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ECONOMIC OPENNESS**

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The Global Index of Economic Openness 2019
Methodology Report

Creating Pathways from Poverty to Prosperity

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1

Introduction

Constructing the Global Index of Economic Openness

The Legatum Institute’s mission is to create the pathways from poverty to prosperity, and our work is focused on understanding how prosperity is created. To that end, with the generous support of the Templeton World Charitable Foundation, we have created a Global Index of Economic Openness to rank countries’ ability to interact with, and benefit from, both domestic and international commerce.

The intent has been to focus on the broad patterns of success that differentiate the economic success of countries as distinct as the United States of America, Angola, Azerbaijan, and Saudi Arabia.

Over the past year, the Legatum Institute has worked with dozens of experts from around the world to develop the Global Index of Economic Openness, covering 157 countries.

There are many global indexes that seek to capture individual elements of economic and social success (for example, the World Bank Doing Business Index, the World Bank Global Governance Index, the World Economic Forum Global Competitiveness Index, the World Economic Forum Enabling Trade Index, and World Trade Organization measures of tariff and non-tariff barriers, etc.). The aim of this Global Index of Economic Openness is to draw these disparate

elements into a more holistic perspective across the whole of an economy.

Pillars of Economic Openness

Measurements of economic impact from different aspects of open economies have been the subject of extensive investigation. In constructing the Global Index of Economic Openness, we first reviewed the academic literature on the major drivers of productivity. Based on the structure of existing global indexes, and the existing literature, we organised the elements of Economic Openness into four pillars:

- **Market Access and Infrastructure**, which measures how easy it is for products and services to be produced and delivered to customers;
- **Investment Environment**, which measures the availability of domestic and foreign sources of finance;
- **Enterprise Conditions**, which examines how contestable and free from burdensome regulation markets are;
- **Governance**, which encompasses the rule of law, as well as government integrity and effectiveness.

We weight these pillars evenly.

Elements of Economic Openness

We then worked with over forty academics from around the world, with political economy, trade, finance, and entrepreneurship expertise, to develop an appropriate taxonomy of discrete elements that drive economic success within each of those four major pillars. Over multiple iterations in hundreds of hours of meetings with these experts, we discussed these concepts and how to measure the performance of countries with respect to them.

The result is a set of 22 distinct elements, organised under the four pillars. They are summarised in the following table, together with their weightings:

Table 1: Pillar and element structure

MARKET ACCESS AND INFRASTRUCTURE	INVESTMENT ENVIRONMENT	ENTERPRISE CONDITIONS	GOVERNANCE
<ul style="list-style-type: none"> • Communication (25%) • Resources (20%) • Transport (25%) • Border Administration (5%) • Import Tariff Barriers (5%) • Open Market Scale (5%) • Market Distortions (15%) 	<ul style="list-style-type: none"> • Property Rights (20%) • Investor Protection (20%) • Contract Enforcement (20%) • Financing Ecosystem (30%) • Restrictions on International Investment (10%) 	<ul style="list-style-type: none"> • Domestic Market Contestability (35%) • Environment for Business Creation (30%) • Burden of Regulation (25%) • Labour Market Flexibility (10%) 	<ul style="list-style-type: none"> • Executive Constraints (15%) • Political Accountability (15%) • Rule of Law (15%) • Government Integrity (20%) • Government Effectiveness (20%) • Regulatory Quality (15%)

The relative importance of each of these elements is different, which is why we give each element discrete weightings within a pillar. Those weights reflect how important the element is to improving Economic Openness. The process of weighting is described in more detail below.

Selecting indicators

Each of the elements is measured using three to seven indicators. These are proxy empirical measures for the element. We are using these indicators to capture collectively, as much as possible, the core idea of an element. For example, under Domestic Market Contestability we use three expert survey measures to capture whether a market is truly contestable. We use a combination of expert-based subjective data and objective data.

These elements capture the underlying structure of our definition of Economic Openness. They are descriptions of the specific policy areas that a government can use. For example, a government looking to improve its Investment Environment has five elements, or key policy areas, that it can change.

In order to determine the most reliable indicators for each of these elements across 157 countries, we used an extensive variety of publicly available global data sources, including the World Bank, World Trade Organisation, and World Economic Forum (a full list can be found in Appendix 1). For most elements, we had many options for the

indicators we could use and we had to narrow these down.

In selecting the indicators, we used the following criteria:

– *Wide coverage of countries:* Because we are building a global index, the data needs to cover a wide range of countries. We chose some indicators with a smaller coverage of countries if it focussed on lower and middle-income countries.

– *Coverage over time:* We intend to create an Index that demonstrates how Economic Openness has shifted over time, not just the current state. To that end, we preferred indicators that showed change over time. We also preferred indicators that would be continued, so that we could use updated data in future editions of the Index.

– *Input rather than outcome focused:* The intent of the Index is to indicate whether a country has policies that enhance Economic Openness. Where possible, we chose indicators that were input-focussed rather than outcome-focussed. We wanted to focus on the drivers rather than the outcomes of Economic Openness. Revealing this information means that a government can clearly see the choices it needs to make. There are two caveats to this. The first is that many indicators represent both input and outcome considerations. For example, the length of a road network is both an input to economic activity and an outcome of historic infrastructure investment. Secondly, where we could not find appropriate input measures we used outcome measures. For example, the number of internet users is an outcome of investment in communications infrastructure. We use it because there is no globally available input measure that was appropriate.

– *Supported by academic literature:* We chose indicators where there was wide consensus that they were important to improving Economic Openness. As well as undertaking our own literature review, our panels of global experts were indispensable in advising on which indicators were best used.

– *Strong internal consistency and relationship with productive capacity:* As well as indicators that were conceptually sound, we wanted indicators that were statistically sound. This consisted of two parts. First, that they were positively correlated with the productive capacity of a country (see below). Second, that there was a strong internal consistency to the indicators, such that they were measuring the same core concept. If these conditions were not met, we might still include an indicator because there was still a strong theoretical case to do so.

For example, in the element of Communications, we identified 12 different indicators of the quality of communications at the national level, and through a process of iteration, with the advice of our expert panel, narrowed this down to four measures that, between them, provided a reliable assessment of the quality of communications in a country. Our goal in the selection of indicators, always, was to strike a balance between achieving reliability and conceptual clarity. Where there were several possible indicators that measured a similar concept, we often combined those to create a single indicator. For example, to create the 2G, 3G and 4G network coverage indicator we took the mean of three variables each measuring 2G, 3G or 4G network coverage.

Like the elements, indicators are weighted to reflect their differing importance within an element.

Creating the Index

The indicators were weighted within each element to create an overall score and ranking, and each element was again weighted to create a pillar score. The overall Economic Openness ranking of countries is based on the average of the four pillar scores.

At each stage in the calibration process, we reviewed the relationship between each of the indicators, elements and pillars with economic wellbeing (as measured by productive capacity, see below). These elements each had a clear positive correlation with economic performance and

a plausible causal impact. While these areas do not cover the entirety of the drivers of economic success, our analysis indicates that the Index can explain 83% of the variation in productive capacity across 157 countries in the world. There are, of course, many exceptions to these broad patterns, and our intention with the Index is not to seek to identify specific policy gaps in any individual country as the binding constraint to growth. These would be more specific and nuanced than any one index could possibly provide.

The role of productive capacity

In constructing the Index, we wanted to benchmark against a measure that captures the policy-relevant drivers of economic wellbeing. We constructed a measure called 'productive capacity', which is the total GDP of a country without 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 states, without atypical

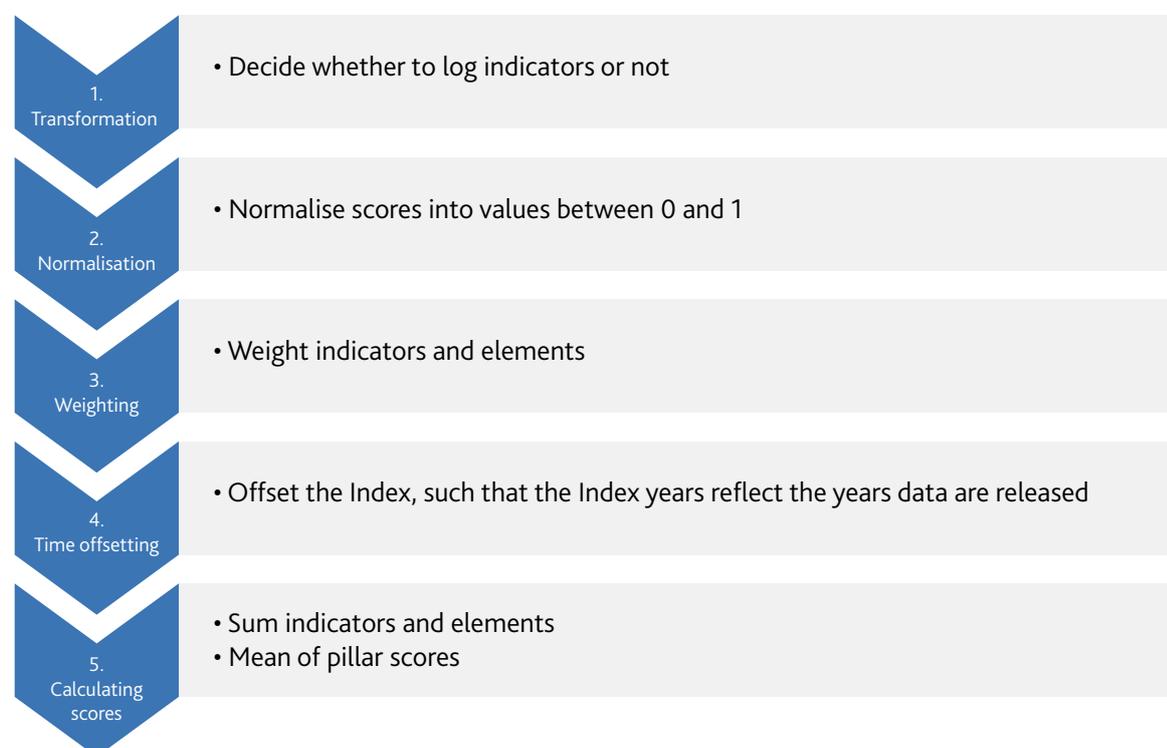
demographic trends or significant resource rents, it works as a clean proxy for productive capacity. However, for others, it does not necessarily capture a nation's true economic wellbeing and the quality of its economic structures and policies.

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 global economy, rather than what they earn. Fundamentally, this is a question of rents vs. productivity. 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. And this, ultimately, is the goal of measuring Economic Openness: to help policymakers better understand the underlying strengths and weaknesses of their own economies.

We use productive capacity as a benchmark throughout the process of constructing the Index, so that we can test whether an indicator is actually improving Economic Openness. We discuss this more in our main report for the Global Index of Economic Openness.

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Calculation of the Index



Having chosen the indicators for each element, there are five steps to calculating the index, summarised in the diagram above.

1. Transformation

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.

The critical transformation is whether or not to log indicators. In cases where the data distribution is skewed or has long tails, we log-normalised the indicator. For example, the cost in weeks of salary of redundancy for most countries is between 0 and 60 weeks. However, a select few countries have values much higher. Variation of this nature requires normalisation 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. Twenty indicators are transformed in this manner. These are shown in the indicator tables in appendix 3.

2. Normalisation

The next step is to normalise the indicator values into values between 0 and 1. A distance-to-frontier (DTF) approach is employed for this task. The distance-to-frontier approach compares a country's performance in an indicator with the values of the best case and the worst case across the entire sample of the countries covered by the Index. 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.

For indicators whose possible values have clear logical upper and lower bounds, the best and worst values might be set at, or close to, their highest and lowest possible values. This scenario mainly applies to indicators generated by survey questions, whose answers range from 0 to 100 percent of respondents, or to indicators with ordinal scales as unit of measurement. The indicator “political participation and rights”, for instance, is limited to values between 1 and 7, thus its frontiers can be defined according to its logical boundaries.

For indicators which have values that can vary on a spectrum that is unlimited at one or both ends, best and worst cases are imposed on the basis of the data collected for the Index since 2007. In cases, as with internet bandwidth, where it is likely that the historical upper bound will be superseded in the future, we left room for improvement, incrementally extending the upper bound.

Where greater values indicate worse outcomes—for instance, in the case of the number of non-tariff measures—we inverted the indicators, so that distance-to-frontier scores always indicate better performance.

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 DTF is close but not actually at those logical bounds. That is because, in many cases, the upper or lower logical bound is never actually achieved. This is particularly the case with survey variables.

After we determined the frontiers, the next step is to calculate a country's distance-to-frontier score for each indicator using the formula $(X_t - \text{Worst Case}) / (\text{Best Case} - \text{Worst Case})$, where X_t is the raw value of indicator i in country j .

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 best and worst 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.

3. Weighting

The next step is to assign weights to the indicators and elements. 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. And each element has a weight that reflects its importance in the overall pillar.

We first weight indicators within an element. Indicators are assigned one of five weights: 0.25, 0.5, 1, 1.5, and 2.¹ The default weight for each indicator is 1; and based on its significance to Economic Openness, its weight may be adjusted downwards or upwards. An indicator with a weight of 2 is twice as important in affecting Economic

¹ The exception is the indicator civil justice, which is weighted 3.

Openness as an indicator with a weight of 1. Weights were determined by three factors:

- the relevance and significance of the indicator with respect to the productive capacity of a country, which is informed by the academic literature and regressions;
- expert opinions offered by the Index’s special advisers; and the relationship with other indicators.

Why not give all indicators equal weight? First, because we include a wide variety of different indicators, and, second, because some indicators are more important than others in delivering Economic Openness. Equal weighting is justifiable when an index covers a limited set of indicators, as with the Human Development Index’s education, health, and income components; in such cases an argument that indicators are of equal importance can be made.

In the Index, equal weighting would be tantamount to claiming—for example, in the Market Access and Infrastructure pillar—that a country’s seaport services (weight x2) are as important to Economic Openness as its rail line density (weight x0.5). Weights allow us to speak to a range of issues while remaining true to our conceptual framework and research findings.

In other cases, indicators may offer related but not identical information on the same issue. Statistically speaking, we address this multicollinearity either by assigning smaller weights to each of the indicators, or by combining similar indicators into a single composite one. This allows us to keep both indicators in the Index, and so retain the unique information they give, while alleviating the double-counting issue that comes from their high correlation. For example, in the Labour Market Flexibility element (in Enterprise Conditions), we provide two expert opinion indicators: whether labour skill is a business constraint and a question on the availability of skilled workers. For other indicators we may combine them into a single indicator. For example, we aggregate

a number of World Bank Doing Business indicators, to give a single composite indicator for this Index.

The weight assigned each indicator is summarised in Appendix 3.

For weighting elements, we carry out the same process by comparing the element scores within the pillar.

4. 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, because very little data is released in the year it was collected (see Figure 1). This means we need to consider how to align the time-series of each indicator as they are aggregated into an index.

We offset every indicator by 0-4 years based on when it became available. So if, for example, data for an indicator for the year 2017 only became available in 2019, we would assign the data for the year 2017 to the 2019 Index, and the data for 2016 to the 2018 Index score and so on. Practically, this means that we assign data to the index year it becomes available in, not the year it is collected in.

On the other hand, assigning the data to the year in which it was recorded 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 use a previous year’s data). This has 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 this year’s score would change significantly in next year’s index, as the data are updated. While there will always be small changes to previous year’s scores, we wanted to minimise this as much as possible.

We considered the benefits and costs of each approach. Our view was that the offsetting approach was preferable, because it was more important to

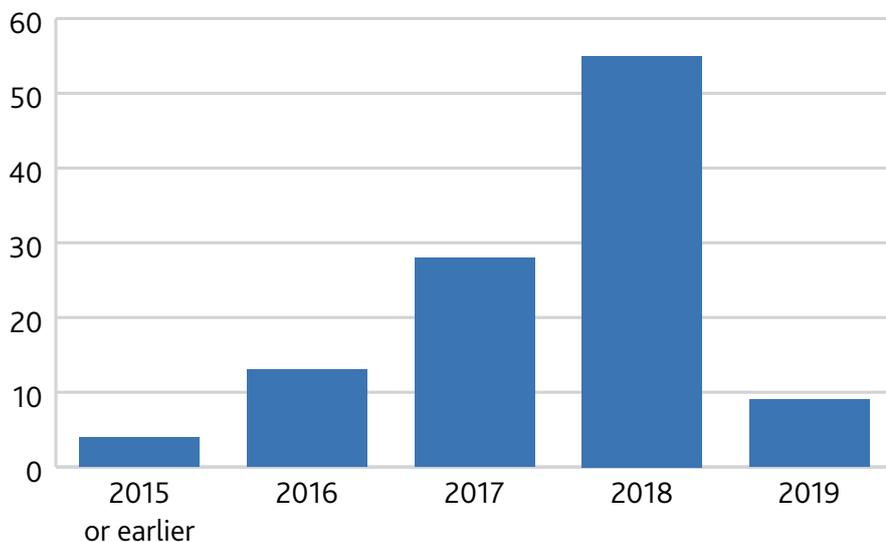
see the trend of Economic Openness, rather than the exact year in which a change occurred.

It is worth noting that this process affects the presentation of historical values. It does not affect the latest score. For the latest score, both approaches create a score based on the latest available data as of January 31st 2019.

5. Calculating scores

Once the indicators have been normalised, assigned a weight and set on a timeline, they can be aggregated to create an index score. In each element, the scores for each indicator are summed together to give an element score. Element scores are summed to give pillar scores out of 100. Each pillar is weighted evenly. The average (mean) of the four pillars is taken to give an overall index score.

Figure 1: Number of indicators with latest data in that year



3

Dealing with missing data

The Global Index of Economic Openness, as with any other global composite index, 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 of 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 data set only started in 2015. That means the earliest data, from 2015, is used to back-fill all previous years.
3. Where no reliable real data are accessible, imputation is employed on a case-by-case basis.

Imputation

Where data is missing for a country for all years, we use two main methods for imputing this data. Firstly, we may insert values directly based on our own research. For example, the Bertelsmann Stiftung Index gives scores from 0 to 10 for many countries around the world. But, because this source is focused on developing a countries, there are a number of highly developed countries missing. 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.

The second method is to use linear regressions to impute an indicator based on other independent variables. We use the following independent variables:

- Productive capacity
- Country groupings²
- Relevant "driver variables" that have an underlying relationship with the indicator we are seeking to impute.

2 We have created nine separate country groupings based on the underlying characteristics of that country. These groupings can be found in appendix 3.

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

These regressions give us several imputation options. For each indicator, we choose the formula based on the degree of correlation and statistical significance of the driver variables. We have also applied a sense check to ensure that the implied relationship is consistent with broader research – and avoid risks of overfitting. For example, in imputing data for the indicator “efficiency of sea-port services”, 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 sea-port services, and a strong conceptual argument.

As a result of this process, we choose a main imputation formula. In some cases, it may not be possible for that formula to be used for all countries because it contains a driver variable that covers only some countries requiring imputation, not all. Therefore, for those countries we choose a fall-back imputation formula that uses a combination of productive capacity and country groupings.

Excluding countries

If a country has more than 50% of its indicators imputed, we exclude that country from the Index.

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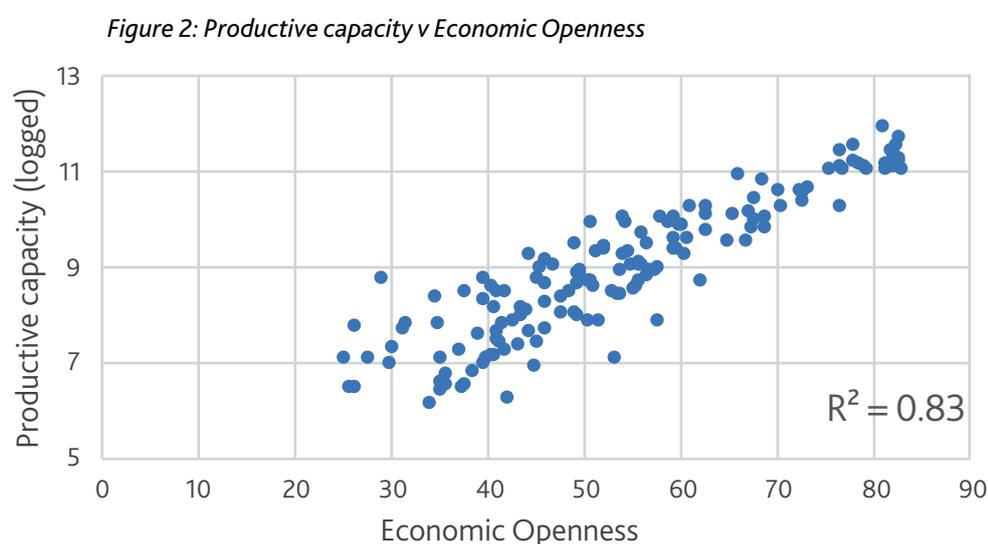
Assessing the Global Index of Economic Openness

To test the structural integrity of the Index we conducted the following analyses. Further summary statistics can be found in appendix 5.

Comparison against Productive Capacity

The first important test is to test the index score against productive capacity. This is a test of the extent to which the Global Index of Economic Openness explains the productive capacity of

a country. It is important that the overall Index shows a strong correlation with productive capacity. As Figure 2 shows, there is a strong positive correlation between a country's score in the Index and its productivity – in fact, 83% of the variation in productive capacity between countries can be explained by our Index.



As Tables 2 shows, the pillars have varying degrees of correlation with productive capacity. All four pillars showing statistically significant correlations, with Market Infrastructure and Access the highest. This shows that each of the pillars is a significant driver of productive capacity.

Table 2: Pillar correlations with productive capacity

Pillar	R ² with productive capacity
Market Access & Infrastructure	0.85
Investment Environment	0.77
Enterprise Conditions	0.71
Governance	0.71

Internal tests

As we were constructing the Index we tried to ensure that, within each element and within each pillar, it made sense to combine the selection of components chosen. 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.

Table 3 shows the Cronbach’s alpha for each pillar. As can be seen, there are high values for each pillar. Table 4 shows the Cronbach’s alpha for each element. There are seven elements with Cronbach’s alpha below 0.7, although none are drastically low. On the whole, the Cronbach’s alpha values show that we have chosen indicators that are internally consistent and add up to a cohesive whole.

Table 3: Pillar Cronbach’s alpha values

Pillar	Cronbach’s alpha of component element scores 2019
Market Access & Infrastructure	0.87
Investment Environment	0.91
Enterprise Conditions	0.77
Governance	0.95

Table 4: Element Cronbach’s alpha values

Pillar	Element	Cronbach’s alpha of component indicator scores 2019
Market Access & Infrastructure	Communication	0.91
	Resources	0.87
	Transport	0.84
	Border Administration	0.82
	Open Market Scale	0.61
	Import Tariff Barriers	0.51
	Market Distortions	0.55
Investment Environment	Property Rights	0.86
	Investor Protection	0.74
	Contract Enforcement	0.59
	Financing Ecosystem	0.87
Enterprise Conditions	Restrictions on International Investment	0.82
	Domestic Market Contestability	0.87
	Environment for Business Creation	0.68
Governance	Burden of Regulation	0.68
	Labour Market Flexibility	0.60
	Executive Constraints	0.91
	Political Accountability	0.90
	Rule of Law	0.81
	Government Integrity	0.82
	Government Effectiveness	0.95
	Regulatory Quality	0.90

Comparison against other global indexes

As part of the stress-testing of the Global Index of Economic Openness, we compared the Index against various other indexes that also examine the economic foundations of a country:

- Economic Freedom of the World (Fraser Institute)
- Index of Economic Freedom (Heritage Foundation)
- Global Competitiveness Index (World Economic Forum)
- Doing Business (World Bank)

We ran simple regressions against each of the indexes to tell us the similarities and differences between our index and other indexes. During this process we looked at how similar the scores are,

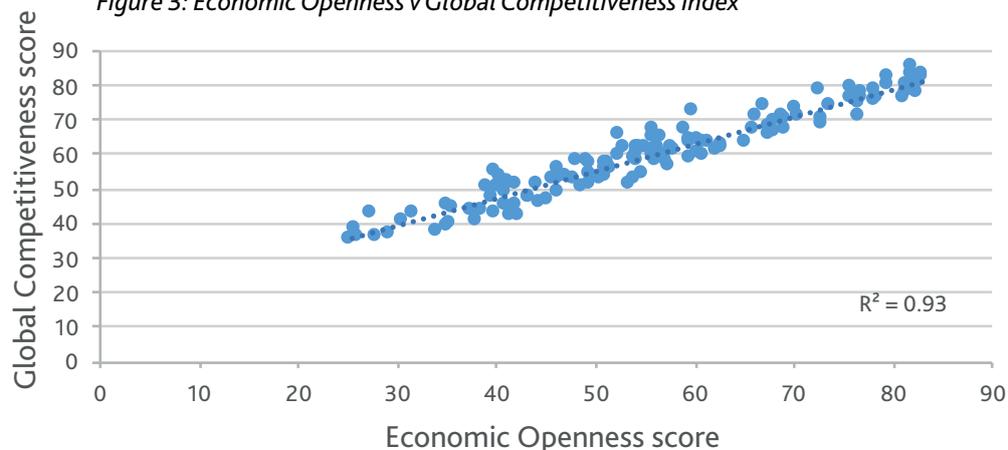
and what can be learned from examining the outliers in each Index.

The first thing to notice is the high degree of correlation with each of the four other indexes. The highest correlation is with the World Economic Forum, where R^2 is equal to 0.93. The main reason for this is that the two indexes share much of the same data (the Global Index of Economic Openness contains 33 indicators from the World Economic Forum).

The Heritage index captures some similar ideas to ours, but also includes macroeconomic indicators such as the size of government spending. The Fraser Index, the most weakly correlated, also contains some macroeconomic indicators.

The other interesting point to note is that Venezuela performs much worse on the Fraser and Heritage indexes. This is in part due to indicator selection. The Fraser Institute has outcome measures, such as inflation, that are not included

Figure 3: Economic Openness v Global Competitiveness Index



The correlation with the other three indexes is lower, with an R^2 between 0.77 and 0.66. This suggests that while the indexes are capturing broadly the same idea, there are some significant differences. World Bank Doing Business for example, has a much narrower remit than the other indexes, although within that remit it is very detailed.

in our Index. This analysis shows that the Index is not out of line with other global economic indexes. And, at the same time, we are capturing some new information and ideas about what can drive Economic Openness.

Figure 4: Economic Openness v Doing Business (World Bank)

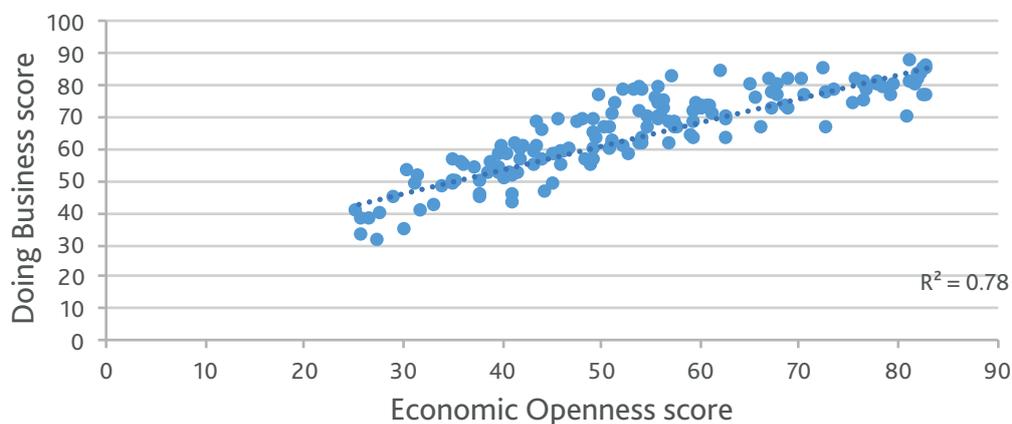


Figure 5: Economic Openness v Index of Economic Freedom (Heritage)

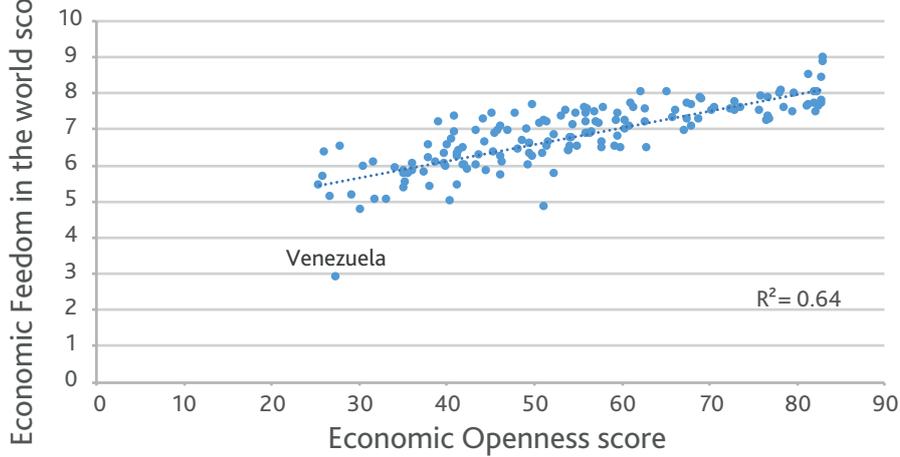
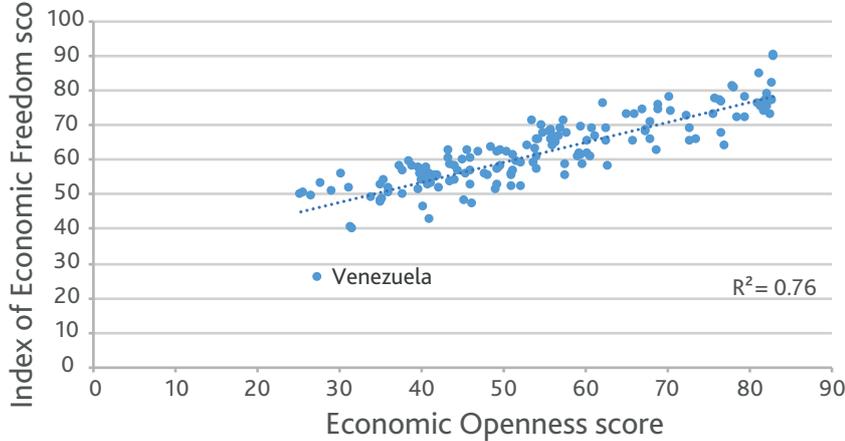


Figure 6: Economic Openness v Economic Freedom in the world (Fraser)



Limitations of the Index

Every global index has limitations and cannot explain the world fully. Some of the primary limitations of the Global Index of Economic Openness 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 outcome data rather than input data.

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

Appendix I: List of Sources

We obtain our data from the following sources:

Source Code	Source Name	Web address
BTI	Bertelsmann Stiftung Transformation Index	www.bti-project.org
CII	Chinn-Ito Index	http://web.pdx.edu/~ito/Chinn-Ito_website.htm
CSP	Center for Systemic Peace	www.systemicpeace.org
FAO	Food and Agriculture Organisation	http://www.fao.org
FH	Freedom House	freedomhouse.org
FI	Fraser Institute	www.fraserinstitute.org
GSMA	Groupe Spéciale Mobile Association	www.gsma.com
IBNWS	International Benchmarking Network for Water and Sanitation Utilities	www.ib-net.org
IBP	International Budget Partnership	www.internationalbudget.org
IMF	International Monetary Fund	www.imf.org
ITU	International Telecommunications Union	www.itu.int
UNCTAD	United Nations Trade Data	comtrade.un.org
UNESD	United Nations Energy Statistics Database	unstats.un.org/unsd/energy/edbase.htm
WBDB	World Bank Doing Business Index	www.doingbusiness.org
WBDI	World Bank Development Indicators	wdi.worldbank.org/
WBES	World Bank Enterprise Surveys	http://www.enterprisesurveys.org/
WBLPI	World Bank Logistics Performance Index	lpi.worldbank.org
WEF	World Economic Forum	www.weforum.org
WGI	Worldwide Governance Indicators	info.worldbank.org/governance/wgi/#home
WJP	World Justice Project	worldjusticeproject.org
WTO	World Trade Organisation	www.wto.org

II

Appendix II: Structure of the Index

MARKET ACCESS AND INFRASTRUCTURE	INVESTMENT ENVIRONMENT	ENTERPRISE CONDITIONS	GOVERNANCE
<ul style="list-style-type: none"> • Communication (25%) • Resources (20%) • Transport (25%) • Border Administration (5%) • Import Tariff Barriers (5%) • Open Market Scale (5%) • Market Distortions (15%) 	<ul style="list-style-type: none"> • Property Rights (20%) • Investor Protection (20%) • Contract Enforcement (20%) • Financing Ecosystem (30%) • Restrictions on International Investment (10%) 	<ul style="list-style-type: none"> • Domestic Market Contestability (35%) • Environment for Business Creation (30%) • Burden of Regulation (25%) • Labour Market Flexibility (10%) 	<ul style="list-style-type: none"> • Executive Constraints (15%) • Political Accountability (15%) • Rule of Law (15%) • Government Integrity (20%) • Government Effectiveness (20%) • Regulatory Quality (15%)

III

Appendix III: Indicator Lists

Market Access and Infrastructure

Trade enables the movement of goods, services, ideas, capital, and people across borders. Our Market Access and Infrastructure pillar measures the quality of the infrastructure that enables trade (communications, transport, and energy), and the inhibiting factors that reduce or restrict the flow of commerce. Where markets have sufficient infrastructure and few barriers to trade and smooth border administration, trade can flourish. Such trade leads to more competitive and efficient markets, enabling new products and ideas to be tested, funded, commercialised.^{1,2}

Unencumbered trade is a vital component of Economic Openness, delivering benefits to producers, consumers, and society as a whole.³ Producers with access to good transport and communications infrastructure, and whose products are not subject to

onerous import tariffs or customs procedures, are more likely to succeed than those whose commercial activities are hampered by regulatory or de facto barriers. Consumers benefit from the increased competition that freer trade brings, which tends to improve quality, lower prices, and increase the variety of goods and services available. Finally, society itself tends to benefit from the ideas that flow from the free exchange of information across borders, a critical factor of long-run productivity growth.⁴ A study of 16 OECD countries found a robust relationship between a country's degree of openness to trade and its total factor productivity; in those countries, trading links enhanced knowledge flows which were responsible for 93% of total factor productivity growth.⁵

Definition of the elements

The infrastructure that enables trade and commerce to operate can be measured by assessing both the critical enablers of trade and also the inhibitors.

Trade enablers are the things that enhance and make trade in all its forms possible. Chief amongst these is Communications, where information technology, flowing through a modern communications network, has become the very life-blood of industry.⁶ Economic production is impossible without the resources of energy and water. Transport, in all its forms, is obviously the great enabler of physical trade, but for services as well in allowing people to move to seek and build business opportunities. International trade can be enabled by an effective Border Administration system and open markets. We also look at Open Market Scale, which is the access a country has to foreign markets.

In addition to the enablers of trade, we also look at the policies and procedures that inhibit trade: Import Tariff Barriers and

Market Distortions, including subsidies, taxes and price continuity as disrupters of fair competition. Protectionism, for example, stifles new ideas and practices, as policies seek to protect incumbents by putting up barriers to outside competition, and the result is typically inefficiency and stagnation with a downward spiral in innovation, growth and prosperity.

Market Access and Infrastructure elements and weightings:

1. **Communications (25%)**
2. **Resources (20%)**
3. **Transport (25%)**
4. **Border Administration (5%)**
5. **Open Market Scale (5%)**
6. **Import Tariff Barriers (5%)**
7. **Market Distortions (15%)**

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?	Weighting
Communication	International internet bandwidth	The sum of used capacity of all internet exchanges (locations where Internet traffic is exchanged) offering international bandwidth.	International Telecommunications Union	157	2017	Kilobits per second per person	0	8,102	Yes	1
Communication	2G, 3G and 4G network coverage	The average of 2G, 3G and 4G network coverage.	Groupe Spéciale Mobile Association	152	2017	index score, 0-100	0	100		2
Communication	Fixed broadband subscriptions	Fixed residential and organisational subscriptions to high-speed access to the public Internet, at downstream speeds equal to or greater than, 256 kbit/s (including satellite broadband, fixed WiMAX and any other fixed wireless technologies, excluding connections via mobile-cellular networks).	International Telecommunications Union	157	2017	number per 100 people	0	54	Yes	1
Communication	Internet Usage	The percentage of the population who, in the last three months, have used the Internet (via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.)	International Telecommunications Union	157	2017	percentage of population	0	100		1
Resources	Installed electric capacity	The total net installed capacity of electric power plants, including enterprises that produce electricity, but for whom the production is not their principal activity.	United Nations Energy Statistics Database	157	2017	kilowatts per capita	0	6	Yes	1.5
Resources	Gross fixed water assets	The total gross fixed asset value of water production facilities.	International Benchmarking Network for Water and Sanitation Utilities	82	2018	USD per population served	0	2,980	Yes	1
Resources	Reliability of electricity supply	Composite measure of: (a) system average interruption duration, (b) system average interruption frequency, (c) use of tools to monitor power outages, (d) use of automated tools to restore power supply, (e) whether a regulator monitors the utility's performance on reliability of supply, and (f) whether financial deterrents exist to limit outages.	World Bank Doing Business Index	157	2018	index score, 0-7	0	7		1
Resources	Ease of establishing an electricity connection	The average of the normalised scores for: (a) cost to connect to electricity, (b) time required to get electricity, and (c) number of procedures required to get electricity.	World Bank Doing Business Index	156	2018	index score, 0-100	0	100		1

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?	Weighting
Resources	Water production	The total annual water supplied to the distribution system (including purchased water, if any) expressed by population served per day.	International Benchmarking Network for Water and Sanitation Utilities	112	2018	litres per person per day	54	1,096	Yes	0.5
Resources	Reliability of water supply	"In your country, how reliable is the water supply (lack of interruptions and flow fluctuations), ranging from extremely unreliable to extremely reliable?"	World Economic Forum	147	2018	expert survey, 1-7	1	7		1
Transport	Logistics performance	A composite of: (a) quality of trade- and transport-related infrastructure, (b) ease of arranging competitively priced shipments, (c) quality of logistics services, (d) ability to track and trace consignments, and (e) frequency with which shipments reach the consignee within the scheduled time.	World Bank Logistics Performance Index	151	2016	index score, 1-5	1	5		1.5
Transport	Airport Connectivity	The degree of integration of a country within the global air transport network, based on the number of available seats offered in flights originating from each country's airports, to each destination weighted by the size of the destination airport (in terms of number of passengers handled).	World Economic Forum	151	2017	index	0	402	Yes	2
Transport	Efficiency of seaport services	"In your country, how efficient (i.e., frequency, punctuality, speed, price) are seaport services (ferries, boats) (for landlocked countries: assess access to seaport services), from extremely inefficient - among the worst in the world, to extremely efficient - among the best in the world?"	World Economic Forum	147	2018	expert survey, 1-7	1	7		2
Transport	Liner shipping connectivity	An index capturing how well countries are connected to global shipping networks: (a) number of ships, (b) their container-carrying capacity, (c) maximum vessel size, (d) number of services, and (e) number of companies that deploy container ships in a country's ports.	Containerisation International Online via United Nations Trade Data	119	2018	index score, rebased to 100 in 2004	0	190	Yes	0.5
Transport	Quality of roads	"In your country, how is the quality (extensiveness and condition) of road infrastructure, from extremely poor - among the worst in the world, to extremely good - among the best in the world?"	World Economic Forum	147	2018	expert survey, 1-7	2	7		1
Transport	Road density	The density of a country's road network, including motorways, highways, and main or national roads, secondary or regional roads, and all other roads.	Food and Agriculture Organisation	157	2011	km per 100 sq km of land area	0	1,096	Yes	0.5

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?	Weighting
Transport	Rail density	The density of a country's rail network based on length of railway route available for train service, irrespective of the number of parallel tracks.	World Bank Development Indicators	156	2016	km per sq km of land area	0	0	Yes	0.5
Border Administration	Efficiency of customs clearance process	The efficiency of customs clearance processes, based on speed, simplicity and predictability of formalities.	World Bank Logistics Performance Index	151	2018	survey, 1-5	1	5		1.5
Border Administration	Time to comply with border regulations and procedures	The time associated with compliance with regulations relating to customs and to other inspections that are mandatory in order for the shipment to cross the economy's border (import and export), as well as the time for handling that takes place at its port or border.	World Bank Doing Business Index	155	2018	hours	664	2	Yes	1
Border Administration	Cost to comply with border regulations and procedures	The cost associated with compliance with regulations relating to customs and to other inspections that are mandatory in order for the shipment to cross the economy's border (import and export), as well as the time for handling that takes place at its port or border.	World Bank Doing Business Index	155	2018	USD (current)	1,807	19	Yes	0.5
Open Market Scale	Domestic and international market access for goods	A composite of (a) the GDP of the economies with which a country has a free trade agreement for goods, and (b) GDP of the domestic economy, weighted double to take into account the ease of trading domestically compared with overseas markets.	World Trade Organisation	149	2017	constant 2010 USD \$bn	0	52,973		1.5
Open Market Scale	Domestic and international market access for services	A composite measure of (a) the GDP of the economies with which a country has a free trade agreement for services, and (b) GDP of the domestic economy, weighted double to take into account the ease of trading domestically compared with overseas markets.	World Trade Organisation	98	2017	constant 2010 USD \$bn	0	46,800		2
Open Market Scale	Trade-weighted average tariff faced in destination markets	The average of applied destination tariff rates levied on merchandise goods (including preferential rates that the rest of the world applies to each country), weighted by the trade patterns of the importing country's reference group.	World Economic Forum	134	2016	percentage	6	2		0.5
Open Market Scale	Index of margin of preference in destination markets	Index measured as average of: (a) trade-weighted average difference between the MFN tariff and the most advantageous preferential duty (advantage score), and (b) the ratio of the advantage score to the trade-weighted average MFN tariff level.	World Economic Forum	134	2016	index score, 1-100	0	85		0.5

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?	Weighting
Import Tariff Barriers	Share of imports free of tariff duties	The share of trade, excluding petroleum, that is imported free of tariff duties, taking into account MFN tariffs and preferential agreements.	World Economic Forum	134	2016	percentage	0	100		1.5
Import Tariff Barriers	Average applied tariff rate	The trade-weighted average of all the applied tariff (custom duty) rates on imports of merchandise goods, including preferential rates that a country applies to the rest of the world.	World Economic Forum	134	2016	percentage	22	0		2
Import Tariff Barriers	Complexity of tariffs	A composite measure of: (a) tariff dispersion, (b) specific tariffs, and (c) number of distinct tariffs.	World Economic Forum	134	2016	index score, 1-7	3	7		0.25
Market Distortions	Extent of liberalisation of foreign trade	The extent to which foreign trade has been liberalised, with uniform, low tariffs and few non-tariff barriers.	Bertelsmann Stiftung Transformation Index	121	2018	expert survey, 1-10	2	10		1
Market Distortions	Prevalence of non-tariff barriers	"In your country, to what extent do non-tariff barriers (e.g., health and product standards, technical and labelling requirements, etc.) limit the ability of imported goods to compete in the domestic market, from strongly limit, to do not limit at all?"	World Economic Forum	147	2018	expert survey, 1-7	2	6		1
Market Distortions	Non-tariff measures	The number of non-tariff measures that can potentially have an effect on international trade in goods, including sanitary and phytosanitary, technical barriers to trade, pre-shipment inspection, contingent trade protective measures, quantity control measures, price control measures, other measures, and export-related measures.	United Nations Trade Data	106	2018	number	2,980	0	Yes	0.25
Market Distortions	Distortive effect of taxes and subsidies	"In your country, to what extent do fiscal measures (subsidies, tax breaks, etc.) distort competition – from distort competition to a great extent, to do not distort competition at all?"	World Economic Forum	147	2018	expert survey, 1-7	3	6		1
Market Distortions	Energy subsidies	The scale of consumer and producer subsidies for energy.	International Monetary Fund	145	2015	percentage of GDP	54	0	Yes	0.25

Investment Environment

Investment is critical for both developing and sustaining an economy. A strong Investment Environment will not only ensure that good commercial propositions are investable, but also that adequate capital of the right type is available for such investable propositions.⁷

A business proposition is made investable when the assets of the business are protected through Property Rights, the interests of the investors are protected, particularly in the context of insolvency, and commercial arrangements of the business can be upheld through courts of law. These protections are substitutions for trust, without which additional costs will be baked into the cost of doing business (for example, higher interest rates and provisions for the expropriation of capital).

For capital to be available for investable propositions, there needs to be a pool of savings and a range of intermediaries such as banks, stock exchanges, private equity, venture capital etc. In addition, tapping into global markets for international investment is a helpful booster for the access of capital, and in addition, tends to also bring with it management expertise and fresh ideas. Financial depth and complexity is robustly and positively correlated with economic growth.^{8,9}

A well-functioning financial system is highly effective at mobilising savings and investments that support entrepreneurs and innovations that are vetted by their potential to improve productivity.¹⁰

Definition of the elements

The structural aspects of how to measure an Investment Environment reveal two overriding concerns. The first is whether or not an investment is effectively protected. If investors do not have secure property rights, investment is unlikely to be undertaken.¹¹ Thus, the importance of an effective system of investment protection and property rights.^{12,13} Second, it is necessary to have a supporting infrastructure for that investment consisting of effective Financing Ecosystem, Contract Administration and an encouraging environment for international investment.¹⁴

The growth in the sophistication of financial markets over the last four decades has been considerable, and the appreciation of the role of capital in economic growth and prosperity has been growing.^{15,16,17} As evidenced from studies in the United States,

financial depth and sophistication have become more important than ever for the availability of venture capital, which provides critical early-stage funding to new companies.^{18,19}

Investment Environment elements and weightings:

1. **Property Rights (20%)**
2. **Investor Protection (20%)**
3. **Contract Enforcement (20%)**
4. **Financing Ecosystem (30%)**
5. **Restrictions on International Investment (10%)**

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?
Property Rights	Protection of property rights	"In your country, to what extent are property rights, including financial assets, protected – from not at all, to a great extent?"	World Economic Forum	147	2018	expert survey, 1-7	1	7	
Property Rights	Lawful process for expropriation	Measure of whether the government: (a) respects the property rights of people and corporations, (b) refrains from the illegal seizure of private property, and (c) provides adequate compensation when property is legally expropriated.	World Justice Project	105	2017	index score, 0-1	0	1	
Property Rights	Intellectual property protection	"In your country, to what extent is intellectual property protected – from not at all, to a great extent?"	World Economic Forum	147	2018	expert survey, 1-7	1	7	
Property Rights	Quality of land administration	Measure of (a) reliability of infrastructure for information on property titles and boundaries, (b) transparency of information, geographic coverage, (c) land dispute resolution and (d) equal access to property rights.	World Bank Doing Business Index	156	2019	Index score, 0-30	0	8	
Property Rights	Procedures to register property	Measure of (a) time, (b) cost and (c) number of procedures to register a property.	World Bank Doing Business Index	156	2018	index score, 0-100	0	100	
Property Rights	Regulation of property possession and exchange	The extent to which government authorities ensure there are well-defined rights of private property and regulate the acquisition, benefits, use and sale of property.	Bertelsmann Stiftung Transformation Index	157	2018	expert survey, 1-10	1	10	
Investor Protection	Strength of insolvency framework	A composite measure of whether insolvency legislation is well designed for rehabilitating viable firms and liquidating nonviable ones, based on: (a) the commencement of proceedings index, (b) management of debtor's assets index, (c) reorganization proceedings index, and (d) creditor participation index.	World Bank Doing Business Index	157	2019	index score, 0-16	0	15	
Investor Protection	Insolvency recovery rate	The cents on the dollar recovered by secured creditors through judicial reorganization, liquidation, or debt enforcement (foreclosure or receivership) proceedings, accounting for the costs of proceedings and the cost of time taken.	World Bank Doing Business Index	157	2019	percentage	0	87	
Investor Protection	Auditing and reporting standards	"In your country, how strong are financial auditing and reporting standards – from extremely weak, to extremely strong?"	World Economic Forum	147	2018	expert survey, 1-7	2	7	

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?
Investor Protection	Extent of shareholder governance index	A composite measure of the rights of shareholders in corporate governance: (a) shareholders' rights and role in major corporate decisions, (b) governance safeguards protecting shareholders from undue board control and entrenchment, and (c) transparency on ownership stakes, compensation, audits and financial prospects.	World Bank Doing Business Index	157	2019	index score, 0-10	0	9	
Investor Protection	Conflict of interest regulation	A measure of the protection of shareholders against directors' misuse of corporate assets for personal gain: (a) transparency of related-party transactions, (b) shareholders' ability to sue and hold directors liable for self-dealing, and (c) access to evidence and allocation of legal expenses in shareholder litigation.	World Bank Doing Business Index	157	2019	index score, 0-10	2	10	
Contract Enforcement	Quality of judicial administration	A measure of good practices in court system: (a) court structure and proceedings,(b) case management, (c) court automation, and (d) alternative dispute resolution.	World Bank Doing Business Index	157	2019	index score, 0-18	2	16	
Contract Enforcement	Time to resolve commercial cases	The average time it takes to take a commercial case through the courts, including the time for filing and service, trial and judgement, and enforcement of a judgement.	World Bank Doing Business Index	157	2019	days	664	54	Yes
Contract Enforcement	Legal costs	The percentage of claim value of (a) attorney fees, (b) court costs, and (c) enforcement costs.	World Bank Doing Business Index	157	2019	percentage	32	3	Yes
Contract Enforcement	Alternative dispute resolution mechanisms	A measure of whether alternative dispute resolution mechanisms are (a) accessible, (b) free from improper influence,(c) efficient (not subject to unreasonable delays), and (d) effectively enforced.	World Justice Project	105	2017	index score, 0-1	0	1	
Financing Ecosystem	Access to finance	The percentage of firms identifying access to, or cost of, finance as a "major" or "very severe" obstacle.	World Bank Enterprise Surveys	123	2017	percentage	60	0	
Financing Ecosystem	Financing of SMEs	"In your country, to what extent can small- and medium-sized enterprises (SMEs) access finance they need for their business operations through the financial sector – from not at all, to a great extent?"	World Economic Forum	147	2018	expert survey, 1-7	2	5	
Financing Ecosystem	Venture capital availability	"In your country, how easy is it for start-up entrepreneurs with innovative but risky projects to obtain equity funding – from extremely difficult, to extremely easy?"	World Economic Forum	147	2018	expert survey, 1-7	1	5	

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?
Financing Ecosystem	Quality of banking system and capital markets	The extent to which a solid banking system and a functioning capital market have been established.	Bertelsmann Stiftung Transformation Index	121	2018	expert survey, 1-10	1	10	
Financing Ecosystem	Commercial bank branches	The number of commercial bank branches (retail locations) per capita.	World Bank Development Indicators	155	2017	branches per 100,000 adults	0	147	Yes
Financing Ecosystem	Soundness of banks	"In your country, how do you assess the soundness of banks - from extremely low (banks may require recapitalization), to extremely high (banks are generally healthy with sound balance sheets)?"	World Economic Forum	147	2018	expert survey, 1-7	2	7	
Financing Ecosystem	Depth of credit information	A measure of the rules and practices affecting the coverage, scope and accessibility of credit information available through either a credit bureau or a credit registry to facilitate lending decisions.	World Bank Doing Business Index	157	2019	index score, 0-8	0	8	
Restrictions on International Investment	Business impact of rules on FDI	"In your country, how restrictive are rules and regulations on foreign direct investment (FDI) – from extremely restrictive, to not restrictive at all?"	World Economic Forum	147	2017	expert survey, 1-7	3	7	
Restrictions on International Investment	Capital controls	The percentage of potential capital controls not levied.	Fraser Institute	154	2016	percentage	0	100	
Restrictions on International Investment	Freedom to own foreign currency bank accounts	The extent to which foreign currency bank accounts are permitted, both domestically and abroad.	Fraser Institute	157	2016	expert judgement, 0-10	0	10	
Restrictions on International Investment	Restrictions on financial transactions	Composite measure of: (a) presence of multiple exchange rates, (b) restrictions on current account transactions, (c) restrictions on capital account transactions, and (d) requirement of the surrender of export proceeds.	Chinn-Ito Index	151	2016	index score, 0-1	0	1	
Restrictions on International Investment	Prevalence of foreign ownership of companies	"In your country, how prevalent is foreign ownership of companies – from extremely rare, to extremely prevalent?"	World Economic Forum	147	2017	expert survey, 1-7	2	5	
Restrictions on International Investment	Freedom of foreigners to visit	Index based on the number of countries for which a country requires a visa from foreign visitors for tourist and short-term business purposes.	Fraser Institute	155	2016	index score, 0-10	0	10	

Enterprise Conditions

A healthy economy is a dynamic and competitive one, where regulation supports business, allowing and encouraging it to respond to the changing priorities of society. In contrast, an economy focussed on protecting incumbents will enjoy lacklustre growth and job creation. Entrepreneurial activity is one of the key drivers of long-term prosperity, and its importance will only grow as the pace of technological change increases and the number of people involved in that change rises. Given the pace of change inherent to the information age, a society's ability to react quickly to new firm- and market-level opportunities is critical to its overall Economic Openness. This entrepreneurial behaviour is especially important for the employment market and tax revenues.

A country's regulatory structure underpins its Enterprise Conditions. Areas such as the Domestic Market Contestability, the Environment for Business Creation and the Burden of Regulation need to encourage and support enterprise, if entrepreneurial

activity is to flourish. They are also important in determining how people interact with businesses in any given country.

Where these elements are not in good working order, it is difficult to encourage formal business activity. Taxation, for example, is a critical factor in deciding where and how businesses are structured. If it is not made both simple and reasonable, it will be avoided.²⁰ The same is true for construction-permitting processes; the majority of buildings in the developing world are constructed without any sort of permit at all, because the relevant regulations are made doubly expensive by corruption.

It is clear that overburdening businesses with tough-to-follow regulations does not necessarily discourage business activity; it discourages formalised business activity that can be monitored and taxed by the state, as people seek ways of circumventing burdensome regulation. Highly restricted labour markets will similarly discourage formal employment, opening workers up to instability and the potential for exploitation.²¹

Definition of the elements

The enabling conditions of enterprise can broadly be separated into those measures which promote entrepreneurship, and those that limit commercial development. These two groups of elements express the factors which might persuade or dissuade an individual from going into business in his or her country. Domestic Market Contestability, which measures how open the market is to new participants, versus protections in place for incumbents, falls into the former category. So too does Environment for Business Creation, which measures the legislative and policy-driven factors which encourage entrepreneurialism.

The Burden of Regulation, which captures the amount of time, money, and effort required to comply with government regulation, can limit commercial development.

Labour Market Flexibility, which captures how dynamic the workplace is for both employers and employees, also falls into the latter category.

Enterprise Conditions elements and weightings:

1. **Domestic Market Contestability (35%)**
2. **Environment for Business Creation (30%)**
3. **Burden of Regulation (25%)**
4. **Labour Market Flexibility (10%)**

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?	Weighting
Domestic Market Contestability	Market-based competition	The extent to which (a) the fundamentals of market-based competition is consistently defined and implemented both macro-economically and micro-economically, (b) there are state-guaranteed rules for market competition with equal opportunities for all market participants, and (c) the informal sector is very small.	Bertelsmann Stiftung Transformation Index	147	2018	expert survey, 1-10	1	10		1
Domestic Market Contestability	Anti-monopoly policy	The extent to which safeguards (such as comprehensive competition laws) exist to prevent the development of economic monopolies and cartels, and the extent to which they are they enforced	Bertelsmann Stiftung Transformation Index	147	2018	expert survey, 1-10	1	10		1
Domestic Market Contestability	Extent of market dominance	"In your country, how do you characterize corporate activity – from dominated by a few business groups, to spread among many firms?"	World Economic Forum	147	2018	expert survey, 1-7	2	6		1
Environment for Business Creation	Private companies are protected and permitted	The extent to which private companies are permitted are viewed institutionally as primary engines of economic production and are given appropriate legal safeguards, and the extent to which privatization processes are conducted in a manner consistent with market principles.	Bertelsmann Stiftung Transformation Index	147	2018	expert survey, 1-10	1	10		1
Environment for Business Creation	Ease of starting a business	A composite measure based on: (a) cost (including paid-in minimum capital requirement), (b) time, and (c) number of procedures (officially required, or commonly done in practice) to start up and formally operate an industrial or commercial business.	World Bank Doing Business Index	156	2018	index score, 0-100	20	100		1
Environment for Business Creation	State of cluster development	"In your country, how widespread are well-developed and deep clusters (geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field) – from non-existent, to widespread in many fields?"	World Economic Forum	147	2018	expert survey, 1-7	2	6		1
Environment for Business Creation	Labour skill a business constraint	The percentage of firms identifying labour skill level as a major or very severe obstacle.	World Bank Enterprise Surveys	125	2017	percentage	50	0		0.5
Environment for Business Creation	Availability of skilled workers	"In your country, to what extent can companies find people with the skills required to fill their vacancies – from not at all, to a great extent?"	World Economic Forum	147	2018	expert survey, 1-7	2	6		0.5
Burden of Regulation	Burden of government regulation	"In your country, how burdensome is it for companies to comply with public administration's requirements (e.g., permits, regulations, reporting) – from extremely burdensome, to not burdensome at all?"	World Economic Forum	147	2018	expert survey, 1-7	1	7		1

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?	Weighting
Burden of Regulation	Time spent complying with regulations	The proportion of senior management's time, in a typical week, that is spent dealing with the requirements imposed by government regulations (e.g., taxes, customs, labor regulations, licensing and registration, including dealings with officials, and completing forms).	World Bank Enterprise Surveys	125	2018	percentage	49	0	Yes	1
Burden of Regulation	Number of tax payments	The total number of taxes paid by businesses, including electronic filing.	World Bank Doing Business Index	157	2018	number per year	147	3	Yes	1
Burden of Regulation	Time spent filing taxes	The time taken for a standardized case study company during the second year of operation to prepare, file and pay (a) corporate income tax, (b) value added or sales tax, and (c) labor taxes, including payroll taxes and social contributions.	World Bank Doing Business Index	157	2018	hours per year	1,096	54	Yes	1
Burden of Regulation	Burden of obtaining a building permit	A composite of: (a) time, (b) cost, and (c) number of procedures to obtain a permit to build a warehouse.	World Bank Doing Business Index	156	2018	index score, 0-100	20	100		1
Burden of Regulation	Building quality control index	A composite measure of the quality control and safety mechanisms in the construction regulatory system: (a) quality of building regulations, (b) quality control before, during, and after construction, (c) liability and insurance regimes, and (d) professional certifications.	World Bank Doing Business Index	155	2018	index score, 0-15	3	15		0.5
Labour Market Flexibility	Cooperation in labour-employer relations	"In your country, how do you characterize Labour-employer relations – from generally confrontational, to generally cooperative?"	World Economic Forum	147	2018	expert survey, 1-7	3	6		1
Labour Market Flexibility	Flexibility of hiring practices	"In your country, to what extent do regulations allow flexible hiring and firing of workers – from not at all, to a great extent?"	World Economic Forum	147	2018	expert survey, 1-7	2	6		0.5
Labour Market Flexibility	Redundancy costs	The cost of redundancy measured in weeks of salary	World Economic Forum	147	2018	weeks	149	2	Yes	0.5
Labour Market Flexibility	Flexibility of employment contracts	A composite measure of how flexible employment contracts are based on: (a) maximum length of a single fixed term contract, (b) restrictions on overtime work, and (c) whether there are fixed term contracts prohibited for permanent tasks.	World Bank Doing Business Index	157	2018	index score, 0-1	0	1		1
Labour Market Flexibility	Flexibility of wage determination	"In your country, how are wages generally set – from by a centralized bargaining process, to by each individual company?"	World Economic Forum	147	2018	expert survey, 1-7	3	7		1

Governance

A stable and trustworthy state is one of the central and underlying components of economic exchange. The more culturally embedded the Rule of Law and good Governance becomes, the more effective these measures are in promoting and supporting a healthy economic environment. Governance is at its most robust when it has been established over time through natural evolution and is essentially a codification of cultural expectations and behaviours.²²

The importance of strong governmental institutions to long-run economic growth cannot be overstated; it has been shown that institutional capacity was more important to long-term success than discrete policy choices.²³ Even when controlling for extraneous factors such as culture, there is evidence that economic institutions are one of the main determinants in differences in economic prosperity across countries, and that these effects can last for centuries.²⁴ Replications of these findings have shown that institutions are more important to long-run growth than either trading or geographic factors.²⁵

Economic progress is not possible without the firm foundation of the Rule of Law. The absence of the Rule of Law will result in depressed domestic and foreign investment, and cronyism in

the business environment, leading people to rely primarily on personal networks and patronage rather than the strength of their own ideas. Rule of Law has also been linked to important improvements in personal freedoms.²⁶ Improvements in Governance have a dramatic effect on raising overall economic prosperity. Indeed, a recent study has shown that a shift to democracy leads to a 20% increase in GDP per capita in the long run.²⁷ However, once an effective base of trustworthy Governance has been achieved, the effects of further improvements to governance are subject to diminishing returns.

The minimisation of corruption is also critical to the functioning of the state. High levels of corruption are associated with higher levels of poverty and income inequality.²⁸ Corruption will corrode trust, which is critical to ensuring an environment where frictionless (or near-frictionless) transactions can take place. A culture of trust invariably takes time to become established. These attributes are more valuable if good behaviours, such as trust, respect and diligence are embedded in a culture, as opposed to imposed from some outside force as a part of a treaty or international agreement.

Definition of the elements

Governance can be conceptually split between the structural and operational aspects of how political and administrative power is checked, and how it is applied. The structural aspects capture how a government and political administration adhere to the law, the extent to which there is effective separation of powers, accountability to the public, and the Rule of Law. The operational aspects capture the integrity and effectiveness of a government, as well as the quality of its regulations, examining how power is applied.

Governance elements and weightings:

1. **Executive Constraints (15%)**
2. **Political Accountability (15%)**
3. **Rule of Law (15%)**
4. **Government Integrity (20%)**
5. **Government Effectiveness (20%)**
6. **Regulatory Quality (15%)**

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?	Weighting
Executive Constraints	Executive powers are effectively limited by the judiciary and legislature	A composite measure of whether executive powers are limited effectively by (a) the judiciary, and (b) the legislature, with twice the weighting given to limitation by the judiciary.	World Justice Project	105	2017	index, 0-3	0	3		2
Executive Constraints	Government powers are subject to independent and non-governmental checks	A composite measure of whether government powers are subject to (a) independent auditing and review, and (b) non-governmental checks, with twice the weighting given to independent auditing and review.	World Justice Project	105	2017	index, 0-3	0	3		1
Executive Constraints	Transition of power is subject to the law	A composite measure of whether (a) government officials are elected or appointed in accordance with the rules and procedures set forth in the constitution, and (b) integrity of the electoral process, including access to the ballot, the absence of intimidation, and public scrutiny of election results.	World Justice Project	105	2017	expert survey, 0-1	0	1		1
Executive Constraints	Military involvement in rule of law and politics	A measure of the military's involvement in politics, which might stem from an external or internal threat, be symptomatic of underlying difficulties, or be a full-scale military takeover.	Fraser Institute	152	2015	index, 0-10	0	10		0.5
Executive Constraints	Government officials are sanctioned for misconduct	A composite measure of whether government officials in the executive, legislature, judiciary, and the police are investigated, prosecuted, and punished for official misconduct and other violations.	World Justice Project	105	2017	expert survey, 0-1	0	1		1
Political Accountability	Consensus on democracy and a market economy as a goal	The extent to which major political actors agree on democracy and a market economy as strategic, long-term goals. A country is awarded a high score if all major political actors agree on establishing or consolidating democracy and a market economy as strategic, long-term goals of transformation. A country is awarded a low score if there are no major political actors who want to establish democracy or a market economy.	Bertelsmann Stiftung Transformation Index	145	2018	expert judgement, 1-10	1	10		1
Political Accountability	Political participation and rights	A measure of the ability to participate in political processes such as voting in legitimate elections, joining parties, running for office, etc.	Freedom House	157	2018	expert judgement, 1-7	7	1		0.5
Political Accountability	Democracy level	A measure of the extent to which a society is autocratic or democratic, including (a) the competitiveness of executive recruitment, (b) constraints on chief executives, (c) regulation of political participation, and (d) competitiveness of political participation.	Center for Systemic Peace	152	2017	expert judgement, -10-10	-10	10		1
Political Accountability	Complaint mechanisms	A measure of whether individuals feel that they have effective complaint mechanisms regarding the government's performance.	World Justice Project	105	2017	expert survey, 0-1	0	1		1
Rule of Law	Judicial independence	"In your country, how independent is the judicial system from influences of the government, individuals, or companies – from not independent at all, to entirely independent?"	World Economic Forum	147	2018	expert survey, 1-7	1	7		1

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?	Weighting
Rule of Law	Civil justice	A composite measure of the quality of civil justice, covering: (a) its affordability, (b) freedom from discrimination, (c) freedom from improper government influence, and (d) whether it is effectively enforced or subject to unreasonable delay.	World Justice Project	105	2017	index, 0-5	0	6		3
Rule of Law	Integrity of the legal system	A composite measure of the strength and impartiality of the legal system, and the popular observance of the law. (based on the International Country Risk Guide Political Risk Component I for Law and Order.)	PRS Group via Fraser Institute	138	2015	expert judgement, 1-10	0	10		2
Rule of Law	Efficiency of dispute settlement	"In your country, how efficient are the legal and judicial systems for companies in settling disputes – from extremely inefficient, to extremely efficient?"	World Economic Forum	147	2018	expert survey, 1-7	1	7		0.5
Government Integrity	Use of public office for private gain	A composite measure of the extent to which government officials in the judiciary, executive, police & military, and legislature use public office for private gain. Variables regarding officials in the executive and judicial branches were double weighted.	World Justice Project	105	2017	index, 0-4	0	3		2
Government Integrity	Diversion of public funds	"In your country, how common is illegal diversion of public funds to companies, individuals, or groups – from very commonly occurs, to never occurs?"	World Economic Forum	147	2018	expert survey, 1-7	1	7		0.5
Government Integrity	Right to information	A composite measure of whether people have a right to government information that can be accessed reasonably, including: (a) whether requests for information held by a government agency are granted, (b) whether these requests are granted within a reasonable time period, (c) if the information provided is pertinent and complete, (d) if requests for information are granted at a reasonable cost and without having to pay a bribe, (e) whether people are aware of their right to information, and (f) whether relevant records are accessible to the public upon request.	World Justice Project	105	2017	expert survey, 0-1	0	1		0.5
Government Integrity	Publicised laws and government data	A composite measure of quality and accessibility of information published by the government in print or online; whether laws and information on legal rights are (a) publicly available, (b) presented in plain language, (c) made accessible in all languages; and whether administrative regulations, drafts of legislation, and high court decisions are made accessible to the public in a timely manner.	World Justice Project	105	2017	expert survey, 0-1	0	1		1
Government Integrity	Transparency of government policy	"In your country, how easy is it for companies to obtain information about changes in government policies and regulations affecting their activities – from extremely difficult, to extremely easy?"	World Economic Forum	147	2018	expert survey, 1-7	1	7		0.5
Government Integrity	Budget transparency	The amount and timeliness of budget information governments are making publicly available.	International Budget Partnership	108	2017	index, 0-100	0	100		0.5

Element Name	Indicator Name	Indicator Description	Indicator Source	Country Coverage (/157)	Last Update	Unit	DTF Worst Score	DTF Best Score	DTF Whether Logged?	Weighting
Government Effectiveness	Government quality and credibility	A composite measure of the perception of: (a) the quality of public services, (b) the quality of the civil service and the degree of its independence from political pressures, (c) the quality of policy formulation and implementation, and (d) the credibility of the government's commitment to such policies.	Worldwide Governance Indicators	157	2016	index, -2.5-2.5	-3	3		2
Government Effectiveness	Prioritisation	The extent to which the government sets and maintains strategic priorities, maintains them over extended periods of time, has the capacity to prioritize and organize its policy measures accordingly, and does not rely on ad hoc measures.	Bertelsmann Stiftung Transformation Index	145	2018	expert judgement, 1-10	1	10		1
Government Effectiveness	Efficiency of government spending	"In your country, how efficiently does the government spend public revenue – from extremely inefficient, to extremely efficient in providing goods and services.	World Economic Forum	147	2018	expert survey, 1-7	1	7		0.5
Government Effectiveness	Efficient Use Of Assets	The extent to which the government makes efficient use of available human, financial and organizational resources.	Bertelsmann Stiftung Transformation Index	145	2018	expert judgement, 1-10	1	10		1
Government Effectiveness	Implementation	The extent to which a government is effective at implementing its own policies.	Bertelsmann Stiftung Transformation Index	145	2018	expert judgement, 1-10	1	10		1
Government Effectiveness	Policy Learning	The extent to which a government demonstrates a pronounced ability of complex learning, and it acts flexibly and replaces failed policies with innovative ones.	Bertelsmann Stiftung Transformation Index	145	2018	expert judgement, 1-10	1	10		1
Government Effectiveness	Policy Coordination	The extent to which government coordinates conflicting objectives effectively and acts in a coherent manner, and is not fragmented into rival fiefdoms that counteract each other.	Bertelsmann Stiftung Transformation Index	145	2018	expert judgement, 1-10	1	10		1
Regulatory Quality	Regulatory quality	The perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	Worldwide Governance Indicators	157	2016	index, -2.5-2.5	-3	3		1
Regulatory Quality	Enforcement of regulations	A composite measure of whether government regulations, such as labour, environmental, public health, commercial, and consumer protection regulations, are effectively enforced.	World Justice Project	105	2017	expert survey, 0-1	0	1		1
Regulatory Quality	Efficiency of legal framework in challenging regulations	"In your country, to what extent can individuals, institutions (civil society), and businesses obtain justice through the judicial system against arbitrary government decisions – from not at all, to a great extent?"	World Economic Forum	147	2018	expert survey, 1-7	1	7		1
Regulatory Quality	Delay in administrative proceedings	A measure of whether administrative proceedings at the national and local levels are conducted without unreasonable delay.	World Justice Project	105	2017	expert survey, 0-1	0	1		1

IV

Appendix IV: Country groupings for imputation

For the purposes of imputation, we organise countries into different groupings based on shared characteristics. These groupings are:

GLOBAL INDEX OF ECONOMIC OPENNESS 2019 – METHODOLOGY REPORT

1	2	3	4	5	6	7	8	9
Azerbaijan	Botswana	Argentina	Australia	Algeria	Afghanistan	Angola	Bangladesh	Albania
Belarus	Ghana	Belize	Austria	Bahrain	Gambia	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	Chile	Jordan	Nigeria	Chad	Ethiopia	Croatia
Democratic Republic of the Congo	Malawi	Costa Rica	Denmark	Kuwait	Pakistan	Guinea	Indonesia	Cyprus
Gabon	Malaysia	Dominican Republic	Finland	Morocco	Sudan	Côte d'Ivoire	Laos	Czechia
Kazakhstan	Mauritius	Ecuador	France	Oman	Syrian Arab Republic	Liberia	Myanmar	Estonia
Russia	Namibia	El Salvador	Germany	Qatar	Turkey	Madagascar	Nepal	Georgia
Swaziland	Seychelles	Guatemala	Hong Kong	Saudi Arabia	Yemen	Mali	Rwanda	Greece
Tajikistan	South Africa	Guyana	Iceland	United Arab Emirates		Mauritania	Sri Lanka	Hungary
Uganda	Tanzania	Haiti	Ireland			Mozambique	Thailand	Italy
Uzbekistan	Zambia	Honduras	Israel			Niger	Vietnam	Latvia
Zimbabwe		Kyrgyzstan	Japan			Papua New Guinea		Lebanon
		Libya	Luxembourg			Senegal		Lithuania
		Mexico	Malta			Sierra Leone		North Macedonia
		Mongolia	Netherlands			Togo		Moldova
		Nicaragua	New Zealand					Montenegro
		Panama	Norway					Poland
		Paraguay	Singapore					Portugal
		Peru	Spain					Romania
		Philippines	Sweden					Serbia
		Suriname	Switzerland					Slovakia
		Trinidad and Tobago	Taiwan					Slovenia
		Uruguay	United Kingdom					South Korea
		Venezuela	United States					Tunisia
								Ukraine

V

Appendix V: Summary statistics for pillars and elements

Pillar summary

Pillar	Mean	Standard Deviation	Minimum Value	Maximum Value	R2 with productive capacity	R2 with overall GIEO score
Market Access and Infrastructure	47.22	17.73	15.54	84.63	0.87	0.93
Investment Environment	53.70	15.30	22.59	86.83	0.76	0.94
Enterprise Conditions	55.52	14.89	22.04	89.73	0.71	0.94
Governance	53.52	16.64	18.85	90.09	0.71	0.90

Element summary

Pillar	Element (weight)	Mean	Standard Deviation	Minimum Value	Maximum Value	R ² with productive capacity	R ² with overall Economic Openness score
Market Access and Infrastructure	Communications (25)	11.65	6.36	0.52	24.09	0.81	0.78
	Resources (20)	10.08	4.15	1.71	18.21	0.84	0.80
	Transport (20)	9.99	3.92	2.89	19.98	0.79	0.85
	Border Administration (5)	2.53	0.93	0.76	4.73	0.61	0.75
	Open Market Scale (5)	1.52	1.04	0.04	4.72	0.31	0.40
	Import Tariff Barriers (5)	3.15	1.04	0.20	5.00	0.49	0.60
	Market Distortions (15)	8.31	2.21	2.88	13.84	0.58	0.79
Investment Environment	Property Rights (20)	11.21	3.43	4.02	18.46	0.78	0.94
	Investor Protection (20)	10.11	3.43	1.24	17.54	0.59	0.79
	Contract Enforcement (20)	9.88	2.90	2.41	18.00	0.49	0.64
	Financing Ecosystem (30)	16.88	5.14	5.33	27.21	0.68	0.81
	Restrictions on International Investment (10)	5.61	2.08	1.00	9.67	0.41	0.51
Enterprise Conditions	Domestic Market Contestability (35)	19.65	8.01	2.65	35.00	0.74	0.92
	Environment for Business Creation (30)	17.96	4.53	4.94	27.77	0.57	0.82
	Burden of Regulation (25)	12.49	2.84	4.26	20.90	0.41	0.58
	Labour Market Flexibility (10)	5.42	1.43	1.13	9.57	0.16	0.25
Governance	Executive Constraints (15)	8.39	2.53	2.36	14.23	0.60	0.76
	Political Accountability (15)	9.61	3.46	2.02	14.70	0.34	0.47
	Rule of Law (15)	7.93	2.32	2.60	13.68	0.63	0.78
	Government Integrity (20)	9.73	3.23	3.47	17.74	0.78	0.92
	Government Effectiveness (20)	10.60	4.33	1.03	19.33	0.69	0.87
	Regulatory Quality (15)	7.26	2.09	2.35	12.64	0.67	0.86

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