collective whole. As a general rule of thumb, we look to have Cronbach's alpha values above 0.7 for a collection of indicators within each element, and only opt to break this rule for good conceptual considerations.

Coverage both spatially and temporally

The second set of considerations in selecting indicators is the geographical and temporal coverage of each indicator:

- **Wide coverage of countries:** Because the Prosperity Index is a global measure, the data needs to cover a wide range of countries. We choose some indicators with a smaller coverage of countries if this coverage is focused on lower and middle-income countries, and do not select indicators which have a focus on primarily higher-income countries — for example, indicators from OECD datasets;
- **Coverage through time:** Our intention is to create an Index that demonstrates how prosperity has shifted over time, rather than just the current state. To that end, we prefer indicators that capture change over time. We also prefer indicators that will continue to be measured so that we can use updated data in future editions of the Index.

Using these criteria, we selected 300 indicators underpinning the 67 elements that provided the best articulation of these building blocks of prosperity. Before the Index could be calculated from these indicators, the issue of missing data points had to be addressed.

* For more about productive capacity and Cantril's Ladder, please see part II of this report.

2. Creating a complete dataset

The Prosperity Index, as with most global composite indexes, faces the problem of incomplete data. Some data points for some years might be missing for some countries, some indicators might be missing for some countries, and some indicators might be released with time lag. To complete our dataset, we prioritised real data in the following order:

1. Where missing data are detected for a country, we first use the latest known value for that indicator. For example, indicators with missing data in 2015 are assigned the corresponding values from 2014;
2. Where data are missing and no prior data are available, which mainly happens with the Index's earlier years, the earliest data available are employed. For example, the World Justice Project's latest dataset started only in 2015. That means the earliest data, from 2015, is used to back-fill all previous years;
3. Where no reliable real data for a specific country are accessible from the main source for an indicator, augmentation and imputation are employed on a case-by-case basis.

Augmenting data with other sources

The preferred way we deal with data missing for a country for all years is by inserting correct values directly, based on other sources for the data.

In some cases, values for some countries are not included in the dataset, but are explicitly or implicitly defined by virtue of the source's methodology. For example, the Bertelsmann Transformation Index gives scores from 0 to 10 for many countries around the world. However, this index is focused on developing countries, and countries that were members of the Organisation for Economic Co-operation and Development (OECD) by 1989 are excluded. In this case, we give these countries the highest possible score of 10, based on our assessment that this is the score they would receive if they were included.

In other cases, values for some countries are not included in the dataset and are not implied by the source methodology. In these cases, we look for the data from different sources. For example, for the "Inflation volatility" indicator, data for Qatar and Cuba are not included in the International Monetary Fund's dataset. In this case, we were able to find accurate data from other sources, such as Index Mundi and the CIA World Factbook.

In cases where values for some countries are not included in the dataset, are not implied by the methodology, and are not available from other sources, we take a different approach — imputation.

Imputation

If we cannot insert data from an appropriate alternative source, we use linear regressions to impute an indicator value based on other independent variables. We use the following independent variables:

- Productive capacity;
- Country groupings;*
- Relevant 'driver variables' that have an underlying relationship with the indicator we are seeking to impute.

We select these driver variables based on whether they have a strong conceptual and/or statistical relationship with productive capacity, the element itself, and the indicators needing imputation. In addition, they must have sufficient country coverage so that they cover most of the countries that have indicators missing.

* We have created nine separate country groupings based on the underlying characteristics of that country. These groupings can be found in Appendix II.

These regressions give us several imputation options. For each indicator, we select the most appropriate regression model based on the degree of correlation and statistical significance of the driver variables. We also apply a sense-check to ensure that the implied relationship is consistent with broader research and to avoid risks of overfitting. For example, in imputing data for the "Efficiency of seaport services" indicator, we used the logistics performance index as a driver variable. This had the advantage of covering a large number of countries, a strong statistical relationship with the "Efficiency of seaport services" indicator, and a strong conceptual argument.

In some cases, the chosen regression model may not impute values for all missing countries because it uses a driver variable that covers only some of the countries requiring imputation. Therefore, we choose a fall-back imputation model that covers each of these remaining countries based on the same criteria as the main imputation.

The degree of imputation for each country with over 15% of its indicators imputed is available, broken down by pillar, in the Appendix.

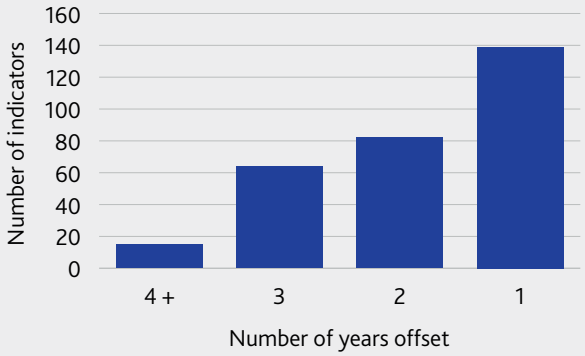
3. Standardising indicators

Once the set of indicators has been selected and missing data points filled, they go through a process of standardising, so that they can then be aggregated to produce composite scores at the element level, and further aggregated to pillar, domain, and Index level. This section outlines the steps undertaken to standardise indicators.

a. Time offsetting

The lags between when data is recorded, published by the source organisation, and subsequently made use of in this Index can vary by a matter of months to years. Very little data is released in the year it was collected and in time for use in the Index (see Figure 1). This means we need to consider how to align the time-series of each indicator before they can be aggregated into an Index.

Figure 1: Number of Indicators by years offset



We offset the majority of indicators by 0-2 years, based on when they became available. So if, for example, data for an indicator for the year 2019 only became available in 2021, we would assign the data for the year 2019 to the 2021 score, and the data for 2018 to the 2020 score, and so on — thereby offsetting by two years. Practically, this means that we assign data to the Index year in which it becomes available, rather than the year in which it is collected. Just 5% of indicators were given an offset of four years or more, as shown in Figure 1.

Another option would be to assign the data to the Index year in which it was recorded. However, this would mean that for most indicators, the data in the latest Index year would be exactly the same as the year before (due to the fact that when data is missing in a year, we roll forward a previous year's data). This would have two major disadvantages. The first is that it would create an artificial flat-lining in the last year of the Index. Second, it would mean the most recent year's score would change significantly as reported in the subsequent year's Index, as the data are updated. While there will always be small changes to previous year's scores, we want to minimise this as much as possible.

It is worth noting that this process affects only the presentation of historical values. It does not affect the latest score. For the latest score, both approaches create a prosperity score based on the latest available data.

We considered the benefits and costs of each approach. Our view was that the offsetting approach was preferable, because it was more important to see the historical trend of prosperity, rather than the exact year in which a change occurred. Due to the fact that we note the year in which data was collected, this still means that it is possible to investigate policy changes that stimulate improvements or deteriorations in prosperity.

b. Transformation

Some indicators in the Index require transformation before they are meaningful. In most of these cases, we transform the indicators by converting to a per capita or per unit area metric. For example, the raw data we collect for the "Rail density" indicator is the total length of rail lines in a country. We standardise this measure by dividing by a country's land area. This makes the measurement comparable between countries of different sizes.

c. Normalisation

The indicators in the Index are based on many different units of measurement, such as percentages and ordinal scales. These different units need to be normalised for comparisons between indicators and countries to be meaningful. A distance-to-frontier approach is used for this task, in which every indicator is normalised to a value between 0 and 1. The distance-to-frontier approach compares a country's performance in an indicator with the values of the assumed best-case and the worst-case for the indicator. In this way, the country's relative position can be captured by the distance-to-frontier score generated. The first step is to define the frontiers — the best and worst cases for each indicator.

Defining the frontiers

For indicators which have logical upper and lower bounds, the best and worst cases might be set at, or close to, their highest and lowest possible values. This scenario mainly applies to indicators with ordinal scales as units of measurement. The "Political participation and rights" indicator, for instance, is limited to values between 1 and 7, thus its frontiers can be defined according to its logical boundaries.

However, where possible, we set the boundaries such that the normalised values (between 0 and 1) contain a relatively consistent standard deviation across indicators. For indicators with clearly defined logical bounds, this often means the distance-to-frontier does not rely on 'logical bounds'. That is because, in many cases, the upper or lower logical bound is theoretical, and is never achieved in practice. This is particularly the case with survey variables.

For indicators whose values can vary on a spectrum that is unlimited at one or both ends, best and worst cases are based on the data collected for the Index since 2007. In cases where it is likely that the historical upper bound will be superseded in the future, as with the "Internet bandwidth" indicator, we leave room for improvement.

Where greater values indicate worse outcomes — for instance, in the case of the "Non-tariff measures" indicator — we invert the distance-to-frontier, such that higher scores always indicate better performance.

Taking logarithms

One of the critical decisions is whether or not to take a logarithm of each indicator. In cases where the data distribution is skewed or has long tails, we log-normalise the indicator. For example, the "Cost of redundancy" indicator value for most countries is between 0 and 60 weeks. However, a select few countries have values much higher. Variation of this nature requires normalisation by taking the logarithm of the values, so that different observations can be compared within a narrower data

range, and so that extreme variation in a single indicator does not unreasonably affect a country's overall performance. Thirty-seven indicators are normalised in this manner.

Excluding outliers

Another key consideration in applying distance-to-frontiers is to decide whether or not there are outliers that should be excluded when selecting best and worst cases. This is done primarily because selecting frontiers to include outliers would result in very little differentiation between the majority of the other countries.

We are typically guided by the 5th and 95th percentiles for observed values in excluding outliers. Selecting frontiers based on these percentiles means that each indicator's distance-to-frontier scores differentiate between countries to a similar degree to other indicators, which is crucial when aggregating these scores to create element and pillar scores. We decided to opt for compatibility of distance-to-frontier scores for aggregation over avoiding penalisation of extremely high or low performers.

For example, values for the "Non-communicable diseases" indicator ranged from 5,586 to 8,551 years/100,00 population. However, only 5% of countries had more than 7,207 years lived with disability from non-communicable diseases per 100,000 pop. The boundaries set for this indicator were 5,500 and 7,750 years/100,000 population, based on the 95% upper bound for values.

Normalising the values

After we determine the frontiers, the next step is to calculate a country's distance-to-frontier score for each indicator. For a given indicator i, if we write $\mathrm{Worst\ Case}$ and $\mathrm{Best\ Case}$ for the frontiers established for this indicator, and x_i^j for country j's raw value in indicator i, then the country's normalised score is given by the following equation:

$$\frac{\mathrm{x}_i^j - \mathrm{Worst\ Case}}{\mathrm{Best\ Case} - \mathrm{Worst\ Case}}$$

Using distance-to-frontier scores allows direct comparison of values across indicators and countries, and also allows tracking and comparison of a country's performance across years. Since the upper and lower frontiers are fixed across years, changes in a country's year-to-year distance-to-frontier score reflect its improvement or deterioration in the same indicator, pillar, or overall score in absolute terms.

4. Constructing the Index

At this stage, we have a set of 300 indicators, using a comparable scale, organised underneath the definitional framework of prosperity. They are now in a position to be combined, and aggregated up to measure each element, pillar, and domain of prosperity, as well as the overall measurement of prosperity.

a. Weighting

As noted earlier, we recognise that not every indicator is equally important to an element, and not every element is equally important to a pillar. Therefore, each indicator is assigned a weight within an element, indicating the level of importance it has in that element. Similarly, each element has a weight that reflects its importance in the overall pillar. Therefore, the next step in constructing the Index is to assign weights to the indicators to determine the element score, and weights to the elements to determine the overall pillar score.

We first weight indicators within an element. Indicators are typically assigned one of four weights: 0.5, 1, 1.5, and 2.* The default weight for each indicator is 1 and, based on its significance to the element in which it is contained, its weight is adjusted downwards or upwards. An indicator with a weight of 2 is twice as important in affecting the concept its element represents as an indicator with a weight of 1.

Weights are determined by three factors:

- The relevance and significance of the indicator with respect to its element, which is informed by the academic literature, policy debate, and expert opinion;
- The robustness and reliability of the indicator in question, including whether it has any known measurement flaws;
- The significance of the indicator in its relationship with both economic and social wellbeing in a global context.

While seemingly more objective not to weight each of our indicators, we choose to weight our indicators for a number of reasons. First, because we include a wide variety of different indicators, in line with our multidimensional view of prosperity. Second, because some indicators are more important than others in delivering prosperity. In the Prosperity Index, equal weighting would be tantamount to claiming that in the Terrorism element of the Safety and Security pillar, for example, the property cost of terrorism (weight *1) is as important as the number of deaths caused by terrorism (weight *2). Weights allow us to speak to a range of issues while remaining true to our conceptual framework and research findings.

After weighting the indicators, we weight elements within each pillar, led by the same three factors above. At the element level we apply weights as percentages rather than factors.

b. Calculating element scores

Once the indicators have been normalised and assigned a weight, they can be aggregated to create an element score. As a result of the distance-to-frontier approach, indicator scores lie between 0 and 1 after normalisation.

In each element, the scores for each indicator are summed together to give an element score.† As a formula, an element score E for an element with indicator scores ind_j with respective weights w_j for $j = 1, \ldots, n$ is given by:

$$E = 100 * \frac{\sum_{j=1}^{n} w_j * ind_j}{\sum_{j=1}^{n} w_j}$$

This results in an element score between 0 and 100.

Excluding irrelevant indicators or elements for specific countries

In a handful of cases, a specific indicator or element does not make sense in the context of a certain set of countries, despite being relevant to the majority of countries covered in the Index. This happens in three instances.

The first instance is voter turnout, covered in the Civic and Social Participation element of the Social Capital pillar. Whilst for the majority of countries, this indicator provides a proxy for the level of civic engagement in a country, bias is introduced by using this indicator for countries with compulsory voting (such as in Australia). The second and third are the "marine protected areas" indicator, cov-

* 99% of indicators received one of these four weights. Two indicators within the Infrastructure and Market Access pillar received a weight of 0.25, and one indicator within the Governance pillar, "Civil justice" received a weight of 3, as it had several key variables underlying it as a composite indicator.

† Weighted sum, using the weights assigned.

ered in the Preservation Efforts element of the Natural Environment pillar, and the Oceans element of the Natural Environment pillar. For these, it does not make much sense to score countries if they are landlocked.

To manage these specific cases, we adjust the weights of the remaining indicators or elements for these countries proportionally to the original weighting assigned to them. An example to illustrate the method is given at the end of Part I.

c. Calculating pillar, domain, and Index scores

Once element scores have been constructed, they are summed to give pillar scores out of 100.* As a formula, the pillar score P for a pillar with element scores E_j and weights κ_j for $j = 1, \ldots, m$ is given by:

$$P = \frac{\sum_{j=1}^{m} \kappa_j * E_j}{\sum_{j=1}^{m} \kappa_j}$$

Each pillar is weighted evenly. The average of the twelve pillars is taken to give an overall Index score, thus a country's Index score, $Prosp$, is given by:†

$$Prosp = \frac{1}{12} \sum_{j=1}^{12} P_j$$

Where the pillar scores for that country are P_j, for $j = 1, \ldots, 12$. Similarly, domain scores are the arithmetic mean of the four pillar scores within that domain.

Conclusions

As set out in this section, there is a significant amount of detail underneath the four stages, of indicator selection, dealing with missing data, standardising indicators, and the calculation of the Index that underpins the measurement of prosperity. In being able to set out these details, we hope to formalise the logic that underpins the way the Prosperity Index measures prosperity. This section, we hope, not only gives transparency about the measurement we use for prosperity, but provides a blueprint for the technical underpinning of any multidimensional index. Building such an index requires a multitude of discrete technical decisions. Should aggregation happen using weights? Should an arithmetic or geometric mean be used? How should cases of missing data be handled? The discretization of each decision, whilst still seeing the picture of the whole process, enables careful decision making in the technical task of index building.

* Weighted sum, using the weights assigned.

† Arithmetic mean.

Excluding irrelevant indicators or elements for specific countries — the Oceans element:

As noted, there were cases where an indicator or element did not make sense in the context of a few specific countries, despite having relevance for the majority of countries. One such example is the Oceans element of the Natural Environment Pillar for landlocked countries.

The original weighting schema for the elements within the pillar is summarised in Table 1 below.

Table 1: Natural Environment, element weights for non-landlocked countries

Element	Weight (for non-landlocked countries)
Emissions	15%
Exposure to Air Pollution	15%
Forest, Land & Soil	20%
Freshwater	20%
Oceans	**15%**
Preservation Efforts	15%

For landlocked countries, we maintain the original ratio of weights between the remaining elements. When the Oceans element is removed 85% of the original 100% weighting remains. The new weighting for Emissions is thus 15% x 100%/85% = 17.65%. A similar calculation is used for each of the remaining elements as shown in Table 2 below.

Table 2: Natural Environment, element weights for landlocked countries

Element	Original Weight (for non-landlocked countries)	Adjustment factor	Weight (for landlocked countries)
Emissions	15%	100%/85%	17.65%
Exposure to Air Pollution	15%	100%/85%	17.65%
Forest, Land & Soil	20%	100%/85%	23.53%
Freshwater	20%	100%/85%	23.53%
Oceans	**15%**		
Preservation Efforts	15%	100%/85%	17.65%

The methodology for excluding irrelevant indicators for specific countries allows us to remain true to our weightings, representing the relevant importance of each element/indicator, without having to impute values into a context where they do not make sense.

Part II: Assessing the Prosperity Index and its pillars

To test the structural integrity of the Index, several statistical analyses for each pillar and for the overall Index were carried out. This section outlines the analysis undertaken during and following the methodological review.

Productive capacity and Cantril's Ladder

The role of productive capacity and Cantril's Ladder

In constructing the Index, we wanted to benchmark against measures that capture the policy-relevant drivers of both social and economic wellbeing. For the former, we used a measure known as Cantril's Ladder, which is self-reported and measured on an ordinal scale of 0 (lowest) to 10 (highest).* For the latter, we constructed a measure called 'productive capacity', which is the total GDP of a country excluding resource rents, divided by the working age population. This removes two distorting effects on a country's GDP that misrepresent the underlying productive capacity: demographics and resource rents.

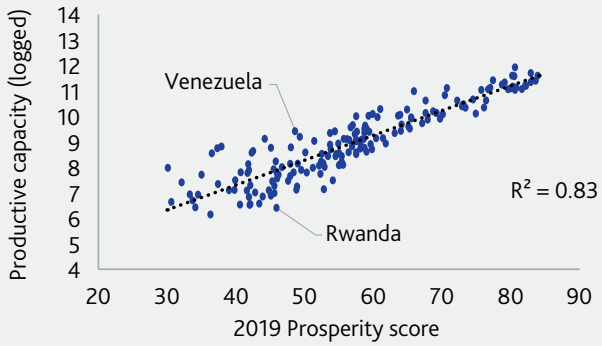
GDP per capita, as a welfare measure, acts as a useful proxy for the average income of the population of a nation. For most nations — those without atypical demographic trends or significant resource rents — it works as a clean proxy for productive capacity. However, for others, it does not necessarily capture a nation's true economic wellbeing and the quality of its economic structures and policies.

In accounting for resource rents and demographic patterns, we hope to produce a more accurate picture of what the productive population of a nation contributes to the economy, rather than what they earn. Fundamentally, this is a question of productivity vs. rents. We wish to measure productivity instead of rents, as measuring the latter tends to produce perverse policy objectives, often with poor alignment between short and long-term goals.

For more information about the construction and role of productive capacity in developing and assessing the Prosperity Index, please see the "Measuring economic wellbeing" essay in the 2019 Prosperity Index report.

Comparison with productive capacity and Cantril's Ladder

Figure 2(a): Productive capacity v Prosperity Index

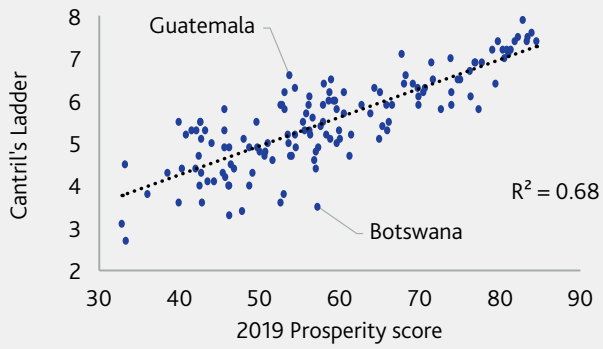


Comparing the Index to established, or simple, measures of both wealth and wellbeing allow us to see whether the rankings produced by the 2019 Prosperity Index broadly align with other accepted views of benchmarking indicators of prosperity.

Figures 2(a) and 2(b) show the relationship between overall prosperity and the chosen proxies for both wealth and wellbeing. As they show,

* The life satisfaction question is: "Please imagine a ladder with steps numbered from 0 at the bottom to 10 at the top. Suppose we say that the top of the ladder represents the best possible life for you, and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time, assuming that the higher the step the better you feel about your life, and the lower the step the worse you feel about it? Which step comes closest to the way you feel?" The data are from Gallup's World Poll and refer to 2018 data. The correlation is based on the 140 countries for which there is data from the survey.

Figure 2(b): Cantril's Ladder v Prosperity Index



the overall Prosperity Index shows a reasonably strong positive correlation with each of these measures.

The results above show that 83% of the variation in productive capacity between countries can be explained by the Prosperity Index, and analogously, 68% of the variation in Cantril's Ladder between countries. It is worth noting that the relationship between productive capacity and overall prosperity is marginally stronger than that between GDP per capita and prosperity. More importantly, this relationship is also stronger at a deeper level, showing a closer relationship with each of the 12 pillars than GDP per capita.

Figures 2(a) and 2(b) also call out some of the outliers when comparing prosperity to productive capacity and Cantril's Ladder. Venezuela, for example, has a higher level of productive capacity than its prosperity score would indicate. A decade prior, these two measures may have aligned more closely for Venezuela, the effects of a deep financial crisis having affected Venezuela across all twelve pillars of prosperity. Analogously, Rwanda has lower productive capacity than its level of prosperity would indicate. Whilst Rwanda has a strong performance across the Open Economies domain of the 2019 Prosperity index, the country ranked 145th for Living Conditions, and 121st for Safety and Security. Similarly, Guatemala has a higher score for the Cantril's Ladder scale than its prosperity would indicate, and Botswana lower than its prosperity would indicate.

The pillars and associated elements have varying degrees of correlation with productive capacity and Cantril's Ladder. Most of the twelve pillars show statistically significant correlations, with Market Access and Infrastructure the highest. This shows that each of the pillars is associated with both wealth and wellbeing. Only the Personal Freedom and Natural Environment pillars exhibit Pearson correlations of under 0.6. Whilst there is a slightly weaker statistical relationship for these two pillars, our work with expert advisors around the world, and their relevance in the academic and policy-focused literature, indicate their importance to prosperity. For further details, including the correlation coefficients mentioned above, please refer to the 2019 methodology document (which is available on www.prosperity.com).

Internal tests

In constructing the Index, we wanted to ensure that it made sense to combine the selection of indicators within elements, and elements within pillars. Cronbach's alpha is a measure of internal consistency — that is, how closely related a set of items are as a group. We aim to get a Cronbach's alpha above 0.7 as a rule of thumb.

The Cronbach's alpha for each pillar can be found in the 2019 methodology document. As can be seen, there are high values for nearly all pillars, with only Social Capital and Natural Environment below 0.7. Similarly, at the element level, Cronbach's alpha was above 0.7 for over two thirds of elements. For those pillars and elements that have alphas below 0.7, we discussed their conceptual standing with external experts and found that reasons for their inclusion counterbalanced the statistical findings. On the whole, the Cronbach's alpha values therefore confirm that the elements and indicators are internally consistent and add up to a cohesive whole.

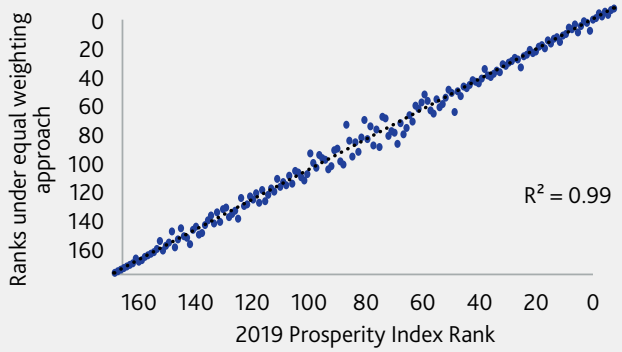
Sensitivity to changes in weighting

Our weighting choice is only one of many possible approaches that would be equally justifiable on different grounds. In discussions with experts, the issue of sensitivity of composite indexes to different weighting choices was a topic that often came up.

In this section, we show the impact of changing our weighting approach on the Index's scores and rankings in two ways: (1) by comparing against an Index using equally weighted indicators and elements, and (2) assessing against randomised weightings, derived using Monte Carlo randomisation simulations.

Equal weighting approach

Figure 3: Ranking with Prosperity Index weighting vs equal weighting



The first test of the sensitivity of the Index to changes in the choice of weightings is to understand how the rankings of the Index would change if we were to use equal weighting.

Figure 3 plots, on the vertical axis, countries' rankings derived by equally weighting indicators and elements and, on the horizontal axis, countries' rankings derived using our weighting approach. The overall correlation is clearly strong. Equally weighting indicators and elements sees many countries experience minor changes in their overall prosperity score and ranking.

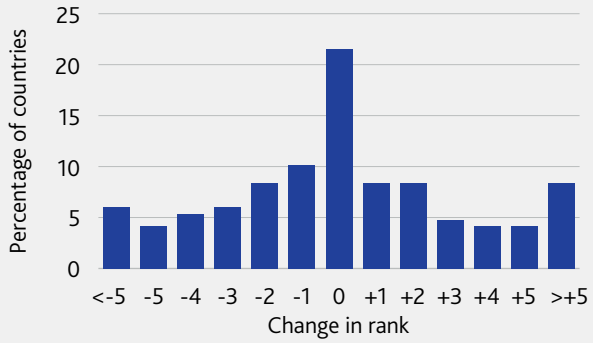
Table 3: Countries changing 10 or more places under equal weighting approach in 2019 Prosperity Index

Country	Prosperity Index Rank	Equal Weighting Approach	Difference
Guyana	90	74	-16
Philippines	84	71	-13
Ghana	102	92	-10
North Macedonia	54	66	+12
Belarus	73	86	+13

Table 3 outlines the five countries where the ranking changed by 10 or more places when using equal weighting for elements and indicators.

The differences in ranking under an equal weighting approach for each of these countries is, unsurprisingly, due primarily to indicators and elements that were consciously down-weighted due to lack of data. For example, Guyana, the Philippines, and Ghana all rank in the top 60 for pre-primary education, which contains just one indicator due to a lack of globally reported data for pre-primary completion rates and quality. Using weighting in the Prosperity Index allows us to account for the lack of data to measure pre-primary education, despite it perhaps having as much importance as other levels of education — an equal weighting approach would mean that countries were affected more

Figure 4: Impact on rankings when using equal weighting approach in 2019 Prosperity Index



heavily by extreme values in pre-primary enrolment.

The breakdown of the rank change in the remaining countries is outlined in Figure 4 on the left:

Overall, the weights chosen for the elements and indicators do not create a large deviation in ranks when compared to equal weightings.

Randomised weighting approach

A second test of the sensitivity of the Index to the choice of weightings is to understand how the rankings of the Index vary when weighting choices are randomised. To do so, we used Monte Carlo simulations — generating Index ranks 1,000 times with indicators randomly allocated a weighting of 0.5, 1.0, 1.5, or 2.0 each time.

Figure 5 shows the outcome of this simulation for each country. The countries have been ordered by their ranks under the current weighting approach (illustrated with a red cross). The range between the 5th and 95th percentiles of the simulated ranks for each country is shown by the vertical bar for each country. This illustrates the volatility of the rank based on the indicator weightings. The median rank is also marked on the line.

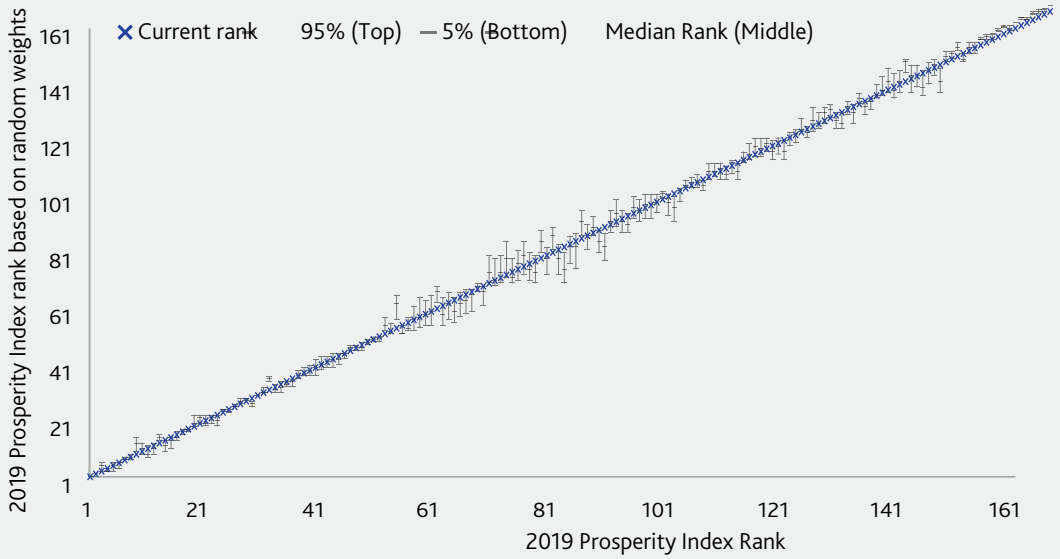
The range of ranks is uniformly quite small across all 167 countries covered in the Index, with only eleven countries ranks having a range over ten places, and the maximum range being just twelve, in Belarus and Vietnam. Furthermore, the median rank is a better comparator after 1,000 simulations, and only six countries median ranks differed by more than 5 places from their rank in the 2019 Prosperity Index — North Macedonia (-8 vs. median rank), Belarus (-7 vs. median rank), Bosnia and Herzegovina (-7 vs. median rank), Paraguay (-6 vs. median rank), Iraq (-6 vs. median rank), and Nigeria (+7 vs. median rank).

Belarus and North Macedonia both experience some of the largest ranking changes under equal weighting and randomised weighting when compared to the Prosperity Index. For North Macedonia, this is primarily due to the Labour Market Flexibility (127th) and Pre-Primary Education (116th) elements, which we consciously down weighted due to data availability. The changes in Belarus' rank have been driven by a greater combination of elements , principally Macroeconomic Stability, Communications, and Productivity and Competitiveness.

The choice and application of weights constitute our view of the relative importance of indicators and elements in their contribution to prosperity, after considering the statistical analysis and seeking the advice of our panel of global experts.

The sensitivity analysis demonstrates that the rankings are relatively stable when they are placed under different weighting scenarios. This implies that the scores and rankings in the Index are affected more by variation in the indicator values than the weights that have been applied.

Figure 5: Range of ranks under randomised weighting approach



Limitations of the Index:

Every global Index has limitations and cannot explain the world fully. Some primary limitations of the Prosperity Index are the following:

Over-reliance on survey data: We depend on expert survey data for many of our indicators. The primary problem this presents is the collinearity between indicators that conceptually have no link. This is often because respondents will give similarly biased responses across a range of answers.

The efficacy of the data: There are always challenges obtaining data that captures the core idea of what we are trying to communicate. That is why, in some cases, we need to use outcome data rather than input data.

Data availability: It is sometimes the case that data becomes unavailable when it is discontinued. This means we occasionally need to change the source of the data. This also makes it hard to create a time-series, if an organisation discontinues one indicator and creates a new one.

Comparison with other global Indexes

As part of stress-testing the Index following the 2019 methodology review, we compared the Prosperity Index with three other indexes that examine areas of social or economic wellbeing across the world:

- The Human Development Index (United Nations Development Programme);
- The Social Progress Index (Social Progress Imperative);
- The Global Competitiveness Index (World Economic Forum).

Ever since its first release in 1990, the United Nations' Human Development Index (HDI) has been the global standard in measuring human development beyond GDP alone. Its three components — health, education, and income — are equally weighted. It ranges from 0 (lowest human development relative to the rest of the world) to 1 (highest possible relative human development).

Produced since 2013, the Social Progress Index (SPI) measures the wellbeing of a society through three dimensions — basic human needs, foundations of wellbeing, and opportunity — which are equally weighted to produce an overall assessment of the social progress of a nation. Whilst the SPI excludes economic variables, it is an authoritative measure of social wellbeing at a national level. Scores range from 0 (lowest social progress) to 100 (highest possible social progress).

The Global Competitive Index (GCI) is the index underlying the World Economic Forum's Global Competitiveness Report, produced since 2004, providing insight into the drivers of productivity and competitiveness in nations around the world. Its underlying indicators are organized into twelve pillars of equal weighting in their importance to competitiveness and economic productivity.

We wanted to understand how the Prosperity Index compared to these indexes. Whilst the conceptual underpinning and aims of each index are not the same, each of these three indexes have proven themselves to be reputable measures of aspects central to prosperity as defined by our conceptual framework.

To understand these differences, given the different measurement criteria, we ran simple regressions against these indexes to tell us the similarities and differences between the Prosperity Index and other indexes. Looking at how similar the scores are, and the outliers in each Index gives us an understanding of the general overlap with these indexes, and what might be learnt from where the measurements highlight differences in specific nations.

The first thing to notice is the high degree of correlation with each of the other indexes, which can be seen in Figures 6(a), 6(b), and 6(c) below. The framework of the Human Development Index aligns most closely with the framework underpinning the Prosperity Index, yet reveals the most dissimilarity with an R^2 of 0.84, compared to an R^2 of 0.90 with the Global Competitiveness Index, and an R^2 of 0.93 with the Social Progress Index.

There are key differences between the Prosperity Index and the HDI. Firstly, the HDI considers only four underlying indicators; life expectancy at birth, mean years of schooling, expected years of schooling, and GNI per capita. There is of course power in the simplicity of this construction, and all four indicators have academic grounding. Nevertheless, the nature of an index comprised of almost 300 indicators is significantly different than that of an index consisting of just four — both types of measurement are valuable in assessing prosperity, but their priorities are set slightly differently. Highly multidimensional indexes, such as the Prosperity Index (and the Social Progress Index, and Global Competitiveness Index) seeks not only to measure, but to explain. However, they are significantly more complex than transparent metrics with only a few underlying variables. Secondly, the HDI's conceptual framework gives no consideration to the role of Inclusive Societies.

The similarity between the scores produced by the Prosperity Index and the remaining two indexes, the Social Progress Index and the Global Competitiveness Index, is significant, with both above 0.90. Whilst all three indexes hold different measurement criteria, there is a high degree of agreement about the relative rankings of nations.

Another thing that is noticeable from the figures is that Iran underperforms on the Prosperity Index relative to both the Human Development Index and the Social Progress Index. Primarily, this is driven by Iran's low score in the Personal Freedom pillar of the Prosperity Index (ranking 163rd). The Human Development Index does not consider an analogous area in their index, and whilst the Social Progress Index does touch on areas relating to Personal Freedom, they are primarily within two components of their measurement (Personal Rights, and Inclusiveness), which are analogous to different elements within the Prosperity Index's framework. Figures 6(a), 6(b), and 6(c) call out a few of the other significant outliers when comparing these indexes, which are primarily the result of the different frameworks underpinning each index.

Figure 6(a): Prosperity Index v Human Development Index

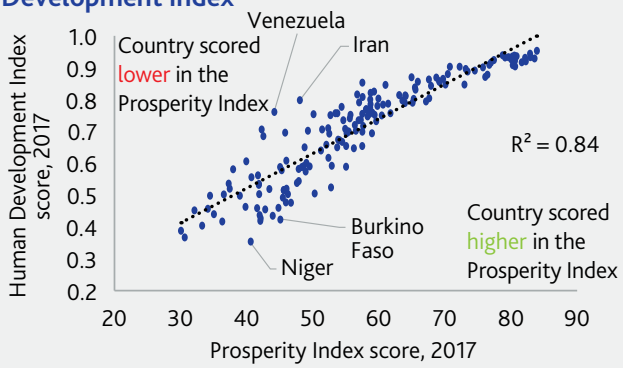


Figure 6(b): Prosperity Index v Social Progress Index

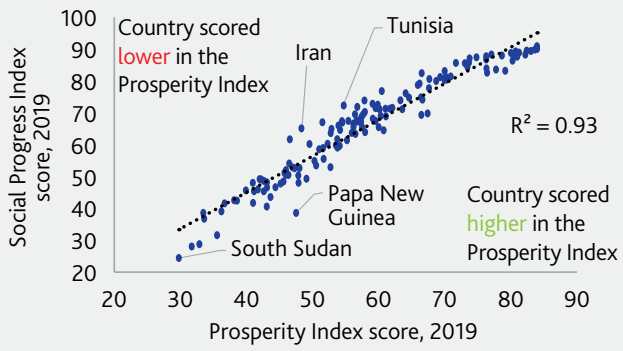
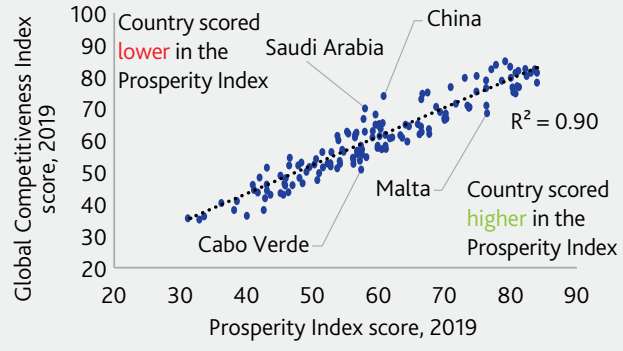


Figure 6(c): Prosperity Index v Global Competitiveness Index



Appendices

Appendix I: Summary statistics for pillars and elements, 2023 Prosperity Index

Pillar Summary Statistics

Pillar	Mean	Minimum Value	Maximum Value	Standard Deviation	Pearson correlation with		
					Productive Capacity	Cantril's Ladder	Prosperity Index score
Safety & Security	67.2	16.5	96.3	17.5	0.7	0.7	0.9
Personal Freedom	56.8	16.2	94.1	19.9	0.6	0.6	0.8
Governance	50.4	13.1	90.4	17.7	0.8	0.7	1.0
Social Capital	54.5	23.0	82.6	10.4	0.7	0.8	0.8
Investment Environment	53.0	21.7	85.0	16.7	0.9	0.8	1.0
Enterprise Conditions	54.8	20.5	83.8	12.9	0.8	0.6	0.9
Infrastructure & Market Access	55.0	24.2	85.7	15.8	0.9	0.8	1.0
Economic Quality	51.6	24.5	80.1	13.4	0.9	0.8	0.9
Living Conditions	69.8	19.2	95.9	19.8	0.9	0.8	0.9
Health	68.6	32.0	86.9	11.2	0.8	0.7	0.9
Education	58.7	16.8	91.4	19.7	0.9	0.8	0.9
Natural Environment	56.2	33.7	78.7	9.1	0.6	0.6	0.8

Inclusive Societies Element Summary Statistics

Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	Pearson correlation with		
						Productive Capacity	Cantril's Ladder	Prosperity Index score
Safety and Security	War and Civil Conflict (20%)	78.8	6.5	100.0	20.2	0.55	0.53	0.70
	Terrorism (15%)	85.5	0.0	100.0	22.8	0.31	0.37	0.37
	Politically Related Terror and Violence (30%)	65.3	1.7	100.0	26.3	0.60	0.61	0.78
	Violent Crime (25%)	51.9	11.0	95.2	19.0	0.64	0.56	0.82
	Property Crime (10%)	60.9	18.6	91.5	16.8	0.64	0.59	0.69
Personal Freedom	Agency (25%)	56.3	13.3	94.8	19.3	0.75	0.76	0.94
	Freedom of Assembly and Association (25%)	60.1	8.8	98.4	25.9	0.47	0.51	0.73
	Freedom of Speech and Access to Information (25%)	59.2	7.5	97.6	22.3	0.44	0.48	0.72
	Absence of Legal Discrimination (25%)	51.9	10.9	89.2	17.3	0.66	0.72	0.85
Governance	Executive Constraints (15%)	47.6	7.6	94.6	19.3	0.71	0.66	0.91
	Political Accountability (15%)	61.7	13.1	97.8	23.9	0.57	0.61	0.82
	Rule of Law (15%)	46.8	10.6	86.9	16.5	0.76	0.64	0.91
	Government Integrity (15%)	49.2	11.0	95.3	22.1	0.80	0.70	0.94
	Government Effectiveness (15%)	50.8	2.7	96.0	23.4	0.82	0.75	0.95
	Regulatory Quality (15%)	45.7	10.5	84.4	16.6	0.82	0.76	0.95
	Institutional Trust (10%)	50.8	15.5	90.2	14.9	0.29	0.30	0.44
Social Capital	Personal and Family Relationships (20%)	66.4	9.1	90.5	17.0	0.66	0.79	0.74
	Social Networks (20%)	64.6	3.1	83.3	12.0	0.40	0.50	0.60
	Interpersonal Trust (20%)	42.4	16.4	87.5	12.4	0.40	0.50	0.53
	Civic and Social Participation (20%)	42.9	5.2	85.0	14.0	0.24	0.30	0.51
	Social Tolerance (20%)	56.1	12.0	94.2	17.0	0.60	0.58	0.74

Open Economies Element Summary Statistics

Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	Pearson correlation with		
						Productive Capacity	Cantril's Ladder	Prosperity Index score
Investment Environment	Property Rights (30%)	53.5	10.7	92.3	18.0	0.84	0.73	0.94
	Investor Protection (20%)	49.3	3.9	83.7	18.0	0.73	0.65	0.85
	Contract Enforcement (20%)	57.1	10.2	95.2	20.3	0.83	0.69	0.93
	Financing Ecosystem (20%)	54.8	15.3	85.5	17.0	0.83	0.75	0.90
	Restrictions on International Investment (10%)	47.4	4.3	80.6	19.3	0.66	0.62	0.74
Enterprise Conditions	Domestic Market Contestability (30%)	54.8	16.5	96.2	19.3	0.80	0.72	0.93
	Environment for Business Creation (25%)	55.7	22.2	85.7	14.8	0.68	0.52	0.86
	Burden of Regulation (25%)	51.9	11.7	79.6	11.5	0.58	0.36	0.71
	Labour Market Flexibility (10%)	49.4	18.4	78.8	11.6	0.33	0.23	0.35
	Price Distortions (10%)	65.1	18.9	96.6	13.9	0.49	0.45	0.65
Infrastructure and Market Access	Communications (25%)	70.9	26.5	97.7	18.8	0.86	0.74	0.90
	Energy (15%)	46.1	12.3	77.3	14.8	0.77	0.71	0.79
	Water (10%)	54.9	12.2	90.5	19.8	0.77	0.74	0.89
	Transport (25%)	43.8	15.2	86.0	17.3	0.85	0.61	0.87
	Border Administration (5%)	54.0	21.2	86.5	15.0	0.82	0.71	0.89
	Open Market Scale (5%)	44.2	2.5	94.4	27.6	0.80	0.49	0.62
	Import Tariff Barriers (5%)	63.6	3.9	100.0	20.2	0.55	0.65	0.83
	Market Distortions (10%)	58.5	15.0	96.4	18.0	0.71	0.68	0.86
Economic Quality	Fiscal Sustainability (25%)	52.7	5.4	88.3	14.2	0.50	0.59	0.50
	Macroeconomic Stability (10%)	57.7	0.0	95.7	15.2	0.28	0.37	0.32
	Productivity and Competitiveness (30%)	54.8	14.0	96.5	20.1	0.88	0.72	0.92
	Dynamism (15%)	36.0	5.9	88.7	18.7	0.80	0.66	0.84
	Labour Force Engagement (20%)	53.9	12.9	94.4	14.6	0.68	0.72	0.75

Empowered People Element Summary Statistics

Pillar	Element (Weight)	Mean	Minimum Value	Maximum Value	Standard Deviation	Pearson correlation with		
						Productive Capacity	Cantril's Ladder	Prosperity Index score
Living Conditions	Material Resources (20%)	64.5	6.8	95.2	24.0	0.87	0.75	0.85
	Nutrition (20%)	72.9	27.7	97.4	18.1	0.85	0.81	0.90
	Basic Services (10%)	79.9	9.3	100.0	24.0	0.80	0.67	0.79
	Shelter (20%)	69.5	5.2	96.5	26.3	0.85	0.71	0.81
Health	Connectedness (15%)	65.9	13.5	97.4	19.4	0.87	0.74	0.92
	Protection from Harm (15%)	70.3	31.2	96.8	15.3	0.77	0.66	0.85
	Behavioural Risk Factors (10%)	61.4	21.2	90.5	15.4	-0.68	-0.58	-0.73
	Preventative Interventions (15%)	74.3	21.6	97.2	16.9	0.62	0.55	0.72
	Care Systems (15%)	54.3	15.0	85.9	16.7	0.88	0.79	0.92
	Mental Health (10%)	62.9	21.6	90.4	12.6	0.41	0.38	0.38
	Physical Health (20%)	66.6	23.6	91.0	13.6	0.72	0.70	0.72
	Longevity (30%)	78.6	32.7	98.2	15.6	0.81	0.69	0.84
Education	Pre-Primary Education (5%)	59.8	1.1	100.0	32.9	0.67	0.58	0.79
	Primary Education (20%)	77.0	12.6	98.2	18.7	0.77	0.65	0.82
	Secondary Education (30%)	55.5	11.8	95.2	22.7	0.88	0.72	0.90
	Tertiary Education (20%)	38.4	8.9	85.3	18.2	0.88	0.74	0.92
	Adult Skills (25%)	64.0	12.7	92.5	20.8	0.83	0.71	0.86
Natural Environment	Emissions (15%)	66.2	28.0	86.1	10.0	0.07	0.12	0.26
	Exposure to Air Pollution (15%)	74.0	20.2	99.2	16.8	0.33	0.46	0.58
	Forest, Land and Soil (20%)	42.4	19.7	80.0	11.8	0.36	0.39	0.43
	Freshwater (20%)	57.5	17.1	97.7	16.1	0.61	0.62	0.80
	Oceans (15%)	57.4	32.3	80.9	9.9	0.28	0.34	0.06
	Preservation Efforts (15%)	45.1	8.3	81.0	14.8	0.53	0.50	0.69

Appendix II: Degree of imputation by country in the 2023 Prosperity Index

Any country that requires a majority of indicators to be imputed are excluded from the Prosperity Index, which led to the exclusion of the Democratic People's Republic of Korea and Western Sahara. Other countries, such as Kiribati, were not considered for inclusion in the Prosperity Index, due primarily to their small size (in terms of population). The table below shows, by pillar and overall, countries with 15% or more of their indicators being imputed.

Country	Overall	Safety and Security	Personal Freedom	Governance	Social Capital	Investment Environment	Enterprise Conditions	Infrastructure and Market Access	Economic Quality	Living Conditions	Health	Education	Natural Environment
São Tomé and Príncipe	52%	33%	54%	79%	93%	81%	85%	70%	26%	27%	17%	33%	25%
Equatorial Guinea	49%	29%	38%	60%	93%	77%	65%	64%	42%	50%	21%	44%	17%
Eritrea	47%	29%	38%	64%	100%	73%	55%	55%	37%	47%	14%	44%	17%
Seychelles	42%	24%	50%	60%	93%	23%	35%	58%	42%	40%	24%	22%	29%
Guinea-Bissau	41%	24%	38%	57%	93%	58%	60%	42%	32%	30%	14%	44%	13%
Cuba	40%	14%	38%	62%	36%	88%	80%	52%	39%	33%	0%	22%	0%
Turkmenistan	38%	14%	33%	60%	21%	85%	75%	64%	26%	3%	3%	50%	4%
Somalia	37%	19%	33%	43%	21%	65%	70%	67%	47%	3%	3%	61%	17%
Papua New Guinea	37%	24%	38%	55%	93%	58%	50%	33%	16%	27%	17%	33%	13%
Comoros	37%	19%	38%	62%	14%	69%	80%	64%	21%	10%	0%	28%	8%
Taiwan, China	36%	10%	33%	33%	0%	31%	20%	52%	61%	42%	66%	22%	33%
South Sudan	36%	14%	33%	48%	14%	73%	50%	64%	32%	10%	10%	33%	25%
Cabo Verde	32%	14%	38%	60%	86%	15%	20%	39%	5%	37%	14%	28%	21%
Djibouti	30%	19%	33%	48%	21%	58%	50%	42%	21%	7%	3%	39%	4%
Hong Kong	29%	33%	10%	16%	0%	15%	28%	29%	11%	53%	66%	22%	50%
Central African Republic	28%	14%	33%	48%	14%	58%	50%	39%	21%	3%	3%	33%	0%
Libya	27%	10%	33%	33%	14%	38%	25%	45%	26%	27%	3%	61%	4%
Iraq	25%	14%	33%	43%	0%	62%	50%	33%	16%	0%	7%	22%	0%
Belize	23%	5%	25%	36%	7%	35%	35%	52%	11%	3%	0%	39%	13%
Syria	23%	5%	33%	33%	7%	35%	20%	48%	21%	10%	3%	22%	13%
Oman	22%	14%	33%	40%	57%	15%	15%	15%	0%	30%	10%	17%	8%
Afghanistan	22%	10%	0%	21%	7%	62%	50%	36%	32%	10%	3%	28%	0%
Congo	20%	14%	0%	19%	7%	50%	50%	39%	11%	0%	3%	33%	8%
Uzbekistan	19%	10%	0%	26%	7%	62%	50%	33%	5%	0%	0%	33%	0%
Iceland	19%	10%	33%	42%	0%	19%	23%	26%	5%	20%	10%	6%	4%
Suriname	19%	0%	0%	19%	14%	35%	25%	48%	5%	13%	7%	44%	4%
Sudan	18%	10%	0%	21%	0%	50%	45%	33%	21%	0%	3%	22%	0%
Switzerland	18%	5%	33%	40%	0%	19%	23%	23%	0%	20%	7%	11%	0%
Kuwait	17%	5%	33%	36%	7%	15%	15%	18%	0%	27%	3%	11%	13%
Guyana	17%	0%	0%	19%	29%	31%	30%	42%	16%	13%	0%	22%	4%
Bahrain	17%	5%	33%	36%	7%	19%	20%	15%	0%	27%	3%	11%	8%
Belarus	17%	10%	0%	19%	0%	54%	45%	33%	5%	3%	0%	33%	0%
Niger	17%	10%	0%	17%	0%	50%	50%	33%	16%	3%	0%	22%	0%
Togo	16%	14%	0%	17%	0%	50%	45%	30%	5%	0%	0%	28%	4%
Qatar	16%	5%	33%	26%	14%	15%	15%	21%	0%	33%	0%	0%	8%
Saudi Arabia	16%	5%	33%	31%	14%	15%	15%	18%	0%	23%	0%	11%	4%
Eswatini	15%	5%	33%	26%	14%	12%	5%	45%	0%	13%	0%	6%	0%

Appendix III: Country groupings for imputation

For the purposes of imputation, we organise countries into different groupings based on shared characteristics. These groupings are shown in the following table.

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
Azerbaijan	Botswana	Argentina	Australia	Algeria	Afghanistan	Angola	Bangladesh	Albania
Belarus	Ghana	Belize	Austria	Bahrain	Eritrea	Benin	Cabo Verde	Armenia
Burundi	Jamaica	Bolivia	Belgium	Egypt	India	Burkina Faso	Cambodia	Bosnia and Herzegovina
Cameroon	Kenya	Brazil	Canada	Iran	Iraq	Central African Republic	China	Bulgaria
Congo	Lesotho	Colombia	Switzerland	Jordan	Nigeria	Chad	Djibouti	Croatia
Democratic Republic of Congo	Malawi	Costa Rica	Chile	Kuwait	Pakistan	Comoros	Ethiopia	Cyprus
Equatorial Guinea	Malaysia	Cuba	Germany	Morocco	Somalia	Côte d'Ivoire	Indonesia	Czechia
Eswatini	Mauritius	Dominican Republic	Denmark	Oman	South Sudan	Guinea	Laos	Estonia
Gabon	Namibia	Ecuador	Spain	Qatar	Sudan	Guinea-Bissau	Myanmar	Georgia
Kazakhstan	São Tomé and Príncipe	El Salvador	Finland	Saudi Arabia	Syria	Liberia	Nepal	Greece
Russia	Seychelles	Guatemala	France	United Arab Emirates	The Gambia	Madagascar	Rwanda	Hungary
Tajikistan	South Africa	Guyana	United Kingdom		Turkey	Mali	Sri Lanka	Italy
Turkmenistan	Tanzania	Haiti	Hong Kong		Yemen	Mauritania	Thailand	Latvia
Uganda	Zambia	Honduras	Ireland			Mozambique	Vietnam	Lebanon
Uzbekistan		Kyrgyzstan	Iceland			Niger		Lithuania
Zimbabwe		Libya	Israel			Papua New Guinea		Moldova
		Mexico	Japan			Senegal		Montenegro
		Mongolia	Luxembourg			Sierra Leone		North Macedonia
		Nicaragua	Malta			Togo		Poland
		Panama	Netherlands					Portugal
		Paraguay	Norway					Romania
		Peru	New Zealand					Serbia
		Philippines	Singapore					Slovakia
		Suriname	Sweden					Slovenia
		Trinidad and Tobago	United States					South Korea
		Uruguay	Taiwan					Tunisia
		Venezuela						Ukraine

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