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Abstract

The aim of this paper is two-fold. Firstly, we present a methodology to measure the novel concept of elite quality (EQ), that is, country's elites' propensity– on aggregate – to create value, rather than rent seek. A four-level architecture allows for both an overall quantification of a country's EQ, as well as an in-depth analysis of specific political economy dimensions, such as elite power. Secondly, the Elite Quality Index (EQx) is brought to life using data on 72 indicators for 32 countries. Our index negatively correlates with inequality measures, which suggests that more powerful elites less inclined to run value creation business models will exacerbate inequality. A variety of robustness tests suggest that the EQx scores and ranking are robust to ceteris paribus changes in key modelling assumptions. Thus, the EQx offers a reliable framework and new tool to analyze the political economy of countries.

Keywords: index, elite quality, institutions, value creation, rent seeking, crony capitalism

JEL codes: D72, F50, P16, P48

"…in this world, with great power there must also come -- great responsibility!"

(Stan Lee's Spider-Man (Amazing Fantasy #15), 1962)

1 Introduction

What is the role of elites in a country's economic and human development? Are powerful elites beneficial or harmful to their countries' institutional and economic performance? Can we measure when they are "good" or "bad" for their country? The recent surge in populistic movements all over the world renders such questions very topical. In this paper, we will try to sketch a structured data-driven answer to these questions, which will allow us to rank the different countries' elites from the highest quality to the lowest. The aim is not judgmental, but hopefully useful to highlight, for each country, where improvement is possible and needed in order to facilitate its growth and development process.

These issues have been approached by the literature from various angles. Acemoglu and Robinson (2012) distinguish between inclusive institutions - shaped by elites interested in their country's productivity growth driven by investment and innovation - and "extractive" institutions, created by elites interested in extracting resources and exploiting the rest of society. Such institutions persist and are governed by political dynamics such as regulatory capture (Stigler 1971; Laffont and Tirole 1991). More recently, Acemoglu and Robinson (2016, 2019a) highlighted the crucial role of the never-ending tension (or "Red Queen effect") between an increasing state capacity and a compensating civil society mobilization. In Western democracies, such a balance guarantees that government bureaucratic elites have the power to provide frameworks and incentives for value creation, enforce laws and solve conflicts, while society has the power to mobilize against abuse, extractive business models and exploitation. Like in an optimal growth

model's saddle path, the relative strength of these two forces should follow a fine balance in order for the country not to diverge to too a strong bureaucratic elite (like China's "despotic Leviathan"), nor to too week institutions with fragmented power distribution (like African countries' "the cage of norms").

Highlighting yet another angle, Diamond (1997) promotes the importance of variation in geography, climate and biodiversity to account for differences between continents in early human history. Geographic considerations have also led to an extensive literature on the implications of natural resources and the "resource curse" for economic development (Humphreys, Sachs and Stiglitz 2007). Yet another strand of literature views history as the main determinant of the diverging patterns of economic development across the world (North 1981). History is argued to matter via several channels, for instance, via historically determined institutions. In their seminal paper, Acemoglu, Johnson and Robinson (2001) investigate the role of colonial origins for current institutions, in particular democracy and property rights. Another strand of literature focuses on the history of culture (see for instance Cozzi (1998) and Tabellini (2008) as well as the literature on social capital (Bourdieu 1986; Putnam 1994)). A link between history, development and religion was first proposed by Weber (1905). He argued for Protestantism, in contrast to Catholicism, to be an important factor in the early stages of European capitalism because it was characterized by a work ethic that encouraged hard work and the accumulation of wealth.

Undeniably, the above discussed factors are crucial to understanding the great differences in living standards that exist across the world by determining the general setting a society operates in. However, this tends to ignore one of the driving forces behind change – elites – and releases them from their agency and responsibility for their nation's human and economic development. Within a given setting, it is those with power and coordination capacity that determine how

resources are allocated, be it human, natural, financial or knowledge-based resources. Hence, in this study, we focus on leaders and decision-makers possessing the strongest coordination capacity over a society's key resources – elites. How they act and what kind of business models they choose, determines social and economic outcomes.

Parry (2005, introduction) refers to elites as "persons who attain the leading positions in a range of activities that have a major bearing on societies". Accordingly, elites are the leading figures in sectors as diverse as, for instance, the political sector, the military, the bureaucratic apparatus, business, unions, or the media. According to Parry (2005, 15) the study of elites as part of political science dates back to Vilfredo Pareto (1848-1923) and Gaetano Mosca (1858-1941). Mosca, for instance, defined elites as "the class that rules… always less numerous, performs all political function, monopolises power and enjoys the advantages that power brings" (quotation in Parry 2005, 33).

How do elites utilize their coordination capacity? We argue that elites, as a network of powerful individuals, operate business models that generate wealth and allow its accumulation along with power. Furthermore, we claim that these individual business models can be located on a continuum that ranges from value creation to value extraction (Casas, 2020 forthcoming). While the former describes business models that, figuratively speaking, grow the elite's slice of the pie by growing the entire pie, the latter describes business models that grow an elite's slice of the pie by increasing its share. The term adopted for elites that engage in value creation business models is 'high quality elites', while elites that engage in value extraction business models are coined 'low

quality elites'[1]. High quality elites give more to society than they take, while low quality elites take more from society than they give. We postulate that the aggregate of elites' individual business models determines a country's aggregate level of value creation. Quite importantly, we theoretically allow relatively unchecked powerful elites to behave in the interest of society even far away from Acemoglu and Robinson (2019a) "narrow corridor". Such elite behavior is clearly commendable, because elites scoring high in terms of power could also do the opposite and leverage their capability to just extract resources. Hence, we will label such elites "high quality elites". The most striking example of such benevolent attitude, as we will show, is certainly Singapore. Of course, by only focusing on elite observed behavior, we cannot predict whether such elites could later move to rent-seeking behavior, which is instead prevented on Acemoglu and Robinson's "narrow corridor".

How can we measure elite quality? And what is the state of elite quality across countries? This paper aims to address these two questions. First, we propose a methodology to measure elite quality, that is, the ability of business models of a country's elite – on aggregate – to create value, rather than rent seek. This is done by means of a composite index called "Elite Quality Index" (also index or EQx), where the underlying indicators provide quantitative evidence of different degrees of value creation and their opposite, value extraction. We present a host of robustness tests that suggest that the proposed index and the resulting scores and ranking are robust to a range of alternative specifications. Furthermore, our multi-layered index architecture allows for an in-depth analysis regarding specific aspects of elite quality at four different levels (sub-index, index area,

[1] Welzel (2002, 319) employs a more specific concept of elite quality, claiming that the quality of elites is characterized by the extent of corruption and female representation. We will also incorporate these elements and generalize them.

pillar and indicator level). Thus, the EQx represents a new tool that can serve to analyze and compare the political economy of countries by shedding light on the aggregate quality of national elites.

Second, we apply the proposed methodology to a set of 32 countries using data on 72 indicators. The EQx reveals substantial differences in the state of elite quality across the considered countries. Singapore ranks first, with a considerable lead. Selected members of the European Union vary significantly in their performance, with EU countries spread between the 3rd (Germany) and 18th (Spain) rank. The United States comes in 5th. China comes in 12th and thus outperforms several European countries as well as the other BRICS countries Russia, India, Brazil and South Africa, which rank (in that order) between 23rd and 30th. We demonstrate the analytical and applied usefulness of the EQx as a toolset in economics by (1) presenting country portraits for the United States and Germany, (2) investigating its relation to inequality measures, and (3) comparing the EQx to existing measures of general economic and human development.

The methodology laid out in this paper represents the starting point for the development of a longitudinal study with annual results and their qualitative interpretation. Further results and analysis for the 32 countries considered in the present study are offered in the Elite Quality Report 2020 (forthcoming, 2020). It precedes the release of the EQx2021 Report that plans to rank over 120 countries. Hence, another aim of the present study is to elicit a discussion and solicit inputs to improve the EQx methodology, the theoretical grounding and employed datasets.

The remainder of this study is organized as follows. Section 2 outlines the theoretical framework the EQx is based on. Section 3 details the methodology the index employs. Section 4 presents key results and illustrates the explanatory power of the EQx. Section 5 scrutinizes the

index' sensitivity to its underlying assumptions via a range of robustness tests. Finally, section 6 concludes.

2 Theoretical framework

We work on the assumption that all elite business models can be located on a spectrum that ranges from value creation to value extraction. In parallel to Acemoglu and Robinson (2019b, 16), the term value 'extraction' is chosen to highlight the distributional effects of elites' business models. It builds upon the seminal work of Tullock (1967) who introduced the notion of 'rent seeking' to show that the welfare costs of monopolies and tariffs are actually higher than the static deadweight loss they imply. Using Tullock's (1967) terminology, value extraction business models are designed to create and capture rents.

A similar dichotomy to value creating and extracting business models is implied by the concept of inclusive and extractive institutions (Acemoglu and Robinson 2012). Inclusive institutions allow all individuals to participate in and benefit from economic activities "on a level playing field" (Acemoglu and Robinson 2012, 144), while extractive institutions imply that vast parts of a society are barred from participation while elites extract resources and opportunities. Importantly, this concept focuses on the classification of government structures. Our concept is different in that it shifts the focus on elite business model choices, within a given institutional, cultural and geographical setting.

However, institutions and elites are closely related, as a country's institutions regulate, incentivize and frame the actions and operations of the elite. On the other hand, following Casas (2020, forthcoming), we argue for directionality with elites influencing and shaping a country's institutions. For instance, elites might exert pressure in the political realm to adjust institutions

according to their preferred business model. Low quality elites might promote monopolies or tax privileges that benefit them. High quality elites aiming at value creation might strengthen the public health and education system to develop human capital or promote the protection of property rights providing incentives for innovation, because these are resources consistent and required with value creation business models.

Table 1. Structure of the elite quality index

Index	*Sub-index*	*Index area*	*Pillar*
EQx	I Power	i. Political Power	i.1 State Capture
			i.2 Regulatory Capture
			i.3 Human Capture
		ii. Economic Power	ii.4 Industry Dominance
			ii.5 Firm Dominance
			ii.6 Creative Destruction
	II Value	iii. Political Value	iii.7 Giving Income
			iii.8 Taking Income
			iii.9 Unearned Income
		iv. Economic Value	iv.10 Producer Rent
			iv.11 Capital Rent
			iv.12 Labor Rent

Note: Structure of the EQx. The 12 pillars consist of a total of 72 indicators.

We analyze elite quality along two dimensions: power and value, with value meaning current value creation/extraction activities as well potential future value creation/extraction activities. Furthermore, these two aspects have economic and political dimensions (Casas 2020 forthcoming). This naturally provides a clear "structure of the various sub-groups of the phenomenon" (OECD 2008, 23) that is illustrated in Table 1. The two sub-indices Power and Value each contain a political and economic dimension, yielding four index areas. Each index area in turn measures three aspects of elite quality, conceptualized as pillars. Finally, each of these in total twelve pillars contain a set of individual indicators (between four and ten indicators each). Thus, the EQx condenses the complex phenomenon of elite quality in one number. Moreover, its

multi-layered architecture reflects the multidimensional nature of elite quality and thus allows for an in-depth analysis at different levels.

3 Methodology

We propose measuring elite quality by means of an index. Indices can summarize complex realities and provide an easy to interpret summary of a multi-dimensional phenomenon, without losing the underlying information base. This facilitates the communication of insights to decision-makers and the general public. Furthermore, the construction of a country ranking allows one to compare performances and, in the future, track progress over time (OECD 2008, 13f). The overarching objective of the process of index construction should be to make the procedure as clear and transparent and therefore justifiable as possible (Santeramo 2017, 135). In consequence, the underlying assumptions and methods used for our index construction are presented and evaluated in detail hereinafter.

Furthermore, since the use of a protocol ensures homogeneity in the index construction process, structure follows by and large the recommendations of the "Checklist for building a composite indicator" presented by the OECD's (2008) handbook of index construction. Its recommendations focus specifically on indices for country comparison and ranking (OECD 2008, 5)[2].

[2] The OECD (2008) handbook and its checklist constitute a widely established starting point for the construction as well as evaluation of composite indicators, see for instance Álvarez-Díaz et al. (2018, 6), Greco et al. (2019, 63f), Grupp and Schubert (2010, 69) and Ivaldi, Bonatti and Soliani (2016, 401).

3.1 Selection of indicators

EQx indicators are selected according to the theoretical framework. Table A1 in the appendix lists and defines all indicators. Column (2) indicates whether an indicator primarily measures value creation or value extraction.

Most indicators are defined such that higher values are better than lower values ("the higher the better"), or the reverse ("the lower the better"), thus measuring value creation linearly. We acknowledge that this approach does not do justice to the ambivalent nature of many indicators. Only a small set of indicators are defined as "deviation from optimum", measuring value creation in a non-linear fashion. This is done to capture the detrimental effects of values being either higher or lower than some reference level. Online appendix B1 indicates the indicators that are non-linear measures of elite quality, as well as the chosen benchmark and underlying rationale.

Furthermore, some indicators measure overlapping aspects of elite quality. This is allowed for, based on the following considerations. Firstly, using different sources to measure a similar aspect may help to address shortcomings in the data when an indicator covers only a particular set of countries, and allows to diversify the risk of mismeasurement. Secondly, in some cases, overlap is intended in order to emphasize a particular aspect[3]. Thirdly, the indicators might complement each other by measuring a similar aspect from a different perspective[4]. Finally, it should be noted

[3] For example, the EQx includes both the World Bank's Ease of Doing Business Index (*Institutional quality* (DBI, i.2)) as a measure of overall institutional quality, as well as two of its indicators, *Protecting Minority Investors* (PMI, i.2) and *Firm Entry Ratio* (ENR, ii.6) in order to particularly take account of these two aspects.

[4] For example, the index includes three indicators on gender equality: one indicator focuses on the political sphere by measuring the proportion of women serving in government bodies (*Women Power Index* (WIP, i.1)), another indicator focuses on gender inequality as a consequence of legislative barriers (*Women, Business and the Law*

that a potentially overemphasized aspect is not expected to dominate index scores, given the ample number of indicators considered.

3.2 Data

In order to measure country-level elite quality on the basis of relevant and up-to-date information, numerous datasets are collected from various international organizations. The sources are listed for each indicator in the appendix in Table A1, column (7). The data sources can be divided in three broad categories presented in Table 2. Column (4) in Table A1 classifies each indicator accordingly. Online appendix B2 provides further information on how the data was transformed to yield individual indicators.

Table 2. Types of dataset sources

Category	*Short description*	*Example*
Index	Source data is an existing composite indicator and/or country data have already been normalized	*Women Power Index* (WPI, i.1)
Raw	Source data has not been transformed	*R&D % GDP* (RND, ii.6)
Proprietary	Source data is gathered by EQx team	[planned in the future]

Note: Table indicates the types of data used for the indicators.

To compute the EQx, we use the most recent available data. Most indicators use data from 2018, and almost all indicators are based on data between 2016 and 2019. Seven indicators are based on datasets older than 2016, up to 2012. This can be justified because these indicators (e.g. *Political decentralization* (PDE, i.1)) reflect phenomena deemed relatively stable. This is consistent with accepted index construction practice as generally, data limitations constrain the

(WBL, i.3)) and another indicator considers the gender pay gap (*Gender Wage Gap* (GWG, iv.12)). Thus, these indicators measure gender equality from different perspectives and are in consequence included in different pillars.

temporal and geographical coverage of indicators, as well as other methodological decisions (Nardo et al. 2005, 35). That is, when constructing an internationally comparable measure, it is not unusual for indices to consider data on different years and for different sets of countries (Szerb and Acs 2011, 8-10; Alkire and Santos 2014, 257). Table 3 indicates the main facts on the geographical coverage of indicators.

Table 3. Data constraints in geographical coverage – main figures

% of indicators covering:	
all Pilot32 countries	>40% of EQx indicators
>30 Pilot32 countries	>55% of EQx indicators
>25 Pilot32 countries	>70% of EQx indicators
% of missing country datapoints overall	10% of observations
Avg. number of available indicators per country	62.1 (out of maximum 72)
Avg. number of countries covered by indicators	28 (out of maximum 32)
Minimum number of indicators per country	40 (Botswana)

Note: Main figures on the geographical coverage of indicators. Further information on the geographical and temporal coverage of the data are provided in Table B3 and B4 in the online appendix.

Considering the international vocation and comparative perspective of the EQx, the long-term aim is to measure elite quality for as many countries as possible, the aforementioned data constraints notwithstanding. As a result, the EQx2021 report will see the index extended from 32 countries considered in the present paper to cover over 100. Acknowledging data constraints, decisions on index construction parameters are based on normative arguments that are discussed next.

3.3 Imputation of missing data

Since no approach to impute missing data is exempt from drawbacks, we hereinafter judiciously document the chosen procedure. Fortunately, and further to the earlier notes, the considered datasets are generally characterized by a relatively good completeness.

When addressing missing values, the aim is to avoid systematic upward or downward biases as a result of missing values. That is, a lack of data should not penalize or favor any country, but should solely influence the accuracy of its score, i.e. the more indicators are accounted for in the computation of the final country score, the more accurate the latter will be.

The EQx addresses missing values based on two approaches. First, minimum requirements in terms of data availability are defined. Datasets are only considered if (1) they cover a minimum of 30% of the considered countries (here this corresponds to 9 countries), and (2) provide recent information on countries' elite quality, i.e. by 2016 or later[5]. Moreover, concerning the structure of the index, (3) pillars need to be based on a minimum of four indicators.

Second, we implement an "available-case analysis" (Little and Rubin 2002, 54) that should only be used if the "amount of missing information is limited" (Little and Rubin 2002, 41). We argue that this is the case here, applying the above minimum requirements. In case an indicator is missing for a particular country, the weight of the missing data point is split between the remaining indicators of the same pillar, in proportion to their respective weights[6]. This approach is also implemented in other indices, such as the Multidimensional Poverty Index (Alkire and Santos 2014,

[5] With seven exceptions as explained in chapter 3.2.

[6] In the present study, no pillar is missing all indicator values for a country. Anticipating aggravated data constraints when considering a larger set of countries in the course of the EQx2021 Report, the weight of the hypothetical missing pillar datapoint would be split between the two other pillar of the same index area, mirroring the approach for individual missing indicators.

256)[7]. It is based on the premise that indicators within the same pillar, and pillars within the same index area, measure similar aspects of elite quality. Also, in case recent data is not available for only a small set of countries, missing values are imputed with the latest available data, up to three years prior to the data used for the majority of other countries.

Importantly, the "available-case analysis" uses all available values, that is, the final EQx will see indicator datasets in part stemming from different years and covering a heterogeneous set of countries (Nardo et al. 2005, 54). This dents cross-country consistency across EQx scores in the same manner that it does with most indices. At the same time, EQx aims to offer valuable insights on aggregate elite quality at the single country level. The available-case analysis potentially implies a gain in efficiency since overall, more information is used to calculate index values, than if a "complete case analysis" was implemented (Nardo et al. 2005, 41). Furthermore, as emphasized by another composite indicator - the Environmental Performance Index (EPI) – "even

[7] The reader should note that different approaches to the issue of missing data were considered, based on Little and Rubin (2002) who created a taxonomy of missing-data methods (consider Little and Rubin (2002, 19-21) for an overview). The easiest and most straightforward method, that we call 'case deletion', is to "discard incompletely recorded units and to analyze only the units with complete data" (p. 19). This is, however, unsuitable for the EQx because in the main 2020 report, nearly all considered datasets constitute a non-complete country list. Moreover, this technique often leads to "serious bias" (p.19) and loss of precision (higher standard errors) as useful information is left out.

Another category covers the so-called "Imputation-Based Procedures" (p. 20). Here, the idea is to fill-in the missing values with substitute values. Nardo et al. (2005, 10-11) differentiate Single Imputation (e.g. use of "mean/median/mode, Regression Imputation, Expectation Maximization Imputations" as substitute) and Multiple Imputations techniques. While both of the above methods - representing a "complete case analysis" (Little and Rubin 2002, 41) - are widely used, EQx decided against it due to the size and heterogeneity of the EQx database.

less-than-ideal indicators contribute to the overall usefulness of the EPI as a composite index" (Wendling et al. 2018, 7). The same applies to the EQx. Note also that reassuringly, a range of robustness tests (see chapter 5) suggest that not only EQx scores, but, in particular the EQx ranking is robust to modifications in key modelling assumptions. This suggests that meaningful cross-country comparisons are possible.

3.4 Normalization

Since indicators have different scales and measurement units, normalization is necessary prior to aggregating the data to "avoid adding up apples and oranges" (OECD 2008, 27).

Indicators are standardized, with a mean of zero and standard deviation of one, applying z-scores (Nardo et al. 2005, 47; OECD 2008, 28). This is done using the 95% trimmed mean and standard deviation, in order to use estimates that are less susceptible to outliers. Next, outliers are forced to fall within a]-2;+2[interval. This concerns roughly 6% of datapoints. The resulting z-scores are then rescaled to fall within a]0 ; 100[interval. Hitherto, all EQx indicators were assigned a so-called directionality, being either the lower, the better; or the higher, the better; or the closer to 0 or an optimum, the better. In consequence, in a final step, normalized values are transformed such that a value close to 100 indicates a high level of elite quality, and a value close to 0 represents a low level of elite quality. Further information on the normalization process in provided in section B5 of the online appendix.

3.5 Weighting and aggregation

How to establish an appropriate weighting and aggregation method represents a contentious issue in the academic debate on the construction of indices (Santeramo 2017). While there are numerous

weighting techniques, the OECD (2008, 31) highlights that "regardless of which method is used, weights are essentially value judgements". However, the (OECD 2008, 33) further highlights that "the absence of an "objective" way to determine weights and aggregation methods does not necessarily lead to rejection of the validity of composite indicators, as long as the entire process is transparent." This is to be achieved by the following two sections[8].

3.5.1 Weighting criteria theoretical background

The theoretical framework, summarized in section 2, provides a clear structure to the index. The weights applied at each level (indicator, pillar, index area and sub-index) emerge from two different approaches: either they are deduced from the theoretical framework, or they are allocated by a group of experts employing a Budget Allocation Process (BAP). Weights are summarized in Table 4.

The weights of the index' main building blocks (sub-index and index areas) are deduced from conceptual deliberations (see Casas 2020 for a theoretical discussion). Conceptual Deliberation 1 argues that power is a necessary condition for value extraction. Accordingly, the sub-index Power can be interpreted as an indicator of future value extraction potential. We weight

[8] By weighting the individual indicators, varied relevance can be attributed to them. Applying equal weights to all indicators is "by far" (Yang 2014, 6) the most commonly used method to avoid any subjective value judgements (OECD 2008, 31; Santeramo 2017, 132). This approach has been both criticized and endorsed (Chowdhury and Squire 2006). Crucially, equal weighting does not imply "no weights", but carries an implicit value judgement of weights being equal. This might "disguise […] insufficient knowledge of […] relationships or a lack of consensus" (OECD 2008, 31).

present value extraction dynamics stronger than (potential) future ones, and thus at present the weighting judgment sees the sub-index Value at 66% while Power is weighted at 34%.

Table 4. Weighting in the EQx

Aggregation level	*Method*	*Weights*	
Sub-index		*Within EQx*	*Within EQx*
Sub-index I: Power	CD 1	34.0%	34.0%
Sub-index II: Value	CD 1	66.0%	66.0%
Index area		*Within sub-index*	*Within EQx*
Sub-index I: Power			
i. Political Power	CD 2	34.0%	11.6%
ii. Economic Power	CD 2	66.0%	22.4%
Sub-index II: Value			
iii. Political Value	CD 3	34.0%	22.4%
iv. Economic Value	CD 3	66.0%	43.6%
Pillar		*Within index area*	*Within EQx*
Sub-index I: Power			
i. Political Power			
i.1 State Capture	BAP	36.0%	4.2%
i.2 Regulatory Capture	BAP	37.0%	4.3%
i.3 Human Capture	BAP	27.0%	3.1%
ii. Economic Power			
ii.4 Industry Dominance	BAP	21.0%	4.7%
ii.5 Firm Dominance	BAP	23.0%	5.2%
ii.6 Creative Destruction	BAP	56.0%	12.6%
Sub-index II: Value			
iii. Political Value			
iii.7 Giving Income	BAP	36.4%	8.1%
iii.8 Taking Income	BAP	36.4%	8.1%
iii.9 Unearned Income	BAP	27.2%	6.1%
iv. Economic Value			
iv.10 Producer Rent	BAP	29.0%	12.6%
iv.11 Capital Rent	BAP	34.0%	14.8%
iv.12 Labor Rent	BAP	37.0%	16.1%
		Within pillar	*Within EQx*
Indicator	BAP	Table A1, column (5)	Table A1, column (6)

Note: Table indicates the underlying weighting method (Conceptual Deliberation (CD) or Budget Allocation Process (BAP)) and the resulting weighting for each aggregation level. The within EQx weights anticipate the linear aggregation scheme detailed in section 3.5.2. Percentages, rounded to one decimal, may not add up to 100 due to rounding.

A similar rationale is applied for Conceptual Deliberation 2, establishing the weight of the index areas Economic Power and Political Power, within the sub-index Power. We argue that Political Power primarily reflects potentially extractive processes, as political may convert to economic power. Hence, the weights for the economic and political dimensions of the sub-index Power are established at 66% and 34%. On account of the larger relevance and impact of economic

value creation processes compared to political value creation processes, the same weights are also applied to the index areas Economic Value (66%) and Political Value (34%).

The rationale of the underlying Conceptual Deliberation 3 assumes a higher relevance of the economic over the political dimension in the overall value creation process.

The weights of the twelve pillars within their index areas, as well as the weight of the individual indicators within their pillars, are determined in the course of a Budget Allocation Process (BAP). The BAP (citing Moldan, Billharz and Matravers 1997; OECD 2008, 32) is a participatory method where experts are provided a budget, e.g. N points, that they allocate to an indicator or pillar. Intuitively, experts "pay" more for indicators they want to stress.

Generally, the BAP is characterized by its "transparent and relatively straightforward nature and short duration" (OECD 2008, 96). Nardo et al. (2005, 67) highlight that the weighting is not based on "technical manipulations" but on experts' opinions, which helps increase the legitimacy of the index. Furthermore, the BAP fosters the creation of a forum of discussion, thus promoting a consensus for policy actions. Hence, a BAP is the method chosen for EQx to determine the weights of individual indicators within their pillars, and the weights of pillars within their index areas. Further information on the exact procedure employed is provided in section B6 in the online appendix.

3.5.2 Aggregation

Indicator aggregation represents another decisive and the final step in the computation of an index. Munda (2012, 337) argues that "what defines a composite indicator is the set of properties

underlying its mathematical aggregation convention". Since, again, there is no "objective" approach to determine the optimal aggregation scheme (OECD 2008, 33), the implications of different aggregation methods should be considered carefully.

The two most commonly adopted techniques are the geometric and linear aggregations[9]. Both methods imply some compensability between indicators, that is, a deficit in a country's performance in one dimension can generally be compensated by a surplus in another dimension. However, the methods differ in the extend of compensability they allow. In the case of geometric aggregation, compensability is lower for an indicator with low values. In this case, scoring low on one indicator implies having to score substantially higher on other indicators to improve the overall score (OECD 2008, 33). This has led, for instance, to the aggregation of indicators building the Human Development Index (HDI) being switched from a linear to a geometric method in 2010, to acknowledge criticism that values of indicator "GDP per capita" should not compensate for low levels of "Life expectancy at birth" (Mazziotta and Pareto 2013, 68).

Linear aggregation, on the other hand, implies a constant and full compensability among indicators (OECD 2008, 338; Munda 2012, 33). This means that "poor performance in some indicators can be compensated by sufficiently high values of other indicators" (Nardo et al. 2005, 12). EQx applies a linear aggregation approach. Within pillars, indicators are assumed to measure similar aspects of elite quality, in consequence, a full compensability is allowed for. A similar reasoning applies for the aggregation of pillars within index areas. Concerning the aggregation of index areas and sub-indices, we highlight that linear aggregation transmits the relative importance

[9] An index constructed based on two indicators with equal weights would result from $(x_1 * x_2)^{1/2}$ in case of a geometric aggregation and $\frac{1}{2}(x_1 + x_2)$ in case of linear aggregation (Santeramo 2017, 131).

of dimensions to the index, as determined by the underlying weighting scheme (Santeramo 2017, 131). Hence, a linear aggregation ensures a full transmission of the relative weights as implied by the theoretical framework. Summarizing, the EQx implements a linear aggregation scheme at each level of aggregation. This simple method, adopted by a vast majority of indices (Yang 2014, 5), contributes to an index that is in its construction process simple and easy to understand.

This concludes the construction of the EQx, to measure the quality of national elites on aggregate. For an example on how indicators are weighted and aggregated to calculate index scores, consult section B7 in the online appendix.

4 Results

The EQx assesses the aggregate of a country's elite business models in terms of relative value creation and value extraction. Table 5 provides an overview of the EQx for a set of 32 countries[10] and reveals substantial differences in the state of elite quality across countries.

Singapore ranks first, with a considerable lead. Interestingly, the sub-index Power shows that Singaporean elites are more powerful than e.g. advanced Western economies, hence penalizing Singapore with rank 15 in the Power sub-index. Yet due to a superb performance in the Value sub-index, Singapore manages to compensate its low Power score and thus sits atop the table in the EQx overall ranking. This indicates that Singaporean elites use their vast power for value creation rather than rent seeking purposes.

[10] We conducted all calculations using two platforms to ensure that all calculations are double-checked. That is, all steps are conducted using Microsoft Excel, as well as using the Index Management Platform IMP, a novel Python-based platform developed by dxFeed. Further details on the IMP can be found in the IMP document retrievable from www.elitequality.org. tbc link xx

Table 5. EQx results

	EQx		***Sub-Index***			
			Power (I)		***Value (II)***	
Country	*Rank*	*Score*	*Rank*	*Score*	*Rank*	*Score*
Singapore	1	68.5	15	59.2	1	73.4
Switzerland	2	64.9	5	63.8	2	65.5
Germany	3	64.2	3	65.0	3	63.7
United Kingdom	4	63.9	2	70.6	7	60.5
United States	5	63.4	1	70.7	8	59.6
Australia	6	63.2	8	63.4	4	63.1
Canada	7	61.9	9	62.7	5	61.5
Japan	8	61.6	10	62.0	6	61.4
Korea, Rep.	9	61.2	4	65.0	9	59.3
Sweden	10	59.7	11	61.8	10	58.6
Norway	11	58.6	13	60.2	13	57.8
China	12	58.4	19	58.2	11	58.5
Poland	13	58.3	17	58.5	12	58.2
Portugal	14	58.0	12	61.4	15	56.3
France	15	57.4	7	63.4	16	54.3
Israel	16	56.9	6	63.5	19	53.5
Italy	17	55.5	16	58.6	18	53.9
Spain	18	55.5	14	59.9	21	53.2
Kazakhstan	19	52.7	28	43.5	14	57.5
Indonesia	20	52.0	22	49.2	20	53.5
Mexico	21	50.7	25	47.4	22	52.4
Saudi Arabia	22	49.2	30	40.0	17	53.9
Russian Federation	23	48.9	24	48.3	25	49.2
Botswana	24	48.9	29	42.7	23	52.0
India	25	45.4	23	48.4	27	43.8
Pakistan	26	44.5	32	32.5	24	50.7
Brazil	27	44.1	20	50.2	28	41.0
Turkey	28	43.3	21	49.2	29	40.3
Nigeria	29	42.4	31	34.7	26	46.4
South Africa	30	41.7	18	58.5	32	33.1
Argentina	31	41.6	26	47.1	30	38.7
Egypt, Arab Rep.	32	40.0	27	44.2	31	37.8

Note: Table indicates index scores and ranking for the overall EQx and its two sub-indices.

A political economy configuration running in the opposite direction to Singapore can be observed in the two Anglo-Saxon economies: The United Kingdom (ranking 4th) and the United States (5th). The leading ranks in the Power sub-index imply that American and British elites are the least powerful of all considered countries. However, despite their relative weakness, they manage to run value extraction business models, and thus rank only 7th and 8th in the Value sub-index.

Members of the European Union (EU) vary significantly in their elite quality. Germany comes in 3rd in the overall EQx ranking as well as in the two sub-indices Power and Value. Sweden and Norway (rank 10 and 11) build a Scandinavian cluster, obtaining similar scores both in the EQx as well as the two sub-indices. Finally, France, Italy and Spain are at the rear of the considered EU countries, ranking 15th, 17th and 18th.

China comes in 12th in the EQx list and thus outranks several advanced European economies like France, as well as other upper-middle income countries (classification of the World Bank 2020b) such as Russia (ranking 23rd), Turkey (28th) and South Africa (30th). With Brazil and India ranking 25th and 27th, a split in the BRICS countries between China and the four other countries is clearly visible at EQx. Chinese elites are slightly more powerful than elites in Singapore and roughly as powerful as elites in Poland or South Africa. South African elites, however, score lowest of all surveyed countries in terms of their current value creation activities, reflected in the last rank of the Value sub-index.

Indices provide specific analytical perspectives. For instance, the Global Competitiveness Index (GCI) sheds light on the competitiveness of countries, and the United Nations Human Development Index (HDI) on different levels of human development. Thus, indices enable the interpretation of the relative current position of a country in terms of what the index measures and provides intelligence on other relevant outcomes (e.g. competitiveness can lead to economic growth and human development). Hereinafter, we illustrate the usefulness of the EQx as an analytical framework and tool to analyze the political economy of countries, in three different ways. Firstly, we provide three exemplary country portraits, on the United States (U.S.), Germany and Portugal. See Figures A1, A2, and A2 in the appendix for the three EQx country scorecards that ground the analysis. Secondly, taking up on the distributive implications of the concept of elite

quality, we investigate how the EQx relates to two measures of inequality. And thirdly, we compare the EQx to renowned measures of general economic and human development.

4.1 Country analysis

4.1.1 United States

The United States (U.S.) ranks 5th in the overall EQx ranking. However, taking a closer look at the index' components reveals substantial differences across different domains representing the comparative strengths and weaknesses of its political economy. EQx might supply insight to the present social context and the renewed commitment to build an inclusive economy.

The most striking finding of EQx is the contrast within the Economic Power index area, between the pillars Industry Dominance (ii.4) and Firm Dominance (ii.5). The U.S. economy is well balanced and diverse and hence no industry dominance is attested by the top spot in the global rank of pillar Industry Dominance (ii.4). Yet at the individual firm level, the exact opposite occurs: extremely powerful firms dominate the economy and the U.S. scores a dreary 28th rank in pillar Firm Dominance (ii.5). The interpretation is that America does not have an institutional problem as much as it has a dominant firm problem. That is, dominant firms appear to manage to operate under the radar of America's exemplary institutional set-up, in order to rent seek, albeit moderately. This could explain the puzzle of why despite being the country that scores highest in Power (sub-index I) it has a good but not excellent Value (sub-index II) score - extractive business models are a feature of its political economy. The final interpretative twist is that the U.S. scores exceedingly high (global no. 1) in pillar ii.6 Creative Destruction, based on an above average performance in the indicators *Entrepreneurship* (ENT), *VC finance* (VCK), *Barriers to start-ups* (BTS) and *R&D % GDP* (RND). This means that the institutional arrangements leave the doors open for value creators

to replace value extractors, explaining why the U.S. economy has traditionally reinvented itself successfully after structural crises.

Furthermore, the EQx points to value extraction in specific pillar level areas that see the U.S. as notable outliers. For instance, it takes rank 30 in *Ease to Challenge Regulations* (i.2, ECR), rank 24 in *Billionaires' wealth as a percent of GDP* (ii.5, BIW), rank 24 in the *Homicide rate* (iii.8, HOM), rank 28 in *Government Debt as % of GDP* (iii.9) and rank 29 in *Health Care as % of GDP (dev. fm optimum)* (iv.10, DHC). Hence, despite an above-average rank in the overall elite quality, the EQx analytical framework denotes the particular areas in the American political economy that are liable of improvement.

Summarizing, the high Power sub-index rank points to the U.S. as a self-correcting system, with value extracting business models by a priori limited by robust institutional arrangements that extractive elites will not be able to challenge. If value creating elites and sectors of the economy would only unleash the full potential of America's institutional strengths, the U.S. could easily climb atop the world's elite quality ranking, and new degrees of inclusive human and economic development would be felt across its diverse society.

4.1.2 Germany

Germany comes in at a very strong 3rd place in the EQx global rank, with critical areas underperforming. By reviewing EQx data, it is possible to identify areas where Germany ought to focus in terms of institutional reform in order to incentivize increased degrees of value creation.

Within the Economic Value index areas, two pillars offer a contrasting picture. The Producer Rent (iv.10) pillar has Germany at an excellent no. 3 position with its traditional export-oriented economic elite exposed to competition and shunning extractive models. The main

exception here is the indicator *FDI net inflows as % of GDP* (FDI) where it ranks 14th, pointing to an economy closed to foreign entrants and hence potentially open to rent seeking by domestic players. On the other hand, the finance sector is quite extractive, with the Capital Rent (iv.11) pillar ranking at 19th, indicating the need for elite business model transformation especially as the country performs worse than many of its EU peers.

In terms of Political Value, the big paradox is between the pillars Taking Income (iii.8, rank3) and Giving Income (iii.7, rank 19). The state is not extractive at all when taxing and otherwise "taking" from society at large, as it encourages value creation– in the indicators *Fiscal decentralization* (FED) or *Corporate tax rate (dev. fm optimum)* (DCT) Germany leads the world (both rank 1). But when it comes to giving, the state impedes value creation. For instance, while it provides excellent value evidenced by phenomenal *Covid-19 safety* (COV) results, it has dismal results in terms of *Regional redistribution as % of government budget* (REG) at rank 29, or *in Subsidies and transfers as % of expenses* (SNT) at rank 26.

The variance found in the different EQx levels and areas should inform policy and social debates. Perspectives might be selected by the analysist - for instance, the fundamental issue facing Germany might be said to be exposed by EQx' Creative Destruction Pillar (ii.6), where the country ranks a middling 14th. The fact that EQx constituent indicator scores often paint different pictures highlights the importance of a multidimensional, wholistic but nuanced view of the economy. Here we might say that Germany's incumbent elites block potential new value creators from realizing their potential. The country's excellent scores in many EQx index areas mean that the pre-conditions for value creation by potential disruptors are present – disruptors would invariable emerge in Germany meaning substantial unrealized opportunity and waste.

4.1.3 Portugal

After joining the European Community in 1986, Portugal experienced a period of real convergence with its European partners until 2000. Since then, with the single currency, its economic performance deteriorated to the point that, after the 2008-10 crisis, it had to call upon external aid to meet its commitments. Today Portugal grows below the E.U. average, it is not competitive, and it is one of the most indebted member states, heavily dependent on the external sector - tourism in particular.

Despite this economic context, Portuguese elites have a middling score (rank 14th) in the group of the sampled countries, ranking better than others in the southern Europe such as Italy (rank 17th) or Spain (rank 18th) and even better than France (rank 15th). This could be a catalyst for a new phase of real convergence with the E.U., already initiated before the current pandemic crisis, but which has caused a major setback in such endeavour.

However, this overall score hides great disparities in the four sub-index areas, revealing a better performance in terms of value creation by the economic elites (iv, rank 10th) and worse in terms of Political Value (iii, rank 25th).

Emphasis should be placed on the good performance in terms of trade freedom (TRF, iv.10, rank 6th), barriers to entry (BTE, iv.10, rank 7th), foreign direct investment attraction (FDI and BTF, iv.10, rank 7th and 1st, respectively) and economic globalisation (EGL, iv, rank 6th). These results are in line with the fact that Portugal is a small economy open to the exterior, that promoted a series of privatizations (SOE, iii.9, rank 9th) and a "golden visa" programme as a form of external financing. The country has also been able to attract several technological investments due to the competitive value of its qualified labour.

Despite the good performance in terms of Economic Value, there are still great opportunities for improvement such as unemployment (EMU, iv.12, rank 22nd), and in particular youth unemployment (YUN, iv.12, rank 20th), and the health care services (DHC, iv.10, rank 20th). The covid-19 pandemic crisis has made the need to correct the weaknesses of the health system all the more evident.

The worse performance in terms of Political Value stems from significant regional disparities (REG, iii.7, rank 25th), the low quality of public services (GPS, iii.7, rank 19th), the huge corporate tax burden (DCT, iii.7, rank 25th) all which contribute to the weak competitiveness of the Portuguese economy and low level of investment along with the high and extractive general tax burden (DTR, iii.7, rank 21st). In this respect, the mediocre nature of public expenditure (DBT, iii.9, rank 29th), which represents a strong extraction of value from future taxpayers' generations, should also be highlighted.

As for political and the economic power, Portugal outperforms the average of surveyed countries. Small countries are often at risk to be at the mercy of powerful elites, yet Portugal boasts high competition due to the good firm entry and exit dynamics in several markets. In this context, the number of large companies is small, contributing to a low concentration of the economic power.

The results at the level of Political Power derive mainly from E.U. membership (Political Globalization, rank 8th) and from the effective institutional arrangements of municipalism, regional coordination commissions and its autonomous regions (Political Decentralization, rank 8th). Additionally, the imposition of quotas for gender diversity in public offices, in the state-owned business sector and in public companies contributes to the good performance in this area (WBL, i.3, rank 4th).

4.2 Elite quality and inequality

Since the EQx represents the first attempt to measure the novel concept of elite quality, index scores cannot be directly validated by comparing them to some existing measure thereof. However, the underlying theoretical framework hints at distributive implications of different levels of elite quality: with high quality elites giving more than they take, a country scoring high on the EQx is expected to be characterized by a more equal society, and vice versa. Interestingly, this is indeed the case. The following two scatterplots in Figure 1 show how the EQx relates to two measures of inequality: the share of pre-tax national income accruing to the top 10% (on the left) and the Gini index (on the right). A lower score in one of the inequality measures indicates a more equal society.

The negative correlation with the Gini index (Pearson correlation coefficient: -0.525) as well as the share of pre-tax national income accruing to the top 10% (-0.773) is quite important. In fact, with all equality indicators omitted for the analysis[11], the focus can be drawn on the power and value aspects of elites. The negative correlation with the Gini index may suggest that better elites, by favoring aggregate growth, investment, and innovation, produce benefits especially to the middle- and lower-income strata of the population. Conversely, low quality elites take advantage of their power to increase their wealth at the expense of the less powerful, and usually poorer, segments of society. Hence better elites reduce inequality, while bad elites running extractive business models increase it.

[11] Before the EQx is related to each inequality measure, a purged EQx is calculated that omits the two inequality related indicators *Billionaire's wealth as % of GDP* (ii.5 BIW) and *Top 10% share of pre-tax national income* (iii.8 INE).

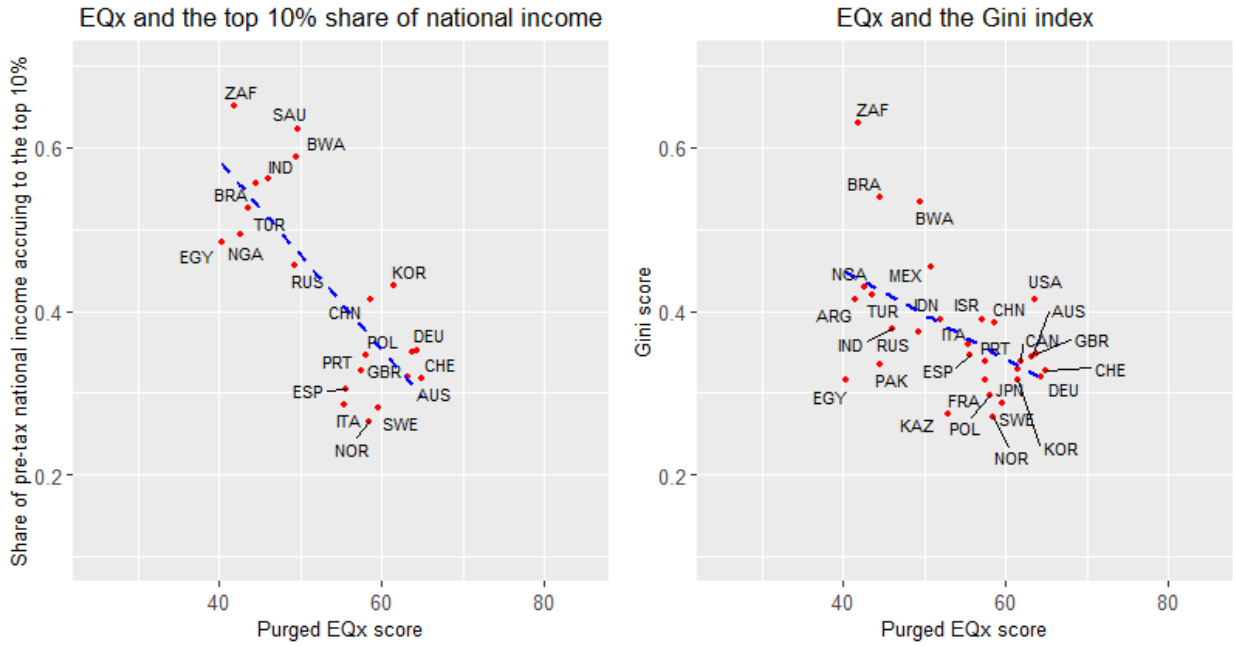

Figure 1. Elite quality and inequality.

Note: The dashed line indicates a fitted regression line. The purged EQx omits all inequality related indicators.

Of course, a correlation is no proof of causation. It could be possible that a long history of inclusive institutions (Acemoglu and Robinson 2012) allow the least powerful social classes to keep the more powerful elites in check away of rent seeking, thereby preventing them to abuse of their power and to appropriate a too large share of value added. However, in either case, from a policy perspective our index appears to provide a promising lever to achieve the social objective of combined efficiency and equality.

4.3 Comparative analysis of the EQx with other indices

We gauge the explanatory space of the EQx by investigating how the EQx relates to other established indices. We compare the EQx to six indices of different domains of human and economic development: (1) the Ease of Doing Business Index or DB (World Bank 2020a) which

assesses the regulatory framework faced by the private sector, (2) the Global Competitiveness Index or GCI (Schwab 2019) which tracks national competitiveness, (3) the Global Innovation Index or GII (Cornell University, INSEAD and WIPO 2019), (4) the Human Development Index or HDI (United Nations Development Programme 2019) which measures human development, (5) the Environmental Performance Index (2020) or EP which summarizes environmental and sustainability issues, and (6) an indicator for Happiness retrieved from the World Happiness Report (Helliwell et al. 2020).

Table 6 provides the correlation coefficients between indices. Since the DB, GCI and EPI serve as a basis for some the EQx indicators[12], the EQx is purged from the respective indicators before examining the relation between the resulting adjusted EQx and the DB, GCI and EPI, respectively.

A key question that research on elite quality will have to address is whether EQx has its own explanatory space on both theoretical and empirical grounds. Regarding the latter, the comparison with other indices provides initial answers. The differences in Pearson correlation coefficients are small but revealing, implying that EQx is empirically not disassociated from leading indices. The question then becomes the extent to which a comparative analysis tells us something other indices do not. From an applied perspective, the question is whether the differences are relevant for policy in terms of suggesting discrete measures. We know, for instance,

[12] The DB enters the EQx in three ways: (1) as indicator i.2 DBI Institutional quality, as well as via two of DB's own indicators that enter the EQx as indicators: (2) i.2 PMI Protecting minority investors and (3) II.6 ENR Firm entry ratio. Similarly, three of the GCI's own indicators enter the EQx as indicators: (1) i.1 GRC Government's responsiveness to change, (2) i.2 ECR Ease to challenge regulations, (3) iv.11 DOI inflation (dev. fm optimum). The EPI enters the EQx as an individual indicator iii.9 EPI Environmental Performance Index.

that for the Gini index, even small differences can have a large social impact and are worth addressing.

Table 6. Pearson correlation coefficients between EQx and other indices

	xEQ (1)	*DB (2)*	*GCI (3)*	*GII (4)*	*HDI (5)*	*EPI (6)*	*Happiness (7)*
xEQ	1						
DB	0.831	1					
GCI	0.931	0.871	1				
GII	0.88	0.796	0.946	1			
HDI	0.794	0.792	0.890	0.815	1		
EPI	0.733	0.641	0.829	0.819	0.881	1	
Happiness	0.678	0.559	0.727	0.694	0.771	0.810	1

Note: EQx indicators based on the DB, GCI and EPI are respectively omitted from the EQx when calculating the pairwise correlation between DB, GCI and EPI with the EQx in column (1). Coefficients are rounded to three decimals. All correlation coefficients are significant at the 0.1% level.

Figure 2 hence illustrates the correlation coefficients from a different perspective, showing the distances of each index in relation to other indices. We find that the EQx' set of correlations (on the far left) are more clustered than those of the DB, EPI or the Happiness indicator, which is not surprising, as they measure more specific, discrete phenomena like institutions or the environment. At the same time, the correlation coefficients are more spread out than those of the GCI and HDI, possibly indicating that EQx transcends the phenomenological range captured by these indices. One might claim EQx's positioning as a 'bridge space' between two types of indices, the narrow, contained phenomena indices and the more general economic and human development indices. Specifically, GCI's stronger correlation with the set of selected indices might imply that EQx extends the explanatory power of competitiveness with a novel conceptual perspective on elites, i.e., the two indices do not overlap and rather are complementary in context of policymaking. For DB's institutional quality index, a theme for further research would be one of directionality

and whether elite quality is the independent variable for certain social and economic indicators it theoretically purports to be.

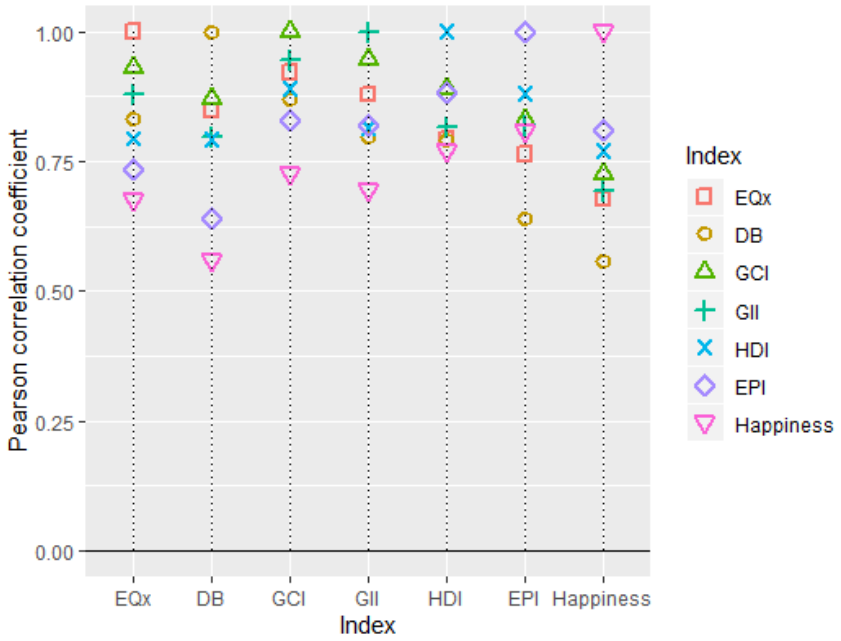

Figure 2. Distances among leadig human and economic devleopement indices, illustrating correlation coefficients acrross indices.

In short, this section's examination shows the potential of EQx to provide insight and policy ideas in a manner similar to what other leading indices do. The comparative discussion vis-à-vis existing indices will be ongoing as EQx establishes a unique empirical place to complement its theoretical positioning, resulting in an explanatory space for elite quality potentially relevant in the areas of economics, development and public policy, both from research and applied perspectives.

5 Sensitivity analysis

The following section has two goals. Firstly, to validate the judgement calls discussed in the methodology section and secondly, to address the critical view that data constraints limit the cross-

country comparability of EQx scores. This is achieved by gauging how sensitive the EQx scores and country ranking are, ceteris paribus, to changes in key modelling assumptions and modifications of its setup (OECD 2008, 34; Santeramo 2017, 131).

We refer to the EQx calculated according to the previously discussed methodology as baseline EQx. The robustness of the baseline EQx is tested by comparing country scores and rankings across alternative specifications. In most cases, this is accomplished by computing Spearman and Kendall Tau-b correlation coefficients, i.e. two non-parametric measures of the strength and direction of statistical association, between the rankings (OECD 2008, 81). Thus, the similarity in the baseline and alternative ranking can be quantified and assessed. This approach is widely used, for instance to investigate the robustness of the Corruption Perceptions Index (Álvarez-Díaz et al. 2018, 10ff), the European Well-being Index (Ivaldi, Bonatti and Soliani 2016, 409), and the Multidimensional Poverty Index (Alkire and Santos 2014, 260ff).

The following sections assess the index' sensitivity with respect to the (1) selection of indicators, (2) data quality, (3) choice of normalization scheme, (4) choice of weighting scheme, and (5) choice of aggregation scheme.

5.1 Leave-one-out robustness

The first test aims at showing the balanced structure of the EQx. Are all the 12 pillars similarly important? Are some of them redundant, or, on the contrary, dominating index scores? We test the impact of each pillar on EQx scores and ranking, by excluding one pillar at a time, following the approach presented by Álvarez-Díaz et al. (2018, 21). Figure 3 illustrates the deviation (EQx minus simulation) from baseline scores (left) and baseline ranks (right). The distribution of the differences in country scores is illustrated by vertical lines for each excluded pillar. Boxes include

50% of all countries and the horizontal line within a box indicates the median. A small box and short vertical line close to the zero-difference horizontal red dashed line indicates that the respective pillar does not significantly affect the final index score (left figure) or ranking (right figure).

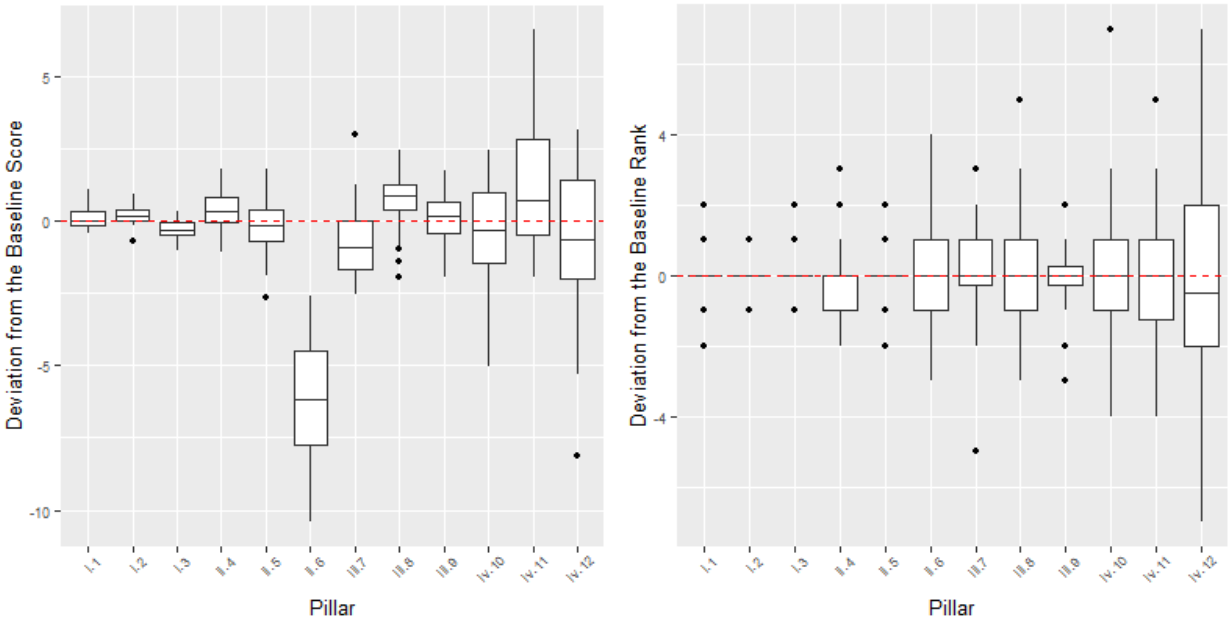

Figure 3. Deviation from baseline EQx when excluding one pillar at a time.

In terms of its effect on index scores, pillar 6 is the most influential pillar. Its omission would lead to higher index scores for all countries. Most importantly, all pillars contribute somewhat to EQx scores.

However, small changes might imply substantial shifting in the ranking. As can be seen in the right figure, pillar 12 being the most influential pillar, its omission potentially shifts a country's ranking the most. However, the tests show that for 50% of countries, omitting a pillar affects their ranking by only up to one position for the first ten pillars, and up to a maximum of two positions

for pillars 11 and 12. The median deviation from the baseline EQx rank is zero or close to zero in each case. Omitting one of the pillars 1, 2, 3, 5 or 9 does not affect the rank position at all for almost all countries.

Figures B1 and B2 in the online appendix test the sensitivity of the index to the selection of underlying indicators and show the deviation from baseline scores and ranking when excluding one indicator at a time. Reassuringly, in almost all cases, excluding one indicator does not change the rank of a country at all or only by one rank. Hence, we conclude that while all indicators and pillars contribute somehow to the EQx, with some possibly having a larger impact than others, no indicator and no pillar dominates the final ranking.

5.2 Implications of data constraints

An obvious concern is that missing values are not missing entirely at random but based on a systematic pattern (OECD 2008, 24): data availability might be related to a country's elite quality. This could represent an endogeneity bias for the EQx. The scatterplot in Figure 4 illustrates the relation between EQx country scores, and the number of indicators used for calculation. On average, the EQx is calculated using 61.1 indicators. Botswana has the least data (40 indicators), while Germany and the United Kingdom have the most (71 indicators).

As suspected, there generally appears to be a positive relation between data availability, i.e. the number of indicators used for index computation, and resulting index scores. The scatterplot roughly takes the shape of an inverse-L. Countries with more data tend to score higher on the EQx. Unsurprisingly, the Pearson correlation coefficient is positive and amounts to 0.559.

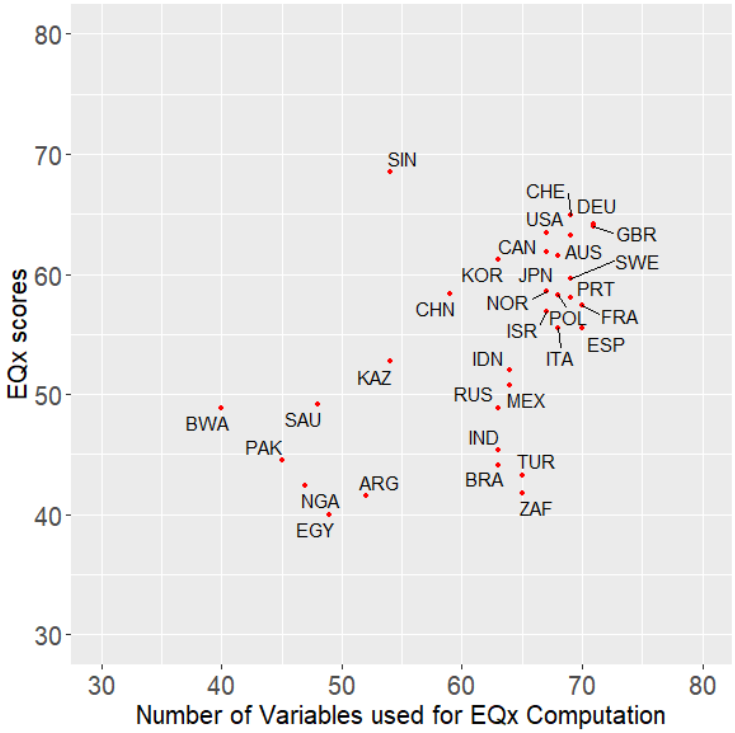

Figure 4. Data availability and EQx scores.

However, it seems that this relation is not particularly strong. We use a multiple comparison test to compare the mean of EQx country scores grouped per number of indicators used for score calculation. We calculate t-tests distinguishing four groups: countries that have data on (1) 60 indicators or less, (2) between 61 and 64 indicators, (3) between 65 and 67 indicators, and more than 68 indicators. Applying a Bonferroni correction for multiple testing, the four group means of EQx scores are not different from each other at the 5% significance level.

More importantly, a positive relation between country scores and data availability is not necessarily an indicator of a bias: high quality elites may allow for and foster the collection of data irrespective of the outcome, while conditions might not be favorable for data collection in countries with low quality elites. Provided the existing indicators are unbiased, index values are not biased, but less precise. The state of elite quality is depicted using less, but nevertheless correct,

information. We are confident that this argument applies here, since the EQx uses data of renowned and trustworthy international organizations.

5.3 Robustness to the normalization scheme

As outlined in section 3.4, data is normalized using the 95% trimmed mean and standard deviation, in order to obtain robust estimates of the mean and the standard deviation that are less susceptible to outliers. Since the bottom and top 2.5% of the data are thus excluded for computation, this implies a loss of information. We evaluate the sensitivity of the EQx to this method, by calculating index scores using several trimming thresholds during the normalization process. Table 7 shows that the resulting rankings are highly correlated with the baseline ranking: the correlation coefficients approach unity. This suggests that the EQx is stable to changes in the trimming threshold used for normalization.

Table 7. Correlation coefficients between the EQx and alternative ranking using different trimming thresholds

	No trimming	*97.5% trimming*	*92.5% trimming*	*90% trimming*
Kendall Tau-b	0.944***	0.988***	0.988***	0.980***
Spearman	0.992***	0.999***	0.999***	0.998***

Note: Coefficients are rounded to three decimals. Both Kendall and Spearman correlation coefficients are significant at the 1% level.

5.4 Robustness to the weighting scheme

As detailed in section 3.5.1, the EQx weighting scheme is established by a panel of experts and based on conceptual deliberations. While the chosen approach is based on careful theoretical

considerations, key insights must be robust to a plausible range of weights. Table 8 compares the baseline ranking to the index ranking resulting from several alternative weighting schemes and shows the respective Kendall Tau-b and Spearman rank correlation coefficients. Columns (2) to (6) apply equal weighting at different aggregation levels, representing a less fine-grained approach than for the baseline specification. Column (7) takes this to the extreme, calculating index values as an unweighted mean of all indicators. Columns (8) to (11) vary the weighting of the two sub-indices, and column (12) applies equal weighting at the index area and sub-index level.

Unsurprisingly, the correlation coefficients are lower the more the weighting scheme is modified. The lowest correlation coefficient is obtained in column (6) when weighting all elements equally within their level of aggregation, representing a fairly strong modification of the baseline weighting scheme. The resulting Kendall Tau-b (Spearman) correlation coefficient still amounts to 0.762 (0.924). Furthermore, the index ranking appears relatively robust to modifications in the weighting at the highest aggregation level, the sub-indices, with the Kendall Tau-b correlation coefficients not being lower than 0.895 (column (11). All correlation coefficients are significant at the 1% level. Hence, we conclude that the EQx ranking is largely robust to slight and even far reaching modifications in the underlying weighting scheme.

Table 8. Robustness to alternative weighting schemes

	EQx (1)	*Altern. 1 (2)*	*Altern. 2 (3)*	*Altern. 3 (4)*	*Altern. 4 (5)*	*Altern. 5 (6)*	*Altern. 6 (7)*	*Altern. 7 (8)*	*Altern. 8 (9)*	*Altern. 9 (10)*	*Altern. 10 (11)*	*Altern. 11 (12)*
Indicator weight within pillar	BAP	equal	✓	equal	equal	equal	Equally	✓	✓	✓	✓	✓
Pillar weight within index area	BAP	✓	equal	equal	equal	equal	weighted	✓	✓	✓	✓	✓
Index area weight within sub-index							indicators					
Political Power	0.34	✓	✓	✓	equal	equal	without	✓	✓	✓	✓	equal
Economic Power	0.66	✓	✓	✓	equal	equal	any other	✓	✓	✓	✓	equal
Political Value	0.34	✓	✓	✓	equal	equal	structure;	✓	✓	✓	✓	equal
Economic Value	0.66	✓	✓	✓	equal	equal	individua	✓	✓	✓	✓	equal
Sub-indices							l final					
Power	0.33	✓	✓	✓	✓	equal	indicator	0.25	0.4	0.45	equal	equal
Value	0.67	✓	✓	✓	✓	equal	weight: $0.013\overline{8}$	0.75	0.6	0.55	equal	equal
Kendall Tau-b	1	0.935***	0.944***	0.903***	0.855***	0.762***	0.766***	0.968***	0.972***	0.923***	0.895***	0.891***
Spearman	1	0.99***	0.991***	0.983***	0.968***	0.924***	0.93***	0.996***	0.997***	0.987***	0.980***	0.978***

Note: The above part of the table shows the weighting scheme used for the EQx (column (1)), as well as 11 alternative weighting schemes (column (2) to (12)). "BAP" indicates weights determined by the Budget Allocation Process, "equal" indicates equal weighting within the respective level. The check mark indicates that the baseline weighting scheme is not changed. The lower part of the table indicates the Kendall Tau-b and Spearman correlation coefficient between the EQx ranking and a ranking using an alternative weighting scheme. Coefficients are rounded to three decimals. Both Kendall and Spearman correlation coefficients are significant at the 1% level.

5.5 Robustness to the aggregation scheme

Next, we examine the EQx' sensitivity towards the underlying function form. We propose to structure this discussion by considering the three benchmark special cases of the constant elasticity of substitution (CES) function (Arrow et al. 1961, 230). Using a CES function, the aggregation scheme at each level of aggregation (indicators to pillar, pillars into index area, index areas into sub-index and sub-indices into final index) can be defined by

$$\bar{x}_{CES} = (\sum_{k=1}^{M} w_k x_k^{\frac{\sigma-1}{\sigma}})^{\frac{\sigma}{\sigma-1}} \qquad (1)$$

where M indicates the number of elements within the considered aggregation level, x_k indicates the value of element k, and w_k its weight. Recall that weights within each aggregation level are characterized by $w_k \epsilon [0,1]$ and $\sum_{k=1}^{M} w_k = 1$ and are obtained from section 3.5.1. The parameter $\sigma \epsilon [0, +\infty]$ indicates the elasticity of substitution. We consider three cases that are listed in Table 9.

Table 9. Alternative aggregation schemes

	Considered σ	*Implied CES*
Case 1	$\sigma \to \infty$	$\bar{x}_{lin} = \sum_{k=1}^{M} w_k x_k$
Case 2	$\sigma \to 1$	$\bar{x}_{geo} = \prod_{k=1}^{M} {x_k}^{w_k}$
Case 3	$\sigma \to 0$	$\bar{x}_{min} = \min(x_1, x_2 \dots, x_N)$

Note: The cases $0 < \sigma < 1$ and $1 < \sigma < \infty$ are also mathematically possible. However, these cases are not meaningful in the context of an index, since the resulting scores are not restricted to the 0 to 100 range specified for the EQx.

In the first case, when $\sigma \to \infty$, the CES takes a linear form (Saito 2012, 5). This approach implies constant and full compensability between the aggregated elements (perfect substitutes) (OECD 2008, 33; Munda 2012, 338).The EQx applies this linear aggregation method, where a weighted arithmetic mean is taken at each level of aggregation.

However, one might argue, that scoring low in one sub-index should imply having to score substantially higher in the other sub-index to improve the overall score, implying a lower level of compensability. This can be realized with a CES where σ goes to one, yielding an aggregation scheme where a geometric mean is taken at each level of aggregation (Case 2). This functional form is the well-known Cobb-Douglas function (Saito 2012, 7).

Alternatively, one might argue that index aggregation should not allow for any substitutability between the aggregated elements. With the elasticity of substitution converging to zero (Case 3), the CES can be transformed to yield the Leontief function (Csontos and Ray 1992, 237). In this case, the aggregated values are constrained by the minimum value of the considered elements (Saito 2012, 1).

The sensitivity of the EQx towards the underlying functional form is assessed by applying the described functional forms at different levels of aggregation. Note that the EQx method to address missing values builds upon the assumption that indicators within the same pillar measure the same phenomenon, implying full compensability between indicators. Hence, this method can only be meaningfully applied using the linear aggregation scheme. In consequence, for all alternative specifications, the aggregation of indicators to pillars remains unchanged to the baseline (linear aggregation) and alternative aggregation schemes are only considered for the remaining, higher levels of aggregation.

Table 10 compares eight alternative methods to the baseline aggregation scheme. Reassuringly, the EQx and alternative rankings are highly and significantly correlated. When using a geometric scheme at any one of the considered aggregation levels, the Kendall Tau-b (Spearman) correlation coefficient amounts to at least 0.984 (0.999) (column 4). Applying a Leontief function at one of the considered aggregation levels implies a ranking with a Kendall Tau-b (Spearman)

correlation coefficient of 0.762 (0.919) (column 6) or higher. Even when using a Leontief function for all considered aggregation levels, the Kendall Tau-b (Spearman) correlation coefficient still amounts to 0.585 (0.733) and remains highly significant. These results suggest that the EQx is largely robust to its underlying functional form.

Table 10. Robustness to alternative aggregation schemes

	EQx *(1)*	*Altern. 1* *(2)*	*Altern. 2* *(3)*	*Altern. 3* *(4)*	*Altern. 4* *(5)*	*Altern. 5* *(6)*	*Altern. 6* *(7)*	*Altern. 7* *(8)*	*Altern. 8* *(9)*
Indicators to pillar	linear	✓	✓	✓	✓	✓	✓	✓	✓
Pillars to index area	linear	geometric	✓	✓	geometric	Leontief	✓	✓	Leontief
Index Areas to sub-index	linear	✓	geometric	✓	geometric	✓	Leontief	✓	Leontief
Sub-indices to index	linear	✓	✓	geometric	geometric	✓	✓	Leontief	Leontief
Kendall Tau-b	1	0.96***	0.996***	0.984***	0.96***	0.762***	0.911***	0.843***	0.585***
Spearman	1	0.993***	0.999***	0.999***	0.994***	0.919***	0.986***	0.957***	0.733***

Note: The above part of the table shows the aggregation scheme used for the EQx (column (1)), as well as eight alternative aggregation schemes (column (2) to (9)). Three methods are compared: a "linear" scheme explained by Case 1, a "geometric" scheme laid out by Case 2, and a "Leontief" scheme presented by Case 3 (see Table 7). The check mark indicates that the baseline weighting scheme is not changed. The lower part of the table indicates the Kendall Tau-b and Spearman correlation coefficient between the EQx ranking and a ranking using an alternative aggregation scheme. Coefficients are rounded to three decimals. Both Kendall and Spearman correlation coefficients are significant at the 1% level.

6 Conclusion

The aim of this paper was two-fold. Firstly, we proposed a sound and transparent methodology to comprehensively measure the novel concept of elite quality. The EQx index provides an easy to interpret summary, a practice-oriented heuristic, of the various conceptual political economy dimensions of the elite quality construct, by providing a solution to aggregate the microeconomic perspective of value creation business models. As a result, it allows us to compare the performance of countries on a common scale and purse important research questions. For instance, the index turns out to be negatively correlated with the Gini index, which suggests that in countries where elites are less powerful or more committed to value creation business models, citizens will be more equal.

In this vein, EQx can serve as a tool to communicate insights and can be used as basis for discussions with policymakers, decision-makers running elite business models and, hopefully, with the general public.

All the underlying assumptions and methods used for index construction have been presented in detail, to render the index as transparent, justifiable and reliable as possible. The different index levels allow for both an overall quantification of a country's elite quality, as well as an in-depth analysis regarding specific aspects of elite quality at four different levels of analysis (index, sub-index and index area, pillar and finally at the indicator level). The methodology can be applied to improved datasets covering a larger number of countries and additional indicators. The variety of robustness tests run suggest that EQx scores and ranking are not driven by individual indicators, different levels of data availability or the chosen normalization method, and are largely robust to a range of alternative weighting and aggregation schemes.

Secondly, the proposed methodology is applied using data on 32 countries and 72 indicators. Thus, the EQx is the first internationally comparable index that quantifies and operationalizes elite quality. The index offers unique insights, possibly controversial but certainly interesting, and enriches the options to analyze the political economy of countries and future economic and human growth prospects. The EQx reveals substantial differences in the state of elite quality across the considered countries. We demonstrate the usefulness of the EQx by presenting three country portraits, on the U.S., Germany, and Portugal, levering the novel analytical toolbox.

This paper has focused on presenting the index construction process and scrutinizing the robustness of EQx scores and ranking - ceteris paribus - to changes in key modelling choices. We have refrained from an econometric analysis using the index and its constellation of sub-indices and pillars, because this will be the focus of future research.

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Conflict of interest

The authors have no conflicts of interest to declare.

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Appendix

A1 EQx indicator list

Table A1. EQx indicator list

Index Area / *Pillar* / *Indicator*		*Description*	*Coin side*	*Country coverage*	*Data type*	*Within pillar weight (BAP)*	*Within EQx weight*	*Source*
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
i Political Power								
i.1 State Capture								
COR	Political corruption	Political corruption subset of the Varieties of Democracies Database (V-DEM)	E	31	Index	19.5%	0.8%	Varieties of Democracies (V-DEM)
MOB	Social Mobility	Intergenerational mobility database (GDIM)	C	29	Raw	15.6%	0.7%	The World Bank, GDIM Database
PDE	Political decentralization	Political decentralization subset of the World Bank decentralization indicators	C	32	Index	14.1%	0.6%	The World Bank, Policy Research Working Paper
ADE	Administrative decentralization	Administrative decentralization subset of the World Bank decentralization indicators	C	32	Index	10.9%	0.5%	The World Bank, Policy Research Working Paper
PGL	Political globalisation	Political dimension of the KOF Globalization index	C	32	Index	12.7%	0.5%	ETHZ, The KOF Globalisation Index
WPI	Women Power Index	Women Power Index	C	32	Index	14.1%	0.6%	The Council of Foreign Relations (CFR)
GRC	Government's responsiveness to change	Indicator of the WEF Global Competitiveness Index	C	32	Index	13.1%	0.5%	World Economic Forum, The Global Competitiveness Index
i.2 Regulatory Capture								
DBI	Institutional quality	World Bank Ease of Doing Business Index	C	32	Index	32.9%	1.4%	The World Bank, Doing Business Index
CRO	Crony-capitalism	Percent of wealth accumulated by billionaires from activities in industries classified as “Crony” by the Economist, i.e. “susceptible to monopoly or requir[ing] licensing or highly depend on the government” (The Economist, Website)	E	30	Raw	29.2%	1.3%	Forbes [Billionaires list] & The World Bank [GDP]
EXP	Expropriation risk	"The risk of expropriation encompasses all discriminatory measures taken by a host government which deprive the investor of its investment without any adequate compensation” (The Global Economy, Website)	E	32	Index	19.2%	0.8%	Credendo

PMI	Protecting Minority Investors	Indicator of the World Bank Ease of Doing Business Index	C	32	Index	11.9%	0.5%	The World Bank, Doing Business Indicators
ECR	Ease to Challenge Regulations	Indicator of the WEF Global Competitiveness Index	E	32	Index	6.8%	0.3%	World Economic Forum, The Global Competitiveness Index
i.3 Human Capture								
UNI	Unionization rate	Total membership of (independent) trade unions in a nation as percentage of all employees	E	24	Raw	20.2%	0.6%	International Labor Organisation, ILOSTAT Database
PSE	Public sector employees as % of total employment	Public sector employment in general government sector plus employment of public corporations, minus employees in public health and education, as percentage of total employment	C	32	Raw	18.0%	0.6%	International Labor Organisation, ILOSTAT Database
CBC	Collective Bargaining Coverage	"Number of employees whose pay and/or conditions of employment are determined by one or more collective agreement(s) as percentage of the total number of employees" (ILOSTAT, Website)	E	20	Index	16.2%	0.5%	International Labor Organisation, ILOSTAT Database
GSI	Global Slavery Index	Global Slavery Index	E	32	Index	25.1%	0.8%	The Minderoo Foundation Pty Ltd and the Walk Free Foundation
WBL	Women, Business and the Law	Women, Business and the Law index	C	32	Index	20.4%	0.6%	The World Bank
ii Economic Power								
ii.4 Industry Dominance								
IEE	Top 3 industries exports as % of exports	Sum of the exports of a nation's 3 top exporting industries as percentage of GDP	E	31	Raw	22.4%	1.1%	United Nations, Comtrade Database [exports] & The World Bank [GDP]
IRE	Top 3 industries as % of GDP	Sum of the revenues of a nation's 3 biggest industries as percentage of GDP	E	24	Raw	25.3%	1.2%	UNdata, Accounts Official Country Data
ECI	Economic Complexity Index	Economic Complexity Index	C	28	Index	38.4%	1.8%	The Observatory of Economic Complexity (OEC)
IVA	Top 3 industries as % of VA	Sum of the value-add induced by a nation's 3 top industries as percentage of total value-add	C	32	Raw	13.9%	0.7%	UNdata, National Accounts Estimates of Main Aggregates
ii.5 Firm Dominance								
PRO	Top 10 firms profitability	Average profitability of a country's top 10 companies in terms of profits	E	32	Raw	13.4%	0.7%	ThomsonOne
SME	SME per 1,000 people	Subset of the MSME Database	C	30	Raw	15.0%	0.8%	SME Finance Forum, MSME Economic Indicators
ATX	Antitrust exemptions	Subset of the OECD Product Market Regulations (PMR) Database	E	12	Index	18.0%	0.9%	OECD, Product Economic Regulation Statistics
BIW	Billionaires' wealth as % of GDP	Sum of a nation's billionaires' total accumulated wealth as percentage of GDP	E	29	Raw	15.6%	0.8%	Forbes [Billionaires list] & The World Bank [GDP]
FKG	Top 10 firms market cap as % of GDP	Sum of the market capitalizations of a country's 10 largest companies - defined by market capitalization - as percentage of GDP	E	32	Raw	13.5%	0.7%	ThomsonOne
FRG	Top 3 firms revenues as % of GDP	Sum of the revenues of a country's 3 largest firms - defined by revenues - as percentage of GDP	E	32	Raw	5.9%	0.3%	ThomsonOne

FRR	Top 30 firms revenues as % of GDP	Sum of the revenues of a country's 30 largest firms - defined by revenues - as percentage of GDP	E	31	Raw	9.7%	0.5%	ThomsonOne
LIB	Lerner Index banking sector	Difference between output prices and marginal costs. "Prices are calculated as total bank revenue over assets, whereas marginal costs are obtained from an estimated translog cost function with respect to output" (World Bank, Website)	E	28	Raw	8.9%	0.5%	The World Bank
ii.6 Creative Destruction								
TUL	Listed firms turnover, long run 15 years	Long-run turnover rate of firms in a country's leading stock exchange index. The average turnover of the last 15 years is calculated	C	21	Raw	7.5%	0.9%	Thomson Reuters Eikon
TUS	Listed firms turnover, short run 3 years	Short-run turnover rate of firms in a country's leading stock exchange index. The average turnover of the last 3 years is calculated	C	21	Raw	9.3%	1.2%	Thomson Reuters Eikon
ENT	Entrepreneurship	Global Entrepreneurship and Development Index	C	32	Index	21.4%	2.7%	The Global Entrepreneurship and Development Institute (GEDI)
VCK	VC finance	Venture capital (VC) investment in high-growth venture companies divided by the total investment in an economy	C	32	Raw	21.4%	2.7%	Main: OECD.Stat & various others
RND	R&D % GDP	Investments in research and development (R&D) as percentage of GDP	C	28	Raw	10.6%	1.3%	UNESCO Institute for Statistics
BTS	Barriers to start-ups	Average (equal weighting) of 2 subsets (BTE & ABS) of the OECD Product Market Regulations (PMR) Database	E	24	Index	15.1%	1.9%	OECD, Product Economic Regulation Statistics
ENR	Firm entry ratio	Number of new companies per 1,000 working-age people (15-64)	C	29	Raw	10.5%	1.3%	The World Bank, Doing Business Indicators
EXR	Firm exit ratio	Death rate of companies, i.e. the "number of enterprise deaths in the reference period (t) divided by the number of enterprises active in t" (OECD, Website).	C	9	Raw	4.3%	0.5%	OECD
iii Political Value								
iii.7 Giving Income								
SNT	Subsidies and transfers as % of expenses	Subsidies and transfers as percentage of payments for operating activities of the government	E	28	Raw	22.3%	1.8%	International Monetary Fund, Government Finance Statistics Yearbook (retrieved from the World Bank)
REG	Regional redistribution as % of government budget	Government wealth transfers between a country's geographical areas as percentage of government budget	E	31	Raw	19.4%	1.6%	Fraser Institute
EDU	School life expectancy	"Total number of years of schooling (primary through tertiary) that a child of school entrance age can expect to receive" (UNESCO, Website)	C	27	Raw	20.4%	1.7%	UNESCO Institute for Statistics (UIS.Stats)

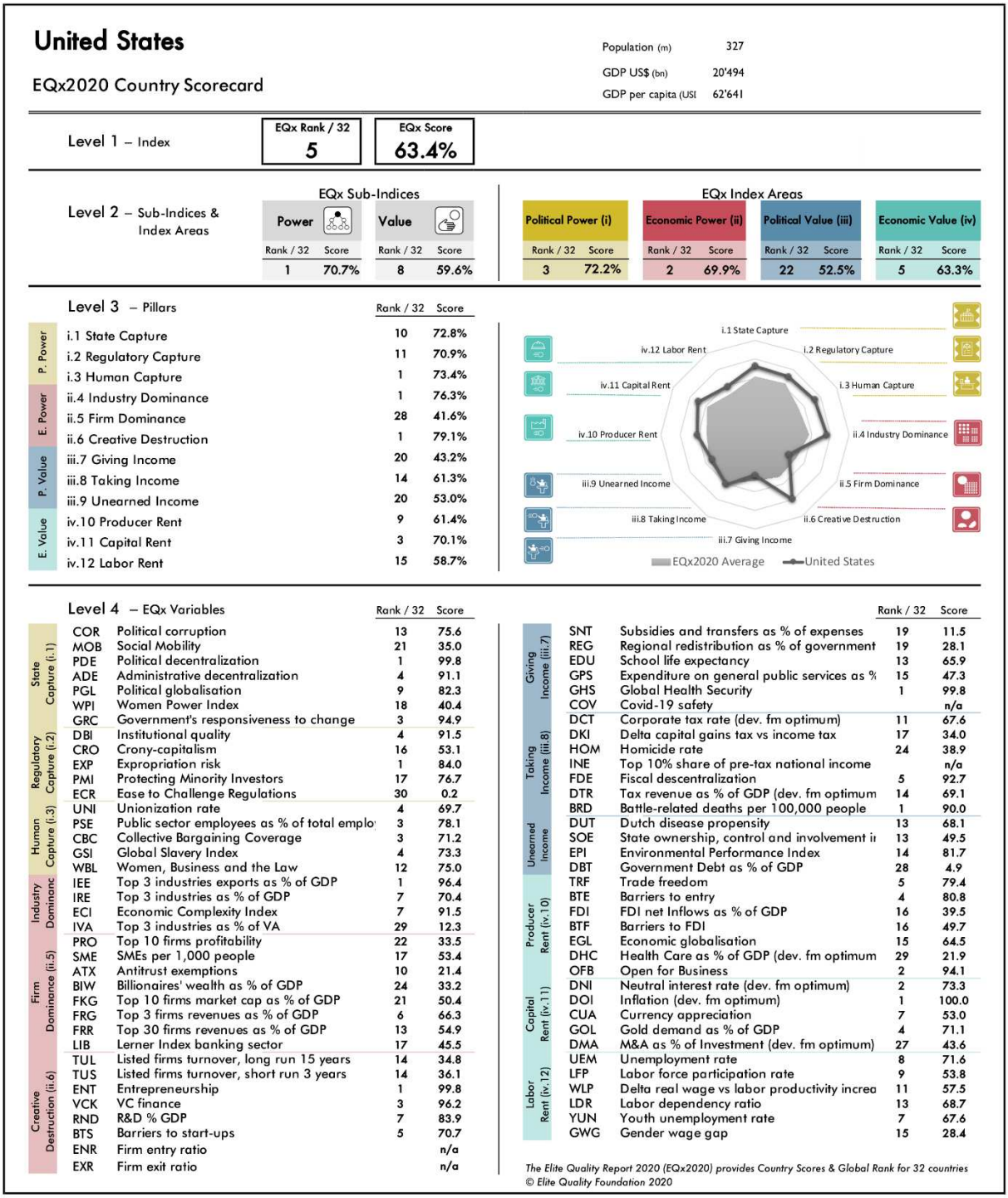
GPS	Expenditure on general public services as % of GDP (dev. fm optimum)	Subset of the Classification of the Functions of Government (COFOG) Database.	C	21	Raw	13.7%	1.1%	International Monetary Fund (IMF), Government Finance Statistics (GFS)
GHS	Global Health Security	Global Health Security Index	C	32	Index	8.6%	0.7%	GHS Index by the NTI, JHU and EIU
COV	Covid-19 safety	COVID-19 Safety Index	C	20	Index	15.7%	1.3%	Deep Knowledge Group
iii.8 Taking Income								
DCT	Corporate tax rate (dev. fm optimum)	Highest statutory corporate tax rate at central government level	C	32	Raw	12.7%	1.0%	KPMG
DKI	Delta capital gains tax vs income tax	Delta between the individual capital gains tax rate and the individual income tax rate.	C	28	Raw	15.7%	1.3%	PWC [Capital Gain Tax] & KPMG [Personal Income Tax]
HOM	Homicide rate	Number of homicides per 100,000 people per year	E	28	Raw	22.9%	1.9%	United Nations Office on Drugs and Crime (UNODC)
INE	Top 10% share of pre-tax national income	Share of pre-tax national income accruing to the 90-100 percentile of adult individuals (over 20 years old)	E	21	Raw	10.2%	0.8%	World Inequality Lab, World Inequality Database (WID)
FDE	Fiscal descentralization	Average of the 36 Indicators of the IMF's Fiscal Decentralization dataset	C	22	Index	13.5%	1.1%	International Monetary Fund (IMF)
DTR	Tax revenue as % of GDP (dev. fm optimum)	Tax revenue as percentage of GDP	C	29	Raw	13.3%	1.1%	International Monetary Fund, Government Finance Statistics Yearbook & World Bank and OECD GDP estimates (retrieved from the World Bank)
BRD	Battle-related deaths per 100,000 people	Deaths in battle-related conflicts per 100,000 people	E	32	Raw	11.8%	1.0%	Uppsala Conflict Data Program (retrieved from the World Bank)
iii.9 Unearned Income								
DUT	Dutch disease propensity	Rents derived from natural resources as percentage of GDP	E	32	Raw	22.1%	1.4%	The World Bank
SOE	State ownership, control and involvement in business	Average (equal weighting) of 6 subsets (STC, POW, IBO, SCP, DCB, GIN) of the OECD Product Market Regulations (PMR) Database	E	24	Index	17.6%	1.1%	OECD, Product Market Regulations Statistics
EPI	Environmental Performance Index	Environmental Performance Index	C	32	Index	34.2%	2.1%	Yale Center for Environmental Law & Policy
DBT	Government Debt as % of GDP	Government Debt as % of GDP	E	32	Raw	26.1%	1.6%	The Global Economy
iv Economic Value								
iv.10 Producer Rent								
TRF	Trade freedom	Index of Economic Freedom	C	32	Index	20.0%	2.5%	The Heritage Foundation, Index of Economic Freedom
BTE	Barriers to entry	Average (equal weighting) of 6 subsets (LPS, CSR, ABC, ABP, LBR, BEN) of the OECD Product Market Regulations (PMR) Database	E	24	Index	21.2%	2.7%	OECD, Product Market Regulations Statistics
FDI	FDI net Inflows as % of GDP	"Net inflows of investment to acquire a lasting management interest (10 percent or more of voting	C	32	Raw	16.8%	2.1%	International Monetary Fund, International Financial Statistics and

		stock) in an enterprise operating in an economy other than that of the investor" (World Bank, Website), as a percentage of GDP						Balance of Payments databases and various others (retrieved from the World Bank)
BTF	Barriers to FDI	FDI Regulatory Restrictiveness Index (FDI Index)	E	28	Index	10.9%	1.4%	OECD, FDI Regulatory Restrictiveness Index
EGL	Economic globalisation	Economic dimension of the KOF Globalization Index	C	32	Index	12.0%	1.5%	ETHZ, The KOF Globalization Index
DHC	Health Care as % of GDP (dev. fm optimum)	Current Health Expenditure as percentage of GDP subset of the WHO Global Health Expenditure Database	C	31	Raw	13.0%	1.7%	World Health Organization, Global Health Expenditure Database
OFB	Open for Business	Open for Business subset of the U.S. News Best Countries 2020 Ranking	C	27	Index	6.0%	0.8%	U.S.News & World Report LP, Best Countries 2020
iv.11 Capital Rent								
DNI	Neutral interest rate (dev. fm optimum)	The neutral interest rate is derived from the following formula: k% + (M1 growth/ GDP growth), with "k%" corresponding to Friedmann's "k" set at 2% and "M1" corresponding to the money supply from central banks	C	24	Raw	31.3%	4.6%	OECD [M1] & World Bank national accounts data [GDP growth]
DOI	Inflation (dev. fm optimum)	Annual percentage change in the Consumer Price Index (CPI)	C	32	Index	22.8%	3.4%	World Economic Forum, The Global Competitiveness Index
CUA	Currency appreciation	Real effective exchange rate (REER)	C	32	Raw	18.4%	2.7%	Bruegel
GOL	Gold demand as % of GDP	Gold demand encompasses the demand (in tons) for gold bars and coins and for jewelry, as a percentage of GDP	E	21	Raw	9.5%	1.4%	World Official Gold supply and demand Statistic
DMA	M&A as % of Investment (dev. fm optimum)	Sum of all M&A deals with a value greater than USD 100m, as percentage of total investment	C	30	Raw	18.0%	2.7%	Thomson Reuters Eikon [M&A] & OECD [Investment]
iv.12 Labor Rent								
UEM	Unemployment rate	"Share of the labor force that is without work but available for and seeking employment" (WB, Website)	E	31	Raw	23.7%	3.8%	International Labour Organization (ILOSTAT database) (retrieved from the World Bank)
LFP	Labor force participation rate	Economically active portion of the population (labor force) divided by the portion of the population aged between 15 and 64 (working-age population)	C	19	Raw	8.7%	1.4%	OECD
WLP	Delta real wage vs labor productivity increases	Delta between real wage increase, measured through labor compensation per hour worked, and labor productivity increase, measured through GDP per hour worked	C	15	Raw	19.6%	3.2%	OECD
LDR	Labor dependency ratio	Dependents i.e. portion of the population aged 0 to 14 and people aged 15 and above that are either outside the labor force or unemployed, as percentage of total employment.	E	32	Raw	10.1%	1.6%	International Labor Organisation (ILOSTAT Database)
YUN	Youth unemployment rate	"Share of the labor force ages 15-24 without work but available for and seeking employment" (KOF, Website)	E	32	Raw	20.5%	3.3%	The World Bank (retrieved from The Global Economy)

GWG	Gender wage gap	"Difference between male and female median wages divided by the male median wages" (OECD, Website)	E	18	Raw	17.3%	2.8%	OECD

Note: List of all indicators considered for the EQx. The first column indicates whether an indicator measures value creation (C) or extraction (E), column (2) provides a short description, column (3) indicates how many countries are covered, column (4) lists the type of the underlying dataset. Column (5) and (6) indicate the indicator's within pillar weight as determined via the Budget Allocation Process (rounded to 1 decimal) as well as the final within EQx weight (rounded to 2 decimals). Weights may not add up to 100 due to rounding. Finally, column (7) gives the source.

A2 Country scorecards



United States

EQx2020 Country Scorecard

Population (m) 327
GDP US$ (bn) 20'494
GDP per capita (US 62'641

Level 1 – Index

EQx Rank / 32	EQx Score
5	63.4%

Level 2 – Sub-Indices & Index Areas

EQx Sub-Indices			
Power		Value	
Rank / 32	Score	Rank / 32	Score
1	70.7%	8	59.6%

EQx Index Areas							
Political Power (i)		Economic Power (ii)		Political Value (iii)		Economic Value (iv)	
Rank / 32	Score	Rank / 32	Score	Rank / 32	Score	Rank / 32	Score
3	72.2%	2	69.9%	22	52.5%	5	63.3%

Level 3 – Pillars

		Rank / 32	Score
P. Power	i.1 State Capture	10	72.8%
	i.2 Regulatory Capture	11	70.9%
	i.3 Human Capture	1	73.4%
E. Power	ii.4 Industry Dominance	1	76.3%
	ii.5 Firm Dominance	28	41.6%
	ii.6 Creative Destruction	1	79.1%
P. Value	iii.7 Giving Income	20	43.2%
	iii.8 Taking Income	14	61.3%
	iii.9 Unearned Income	20	53.0%
E. Value	iv.10 Producer Rent	9	61.4%
	iv.11 Capital Rent	3	70.1%
	iv.12 Labor Rent	15	58.7%

Level 4 – EQx Variables

			Rank / 32	Score
State Capture (i.1)	COR	Political corruption	13	75.6
	MOB	Social Mobility	21	35.0
	PDE	Political decentralization	1	99.8
	ADE	Administrative decentralization	4	91.1
	PGL	Political globalisation	9	82.3
	WPI	Women Power Index	18	40.4
	GRC	Government's responsiveness to change	3	94.9
Regulatory Capture (i.2)	DBI	Institutional quality	4	91.5
	CRO	Crony-capitalism	16	53.1
	EXP	Expropriation risk	1	84.0
	PMI	Protecting Minority Investors	17	76.7
	ECR	Ease to Challenge Regulations	30	0.2
Human Capture (i.3)	UNI	Unionization rate	4	69.7
	PSE	Public sector employees as % of total emplo	3	78.1
	CBC	Collective Bargaining Coverage	3	71.2
	GSI	Global Slavery Index	4	73.3
	WBL	Women, Business and the Law	12	75.0
Industry Dominanc	IEE	Top 3 industries exports as % of GDP	1	96.4
	IRE	Top 3 industries as % of GDP	7	70.4
	ECI	Economic Complexity Index	7	91.5
	IVA	Top 3 industries as % of VA	29	12.3
Firm Dominance (ii.5)	PRO	Top 10 firms profitability	22	33.5
	SME	SMEs per 1,000 people	17	53.4
	ATX	Antitrust exemptions	10	21.4
	BIW	Billionaires' wealth as % of GDP	24	33.2
	FKG	Top 10 firms market cap as % of GDP	21	50.4
	FRG	Top 3 firms revenues as % of GDP	6	66.3
	FRR	Top 30 firms revenues as % of GDP	13	54.9
	LIB	Lerner Index banking sector	17	45.5
Creative Destruction (ii.6)	TUL	Listed firms turnover, long run 15 years	14	34.8
	TUS	Listed firms turnover, short run 3 years	14	36.1
	ENT	Entrepreneurship	1	99.8
	VCK	VC finance	3	96.2
	RND	R&D % GDP	7	83.9
	BTS	Barriers to start-ups	5	70.7
	ENR	Firm entry ratio		n/a
	EXR	Firm exit ratio		n/a

			Rank / 32	Score
Giving Income (iii.7)	SNT	Subsidies and transfers as % of expenses	19	11.5
	REG	Regional redistribution as % of government	19	28.1
	EDU	School life expectancy	13	65.9
	GPS	Expenditure on general public services as %	15	47.3
	GHS	Global Health Security	1	99.8
	COV	Covid-19 safety		n/a
Taking Income (iii.8)	DCT	Corporate tax rate (dev. fm optimum)	11	67.6
	DKI	Delta capital gains tax vs income tax	17	34.0
	HOM	Homicide rate	24	38.9
	INE	Top 10% share of pre-tax national income		n/a
	FDE	Fiscal descentralization	5	92.7
	DTR	Tax revenue as % of GDP (dev. fm optimum	14	69.1
	BRD	Battle-related deaths per 100,000 people	1	90.0
Unearned Income	DUT	Dutch disease propensity	13	68.1
	SOE	State ownership, control and involvement i	13	49.5
	EPI	Environmental Performance Index	14	81.7
	DBT	Government Debt as % of GDP	28	4.9
Producer Rent (iv.10)	TRF	Trade freedom	5	79.4
	BTE	Barriers to entry	4	80.8
	FDI	FDI net Inflows as % of GDP	16	39.5
	BTF	Barriers to FDI	16	49.7
	EGL	Economic globalisation	15	64.5
	DHC	Health Care as % of GDP (dev. fm optimum	29	21.9
	OFB	Open for Business	2	94.1
Capital Rent (iv.11)	DNI	Neutral interest rate (dev. fm optimum)	2	73.3
	DOI	Inflation (dev. fm optimum)	1	100.0
	CUA	Currency appreciation	7	53.0
	GOL	Gold demand as % of GDP	4	71.1
	DMA	M&A as % of Investment (dev. fm optimum)	27	43.6
Labor Rent (iv.12)	UEM	Unemployment rate	8	71.6
	LFP	Labor force participation rate	9	53.8
	WLP	Delta real wage vs labor productivity increa	11	57.5
	LDR	Labor dependency ratio	13	68.7
	YUN	Youth unemployment rate	7	67.6
	GWG	Gender wage gap	15	28.4

The Elite Quality Report 2020 (EQx2020) provides Country Scores & Global Rank for 32 countries

Figure A1. EQx country scorecard of the United States

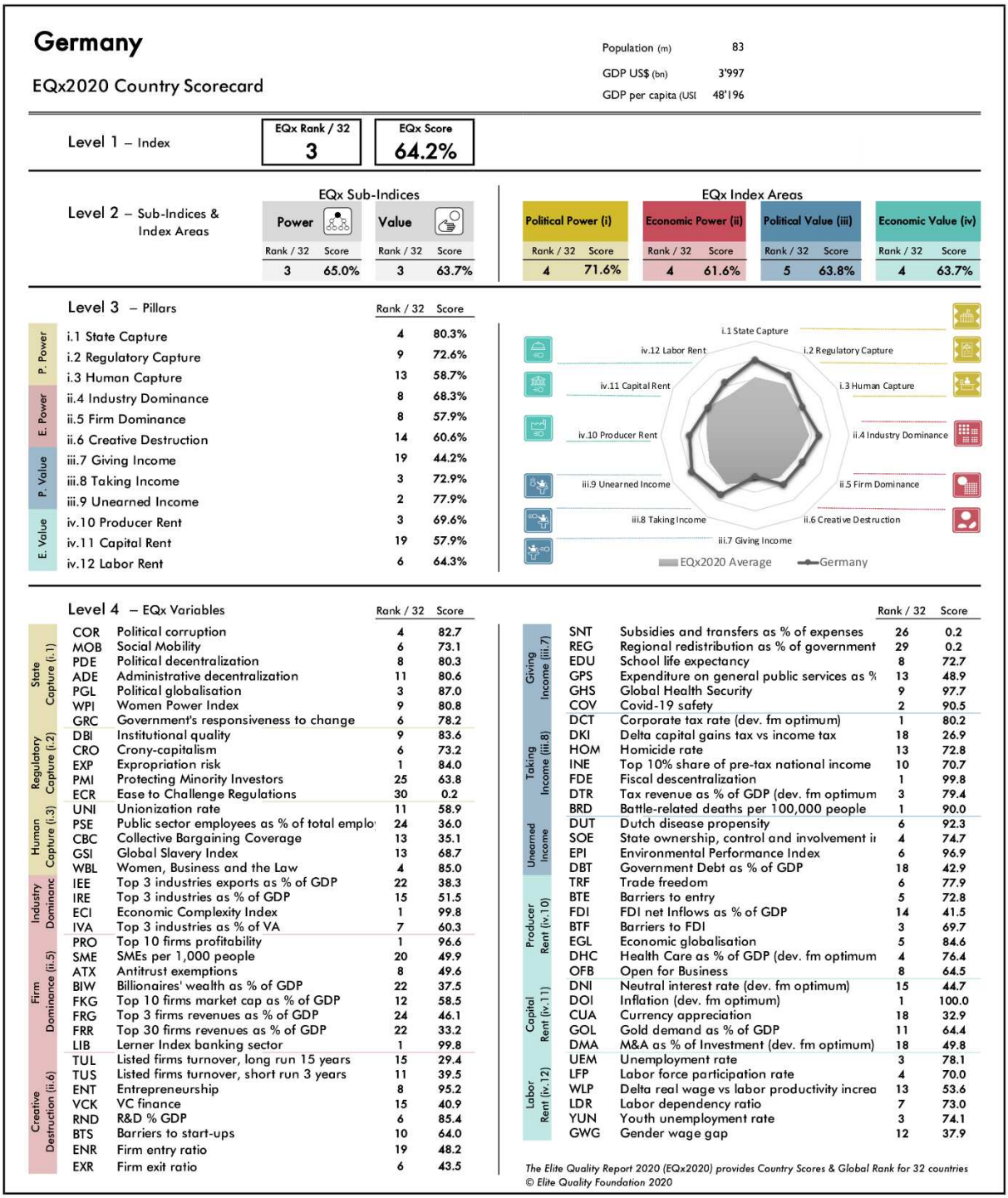


Figure A2. EQx country scorecard of Germany

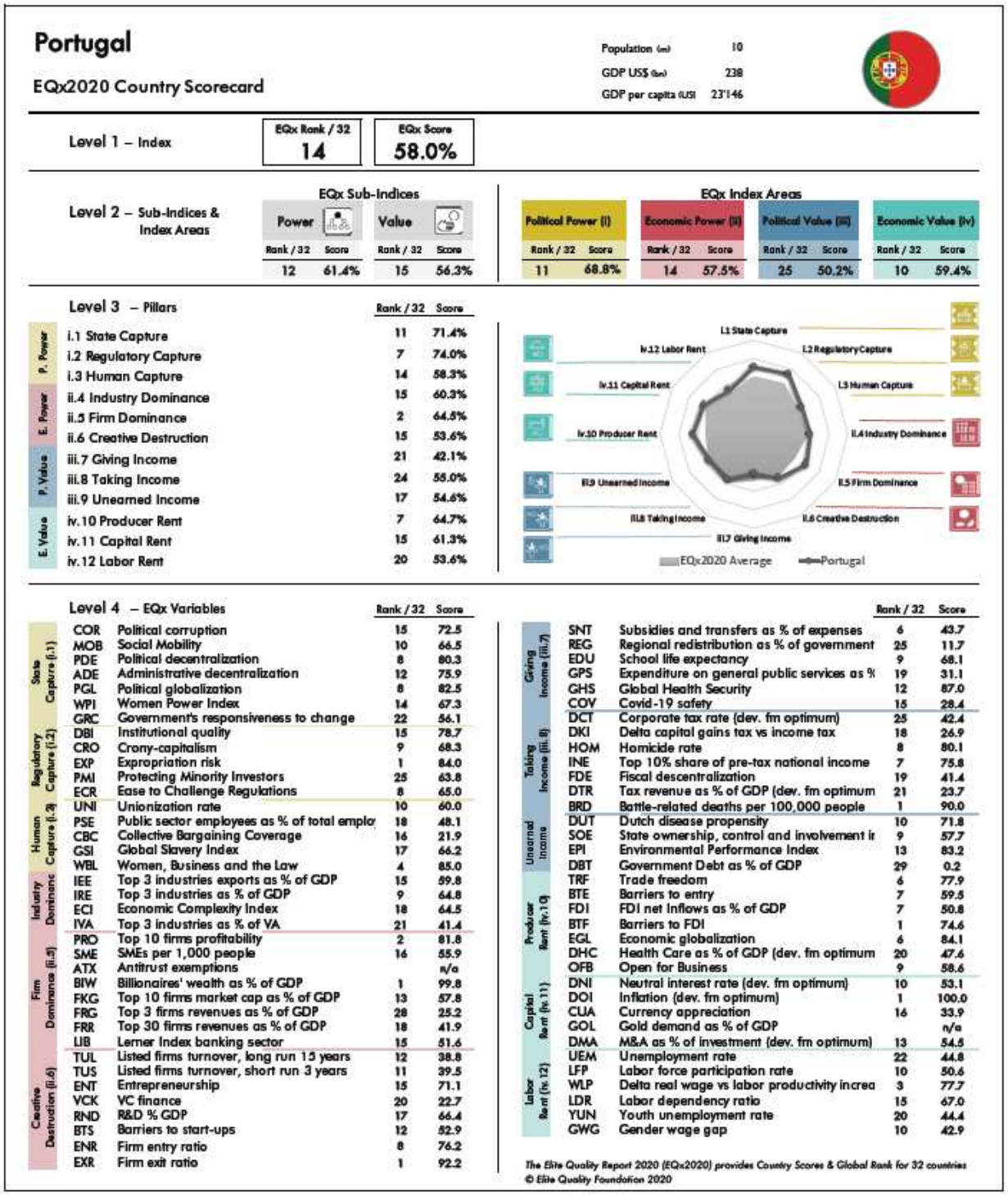


Figure A3. EQx country scorecard of Portugal