

COVERING 98% OF WORLD GROSS DOMESTIC PRODUCT AND 93% OF WORLD POPULATION



2018

INTERNATIONAL PROPERTY RIGHTS INDEX

Full Report



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I. Property Rights in the 21st Century

The new way of producing wealth, to favor the progress of nations and the prosperity of their societies, relies less and less on natural resources and more on educational attainment and the ability of scientific and technological environments to invent and innovate.

However, talent and innovation does not grow on trees. They require a complex ecosystem to promote, enhance, and encourage it. Key pieces in this ecosystem include institutional robustness, macroeconomic stability, and public policies favoring free interaction (Levy-Carciente 2017).

Property rights are accepted as a linchpin for human beings' liberty, acting as a catalyst for economic and societal growth, and as a defense against authoritarian temptations. Accordingly, creating a legal private property system becomes a highly useful institution for a society as it works naturally to protect liberties. Individual liberty is the most important appropriation a system of property rights can amplify.

Following Hayek in *The Constitution of Liberty* (1959), we should define at least two terms: Freedom as the ability to do what we consider right (innate); and Liberty as the government's restrained coercion allowing the opportunity to exercise (social) rights. Hayek also differentiates 'liberty' and 'liberties', as the former allows everything that is not forbidden while the latter prohibits everything that is not explicit. Hayek prefers the negative concept of freedom (avoiding discretionary coercion) as the concept protects a greater number of human actions when exercised. Alternatively, liberty does not assure any special opportunity; it just leaves decisions to our discretion according to the circumstances in which we find ourselves. In this way, liberty produces more benefits for the discipline it imposes than for the opportunities it offers.

Property is the basis of the freedom to contract, which is simply liberty in action. Without freedom to exchange, a third party, generally the government, intervenes through the political-bureaucratic ruling class. Freedom is more than the right to own property or the right to make transactions, to exchange, to buy and sell. Once citizens lose the right to own, they lose the ability to control their own lives (Bovard 2000).

Simultaneously, property rights promote productivity and nurture economic growth and social development. It is the most effective means of guaranteeing civil rights and civil liberties, giving rise to what Pipes (1999) defines as the co-sovereign citizen (in modern democratic and liberal republics, sovereignty is an attribute of citizenship not only the nation state). Property rights and market economies are vital foundations to political freedom. Private property gives people a place to stand if they must resist the government. Market economies and private property allow citizens to build up resistance to government pressure.

In the 21st century, technological advances and globalization have borne new terms the tools and spaces that differentiate it from the past: the digital era, the sharing economy, collaborative consumption, peer to peer, network society, and so on. Most of these concepts encompass similar features: Information Communication Technologies; Artificial Intelligence for automation; and user-generated, user centric, platforms.

It is important to focus on the features because certain terms as ‘sharing’ or ‘collaborative’ misguide us. In fact, when using a peer-to-peer (P2P) ride hailing services, short-term rentals, or a crowdfunding platform, there is a fee for that service; and there is a benefit for both sides of the participants: those who offer and those who receive the service. The real reason for the service to exist makes use of underutilized resources, or excess capacity, giving us hints of the nature of the expanding society.

There is no particular innovation in leasing, renting, or raising funds; but innovation lies in the underlying technology and processes: the network of information involved, the interconnection through the Internet, the immediate responses, and the P2P interaction. These features reduce the need for middlemen and drop transaction costs, opening windows of opportunity for avid entrepreneurs who have the cognizance to grasp a need and imagine a way to address it (Kirzner 2013).

Trust is the cornerstone of interactions on these platforms, and it is built among participants based on ratings and user information. More and more, peer-review systems are becoming arbiters of quality. However, the importance of trust and the possibility of closer social interaction shall not mislead us either: consumers always prefer affordability and convenience.

Therefore, what the new economy is promoting is making markets more efficient, reducing idle resources, reducing transaction costs, reducing time-response, increasing quantity and quality. And we are just at the dawn: these types of companies are likely each day to become more important. They were projected to grow from 15 billion USD in 2015 to 335 billion USD by 2025 (PricewaterhouseCoopers, 2015).

The rapid growth of the new economy has significant property implications. It changes the way people use their properties and relate with the property of others. The scope and length of properties must be specified in such a way that it can be divided or distributed spatially and temporarily. The new economy demands a strong property rights system, both physical and intellectual property rights.

The knowledge society leverages the importance of intellectual property rights. Following Nussbaum (2011), intellectual property begins with the ability of individuals to generate knowledge, making use of their senses, imagination, thinking and reasoning. Insofar as individuals are intimate with their intellectual creation, knowledge maintains a delicate moral consideration with their protection. As Jean Le Chapelier said: ‘the fruit of thought’, is the most sacred, the most legitimate, the most incontrovertible and the most personal of all the properties (in Salazar 2010). In that sense, the right thing is that each individual could enjoy the fruit of his effort. Thus, the Universal Declaration of Human Rights (UN 1948) Article 27 recognizes the right that a person has to the “*protection of the moral and material interests that correspond to him by reason of the scientific, literary, or artistic productions of which he be the author*”.

It is worth noting that knowledge, as well as information, has a specific characteristic called ‘non-rivalry’, that is, that it can be used repeatedly and simultaneously by many people, without being ‘exhausted’. Hence, the allocation of intellectual property rights does not confer exclusive possession (such as physical property rights) but rather the benefits of their economic exploitation. The objective of these rights therefore create economic incentives for research and innovation, stimulating diffusion of knowledge by nurturing creativity (David and Foray, 2003).

Intellectual property rights are a dimension of the competitive economy whose objective is the benefit of the consumer. Innovation is based on a dynamic perspective of competition, promoting dynamic efficiency (creative capacity) and not of static efficiency (with fixed technology). The dynamic approach shows not only the inconclusive short-term impact, but also positive medium and long-term impact. The impact of innovation is not limited to a reduction in prices over time because of the increase in production; it includes positive secondary effects in other social spheres such as education, scientific advances, and spawning new economic sectors among others.

The debate on this subject is complex. However, what is certain is that institutional arrangements – and in them, property rights – are crucial for building free, productive, and inclusive societies.

In conclusion, whether we see it by its intellectual component or whether we analyze it by the transformation in the exchange and use of physical assets, the society of the digital era must be supported by a firm system of property rights for its success.

II. PRI Structure and Methodology

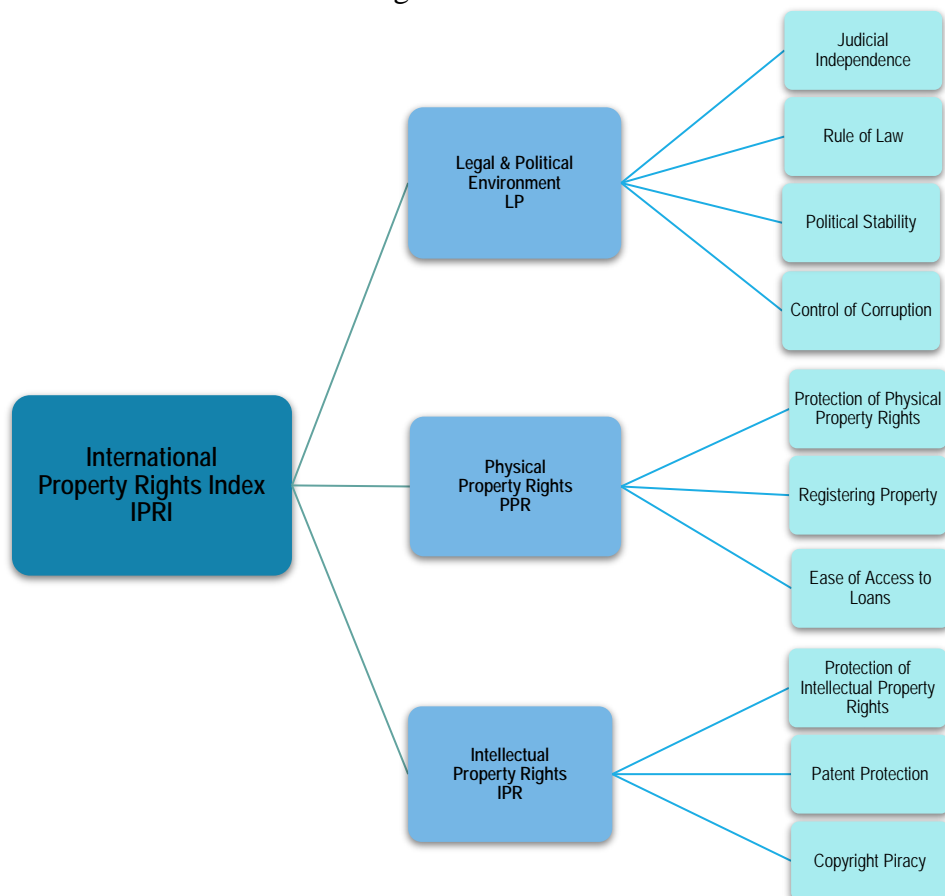
Property Rights Alliance (PRA) is dedicated to the protection of property rights all around the world. Since 2007 it has instituted the *Hernando de Soto Fellowship* to produce an annual International Property Rights Index (IPRI) to measure the protections of property rights.

This Index was developed to serve as a barometer of the state of property rights in all countries of the world. After a broad review of the literature on the subject, a solid conceptualization was achieved. Finally, several experts and professionals in the field of property rights were consulted, establishing the set of main categories (hereinafter, "components" or "sub-indices") and the items included in each.

The following are the three components of the IPRI:

1. Legal and Political Environment, LP
2. Physical Property Rights, PPR
3. Intellectual Property Rights, IPR

Figure 1. IPRI Structure



The Legal and Political Environment (LP) component provides information on the strength of a country's institutions and respect for the 'rules of the game' among citizens. Therefore, the items

included in the LP are wide-ranging. This component has a significant influence on the development and protection of physical and intellectual property rights.

The other two components of the index: Physical and Intellectual Property Rights (PPR and IPR), reflect two crucial forms of property rights for countries' economic development. Items included in these two categories represent *de jure* rights and *de facto* results in each country.

As a result, the IPRI is comprised of 10 items, each grouped under one of the three components: LP, PPR, or IPR. While there are numerous items related to property rights, the final IPRI is specific to core factors that are directly associated to the strength and defense of physical and intellectual property rights. Ensuring that scores are comparable across countries and years, items for which data was available more regularly and in a greater number of countries were given preference.

The IPRI-2018 kept the previous years' methodology to allow for a full comparison of its results with previous editions.

II.1. Legal and Political Environment (LP)

The Legal and Political Environment component measure the ability of a nation to enforce a *de jure* system of property rights. It comprises four (4) elements: the independence of its judicial system, the strength of the rule of law, the control of corruption, and the stability of its political system.

Judicial Independence

This item examines the judiciary's freedom from political, individual or business groups' influence. The independence of the judiciary is a central underpinning for the sound protection and sovereign support of the court system with respect to private property.

For this item, the chosen data source was the Global Competitiveness Index from the World Economic Forum's 2017-2018 (<http://bit.ly/2lHs5Mn>). The original data scale is [1 - 7], where 7 is the best score. The full question and associated answers of the Executive Opinion Survey for this indicator was:

In your country, how independent is the judicial system from influences of the government, individuals, or companies? [1= not independent at all; 7 = entirely independent]

Rule of Law

This element measures the extent to which agents have confidence and stand by the rules of their society. Specifically, it measures the quality of contract enforcement, property rights, police, and courts, as well as the likelihood of crime and violence.

It combines several indicators, including fairness, honesty, enforcement, speed, affordability of the court system, protection of private property rights, and judicial and executive accountability. Rule of Law complements the Judicial Independence item.

The chosen data source was the World Bank Worldwide Governance Indicators, 2016 (<http://bit.ly/1rwwuAb>). The original data scale is [-2.5 to 2.5], where 2.5 is the best score.

Political Stability

Political stability endorses incentives to obtain or to extend ownership and/or management of properties. The higher the likelihood of government instability, the less likely people will be to obtain property and to develop trust in the soundness of the rights attached.

For this item, the chosen data source was the World Bank Worldwide Governance Indicators, 2016 (<http://bit.ly/1rwwuAb>). The original data scale is [-2.5 to 2.5], where 2.5 is the best score.

NOTE: *A special notice has to be made regarding the Political Stability indicator for this year, as it displays a value outside of its normal range for one country (Yemen -2.794). Therefore, this country's value was considered as the extreme of the range scale (minimum value) for the rescaling process. This situation also happened last year, and we followed the same procedure.*

Control of Corruption

This item combines several indicators that measure the extent to which public power is exercised for private gain. This includes petty and grand forms of corruption, as well as the 'capture' of the state by elites and particular interests. As with other items in the LP component, corruption influences people's confidence in the existence of sound implementation and enforcement of property rights. Corruption reflects the degree of informality in the economy, which is a distracting factor to the expansion of respect for legal private property.

The data source chosen for this item was the World Bank Worldwide Governance Indicators, 2016 (<http://bit.ly/1rwwuAb>). The original data scale is [-2.5 to 2.5], where 2.5 is the best score.

II.2. Physical Property Rights (PPR)

A strong property rights regime promotes confidence in its people through its effectiveness to protect private property rights. It also provides for integrated transactions related to the registry of property, and it allows access to the required credit to convert property into capital. For these reasons, the following items are used to measure private Physical Property Rights protection (PPR).

Protection of Physical Property Rights

The Protection of Physical Property Rights relates directly to the strength of a country's property rights system based on experts' views of the quality of the judicial protection of private property, including financial assets. Additionally, it incorporates experts' opinions on the precision of the legal definition of property rights.

The data source chosen for this item was the Global Competitiveness Index of the World Economic Forum's 2017-2018 (<http://bit.ly/2lHs5Mn>). The original data scale is [1 - 7], where 7 is the best score. The full question and associated answers of the Executive Opinion Survey for this indicator was:

In your country, to what extent are property rights, including financial assets, protected? [1 = not at all; 7 = to a great extent].

Registering Property

This item reflects businesses' point of view on the complexity of registering property in terms of the number of days and required procedures. It records the full sequence of procedures needed to transfer a property from seller to buyer when a business purchases land or a building. This

critical information shows that the more difficult property registration is, the more likely it is that assets stay in the informal sector. This limits development of the broader public's understanding and support for a strong, legal, sound property rights system. Moreover, registration barriers also discourage assets' movement from lower to higher prized uses.

The Registering Property indicator reflects one of the main economic arguments set forth by Hernando de Soto: *“what the poor lack is easy access to the property mechanisms that could legally fix the economic potential of their assets so they could be used to produce, secure or guarantee greater value in the extended market”* (2000:48). This item is calculated as:

$$\text{Registering Property} = 0.7 * \text{\#days} + 0.3 * \text{\#procedures}$$

The data source chosen for measuring this item was The World Bank Group's 2018 Doing Business Report (<http://bit.ly/2mm9poK>). The original data scale is [1 - ∞], where 1 is the best score.

Ease of Access to Loans

Access to bank loans without collateral serves as a proxy of the financial sector's development in a country. Financial institutions and a strong property rights system play a crucial complementary role to bring economic assets into the formal economy. Therefore, credit facilities have always been an important channel in alleviating poverty.

The data chosen for this item was the Global Competitiveness Index of the World Economic Forum's 2017-2018 (<http://bit.ly/2IHs5Mn>). The original data scale is [1 - 7], where 7 is the best score. The full question and associated answers of the Executive Opinion Survey for this indicator was:

In your country, how easy is it for businesses to obtain a bank loan? [1 = extremely difficult; 7 = extremely easy]

II.3. Intellectual Property Rights (IPR)

The Intellectual Property Rights component evaluates the protection of what has become the most valuable sector in advanced economies. In addition to an opinion-based measure, it assesses protection of two major forms of intellectual property rights (patents and copyrights) from a *de jure* and a *de facto* perspective.

Protection of Intellectual Property Rights

Capturing a nation's protection of intellectual property is a crucial element of the IPRI.

The data source chosen was the Global Competitiveness Index of the World Economic Forum's 2017-2018 (<http://bit.ly/2IHs5Mn>). The original data scale is [1 - 7], where 7 is the best score. Its Executive Opinion Survey used the following question and associated answers to attain the information:

In your country, to what extent is intellectual property protected? [1 = not at all; 7 = to a great extent]

Patent Protection

This item reflects the strength of a country's patent laws based on five extensive criteria: coverage of subject matter, membership in international treaties, restrictions on patent rights, enforcement mechanisms, and duration of protection.

The data used for this item was the 1960-2015 Patent Rights Index (Park 2018). The dataset (<http://bit.ly/2mVLewa>) is quinquennial on a scale of [0 - 5], where 5 is the highest score. The data for the most recent year (2015) was published in 2018 with PRA assistance.

Copyright Piracy

The level of piracy in the Intellectual Property sector is an important indicator of the effectiveness of Intellectual Property Rights enforcement in a country.

The data source chosen for this item was the BSA Global Software Survey; The Compliance Gap (2016 edition, <http://bit.ly/1TXs7i0>), which estimates the volume and value of unlicensed software installed on personal computers. It also reveals attitudes and behaviors related to software licensing, intellectual property, and emerging technologies. The original data scale is [0 – 100%], where 0 is the best score.

III. Methodology

The IPRI's 2018 scores and rankings are based on data obtained from official sources made publicly available by established international organizations (see Appendix I). For this reason, data comes in different styles and scales. Consequently, we rescaled the data in order to accurately compare them against each other and to calculate the overall score.

The general grading scale of the IPRI ranges from [0 - 10], where 10 is the highest value and 0 is the lowest value (or most negative) for a property rights system within a country. The same interpretative logic is applied to the three components and to the 10 items or indicators. The average mechanisms applied assume equal importance for each component of the final IPRI score (and of each item of every component); however, if it were of any research interest, weights could be applied to evaluate the relative importance of the different aspects of a property rights system of a country.

The 2018 IPRI uses data from period 2015 to 2018. The 10 items are gathered from different sources, which imply that they have different accessibility times for the most updated data available. The applied logic in the analysis has been to include the latest available data sets for the IPRI. Most of the items present a lag of 1 year (see Appendix I), so the time difference among data should not affect our analysis.

Almost all the items needed to be rescaled to the IPRI range. The rescaling process was done as follows:

1. For bounded data series with same direction:

$$\left[\left(\frac{\text{Country Value} - \text{MIN Original Scale}}{\text{MAX Original Scale} - \text{MIN Original Scale}} \right) * (\text{MAX New Scale} - \text{MIN New Scale}) \right] + \text{MIN New Scale}$$

2. For unbounded data series with same direction:

$$\frac{(\text{MAX Value of data serie} - \text{Country Value})}{(\text{MAX Value of data serie} - \text{MIN Value of data serie})} * 10$$

3. For bounded data series with inverse direction:

$$10 - \left[\left(\frac{\text{Country Value} - \text{MIN Original Scale}}{\text{MAX Original Scale} - \text{MIN Original Scale}} \right) * (\text{MAX New Scale} - \text{MIN New Scale}) \right] + \text{MIN New Scale}$$

IPRI Calculations:

$$LP = \frac{\text{Judicial independence} + \text{Rule of Law} + \text{Political Stability} + \text{Control of Corruption}}{\# \text{ Items}}$$

$$PPR = \frac{\text{Property Rights} + \text{Registering Property} + \text{Ease Access Loans}}{\# \text{ Items}}$$

$$IPR = \frac{\text{Intellectual Property Protection} + \text{Patent Protection} + \text{Copyright Piracy Level}}{\text{\#Items}}$$

$$IPRI = \frac{LP + PPR + IPR}{3}$$

In addition to calculating the IPRI scores and its components, countries were ranked according to their scores. With some frequency, a few countries can exhibit almost the same score and they will be placed in the same rank. This way, i.e., Country A is ranked #1, while Country B and Country C are #2, and Country X, Country Y and Country Z are #3.

To minimize this situation and a diffusion bias, ranking calculations were made using IPRI scores with all their decimals. The final scores were thus differentiated to come up with the ranking positions.

III.1. Countries and Groups

The 2018 IPRI ranks 125 countries. This year there are two (2) new countries included in the index: Haiti and Swaziland; while four (4) countries that were part of the index last year are not included this year: Bolivia, Cote D'Ivoire, Gabon, and Macedonia FYR.

The availability of required data is the only factor that determines a country's inclusion in the IPRI. To ensure consistency in data and analysis, only country-year combinations respecting specific rules have been considered.

Since the 2013 IPRI, a rule was instituted to require at least 2/3 of the data for each component available for a country to be included. If a country does not have data available for at least 3 items for LP, 2 items for PPR, and 2 items for IPR, it will not be included in the analysis.

All countries were grouped following different criteria (Appendix II):

1. Geographical regions: Latin America and Caribbean (LAC), Western Europe (WE), Central/Eastern Europe and Central Asia (CEECA), Middle East/North Africa (MENA), Africa (A), Asia and Oceania (AO), and North America (NA).
2. Income classification (World Bank (WB)): High income, Upper middle income, Lower middle income and Low income.
3. Regional and Development classification (International Monetary Fund (IMF)): Advanced Economies, Commonwealth of Independent States (CIS), Emerging & Developing Asia, Emerging and Developing Europe, Latin America & the Caribbean, Middle East/North Africa & Pakistan, and Sub-Saharan Africa.
4. Economic and Regional Integration Agreements: Organization for Economic Co-operation and Development (OECD), European Union (EU), Southern African Development Community (SADC), Economic Community of Western African States (ECOWAS), Association of Southeast Asian Nations (ASEAN), Central American

Parliament (PARLACEN), Gulf Cooperation Council (GCC), Pacific Alliance (AP), Southern Common Market (MERCOSUR), South Asian Association for Regional Cooperation (SAARC), Central African Economic and Monetary Community (CEMAC), Central American Common Market (MCCA), Commonwealth of Independent States (CIS), Arab Maghreb Union, Caribbean Community (CARICOM), Andean Community (CAN), European Free Trade Association (EFTA), Intergovernmental Authority on Development (IGAD), North American Free Trade Agreement (NAFTA), Organization of the Petroleum Exporting Countries (OPEC), Economic Community of Central African States (ECCAS), and Trans-Pacific Partnership (TPP).

Group members were updated by April 30th, 2018, and it is worth highlighting the following cases:

- United Kingdom (UK) will remain in the EU, according to note in the following link: https://europa.eu/european-union/about-eu/countries_en#tab-0-0
- Bolivarian Republic of Venezuela is not included in MERCOSUR, according to note in the following link: <http://www.mercosur.int/innovaportal/v/7823/4/innova.front/paises-del-mercosur>
- Equatorial Guinea is included in OPEC countries according to note in the following link: http://www.opec.org/opec_web/en/about_us/25.htm
- United States of America (USA) is not included in TPP, according to note in the following links: <https://ustr.gov/trade-agreements/free-trade-agreements/trans-pacific-partnership>
<https://www.whitehouse.gov/presidential-actions/presidential-memorandum-regarding-withdrawal-united-states-trans-pacific-partnership-negotiations-agreement/>

IV. 2018 IPRI. Country Results

This section presents the results of the 2018 IPRI. Starting with the scores of the overall IPRI and its three (3) components between 2015 and 2018 in Table 1. This chapter also includes comparative analysis.

As an average, the sample of the 125 countries resulted in a 2018 IPRI score of 5.74. The Legal and Political Environment (LP) was the weakest component with a score of 5.21, followed by the Intellectual Property Rights (IPR) component with a score of 5.54; and Physical Property Rights (PPR) was the strongest component with a score of 6.46. For the fourth consecutive year, we found overall improvement of average IPRI score and for all its components (see Table 1).

Table 1. Average Score: IPRI and its Components. 2015 - 2018.

	IPRI	LP	PPR	IPR
Average 2015	5.3007	4.993	5.7668	5.1424
Average 2016	5.4459	5.1303	5.8746	5.3328
Average 2017	5.6336	5.1715	6.2265	5.5027
Average 2018	5.7406	5.2159	6.4641	5.5419

We ran a normality test for IPRI and its components, using SPSS®, showing a Gaussian behavior. All of them showed unimodal distributions (see Table 2, Table 3, and Figure 1).

Table 2. Statistics: 2018 IPRI and its Components.

		IPRI	LP	PPR	IPR
N		125	125	125	125
Mean		5.74062	5.21592	6.4641	5.54186
Standard Deviation		1.437894	1.815148	1.207094	1.624579
Minimum		2.734	1.493	1.327	1.915
Maximum		8.692	9.013	8.874	8.83
Percentiles	25	4.7185	3.817	5.787	4.3985
	50 (Median)	5.398	4.809	6.456	5.23
	75	6.5665	6.556	7.257	6.606

Table 3. Tests of Normality: One-Sample Kolmogorov-Smirnov Test.

		IPRI	LP	PPR	IPR
N		125	125	125	125
Normal Parameters ^{a,b}	Mean	5.74062	5.21592	6.46410	5.54186
	Standard Deviation	1.437894	1.815148	1.207094	1.624579
Max. Extreme Differences	Absolute	0.108	0.098	0.055	0.080
	Positive	0.108	0.098	0.035	0.080
	Negative	-0.067	-0.065	-0.055	-0.072
Kolmogorov-Smirnov Z		0.108	0.098	0.055	0.080
Asymp. Sig (2-tailed)		,001 ^c	,005 ^c	,200 ^{c,d}	,047 ^c

a. Test distribution is normal b. Calculated from data c. Lilliefors correction
d. Lower limit of the true significance

Figure 2. Histogram: 2018 IPRI and its Components.

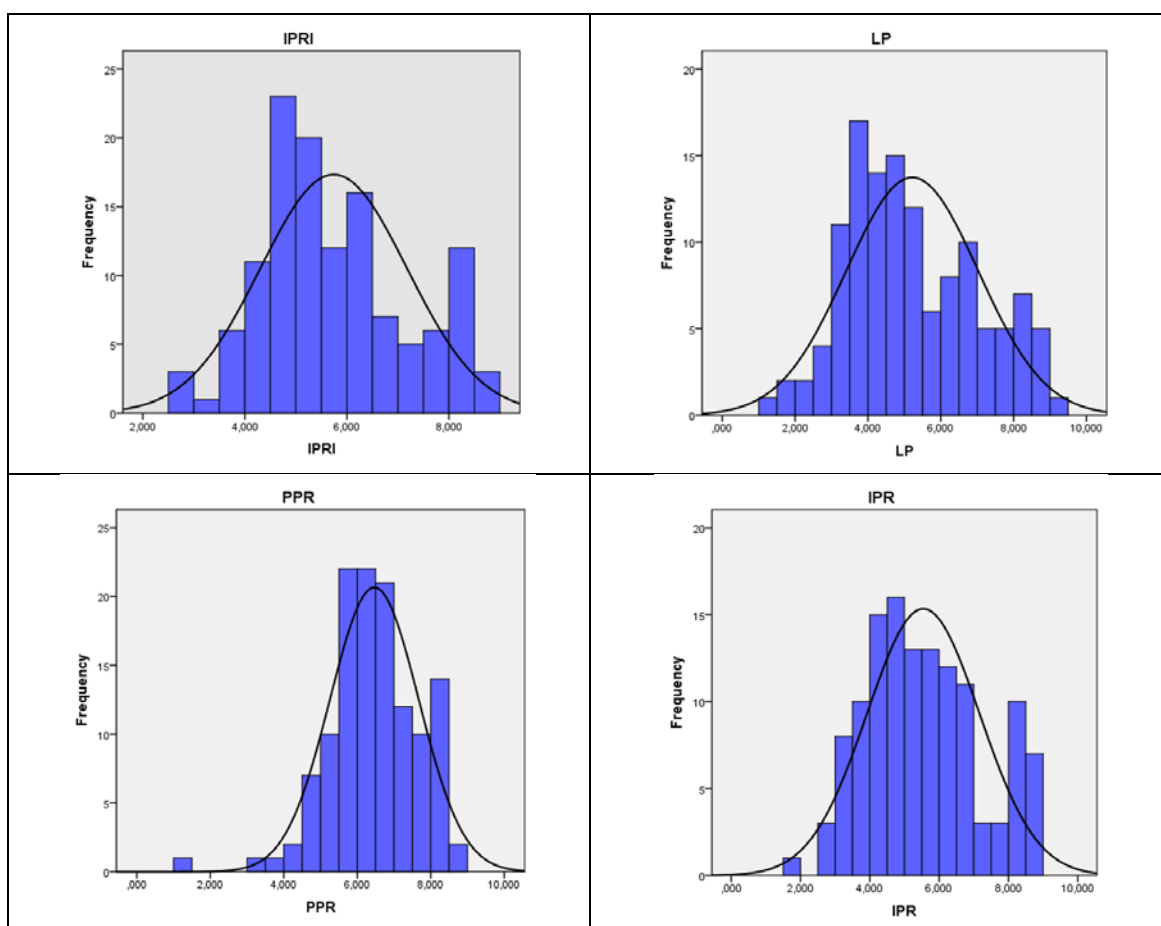


Table 4 shows, alphabetically ordered, the score values of the 125 countries included in the 2018 IPRI and of its components. Figure 3 displays countries organized by its IPRI scores from top to bottom, showing their IPRI ranking.

Table 5 shows the IPRI 2018 rankings by quintile for all the 125 countries in our sample. In general, the number of countries belonging to each quintile increases from the top 20% to the bottom 20% (1st quintile 17 countries, 2nd quintile 21 countries, 3rd quintile 24 countries, 4th quintile 28 countries, and 5th quintile 35 countries). Hence, the fourth and the fifth quintiles include 63 countries which is a 50.4% of our sample, while the first three quintiles includes almost the same amount countries, 62 countries, being the 49.6% of the sample.

Table 4. 2018 IPRI. IPRI and its Components: Scores and Ranks by Country

COUNTRY	IPRI 2018	Rank	LP	PPR	IPR	COUNTRY	IPRI 2018	Rank	LP	PPR	IPR	COUNTRY	IPRI 2018	Rank	LP	PPR	IPR
ALBANIA	4.525	102	4.236	6.003	3.338	HAITI	2.734	125	2.920	1.327	3.954	PAKISTAN	3.637	121	2.906	4.535	3.470
ALGERIA	4.140	113	3.558	5.475	3.387	HONDURAS	4.724	93	3.439	6.314	4.418	PANAMA	5.833	53	4.538	7.455	5.508
ARGENTINA	5.026	79	4.517	5.330	5.230	HONG KONG	7.850	17	7.983	8.175	7.391	PARAGUAY	4.518	103	3.662	6.090	3.801
ARMENIA	4.715	95	4.166	6.774	3.205	HUNGARY	6.098	46	5.351	6.249	6.694	PERU	5.229	69	4.162	6.504	5.022
AUSTRALIA	8.329	7	8.228	8.171	8.589	ICELAND	7.618	20	8.187	7.997	6.670	PHILIPPINES	5.218	70	3.808	6.456	5.390
AUSTRIA	8.005	15	7.779	7.849	8.387	INDIA	5.639	59	4.582	6.533	5.802	POLAND	6.093	47	5.700	6.490	6.089
AZERBAIJAN	5.038	78	4.110	7.055	3.948	INDONESIA	5.333	64	4.672	6.981	4.344	PORTUGAL	6.934	28	6.977	6.858	6.968
BAHREIN	6.175	45	5.318	7.541	5.664	IRAN	4.749	91	3.848	5.788	4.611	QATAR	7.178	25	6.913	8.116	6.506
BANGLADESH	3.366	122	3.510	3.848	2.740	IRELAND	7.660	19	8.019	7.109	7.851	ROMANIA	5.813	54	5.295	6.150	5.994
BELGIUM	7.679	18	7.471	7.388	8.177	ISRAEL	7.131	26	6.576	7.083	7.734	RUSSIA	4.891	84	3.617	5.839	5.216
BENIN	4.511	104	4.115	4.448	4.969	ITALY	5.993	50	5.396	5.954	6.630	RWANDA	6.562	32	6.080	7.442	6.165
BOSNIA&HERZEGOVINA	4.418	107	4.029	5.731	3.493	JAMAICA	5.991	51	5.328	6.475	6.171	SAUDI ARABIA	6.187	44	5.681	7.201	5.680
BOTSWANA	6.000	49	6.399	6.888	4.711	JAPAN	8.231	11	7.836	8.341	8.517	SENEGAL	5.010	80	4.711	5.807	4.511
BRAZIL	5.746	55	4.640	6.231	6.369	JORDAN	6.192	42	5.507	7.342	5.728	SERBIA	4.612	101	4.388	5.848	3.599
BRUNEI DARUSSALAM	4.767	90	6.344	3.435	4.523	KAZAKHSTAN	4.836	88	4.328	6.369	3.810	SIERRA LEONE	4.641	99	3.740	5.098	5.086
BULGARIA	5.398	63	4.564	6.138	5.492	KENYA	4.983	82	3.826	6.316	4.809	SINGAPORE	8.405	5	8.440	8.723	8.051
BURUNDI	3.778	118	2.076	5.225	4.033	KOREA, REP	6.448	35	5.821	6.844	6.678	SLOVAKIA	6.273	39	5.324	6.950	6.546
CAMEROON	4.323	109	3.151	5.336	4.484	KUWAIT	5.491	62	5.171	6.822	4.479	SLOVENIA	6.085	48	6.365	5.946	5.946
CANADA	8.295	10	8.477	8.256	8.150	LATVIA	5.718	56	5.819	6.227	5.109	SOUTH AFRICA	6.349	37	5.448	6.661	6.938
CHAD	3.771	119	2.254	4.719	4.339	LEBANON	4.342	108	3.028	6.625	3.374	SPAIN	6.520	33	6.118	6.717	6.726
CHILE	6.881	29	6.791	7.597	6.256	LIBERIA	4.619	100	3.682	5.548	4.627	SRI. LANKA	5.239	68	4.923	6.183	4.612
CHINA	5.905	52	4.791	7.035	5.888	LITHUANIA	6.425	36	6.380	6.870	6.025	SWAZILAND	4.840	86	4.278	6.023	4.219
COLOMBIA	5.516	61	3.856	6.402	6.290	LUXEMBURG	8.298	9	8.539	8.196	8.158	SWEDEN	8.397	6	8.548	8.295	8.347
CONGO, D.R.	3.745	120	1.888	5.241	4.106	MADAGASCAR	4.041	114	3.382	4.575	4.167	SWITZERLAND	8.619	3	8.735	8.427	8.695
COSTA RICA	6.571	31	6.568	6.698	6.448	MALAWI	4.660	97	4.517	5.084	4.379	TAIWAN	7.312	22	6.694	8.287	6.954
CROATIA	5.172	73	5.242	5.485	4.789	MALAYSIA	6.492	34	5.713	7.657	6.105	TANZANIA, UNITED REP	5.175	71	4.364	5.586	5.574
CYPRUS	6.238	41	6.389	6.219	6.106	MALI	4.722	94	3.340	5.823	5.003	THAILAND	5.317	65	4.468	6.933	4.550
CZECH Rep.	6.981	27	6.544	6.998	7.400	MALTA	6.734	30	6.635	7.313	6.254	TRINIDAD & TOBAGO	5.714	57	5.194	5.913	6.035
DENMARK	8.164	12	8.432	7.850	8.210	MAURITANIA	4.170	112	3.454	4.265	4.791	TUNISIA	5.097	75	4.480	6.171	4.641
DOMINICAN REP	4.838	87	3.980	6.107	4.427	MAURITIUS	6.250	40	6.521	7.087	5.142	TURKEY	5.282	66	3.556	6.828	5.462
ECUADOR	4.711	96	3.380	5.524	5.230	MEXICO	5.173	72	3.616	6.088	5.816	UGANDA	4.853	85	3.832	6.135	4.592
EGYPT	5.062	77	4.348	5.750	5.089	MOLDOVA	4.002	115	3.399	5.786	2.821	UKRAINE	4.283	110	2.685	5.726	4.436
EL SALVADOR	4.775	89	4.086	5.861	4.378	MONTENEGRO	4.651	98	4.902	5.699	3.352	UNITED ARAB EMIRATES	7.573	21	7.100	8.370	7.248
ESTONIA	7.182	24	7.335	7.627	6.582	MOROCCO	5.645	58	4.684	6.692	5.558	UNITED KINGDOM	8.141	13	7.980	7.940	8.504
ETHIOPIA	4.421	106	3.780	5.913	3.569	MOZAMBIQUE	4.487	105	3.169	5.458	4.834	UNITED STATES	8.124	14	7.364	8.308	8.700
FINLAND	8.692	1	8.848	8.399	8.830	NEPAL	4.947	83	3.901	6.640	4.299	URUGUAY	6.191	43	7.224	6.494	4.856
FRANCE	7.184	23	6.958	6.771	7.824	NETHERLANDS	8.325	8	8.431	8.013	8.532	VENEZUELA, BOL. Rep.	2.975	123	1.604	4.728	2.595
GEORGIA	5.145	74	5.275	7.144	3.015	NEW ZEALAND	8.632	2	9.013	8.874	8.010	VIETNAM	5.076	76	4.809	5.980	4.438
GERMANY	7.909	16	7.777	7.608	8.344	NICARAGUA	4.266	111	3.234	5.659	3.904	YEMEN, REP.	2.793	124	1.493	4.970	1.915
GHANA	5.635	60	5.166	5.839	5.901	NIGERIA	3.923	116	2.990	4.985	3.795	ZAMBIA	4.732	92	4.558	5.872	3.766
GREECE	5.267	67	4.999	5.161	5.640	NORWAY	8.450	4	8.798	8.484	8.070	ZIMBABWE	3.844	117	3.054	4.811	3.668
GUATEMALA	5.008	81	3.738	6.732	4.554	OMAN	6.332	38	6.124	7.678	5.194	Average 2018	5.741		5.216	6.464	5.542

Figure 3. IPRI 2018: Scores and Rankings

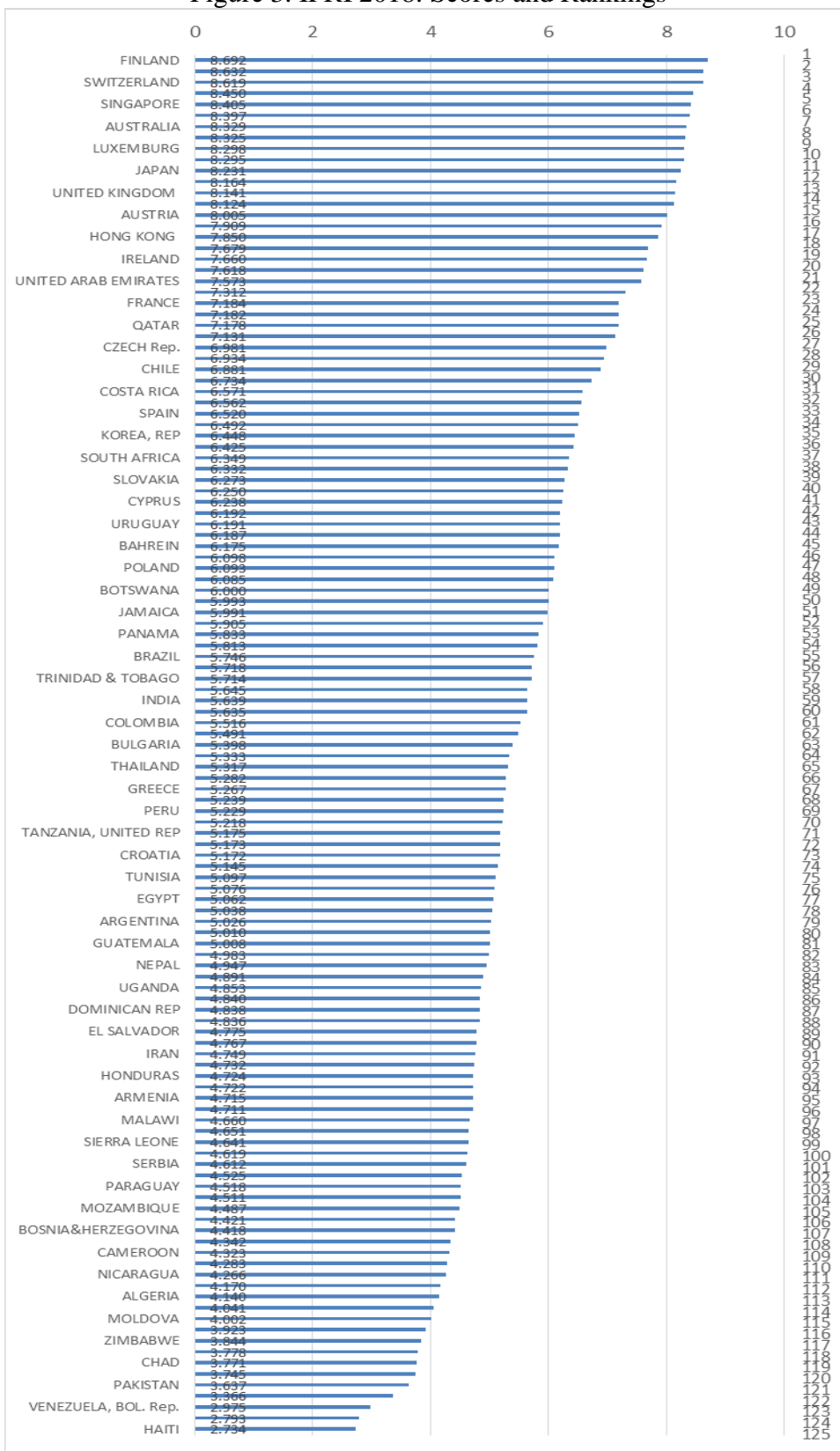


Table 5. 2018 IPRI: Rankings by Quintiles

Top 20 Percent	2nd Quintile	3rd Quintile	4th Quintile	Bottom 20 Percent
FINLAND	BELGIUM	SLOVAKIA	BULGARIA	IRAN
NEW ZEALAND	IRELAND	MAURITIUS	INDONESIA	ZAMBIA
SWITZERLAND	ICELAND	CYPRUS	THAILAND	HONDURAS
NORWAY	UNITED ARAB EMIRATES	JORDAN	TURKEY	MALI
SINGAPORE	TAIWAN	URUGUAY	GREECE	ARMENIA
SWEDEN	FRANCE	SAUDI ARABIA	SRI LANKA	ECUADOR
AUSTRALIA	ESTONIA	BAHREIN	PERU	MALAWI
NETHERLANDS	QATAR	HUNGARY	PHILIPPINES	MONTENEGRO
LUXEMBURG	ISRAEL	POLAND	TANZANIA, UNITED REP.	SIERRA LEONE
CANADA	CZECH REPUBLIC	SLOVENIA	MEXICO	LIBERIA
JAPAN	PORTUGAL	BOTSWANA	CROATIA	SERBIA
DENMARK	CHILE	ITALY	GEORGIA	ALBANIA
UNITED KINGDOM	MALTA	JAMAICA	TUNISIA	PARAGUAY
UNITED STATES	COSTA RICA	CHINA	VIETNAM	BENIN
AUSTRIA	RWANDA	PANAMA	EGYPT	MOZAMBIQUE
GERMANY	SPAIN	ROMANIA	AZERBAIJAN	ETHIOPIA
HONG KONG (SAR of China)	MALAYSIA	BRAZIL	ARGENTINA	BOSNIA & HERZEGOVINA
	KOREA, REP	LATVIA	SENEGAL	LEBANON
	LITHUANIA	TRINIDAD & TOBAGO	GUATEMALA	CAMEROON
	SOUTH AFRICA	MOROCCO	KENYA	UKRAINE
	OMAN	INDIA	NEPAL	NICARAGUA
		GHANA	RUSSIA	MAURITANIA
		COLOMBIA	UGANDA	ALGERIA
		KUWAIT	SWAZILAND	MADAGASCAR
			DOMINICAN REP.	MOLDOVA
			KAZAKHSTAN	NIGERIA
			ELSALVADOR	ZIMBABWE
			BRUNEI DARUSSALAM	BURUNDI
				CHAD
				CONGO, DEM. REP.
				PAKISTAN
				BANGLADESH
				VENEZUELA, BOLIVARIAN REP.
				YEMEN, REP.
				HAITI

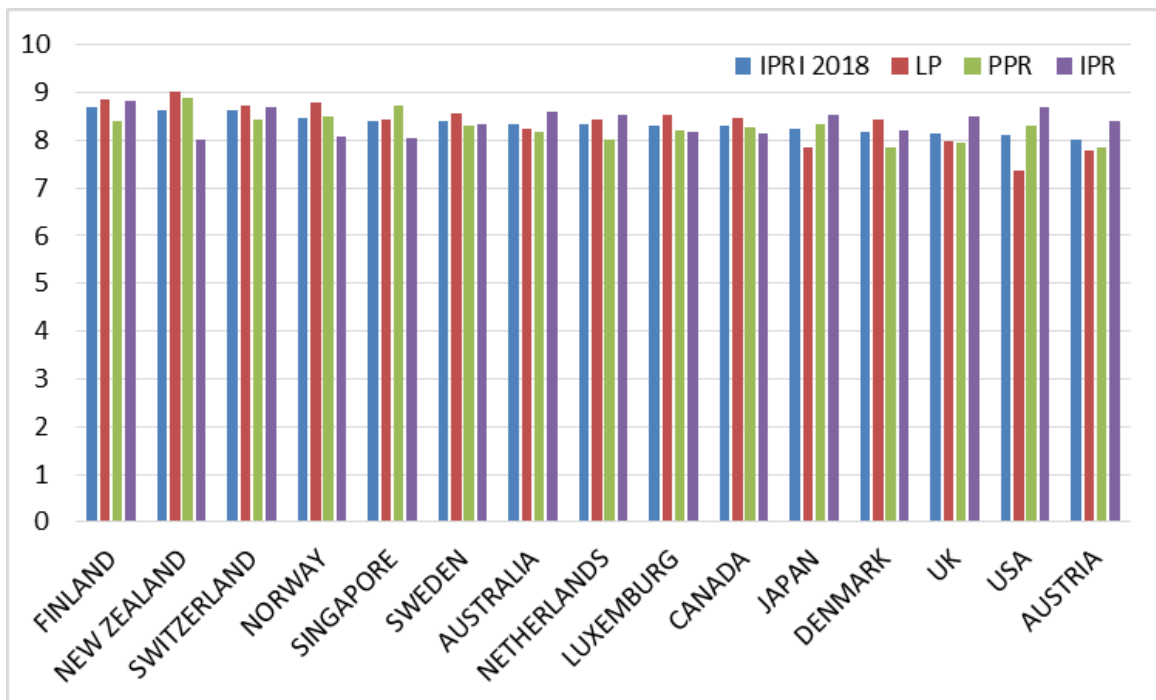
Strongest

Weakest

Figure 4 displays the top 15 countries for this year's IPRI edition. Finland leads the 2018 IPRI (8.6924) as well as the IPR (8.8295). New Zealand ranks second (8.6322) and leads the LP (9.0127) and the PPR (8.8742) components. Next come Switzerland (8.6183), Norway (8.4504), Singapore (8.4049), Sweden (8.3970), Australia (8.3295), Netherlands (8.3252), Luxembourg (8.2978), Canada (8.2947), Japan (8.2315), Denmark (8.1640), United Kingdom (8.1413), United States of America (8.1243), and Austria (8.0050).

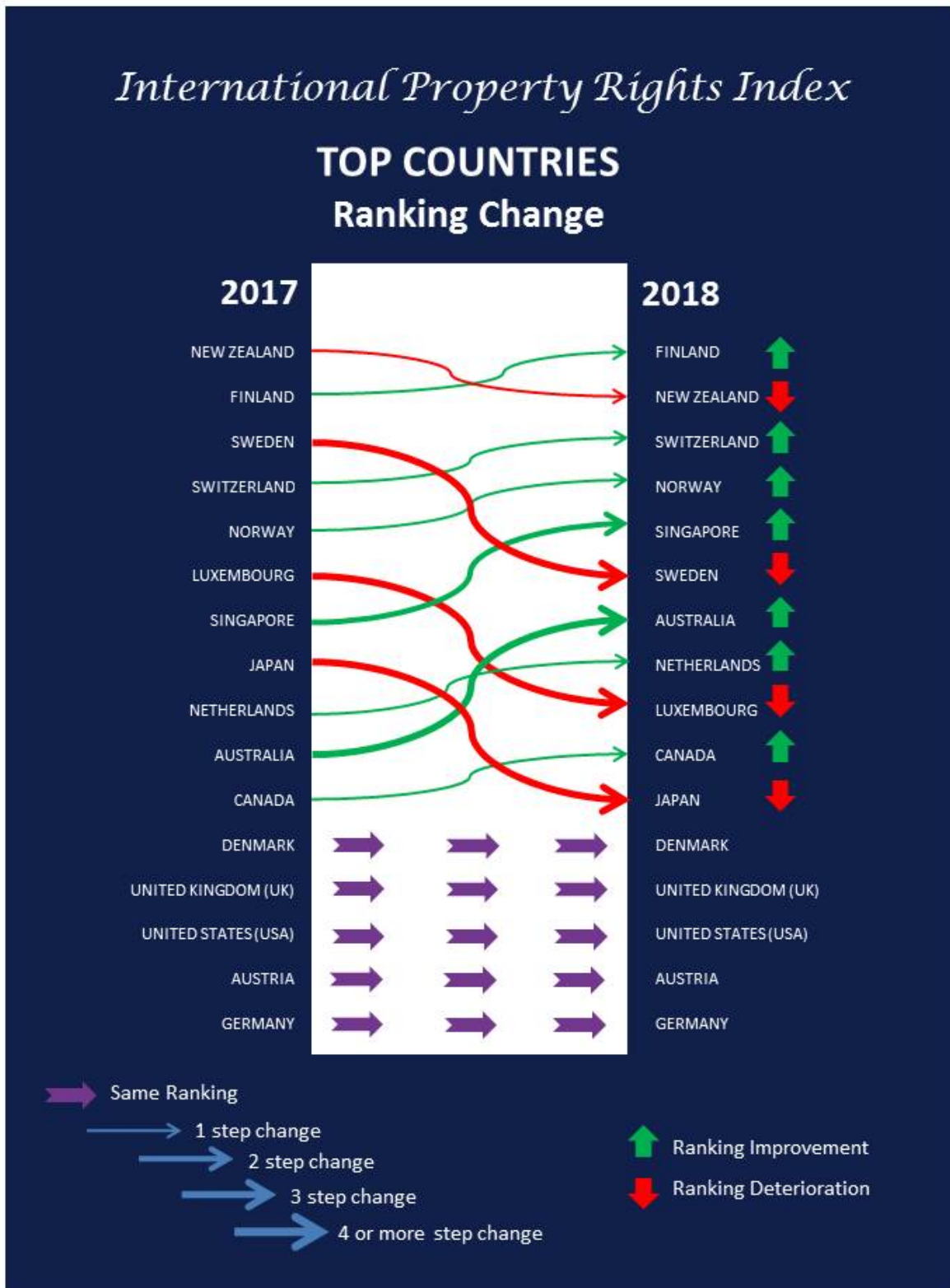
It is worth noting that 2018 and 2017 IPRI top countries are the same, with a different lineup (see Figure 5). The maximum value of the 2018 IPRI score is higher than the previous year (8.6924 vs 8.6335) while the minimum score of the top 15 is lower this year (last year was 8.0122).

Figure 4. 2018 IPRI: Top 15 Countries



Eight (8) countries show the LP as their strongest component (Finland, New Zealand, Switzerland, Norway, Sweden, Luxembourg, Canada and Denmark); six (6) of them show the IPR (Australia, Netherlands, Japan, UK, USA and Austria) as their highest component; and just one (Singapore) has the PPR as their highest component. Most of the top countries, except Singapore, show the LP or the IPR component as the strongest for the IPRI.

Figure 5. 2018 IPRI vs. 2018 IPRI: Top Countries Ranking Change



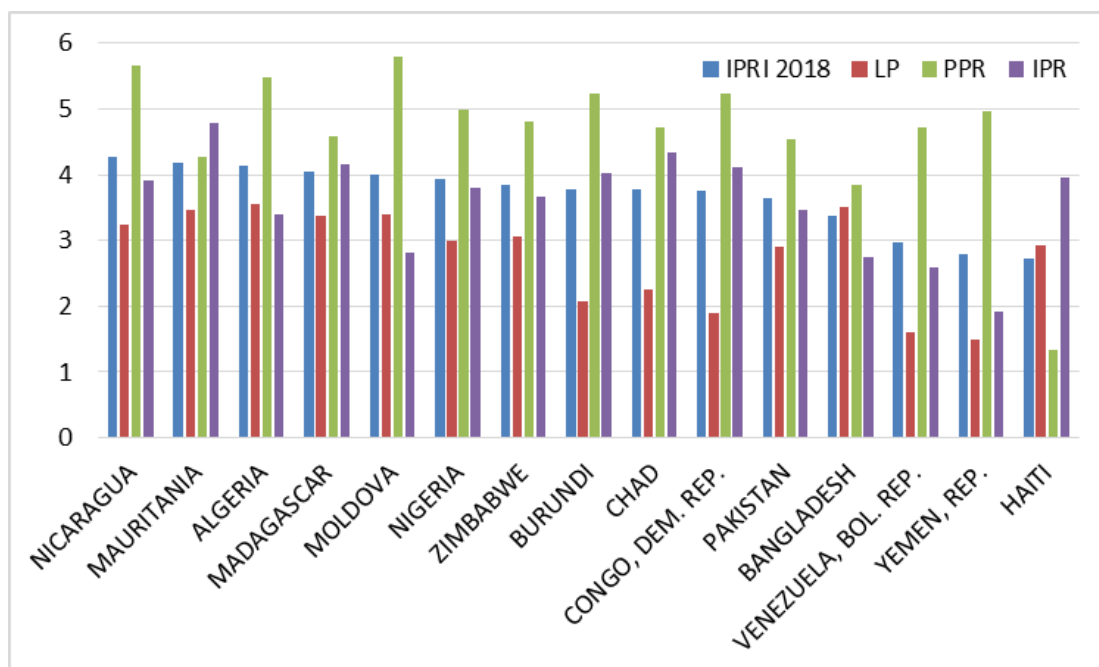
As shown in Figure 6, the bottom 15 countries are Haiti (2.7339), Rep. of Yemen (2.7925), Bolivarian Rep. of Venezuela (2.975), Bangladesh (3.3658), Pakistan (3.6372), Democratic Rep. of Congo (3.745), Chad (3.7706), Burundi (3.7782), Zimbabwe (3.8442), Nigeria (3.9232), Moldova (4.002), Madagascar (4.0415), Algeria (4.1401), Mauritania (4.1702), and Nicaragua (4.266).

Considering the IPRI components, we find the following bottom countries:

- LP: Rep. of Yemen (1.4925), Bolivarian Rep. of Venezuela (1.6035) and Democratic Rep. of Congo (1.8879).
- PPR: Haiti (1.3268), Bangladesh (3.8479) and Mauritania (4.2648).
- IPR: Rep. of Yemen (1.9149), Bolivarian Rep. of Venezuela (2.5951) and Bangladesh (2.7401).

Most of the bottom countries show the PPR as the stronger IPRI component (not the case for Mauritania and Haiti), while the weakest is the LP (not the case for Haiti with PPR as its lowest component, and for Algeria, Moldova and Bangladesh with IPR as their lowest component). This situation is the opposite for the top countries. This reinforces the ability of LP to influence the rest of the components.

Figure 6. 2018 IPRI: Bottom 15 Countries



A comparison between the IPRI scores in 2017 and 2018 reveals an important improvement, not only for the averages of the IPRI scores and of its components, but also in the maximum level showed by the sample of countries.

The average IPRI score raised from 5.63 in 2017 to 5.74 in 2018, the maximum value from 8.63 in 2017 to 8.69 in 2018, and the minimum value from 2.728 in 2017 to 2.733 in 2018. Simultaneously, the average scores for all the components raised too.

This year, five countries show the highest absolute improvement in their IPRI score: Azerbaijan (1.09), Ukraine (0.86), Russia (0.85), Moldova (0.82), and Cyprus (0.79); while the ones with highest decreases in their 2018 IPRI scores were South Africa (-0.65), Ethiopia (-0.3), Liberia (-0.27), Uganda (-0.25), and Uruguay (-0.22).

Looking at these comparisons of the IPRI components, we found:

- LP: The average improvement 2018-2017 was 0.0444 for the countries with the highest levels: Argentina (0.70), Vietnam (0.33), Indonesia (0.33), Peru (0.3), and Trinidad & Tobago (0.29). While the countries showing the most significant decreases were Turkey (-0.38), Poland (-0.34), Philippines (-0.33), Chad (-0.32), and Mozambique (-0.32). Changes in LP component scores 2018-2017 are shown in Figure 8.
- PPR: The average improvement 2018-2017 was 0.2376. Azerbaijan (2.44), Ukraine (2.35), Moldova (2.28), Cyprus (2.2), and Russia (2.12) showed the highest improvements. While South Africa (-1.18), Liberia (-0.48), Sweden (-0.36), El Salvador (-0.35), and Peru (-0.33) showed the deepest declines. Changes in PPR component scores 2018-2017 are shown in Figure 9.
- IPR: The average improvement 2018-2017 was of 0.0392. The most significant increases in the IPR component were reported by Costa Rica (1.07), Burundi (0.67), Brazil (0.62), Egypt (0.62), and Colombia (0.57). While the most relevant decreases were shown by Ethiopia (-0.86), Uganda (-0.61), South Africa (-0.51), Uruguay (-0.5), and Greece (-0.39). Changes in IPR component scores 2018-2017 can be seen in Figure 10.

Figure 7. IPRI Score 2018-2017 and Variation

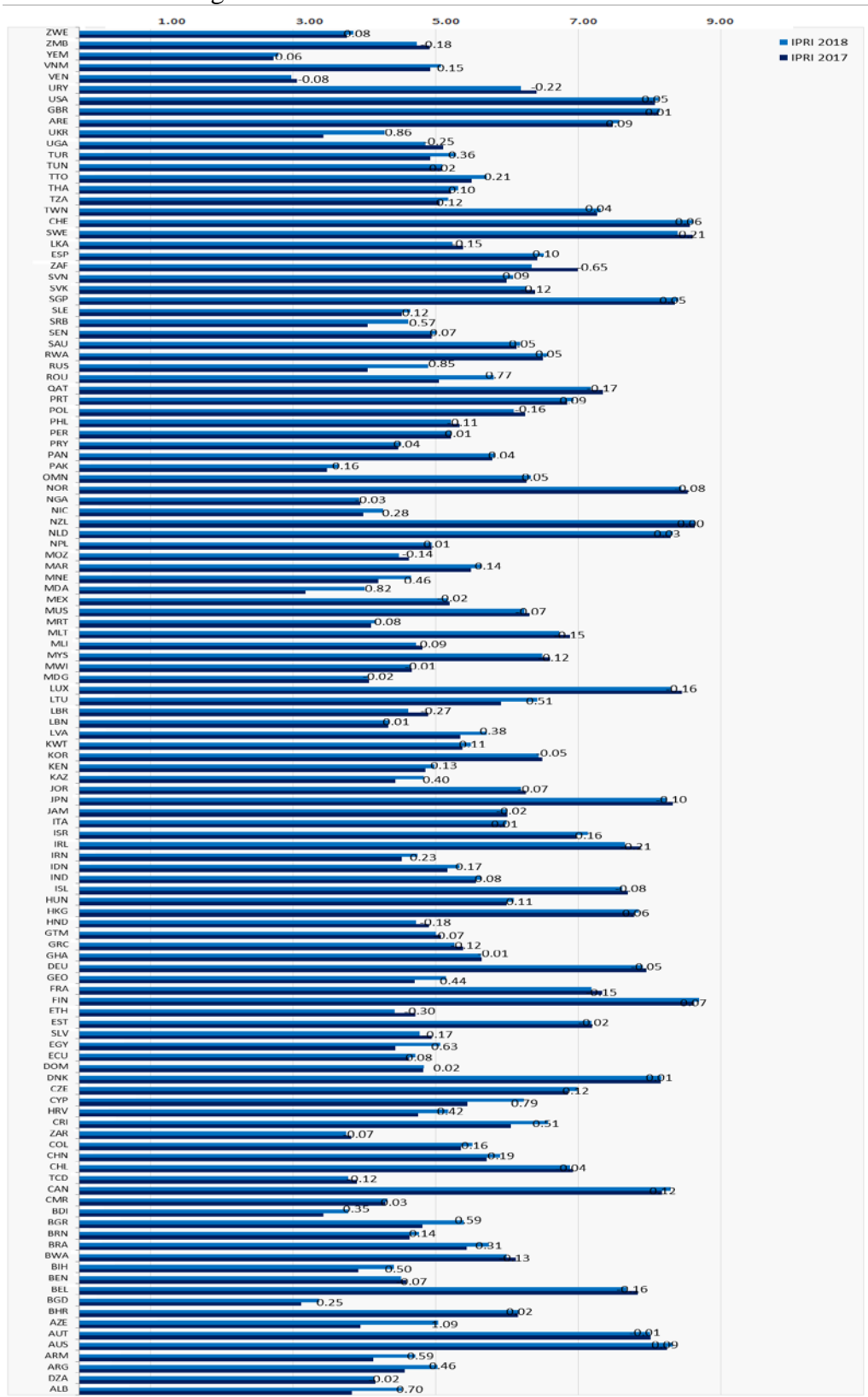


Figure 8. LP Score 2018-2017 and Variation

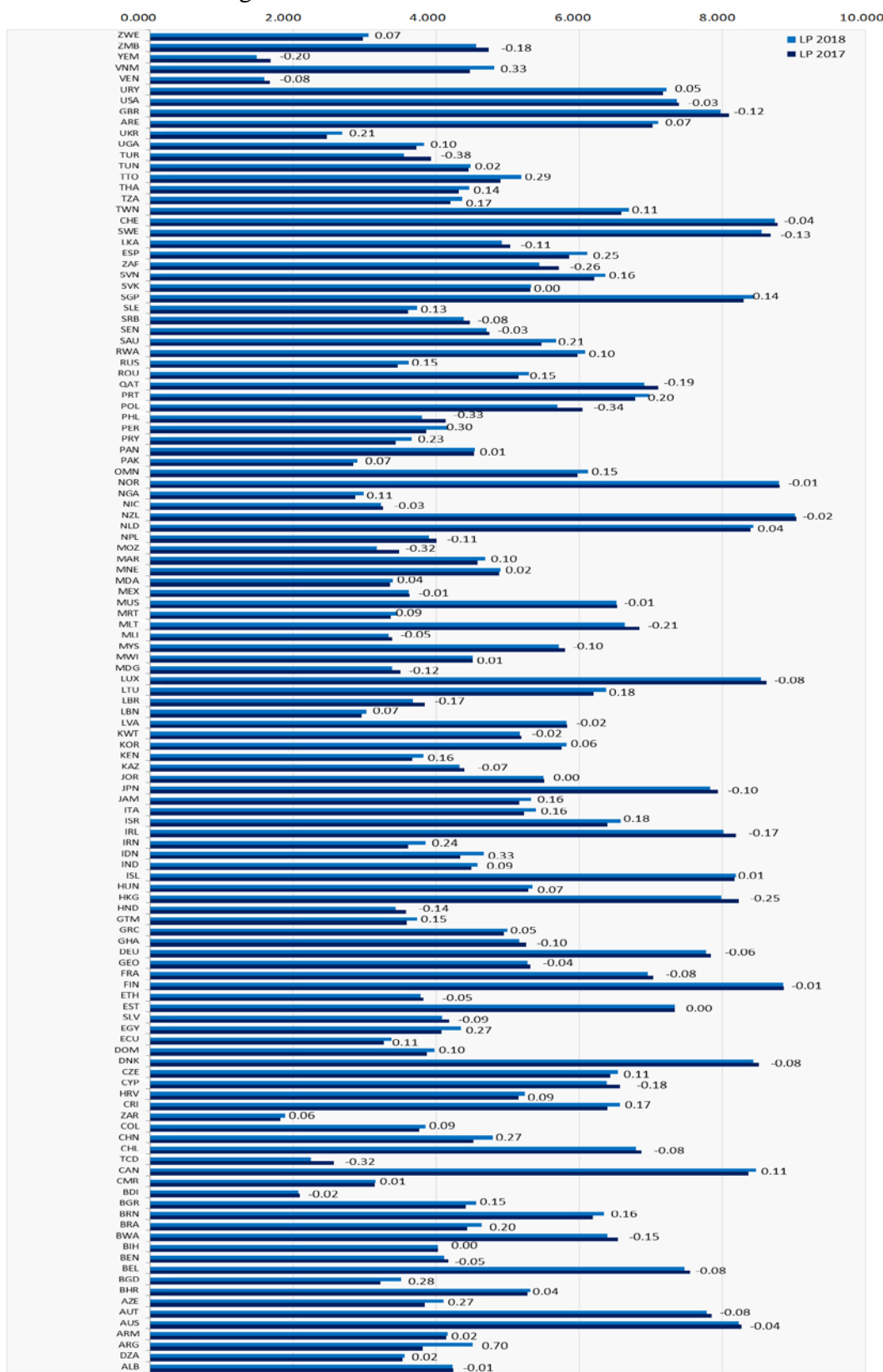


Figure 9. PPR Score 2018-2017 and Variation

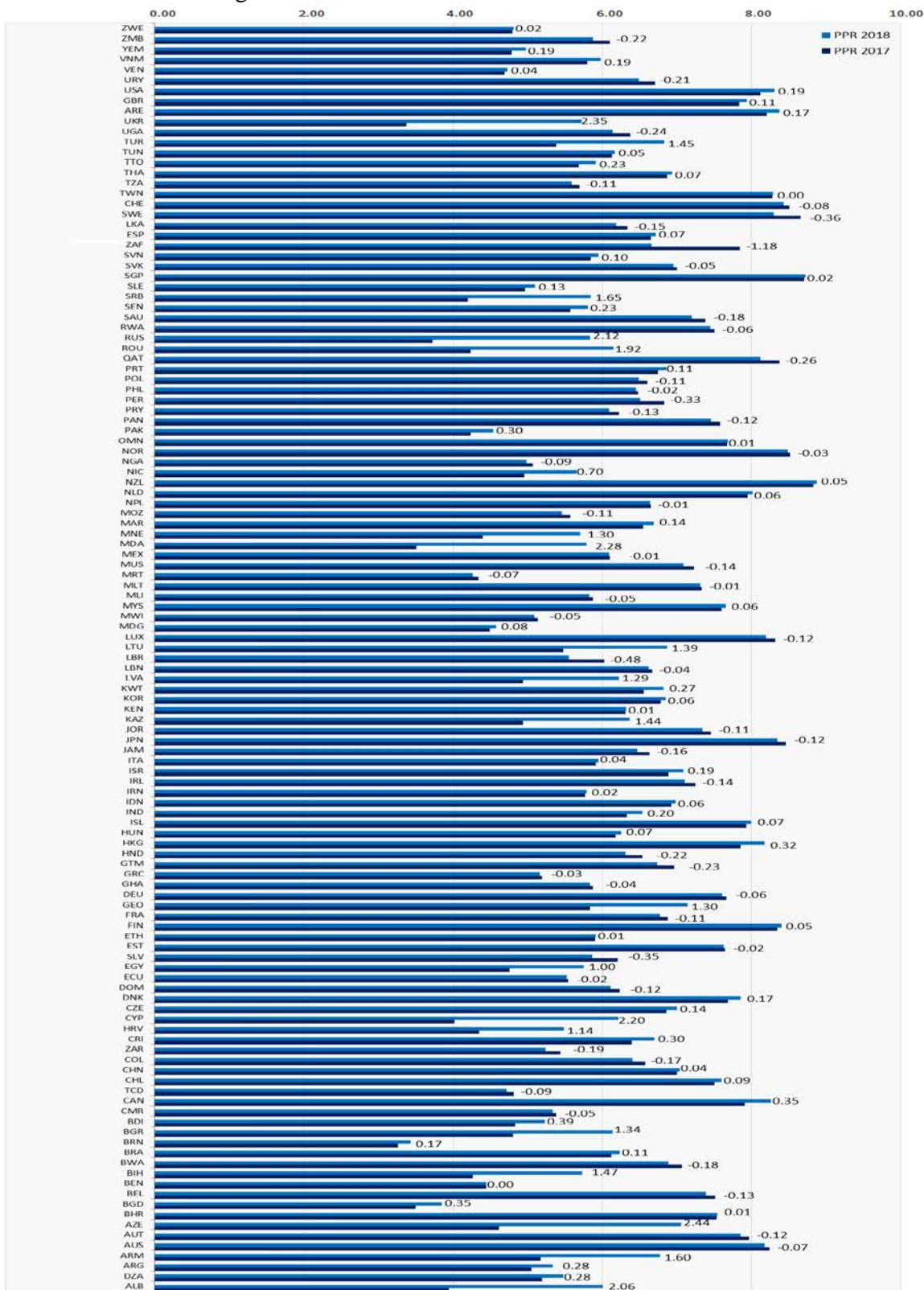
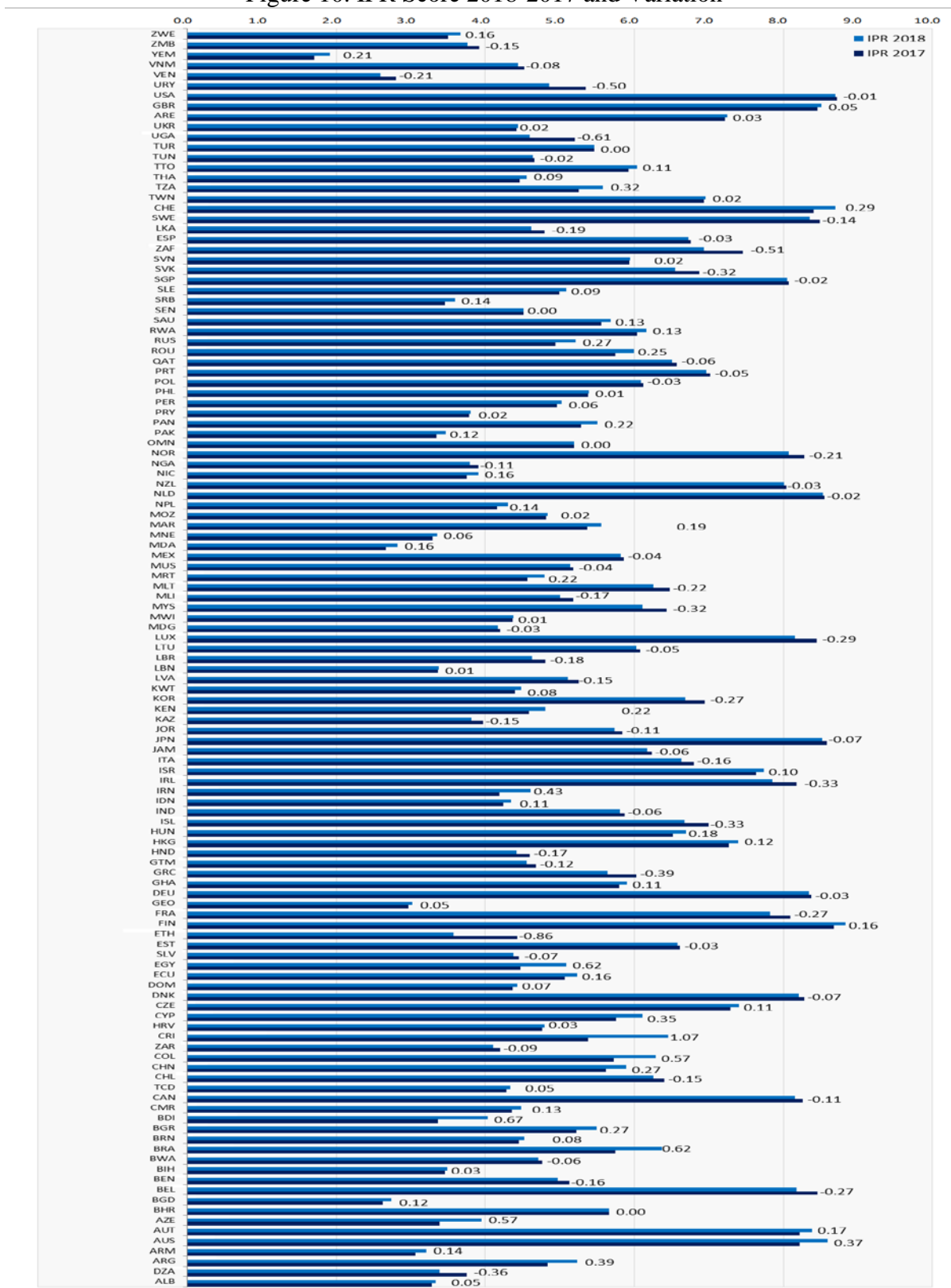


Figure 10. IPR Score 2018-2017 and Variation



IV.1. IPRI 2018 Groups Results

Countries were grouped according to their geographical regions, income level, degree of development, and participation in economics & regional integration agreements. For each group the IPRI score and of its components were calculated. Former year's classifications were also kept for comparison purposes (see Table 6 and Figures 11-15).

As an average, we can say that groups 2018 IPRI scores improved compared to 2017, however looking at each group, we find mixed results:

- a. PRA Regional Groups: Most of them improved their IPRI score, the most relevant being the CEECA (0.4746), while drops were recorded for Africa (-0.039) and Western Europe (-0.536).
- b. Geographical groups: The highest improvement is shown by the Rest of Europe (0.4901) followed by South America (0.1951), while Africa and Central America & The Caribbean showed a decrease of 0.0081 and 0.1887 respectively.
- c. Regional & Development Group (IMF classification): All the groups improved in their IPRI score but Sub-Saharan Africa (-0.043). The three top groups remaining were Advanced Economies, MENA & Pakistan, and Emerging & Developing Asia. This year Emerging & Developing Europe surpassed Latin America & Caribbean and Sub-Saharan countries. At the bottom remain CIS countries.
- d. Income group (WB classification): This year income classification groups recover the same display of the IPRI score: at the top High Income, followed by Upper Middle, Lower Middle and Low Income countries. The highest improvement is shown by the Upper Middle group (+0.2399), and the most significant decrease by Low Income countries (-0.1345).
- e. Integration Agreements: As in 2017, the five top groups are EFTA, OECD, NAFTA, EU, and TPP. EFTA and TPP showed reductions in their score (-0.0355 and -0.0791 respectively). At the bottom we also find CEMAC, CEEAC, SAARC, CIS, and ECOWAS. CIS showed the most relevant improvement of all groups (+0.7690), followed by MERCOSUR (+0.5807) and CAN (+0.36). The groups with higher deterioration in their IPRI score were CARICOM (-0.9435), CEMAC (-0.246), and IGAD (-0.1397).

Group members were updated by April 30th, 2018; and it is worth highlighting the following cases:

- United Kingdom (UK) will remain in the EU, according to note in the following link: https://europa.eu/european-union/about-eu/countries_en#tab-0-0
- Bolivarian Republic of Venezuela is not included in MERCOSUR, according to note in the following link: <http://www.mercosur.int/innovaportal/v/7823/4/innova.front/paises-del-mercosur>
- Equatorial Guinea is included in OPEC countries according to note in the following link: http://www.opec.org/opec_web/en/about_us/25.htm
- United States of America (USA) is not included in TPP, according to note in the following links: <https://ustr.gov/trade-agreements/free-trade-agreements/trans-pacific-partnership>
<https://www.whitehouse.gov/presidential-actions/presidential-memorandum-regarding-withdrawal-united-states-trans-pacific-partnership-negotiations-agreement/>

It is worth mentioning that some groups are in different classifications, and they report different score values. That is the case of Commonwealth of Independent States or Latin America and the Caribbean. This is because in some of the classifications they include/exclude some countries.

Table 6. IPRI 2018: Groups Score

	Group	IPRI 2018	LP 2018	PPR 2018	IPR 2018
Groups Regional	A	4.7710	3.9914	5.6225	4.6991
	AO	6.1128	5.7075	6.8227	5.8081
	CEECA	5.4113	4.9582	6.3396	4.9361
	LAC	5.1211	4.3239	5.9764	5.0631
	MENA	5.6058	4.9219	6.7749	5.1206
	NA	8.2095	7.9207	8.2822	8.4255
	WE	7.6100	7.6119	7.4909	7.7272
Geographical Regions	EUROPEAN UNION	6.9064	6.7577	6.9560	7.0055
	REST OF EUROPE	5.4777	5.0748	6.6374	4.7209
	AFRICA	4.7997	4.0282	5.6758	4.6951
	NORTH AMERICA	7.1974	6.4859	7.5507	7.5556
	CENTRAL AMERICA&CARIBE	5.0455	4.3025	5.8540	4.9798
	SOUTH AMERICA	5.1994	4.4262	6.1000	5.0721
	ASIA	5.7733	5.2133	6.7849	5.3216
OCEANIA	8.4808	8.6203	8.5227	8.2995	
Regional Integration Agreements	OECD	7.2804	7.0774	7.3683	7.3955
	EU	6.9064	6.7577	6.9560	7.0055
	SADC	4.9203	4.3253	5.7533	4.6822
	ECOWAS	4.7231	3.9635	5.3641	4.8417
	ASEAN	5.8010	5.4649	6.5950	5.3431
	PARLACEN	4.9073	3.8358	6.3546	4.5315
	GCC	6.4893	6.0513	7.6213	5.7952
	AP	5.8675	4.9219	6.7907	5.8899
	MERCOSUR	5.3703	5.0107	6.0362	5.0641
	SAARC	4.5657	3.9643	5.5478	4.1848
	CEMAC	4.0471	2.7025	5.0275	4.4112
	MCCA	5.0688	4.2131	6.2526	4.7406
	CIS	4.6273	3.7175	6.2583	3.9062
	ARAB M UNION	4.7631	4.0441	5.6509	4.5943
	CARICOM	4.8131	4.4807	4.5716	5.3870
	CAN	5.1523	3.7996	6.1435	5.5139
	EFTA	8.2290	8.5732	8.3025	7.8114
IGAD	4.7524	3.8127	6.1210	4.3234	
NAFTA	7.1974	6.4859	7.5507	7.5556	
CEEAC	4.4359	3.0899	5.5928	4.6251	
TPP	6.8646	6.6755	7.2387	6.6797	
Region & Development Classification (IME)	Advanced economies	7.4514	7.3671	7.5063	7.4807
	CIS	4.7012	3.9400	6.3848	3.7789
	Emerging and Dvlpg. Asia	5.2089	4.6836	6.1528	4.7902
	Emerging and Dvlpg. Europe	5.2061	4.7263	6.0621	4.8301
	Latin America & Caribbean	5.1211	4.3239	5.9764	5.0631
	Middle East, N. Africa & Pakistan	5.2977	4.6009	6.4588	4.8335
	Sub-Saharan Africa	4.7951	4.0129	5.6769	4.6955
Income Group (World)	High income	7.1041	7.0075	7.2983	7.0065
	Low income	4.4734	3.6004	5.2711	4.5486
	Lower middle income	4.6594	3.8554	5.8235	4.2992
	Upper middle income	5.2265	4.4676	6.3614	4.8504
OPEC	OPEP	5.2143	4.4716	6.3343	4.8368

Figure 11. 2018 IPRI and Components: Regional Groups Score

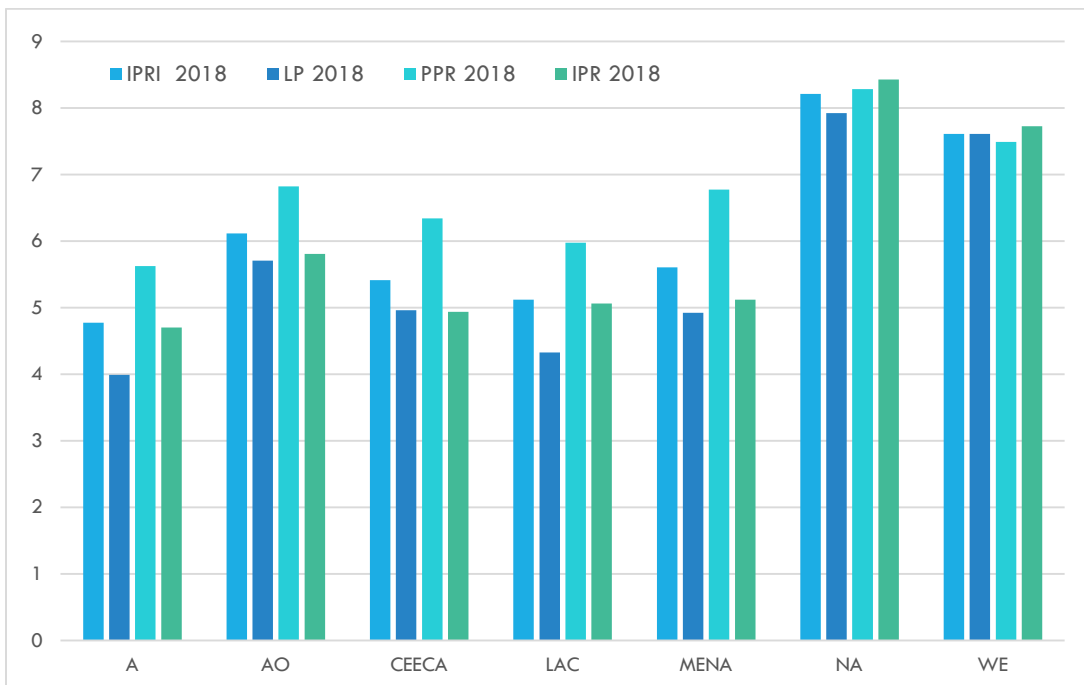


Figure 12. 2018 IPRI and Components: Geographical Groups Score

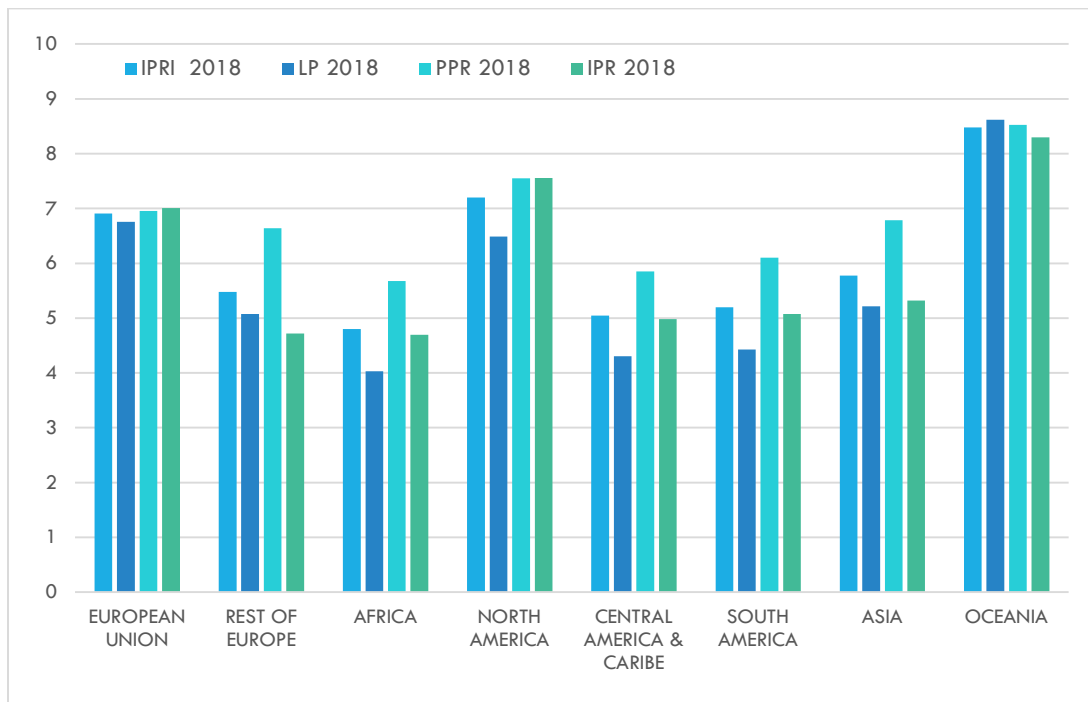


Figure 13. 2018 IPRI and Components: Development Groups Score

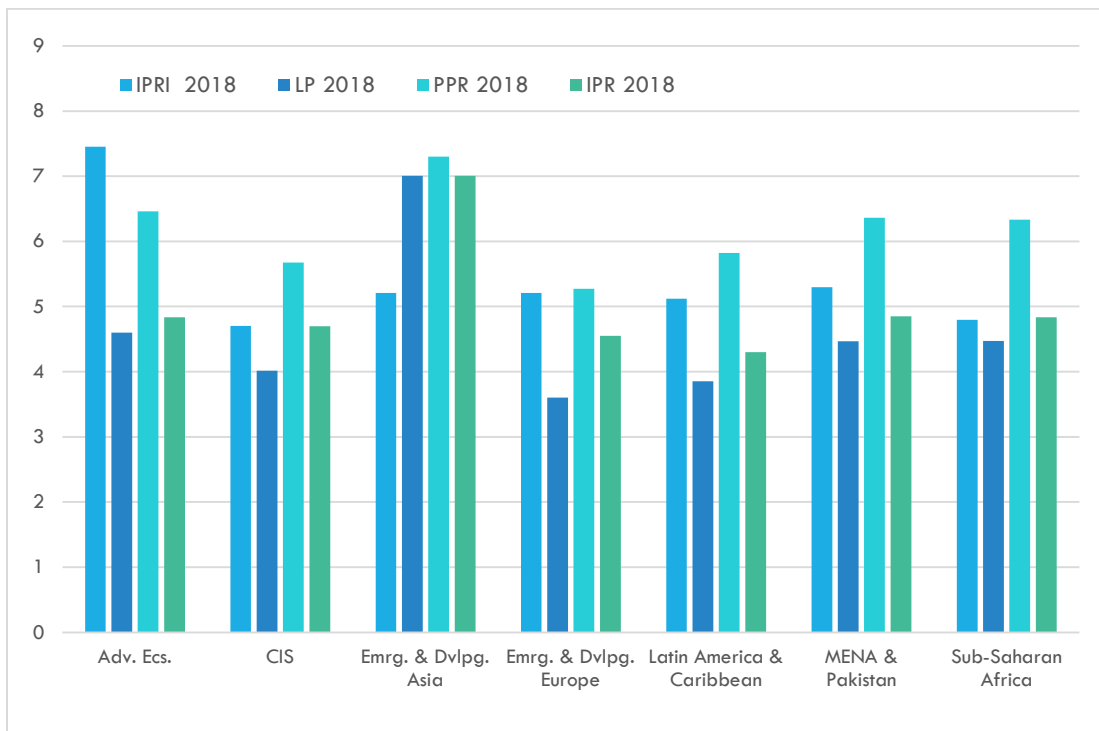


Figure 14. 2018 IPRI and Components: Income Groups Score

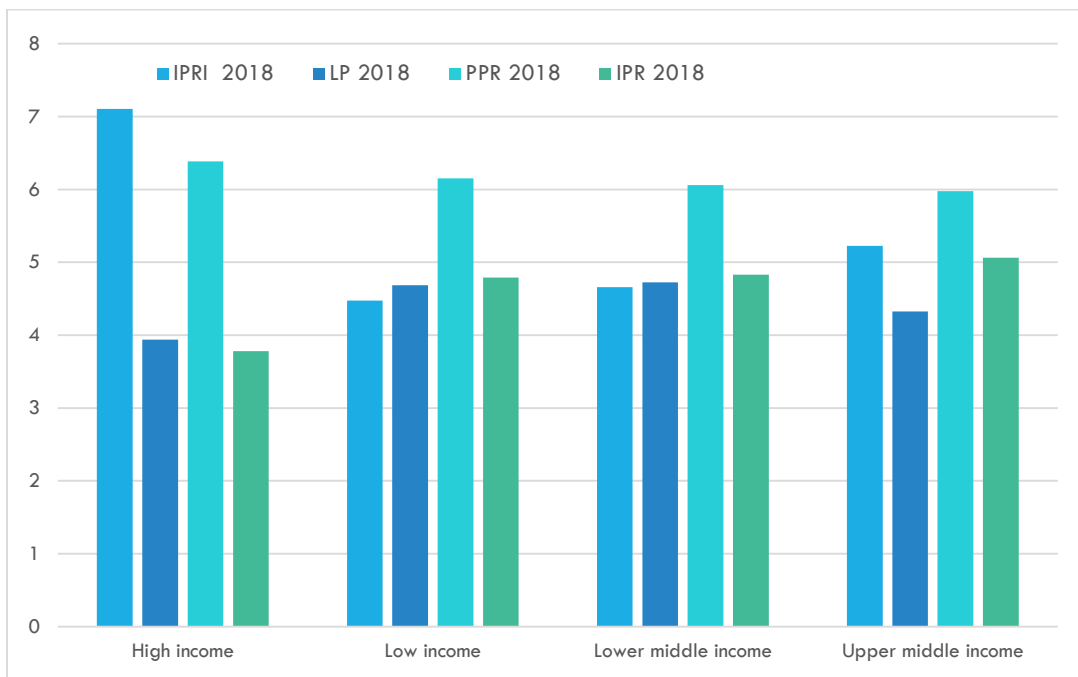
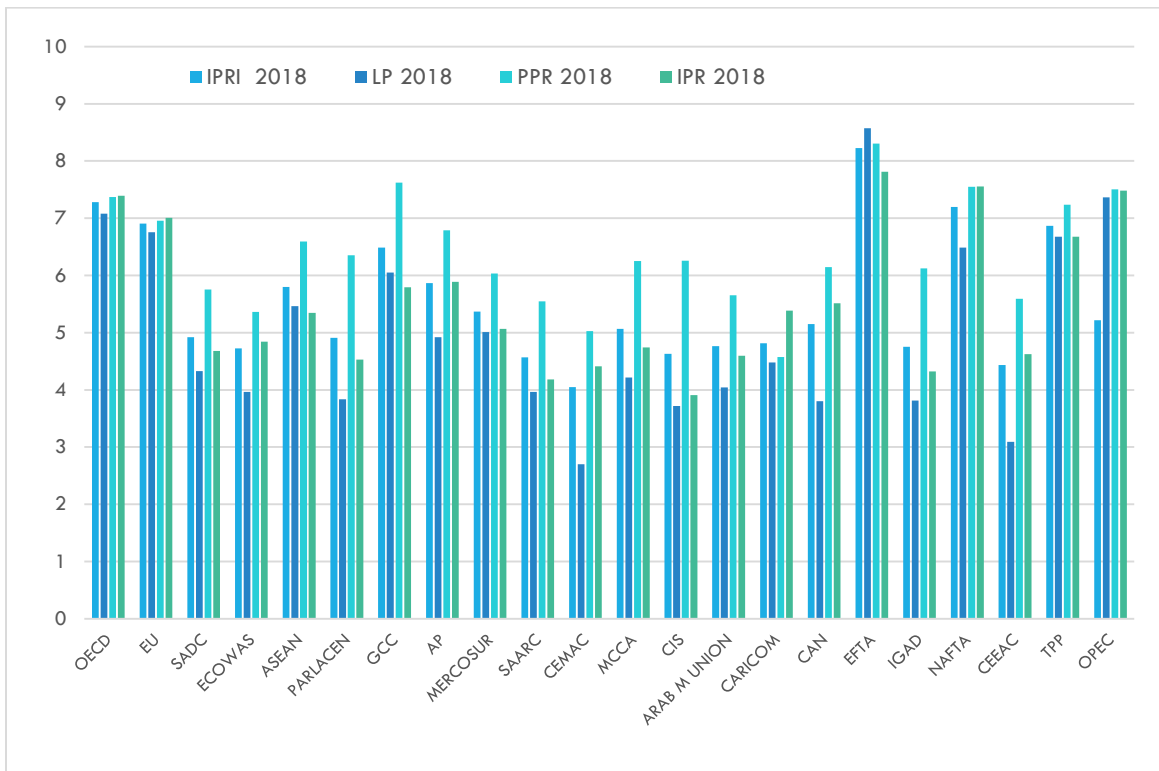


Figure 15. 2018 IPRI and Components:
Economic & Regional Integration Agreement Groups Score



V. IPRI-Population

Taking into account a demographic perspective is very important for an index such as the IPRI, which aims to assess the level of property rights that people enjoy, regardless of whether measurements are taken by countries.

For that reason, since 2015 we included a population incidence to the index. In this respect, we note that although the 2018-IPRI average score is 5.7406, when population weights it, it reduces to 5.645. However, there is an improvement if compared to 2017 IPRI-population (5.522), presenting a positive scenario where more people around the world enjoy property rights protection.

Even with an improvement from the previous year, there is still much room for upgrading the property rights systems in highly populated countries. With this approach, the IPRI becomes an even more powerful tool for policy makers.

This year's sample of 125 countries has a population of 6.8 thousand millions people¹ and it shows that 66.50% of world population (71.47% sample population) live in 71 countries with an IPRI between [4.5-6.4], more specifically, almost half of world population (45.53% or 48.93% of sample population) live in 28 countries with a middle range of this index, (between [5.5-6.4]). On the two extremes, we find that 13% of the world population (or 13.98% sample population) enjoys higher levels of property rights protection in 33 countries [6.5-9.4]; and 13.54% of world population (14.56% sample population) live in 21 countries with lower levels of property rights [2.5-4.4].

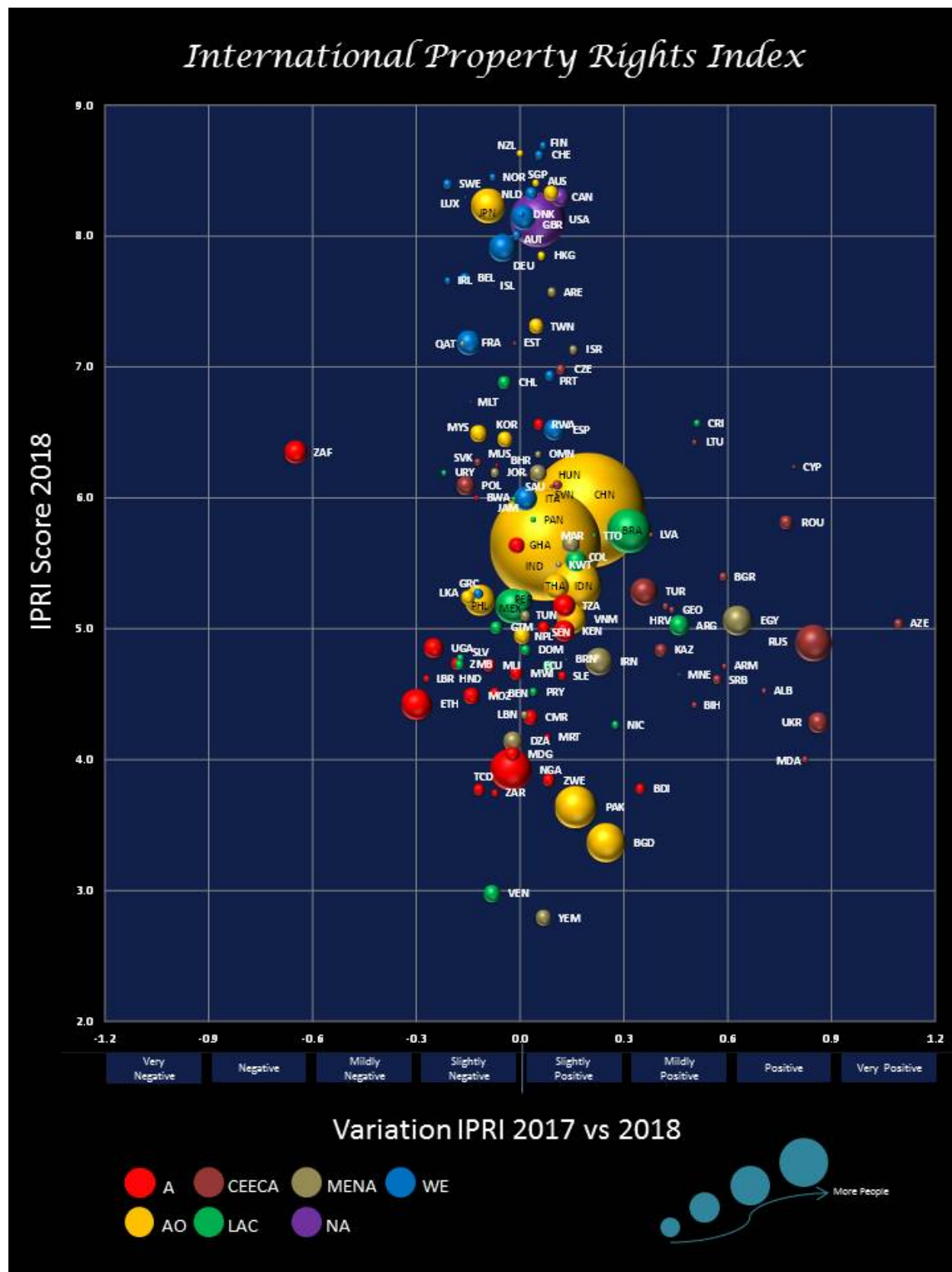
Table 7. 2018 IPRI and Population

2018 IPRI (Ranges)	Number of Countries	Population (000)	% Population	Incidence (%)	IPRI-Population
2.5 a 3.4	4	229,983	3.40	1.65	1.93
3.5 a 4.4	17	698,743	10.32	9.70	7.28
4.5 a 5.4	43	1,548,208	22.86	29.62	20.52
5.5 a 6.4	28	3,336,337	49.26	23.55	50.52
6.5 a 7.4	12	201,852	2.98	11.59	3.65
7.5 a 8.4	18	739,848	10.92	20.27	15.68
8.5 a 9.4	3	18,416	0.27	3.62	0.42
	125	6,773,387	100.00	100.00	100.00

Figure 16 shows a combination of elements while analyzing changes in the IPRI scores: country, population, and belonging to particular group. It's encouraging to see that most of the countries have improved their scores, particularly densely populated countries showing a mildly positive to positive change in fostering their property rights system.

¹ Source: United Nations. Population Division. World Population Prospects: The 2017 Revision. <http://esa.un.org/unpd/wpp/Download/Standard/Population/>

Figure 16. 2018 IPRI: Country Score Changes (population and groups)



VI. IPRI and Gender

Gender equality refers to equal rights, responsibilities, and opportunities for women and men, girls and boys; this means that the interests, needs, and priorities of both females and males are taken into consideration. Human rights and social justice are goals in themselves. At the same time, their relevance has been demonstrated in fostering development, particularly in some areas like health, education, agriculture, and unbiased access to credit for reducing poverty. In short, gender equality plays a decisive role for less developed and developing countries.

Although organized by countries, the IPRI intends to show property rights protection of people, the gender component attempts to measure gender bias towards property right protection. Using items closely related to property rights and their impact on economic development, we used the Social Institutions and Gender Index, (SIGI) created by the OECD to calculate the gender component for the IPRI. The SIGI is composed of five sub-indices, each representing a separate dimension of discrimination: Discriminatory Family Code, Restricted Physical Integrity, Son Bias, Restricted Resources, and Assets and Restricted Civil Liberties.

To account for gender equality, this chapter extends the standard IPRI measure to include a measure of gender equality (GE) concerning property rights. The IPRI formula was modified to incorporate gender equality as following:

$$IPRI-GE = IPRI + 0.2*GE$$

A weight of 0.2 for the gender equality measure is arbitrary. We varied the weight to 0.5 or according to the female/male population in each country, but scores were highly correlated. We decided to keep the weight of 0.2 for comparison purposes with previous data series.

VI.1. Data & Methodology

The GE component is calculated using the following five indicators (Source: OECD Gender, Institutions, and Development Database 2014 (GID-DB) details in Appendix III):

1. **Women's Access to Land:** Estimates whether women and men have equal and secure access to land use, control, and ownership.
2. **Women's Access to Credit:** Measures whether women and men have equal access to financial services.
3. **Women's Access to Property Other than Land:** Determines whether women and men have equal and secure access to non-land assets use, control, and ownership.
4. **Inheritance Practices:** Combines two elements:
 - a. Inheritance practice to daughters: Considers whether daughters and sons have equal inheritance rights.
 - b. Inheritance practice to widows: Assesses whether widows and widowers have equal inheritance rights.
5. **Women's Social Rights:** Covers broader aspects of women's equality and is a composite of four other items crucial to equal standing in society:
 - a. Parental authority:

- i. *In marriage*: determines whether women and men have the same right to be the legal guardian of a child during marriage.
 - ii. *After divorce*: measures whether women and men have the same right to be the legal guardian of and have custody rights over a child after divorce.
- b. Female genital mutilation: Measures the occurrence of female genital mutilation.
 - c. Access to public space: Evaluates whether women face restrictions on their freedom of movement and access to public space.
 - d. Son preference in education: Expresses the percentage of people agreeing that university is more important for boys than for girls.

The original data have three levels: 0 (Best), 0.5 (Average) and 1 (Worst). All data series were rescaled to IPRI scale (0-10). The final GE score is an index based on the average of the five equally weighted variables. Those variables with more than one item were also calculated as equally weighted. A minimum score (0) means complete discrimination against women, while maximum score (10) is given to countries with gender equality. Therefore, the IPRI-GE scale is (0-12). As the GE data source is discrete, equal outcomes are likely to be found. That will be minimized in the IPRI-GE thanks to the variability of the IPRI scores.

VI.2. IPRI-GE and GE: Country Results

The IPRI-GE shows results for 121 of 125 countries included in the 2018-IPRI, as there was no information available for Brunei Darussalam, Malta, Montenegro, and Taiwan.

The GE average score for the 121 countries is 7.458 which is higher (2.68%) than last year's (7.438). The average 2018 IPRI-GE score is 7.228 showing a slight but persistent improvement of 1.6% (2017 IPRI-GE= 7.118; 2016 IPRI-GE =6.933; 2015 IPRI-GE = 6.76).

Looking in detail at the GE components, we find that inheritance practices for widows (6.27) and daughters (6.17), and women's access to land (7.02) are the two items with lower scores (Figures 17a and 17b).

Fourteen (14) countries, show the maximum score of GE=10: Austria, Belgium, Croatia, Czech Rep., Denmark, Dominican Rep., Iceland, Ireland, Latvia, Lithuania, Luxembourg, Panama, Portugal, and Slovakia. Thirty (30) other countries were in the range of [9-10]. The GE bottom scores are held by Congo Dem. Rep. (2.67), Nigeria (3.12), Zambia (3.25), Egypt (3.37), Yemen Rep. (3.59), Oman (3.67), United Arab Emirates (3.67), Saudi Arabia (3.67), Chad (3.71), Iran (3.73), and Mauritania (3.85).

Finland leads the IPRI-GE (10.69) followed by New Zealand (10.63), Switzerland (10.51), Norway (10.45), Sweden (10.39), Australia (10.33), Netherlands (10.32), Luxembourg (10.30), Canada (10.29), Japan (10.22), Denmark (10.16), USA (10.12), and Austria (10.00). All of them are very close in their score values and over 10. In a score range of [10-9] we find Singapore, Germany, UK, Belgium, Ireland, Iceland, Hong Kong, France, Estonia, and Israel.

On the other extreme of the IPRI-GE, with scores below five (5), we find Yemen Rep. (3.51), Bangladesh (4.15), Congo Dem. Rep. (4.28), Haiti (4.3), Chad (4.51), Nigeria (4.55), Pakistan (4.64), Mauritania (4.94), Bolivarian Rep. Venezuela (4.96), Algeria (4.98), and Burundi (4.98).

Some of these countries report this low value due to their low IPRI scores and not their GE scores (that is the case for Haiti with a GE of 7.83 and Venezuela with a GE of 9.93).

Analyzing the IPRI-GE by groups, we found the following results (see Figure18):

- Geographical Regions: At the top we find Oceania (10.47), North America (8.986), and European Union (8.878); while at the bottom are Africa (5.85), Central America & the Caribbean (6.728), and South America (6.878).
- Regional and Development Criteria (IMF): Advanced Economies (9.40) is leading the group followed by Emerging & Developing Europe (7.123), Latin America & the Caribbean (6.786), Emerging and Developing Asia (6.443), CIS (6.3857), MENA & Pakistan (6.173), and ending with Sub-Saharan Africa (5.885).
- CIS countries show a high GE score (8.422) but the IPRI pulls down their IPRI-GE. A similar situation happens with Latin America & the Caribbean and Emerging & Developing Europe; while the opposite happens with MENA & Pakistan (GE= 4.377) and Emerging & Developing Asia (GE=5.952).
- Income Classification (World Bank): This year the IPRI-GE and the GE display the same pattern as the IPRI, holding the relationship between property and economic strength.
- Economic and Regional Integration Agreements: As in the IPRI, the five top groups are EFTA (10.191), OECD (9.208), NAFTA (8.9868), EU (8.878), and TPP (8.709). The bottom groups are CEMAC (4.9667), CEEAC (5.368), SAARC (5.625), and Arab Monetary Union (5.66). It should be noted that CIS, CAN, PARLACEN, MERCOSUR, and CARICOM show high GE scores, but their IPRI scores reduce their IPRI-GE values.

Fig. 17a. 2018 IPRI-GE: Scores & Rankings

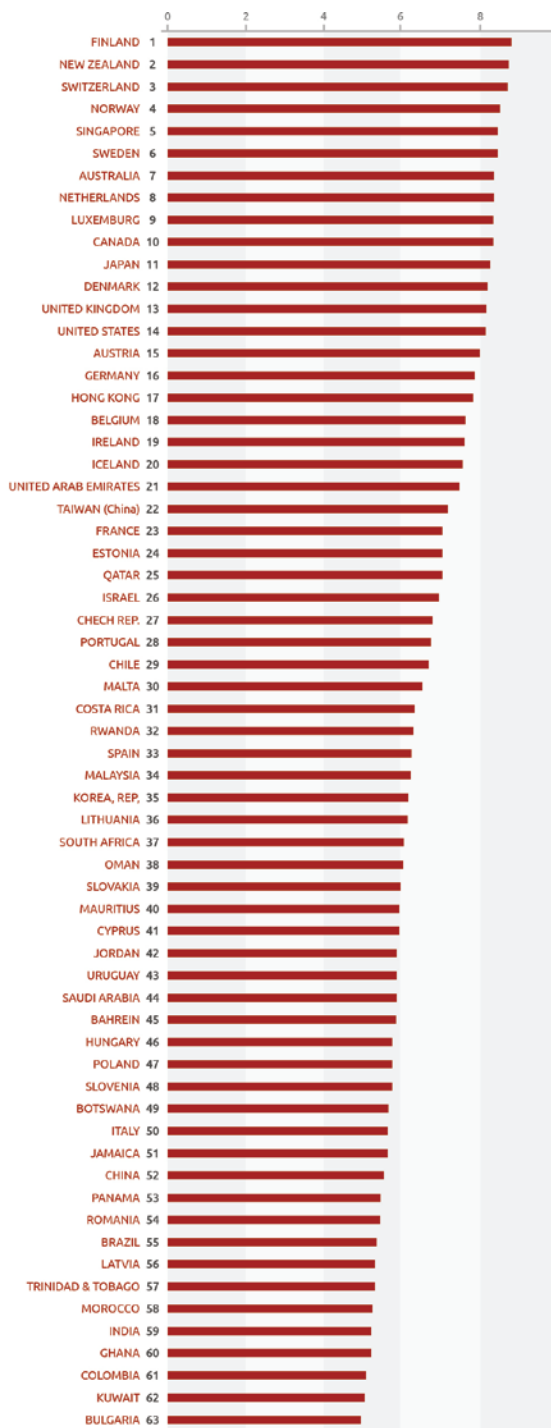


Fig. 17b. 2018 GE: Scores & Rankings

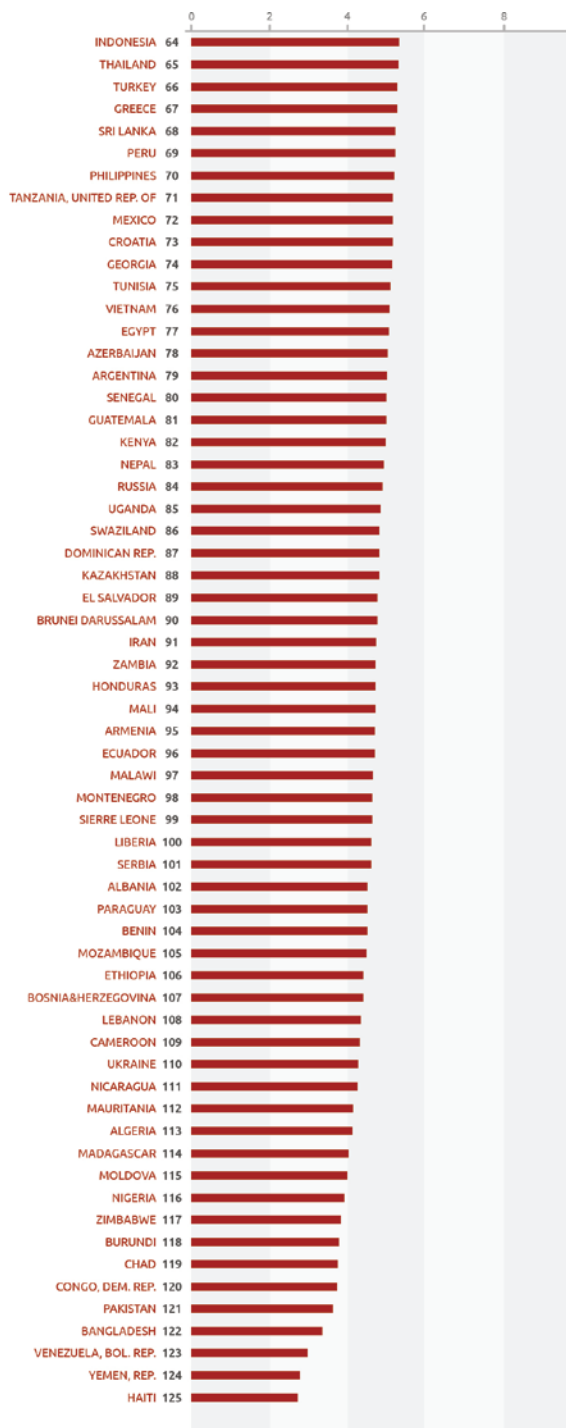


Figure 18. 2018 IPRI-GE and GE: Groups

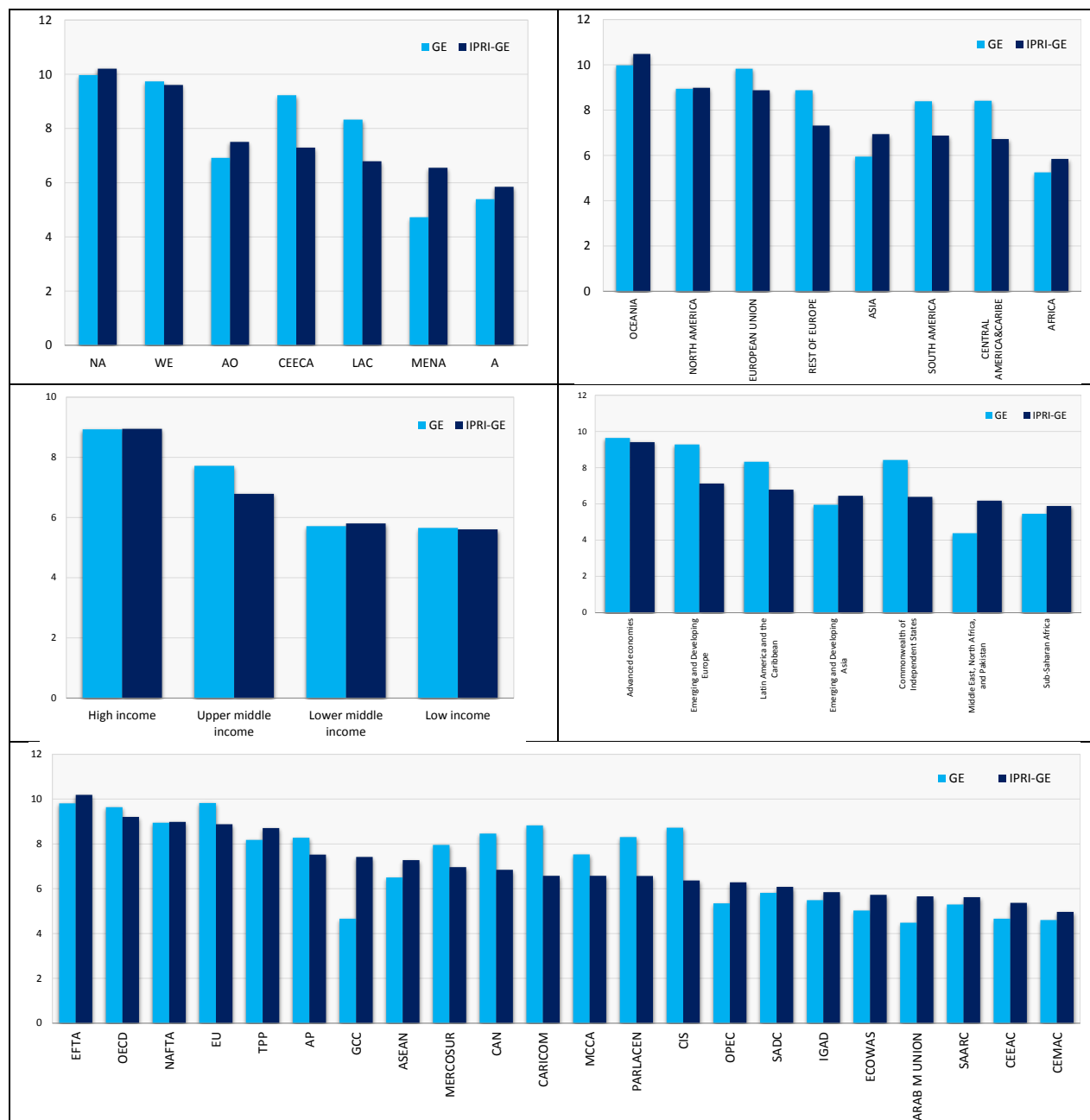


Table 8 shows the 2018 IPRI-GE rankings by quintile for the 121 countries in the sample. As in the IPRI, the number of countries belonging to each quintile increases from the top 20% to the bottom 20% (1st quintile 17 countries, 2nd quintile 20 countries, 3rd quintile 23 countries, 4th quintile 27 countries, and 5th quintile 34 countries). Hence, the fourth and fifth quintiles include 51.06% (61 countries) of the countries included in the sample.

Table 8. 2018 IPRI-GE: Ranking by Quintiles

Strongest



Weakest

Top 20 Percent	2nd Quintile	3rd Quintile	4th Quintile	Bottom 20 Percent
FINLAND	IRELAND	ITALY	KUWAIT	TANZANIA, UNITED REP.
NEW ZEALAND	ICELAND	QATAR	RUSSIA	BOSNIA & HERZEGOVINA
SWITZERLAND	HONG KONG (SAR of China)	SOUTH AFRICA	DOMINICAN REP.	TUNISIA
NORWAY	FRANCE	JAMAICA	INDONESIA	UGANDA
SWEDEN	ESTONIA	PANAMA	ARGENTINA	PARAGUAY
AUSTRALIA	ISRAEL	ROMANIA	MOROCCO	ALBANIA
NETHERLANDS	CZECH REPUBLIC	URUGUAY	INDIA	LIBERIA
LUXEMBOURG	PORTUGAL	LATVIA	GUATEMALA	MALI
CANADA	CHILE	RWANDA	THAILAND	MOZAMBIQUE
JAPAN	LITHUANIA	MALAYSIA	AZERBAIJAN	MALAWI
DENMARK	SPAIN	TRINIDAD & TOBAGO	PERU	SWAZILAND
UNITED STATES	UNITED ARAB EMIRATES	COLOMBIA	GHANA	EGYPT
AUSTRIA	SLOVAKIA	BULGARIA	MEXICO	BENIN
SINGAPORE	CYPRUS	BAHREIN	SERBIA	MADAGASCAR
GERMANY	COSTA RICA	BRAZIL	ARMENIA	MOLDOVA
UNITED KINGDOM	POLAND	CHINA	ECUADOR	NICARAGUA
BELGIUM	SLOVENIA	TURKEY	GEORGIA	ETHIOPIA
	HUNGARY	CROATIA	VIETNAM	IRAN
	MAURITIUS	BOTSWANA	EL SALVADOR	SIERRA LEONE
	KOREA, REP	OMAN	KAZAKHSTAN	CAMEROON
		JORDAN	SRI. LANKA	ZAMBIA
		GREECE	NEPAL	LEBANON
		SAUDI ARABIA	UKRAINE	ZIMBABWE
			PHILIPPINES	BURUNDI
			SENEGAL	ALGERIA
			KENYA	VENEZUELA, BOLIVARIAN REP.
			HONDURAS	MAURITANIA
				PAKISTAN
				NIGERIA
				CHAD
				HAITI
				CONGO, DEM. REP.
				BANGLADESH
				YEMEN, REP.

VII. IPRI, Development and 21st Century Disruptions

Given the extensive literature of important interactions between property rights and development, we examined different dimensions of development with the IPRI and its components through indices and variables.

Development is a multidimensional concept that includes economic, political, social, cultural, technological, and ecological spheres for present and future generations.

Ethics is central to the analysis of the complexities of human social development, having received important theoretical contributions this century from Amartya Sen (1999)² and Martha Nussbaum (2011)³. ‘Capabilities’ and ‘development as freedom’ provide a normative philosophical foundation for a theory of human rights, an essential requirement for a dignified life with social justice. The key players in the model are human beings: assessing quality of life, and making proactive efforts to improve their well-being. From this perspective, development refers to the ability to accomplish goals in life. Therefore, the expansion of freedom is central to this approach (Levy-Carciente, S. *et al.* 2014)⁴.

Concurrently, the accelerated path in which transformations are happening forces us to identify the levers that allow success under new structures. How does one prepare to succeed in a world with these characteristics? Are property rights valuable institutions to succeed in the new e-society? These questions directed us to examine the relationship of some indicators of the e-society with the IPRI and its components.

Indicators were gathered in four groups, as follows:

- Economic Outcomes
- Liberties
- Social Capital
- E-society

² Sen, Amartya. 1999. *Development as Freedom*. Oxford: Oxford University Press.

³ Nussbaum, Martha C. 2011. *Creating Capabilities: The Human Development Approach*. Cambridge: Harvard University Press.

⁴ Levy-Carciente, Sary *et al.* 2014. "From Progress to Happiness: Measurements for Latin America". *Social Change Review*, Summer 2014, Vol. 12(1): 73-112. DOI: 10.2478/scr-2014-0004.

VII.1. Socio-economic Outcomes

In this section, a group of elements related to the economic dimension were evaluated with the IPRI and its components (for source details see Appendix IV):

- Production: Using the Gross Domestic Product (GDP) in constant USD in *per capita* terms adjusted by the Gini coefficient. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It was calculated without making deductions for depreciation or for depletion and degradation of natural resources. The Gini coefficient is a statistical measure of the degree of variation represented in a set of values. When adjusting the GDP it captures income inequality. (Source: World Bank).
- Fiscal Policy using three variables:
 - Government Spending: This component – of the Economic Freedom Index, Heritage Foundation – considers the level of government expenditures as a percentage of GDP. Government expenditures, including consumption and transfers, account for the entire score.
 - Fiscal Freedom: This component – of the Economic Freedom Index, Heritage Foundation – is a measure of the tax burden imposed by government. It includes both the direct tax burden in terms of the top tax rates on individual and corporate incomes and the overall amount of tax revenue as a percentage of GDP.
 - Personal Income Tax Rate of the Tax Attractiveness Index (TAI) (<http://www.tax-index.org/>) determines the tax burden for employees. Therefore, it increases labor costs for corporations since (internationally mobile) employees demand a higher wage in countries with higher personal income tax rates.
- Domestic Investment: Using the Gross Capital Formation in current *per capita* terms which consists of outlays on addition to the fixed assets of the economy plus net changes in the level of inventories. (Source: World Bank).
- Foreign Investment: Using Net Investment in government nonfinancial assets *per capita* (constant 2010 USD) that includes fixed assets, inventories, valuables, and non-produced assets. Nonfinancial assets are stores of value and provide benefits either through their use in the production of goods and services or in the form of property income and holding gains. Net investment in nonfinancial assets also includes consumption of fixed capital. (Source: World Bank).
- Composition of Production: Using the Index by the Atlas of Economic Complexity. The complexity of an economy is related to the multiplicity of useful knowledge embedded in it. We can measure economic complexity by the mix of products that countries are able to make. (Source: The Observatory of Economic Complexity, MIT).
- Entrepreneurship Ecosystem: Using the Global Entrepreneurship Index of GEDI that measures the health of the entrepreneurship ecosystems in countries. It then ranks the performance of these countries against each other providing a picture of how each of them performs in both domestic and international context. (Source: The Global Entrepreneurship and Development Institute).

- Fragile States: Using the Fragile States Index (FSI), which is a tool identifying those pressures pushing a state towards the brink of failure. (Source: The Fund for Peace). We also included two of its components:
 - a. Uneven Economic Development: Ethnic, religious, or regional disparities. Governments tend to be uneven in their commitment to the social contract.
 - b. Poverty & Economic Decline: Strain the ability of the state to provide for its citizens.

Then we used the Pearson Correlation Coefficient which is a measure of the linear dependence between two variables to evaluate their correlations with the IPRI and its components. Most of the correlations⁵ found were significant and strong (see Table 9). We consider the following tranches or correlation ranges: None [0], Weak (0 - 0.3), Soft [0.3 - 0.5), Moderate [0.5 - 0.6), Good [0.6 - 0.8), Strong [0.8 - 1), Perfect [1]. The direction of the correlations are as expected; however we will show only their absolute value, as the direction of the series was adjusted for calculations.

IPRI-GDP *per capita* correlations increased when it was adjusted by the Gini Coefficient – a measure of dispersion or inequality – making it a more accurate measure in each country. The highest correlation was found for the IPRI and the adjusted GDP *per capita* (0.833) followed by the LP (0.814) and the IPR (0.807).

Table 9. Pearson Correlation Coefficient

	GDP <i>per capita</i> (constant 2010 USD)	GDP <i>per capita</i> (constant 2010 USD) * GINI	Gross capital form. (current USD) + <i>per capita</i>	Net investment in non-financial assets <i>per capita</i> (constant 2010 USD)	Government Spending (IEF, HF)	Fiscal Freedom (IEF, HF)
IPRI	0.823	0.833	0.756	0.528	0.476	0.414
LP	0.821	0.814	0.750	0.532	0.505	0.461
PPR	0.651	0.668	0.623	0.483	0.307	0.189
IPR	0.782	0.807	0.705	0.464	0.472	0.443
	Economic Complexity	GEI	Fragile States Index	Economic Decline and Poverty (FSI)	Uneven Development (FSI)	Personal Income Tax Rate (TAI)
IPRI	0.735	0.904	0.863	0.813	0.751	0.420
LP	0.678	0.885	0.890	0.793	0.765	0.412
PPR	0.648	0.779	0.705	0.750	0.673	0.225
IPR	0.739	0.835	0.773	0.716	0.640	0.497

The relationship with domestic investments (Gross Capital Formation), showed for the IPRI a Pearson of 0.7562 followed by the LP (0.765), the IPR (0.705), and the PPR (0.623) component.

⁵Correlation theory is aimed to show the possible relationship, association, or dependence between two or more observed variables. It allows for the analysis of the type of association (direct or indirect) and the level or degree of intensity between them.

Meanwhile the correlation with foreign investment (net investment in nonfinancial assets) was moderate, showing a Pearson Coefficient for the IPRI and its components of 0.5 ± 0.04 .

Domestic production composition (Economic Complexity) also exhibited a good Pearson Coefficient, being the highest with IPR (0.739), followed by the IPRI (0.735), LP (0.678), and the PPR (0.648) component.

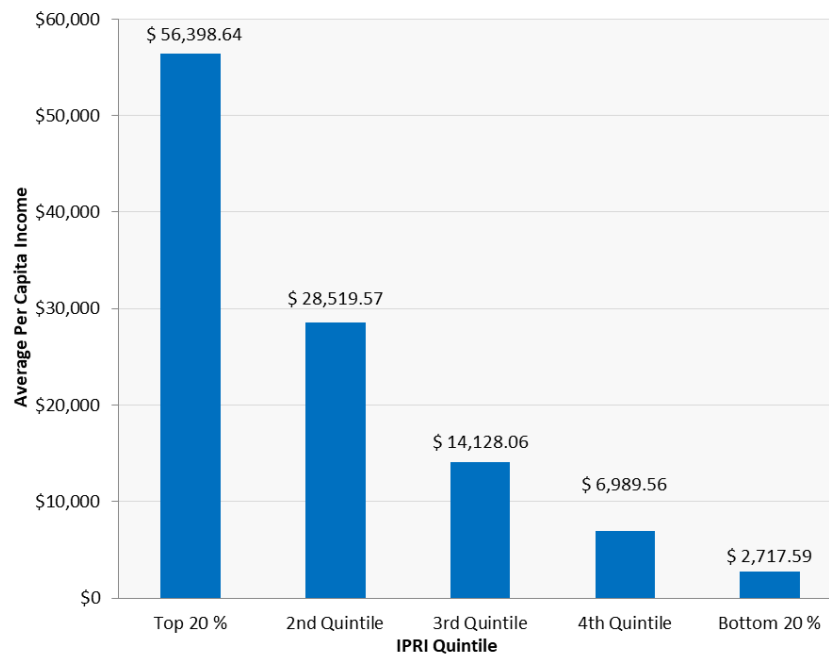
Of all the items, the entrepreneurial environment had the highest correlations in this order: IPRI (0.904), LP (0.885), IPR (0.835), and PPR (0.779). This finding boasts entrepreneurship as a building block of innovation, investment, production, and economic growth.

The ability of a state to respond to citizenship demands measured by the Fragile States Index also showed strong correlations, the highest being LP (0.890), followed by IPRI (0.863), IPR (0.773), and PPR (0.705). It is also important to highlight the strong correlation of the IPRI with the FSI dimension, 'Economic Decline and Poverty' (0.813).

The lower correlations were found with fiscal policy (Government Spending, Fiscal Freedom, and Personal Income Tax Rate), all of them with Pearson Coefficient near 0.4.

Figure 19 shows that, on average, countries in the top quintile of IPRI scores (i.e. top 20%) show a *per capita* income almost 20 times that of the countries in the bottom quintile, which is a very relevant disparity. These results reinforce the significant and positive relationship between prosperity and a property rights system, measured at an individual level.

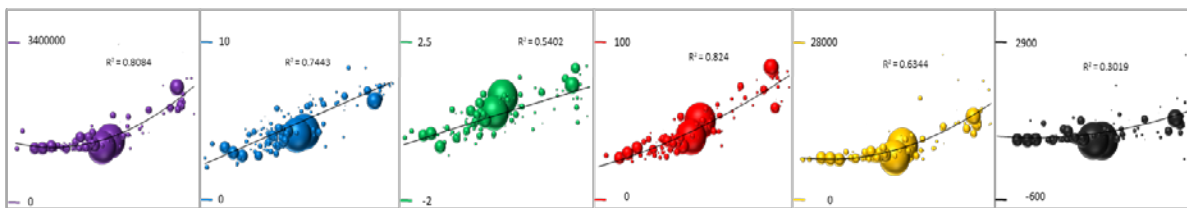
Figure 19: Average *per capita* Income by IPRI Quintiles



Figures 20a,b show the best fit curve for the IPRI and its components with some economic variable and the coefficient of determination⁶ (R^2). Figure 20a displays the relationship of IPRI-economic variables with a demographic perspective.

⁶The coefficient of determination (R^2) is a key output of the regression analysis. It is interpreted as the proportion of the variance in the dependent variable that is predictable from the independent variable. It ranges from 0 to 1.

Figure 20a. IPRI Correlations with Economic Outcomes Variables (with demographic impact)



Legend

- IPRI vs GDP per capita * Gini (GDP pc - Gini)
- IPRI vs Fragile States Index (FSI)
- IPRI vs Economic Complexity (EC)
- IPRI vs Global Entrepreneurship Index (GEI)
- IPRI vs Gross capital formation per capita (GKFpc)
- IPRI vs Net investment in nonfinancial assets per capita (Net-I pc)

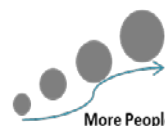
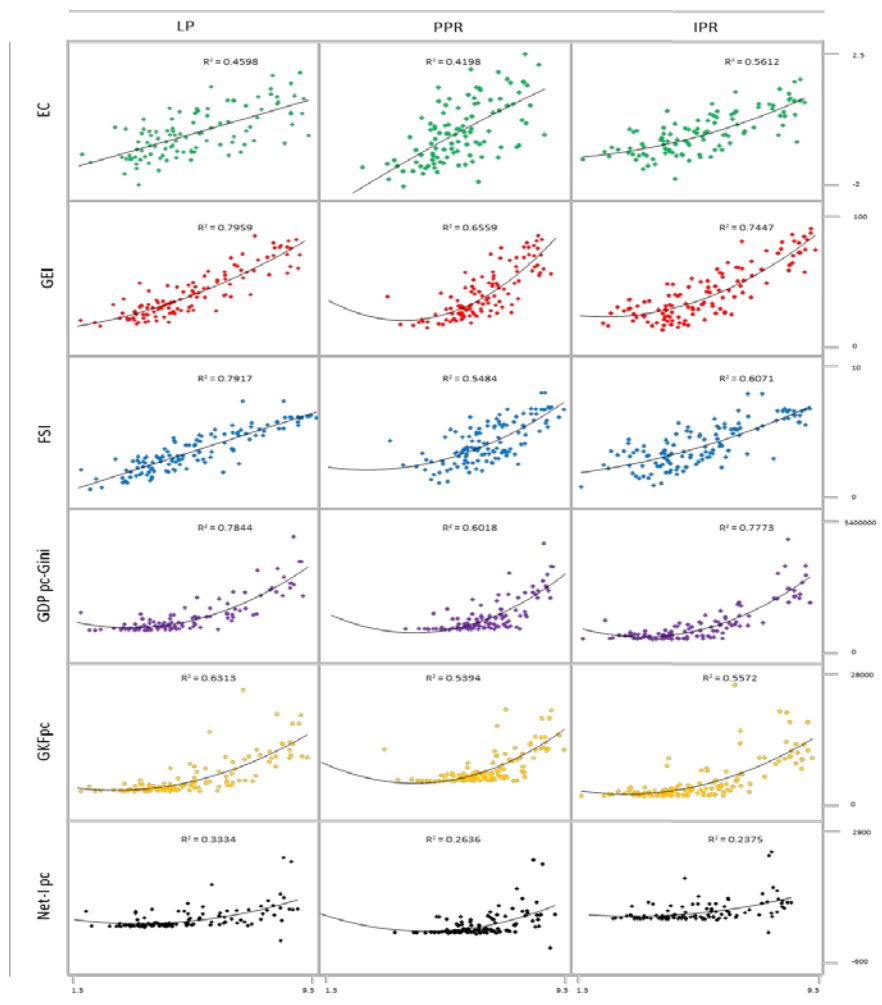


Figure 20b. IPRI Components Correlations with Economic Variables



- ◆ IPRI Components vs Economic Complexity (EC)
- ◆ IPRI Components vs Global Entrepreneurship Index (GEI)
- ◆ IPRI Components vs Fragile States Index (FSI)
- ◆ IPRI Components vs GDP per capita * Gini (GDP-Gini)
- ◆ IPRI Components vs Gross capital formation per capita (GKFpc)
- ◆ IPRI Components vs Net investment in nonfinancial assets per capita (Net-I pc)

VII.2. Freedom

Referencing the paradigm of ‘development as freedom’ based on capabilities and opportunities, it firmly becomes indissoluble with the republican conditions of citizenship, valuing human rights, and particularly human freedom to pursue personal goals.

In this perspective, an individual becomes empowered by information received via greater access to data and technology, and is better able to enjoy the free exercise of their more informed actions in a given legal framework: a rule of law in which freedom has the unavoidable counterpart of responsibility.

To examine the relevance of freedom and its relationship with the IPRI and its components, the following elements were considered (for source details see Appendix IV):

- Economic Freedom: Using two indices – the Index of Economic Freedom (IEF) by The Heritage Foundation and the Economic Freedom of the World Index (EFW) by Fraser Institute.

IEF documents the positive relationship between economic freedom and a variety of social and economic goals. The ideals of economic freedom are strongly associated with healthier societies, cleaner environments, greater *per capita* wealth, human development, democracy, and poverty elimination. (<http://www.heritage.org/index/about>). It is composed of 10 economic freedoms, within four categories: [1] Rule of Law (property rights, freedom from corruption); [2] Limited Government (fiscal freedom, government spending); [3] Regulatory Efficiency (business freedom, labor freedom, monetary freedom); and [4] Open Markets (trade freedom, investment freedom, and financial freedom). The IEF considers every component equally important in achieving the positive benefits of economic freedom. Each freedom is weighted equally in determining country scores.

EFW measures the degree to which the policies and institutions of countries are supportive of economic freedom. In recent years, social scientists have focused on the identification and measurement of the impact of economic, political, legal, and cultural factors in the growth and development of economies. The EFW data set provides a comprehensive measure of the degree to which countries rely on voluntary exchange and market institutions to allocate resources. It has five dimensions: [1] Size of Government; [2] Legal System and Security of Property Rights; [3] Sound Money; [4] Freedom to Trade Internationally, and [5] Regulation. The EFW index covers 157 countries with data available for approximately 100 countries back to 1980. This data set enables scholars to analyze the impact of both cross-country differences in economic freedom, and changes in that freedom across a time frame of more than three decades. (<http://www.freetheworld.com/>).

- Political Freedom: Using the Political Rights dimension of the Freedom in the World Index (FW) by the U.S.-based non-governmental organization Freedom House.

FW assesses the real-world rights and freedoms enjoyed by individuals, rather than governments or government performance per se. It is a result of a yearly survey that reports the degree of civil liberties and political rights in every nation and significant disputed territories around the world. It produces annual scores representing the levels of political rights and civil liberties in each state and territory, on a scale from 1 (most free) to 7 (least free). Depending on the ratings, the nations are then classified as "Free", "Partly Free", or

"Not Free". (<https://freedomhouse.org/report-types/freedom-world>). It has two dimensions: Political Rights and Civil Liberties.

In its Political Rights Dimension, countries and territories with a rating of 1 enjoy a wide range of political rights, including free and fair elections. Candidates who are elected actually rule, political parties are competitive, the opposition plays an important role and enjoys real power, and the interests of minority groups are well represented in politics and government. On the opposite end, countries and territories with a rating of 7 have few or no political rights because of severe government oppression, sometimes in combination with civil war; they may also lack an authoritative and functioning central government and suffer from extreme violence or rule by regional warlords.

- Civil Freedom: Using the Civil Liberties Dimension of the Freedom in the World Index by the U.S.-based non-governmental organization Freedom House.

In the Civil Liberties Dimension, countries and territories with a rating of 1 enjoy a wide range of civil liberties, including freedoms of expression, assembly, association, education, and religion. They have an established and generally fair legal system that ensures the rule of law (including an independent judiciary), allow free economic activity, and tend to strive for equality of opportunity for everyone, including women and minority groups. Countries and territories with a rating of 7 have few or no civil liberties. They allow virtually no freedom of expression or association, do not protect the rights of detainees and prisoners, and often control or dominate most economic activity.

The gap between political rights and civil liberties ratings is rarely more than two points. Politically oppressive states typically do not allow a well-developed civil society, for example; and it is difficult, if not impossible, to maintain political freedoms in the absence of civil liberties like press freedom and the rule of law.

- Absence of Coercion: Using the Human Freedom Index (HFI) by Cato, Fraser and Visio Institute. <https://www.cato.org/human-freedom-index>

HFI presents a broad measure of human freedom, understood as the absence of coercive constraint (based on the "negative" definition of freedom that prevents individuals from acting as they might wish), which includes economic freedom. It suggests that freedom plays an important role in human well-being and offers opportunities for further research into the complex ways in which freedom influences – and can be influenced by – political regimes, economic development, and the whole range of indicators of human well-being. The index uses 76 distinct indicators gathered in two dimensions: personal (34) and economic (42) freedom, distributed in the following areas: [1] Rule of Law; [2] Security and Safety; [3] Movement; [4] Religion; [5] Association, Assembly, and Civil Society; [6] Expression; [7] Relationships; [8] Size of Government; [9] Legal System and Property Rights; [10] Access to Sound Money; [11] Freedom to Trade Internationally; and [12] Regulation of Credit, Labor, and Business.

- Electoral Freedom: Using the World Electoral Freedom Index (WEFI) (<http://www.fundalib.org/en/imle-2018/>) developed by The Foundation for the Advancement of Liberty which aims to determine the degree of freedom enjoyed by the elector in each of the countries studied. In its attempt to classify countries (198) based on their electoral

freedom, it takes into account 55 indicators grouped in four sub-indices, and scores them from 0-100:

- The Political Development Index (PDI) contributes 10% to the general calculation. It includes 15 indicators designed to measure the pre-conditions of electoral freedom in each country grouped into three areas: political and legal indicators, indicators of general freedom in other aspects of society, and indicators of economic development.
- Active Suffrage Freedom Index (ASFI) contributes 30% to the general index. It has four large areas that incorporate more than a dozen indicators. Those areas are the universality of the vote & its restrictions, the characteristics of the rights of the voter, the electoral census, and the election & scrutiny procedures.
- Passive Suffrage Freedom Index (PSFI) contributes 30% to the general index, and has six areas: restrictions to passive suffrage, requirements for its exercise, entry barriers, characteristics of the electoral campaign, characteristics of the elective process, and the distortion of the result (15 indicators in total).
- Elector's Empowerment Index (EEI), contributes 30% to the score of the main index. It considers the following areas assessed using 14 indicators: effectiveness of the election, procedures for direct decision by the electorate, political pluralism, real power of the representatives & capacity to revoke them, and integrity of the political process.

We found significant, positive, and important correlations between IPRI and its components with previous indices (Table 10).

	IEF	EFW	HFI	WEFI-PDI	Pol. Rights - FWI	Civil Lib. - FWI
IPRI	0.818	0.722	0.782	0.864	0.555	0.622
LP	0.823	0.728	0.807	0.877	0.583	0.654
PPR	0.752	0.679	0.614	0.696	0.344	0.411
IPR	0.690	0.598	0.718	0.794	0.569	0.616

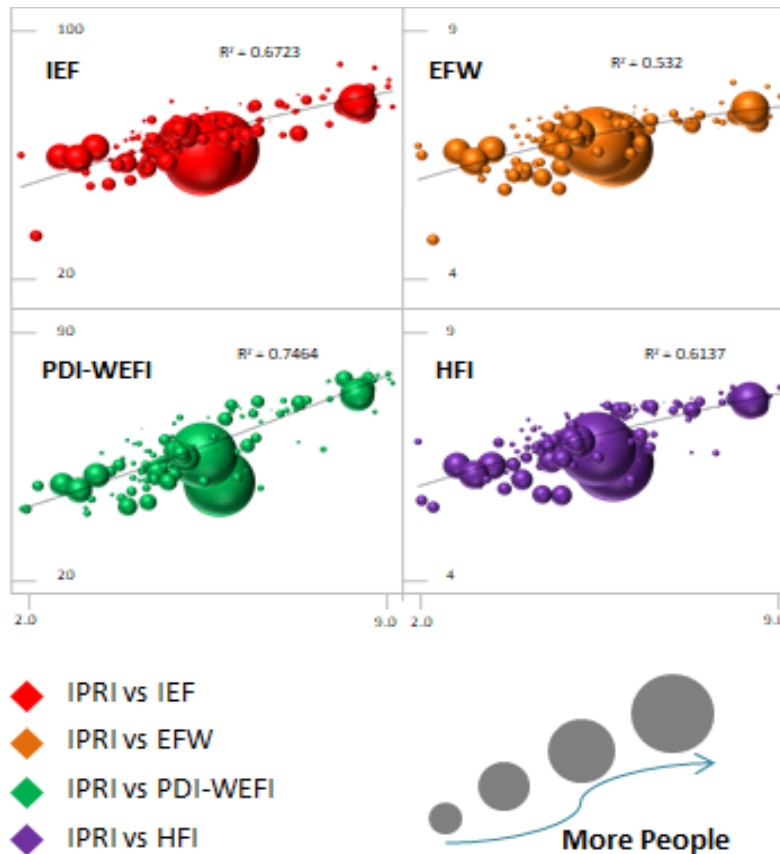
The strongest Pearson Coefficient was found between the Political Development Index component of the World Electoral Freedom Index (WEFI-PDI) and the LP (0.877) followed by the one with IPRI (0.864).

Next come the correlations with the Index of Economic Freedom (IEF) being the strongest with LP (0.823) followed by the IPRI itself (0.818), PPR (0.752), and IPR (0.69). Then comes the Human Freedom Index (HFI) with LP (0.807), the IPRI (0.782), IPR (0.718), and PPR (0.614). Again, an economic freedom index, this time the Economic Freedom of the World Index (EFW) had a good correlation with LP (0.728) and the IPRI (0.722).

In a third group we find Civil Liberties and Political Rights of the Freedom World Index by Freedom House. It must be noted that Political Rights and Civil Liberties of the Freedom in the

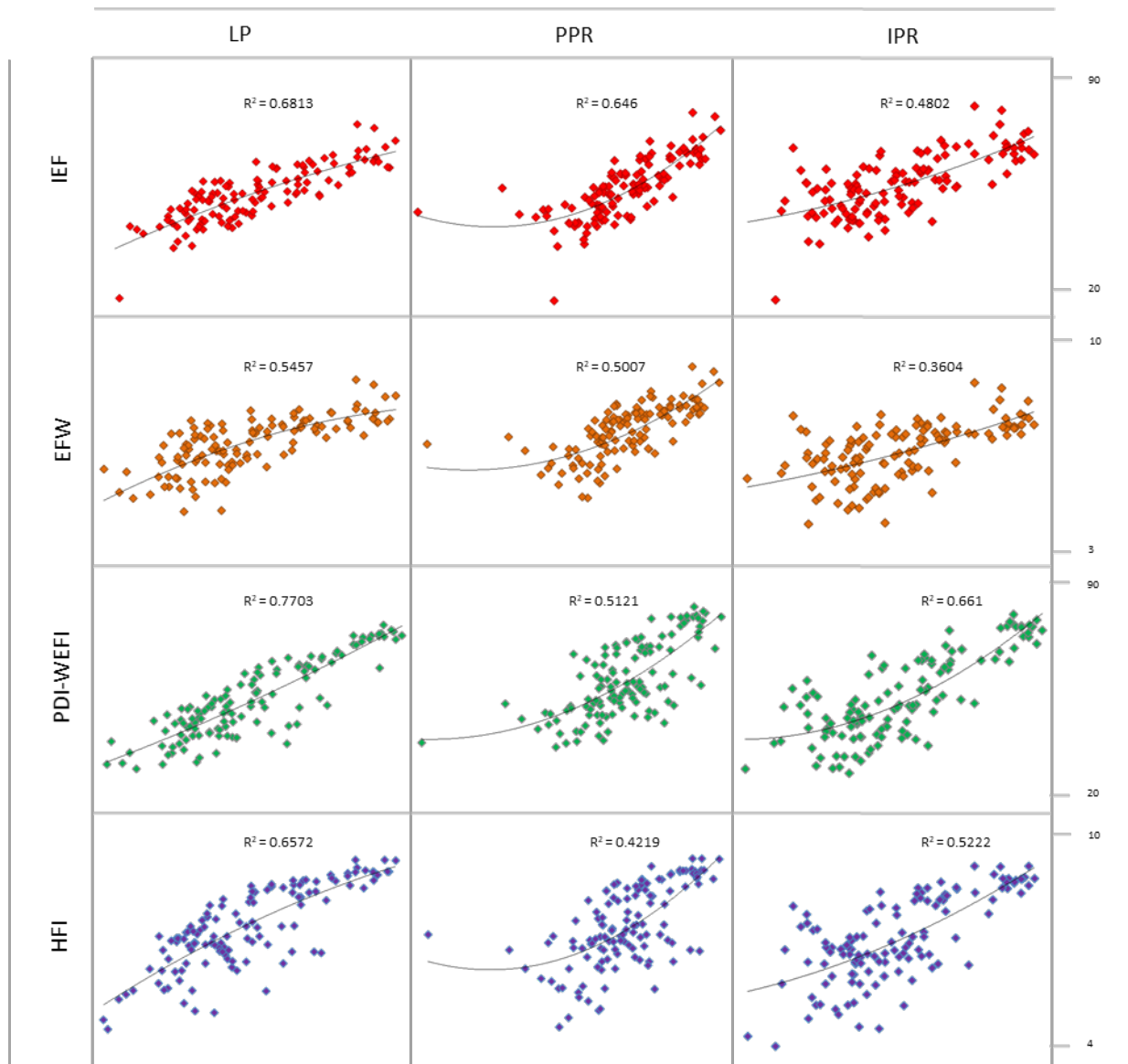
World Index by Freedom House are composed of numerical ratings, running from 1-7⁷. This way it could be considered a discrete item. Therefore, it is not appropriate to evaluate correlations mathematically (Pearson Correlation) as they generate tremendous dispersions and a correlation bias. However, this does not prevent conjectures based on their behavior related to the IPRI.

Figure 21a. IPRI Correlations with Freedom Indicators (with demographic incidence)



⁷ These variables run in the opposite direction of the IPRI. For this reason, their direction was adjusted.

Figure 21b. IPRI Components Correlations with Freedom Indicators



- ◆ IPRI vs IEF
- ◆ IPRI vs EFW
- ◆ IPRI vs PDI - WEFI
- ◆ IPRI vs HFI

VII.3. Social Capital

Social capital has different definitions, but it is generally understood as the network of relationships among people who live and work in a particular society enabling it to function effectively. Concurrently it may be known as the group of norms and bonds that allow collective social action. It is built upon trust, reciprocity, cooperation, assistance, support, interdependence, interaction, dialogue, involvement, and participation (Jaffé, Levy-Carciente & Zanoni, 2007)⁸.

Given the importance of having people as the axis around which development concepts and policies should rotate, we tried to grasp social capital of countries using these studies: [1] the Social Capital sub-index of the Prosperity Index by Legatum (<http://www.li.com>), [2] a group of variables from the International Institute of Social Studies (<http://www.indsocdev.org>), and [3] the Corruption Perception Index of Transparency International (<https://www.transparency.org/research/cpi/overview>):

- Social Capital component of the Prosperity Index, by Legatum: This sub-index measures countries' performance in two areas: social cohesion and engagement, and community & family networks. Variables: perceptions of social support, volunteering rates, helping strangers, charitable donations, social trust, marriage, and religious attendance.
- Civic Activism: Refers to the social norms, organizations, and practices which facilitate greater citizen involvement in public policies and decisions. These include access to civic associations, participation in the media, and the means to participate in civic activities such as nonviolent demonstrations or petitions.
- Intergroup Cohesion: Refers to relations of cooperation and respect between identity groups in a society. Where this cooperation breaks down, there is the potential for conflict such as ethnically or religiously motivated killings, targeted assassinations & kidnappings, acts of terror such as public bombings or shootings, or riots involving grievous bodily harm to citizens with concomitant effects upon growth and development.
- Interpersonal Safety and Trust: Interpersonal norms of trust and security exist to the extent that individuals in a society feel they can rely on those whom they have not met before. Where this is the case, the cost of social organization and collective action are reduced. Where these norms do not exist or have been eroded over time, it becomes more difficult for individuals to form group associations, undertake an enterprise, and live safely & securely.
- Inclusion of Minorities: Measures levels of discrimination against vulnerable groups such as indigenous peoples, migrants, refugees, or lower caste groups. This measure focuses upon whether there is systemic bias among managers, administrators, and members of the community in the allocation of jobs, benefits, and other social & economic resources regarding particular social groups.
- Corruption Perception Index: This index ranks countries/territories based on how corrupt a country's public sector is perceived to be. It is a composite index, drawing on corruption-related data from expert and business surveys carried out by a variety of independent and reputable institutions. It ranges between 0 (highly corrupt) and 10 (very clean) for the years

⁸ Jaffé, K.; S. Levy-Carciente; W. Zanoni. 2007. "The Economic Limits of Trust: The Case of Latin-American Urban Informal Commerce Sector" *Journal of Developmental Entrepreneurship*, Vol. 12, Sep(3):339-35.

1995 - 2011 and between 0-100 afterward, where 0 means that a country is perceived as highly corrupt and 100 means it is perceived as very clean.

We evaluated their correlation with the IPRI and its components (see Table 11 and Figure 22a,b), and the strongest correlations were found between the Corruption Perception Index with LP (0.973) and the IPRI (0.936). Immediately after comes the correlation of Civic Activism and the IPRI (0.842) followed by the IPR (0.823) and the LP (0.812) component.

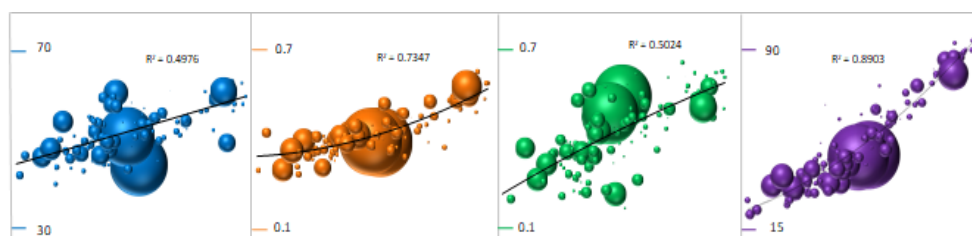
Interpersonal Safety and trust show good correlations mainly with LP (0.722) and the IPRI (0.708), and with the Social Capital component of the Prosperity Index with the IPRI (0.705), LP (0.688), and the IPR (0.661).

Inclusion of Minorities and Intergroup Cohesion displayed good correlations (0.6-0.8), especially with LP and IPRI.

Table 11. Pearson Correlation Coefficients

	Social Capital, PI	Civic Activism	Intergroup Cohesion	I-P Safety & Trust	Minorities Inclusion	Corruption Perception
IPRI	0.705	0.842	0.598	0.708	0.662	0.936
LP	0.688	0.812	0.626	0.722	0.671	0.973
PPR	0.625	0.696	0.512	0.676	0.559	0.746
IPR	0.661	0.823	0.516	0.600	0.606	0.844

Figure 22a. IPRI Correlations with Social Capital Indicators (w/demographic perspective)



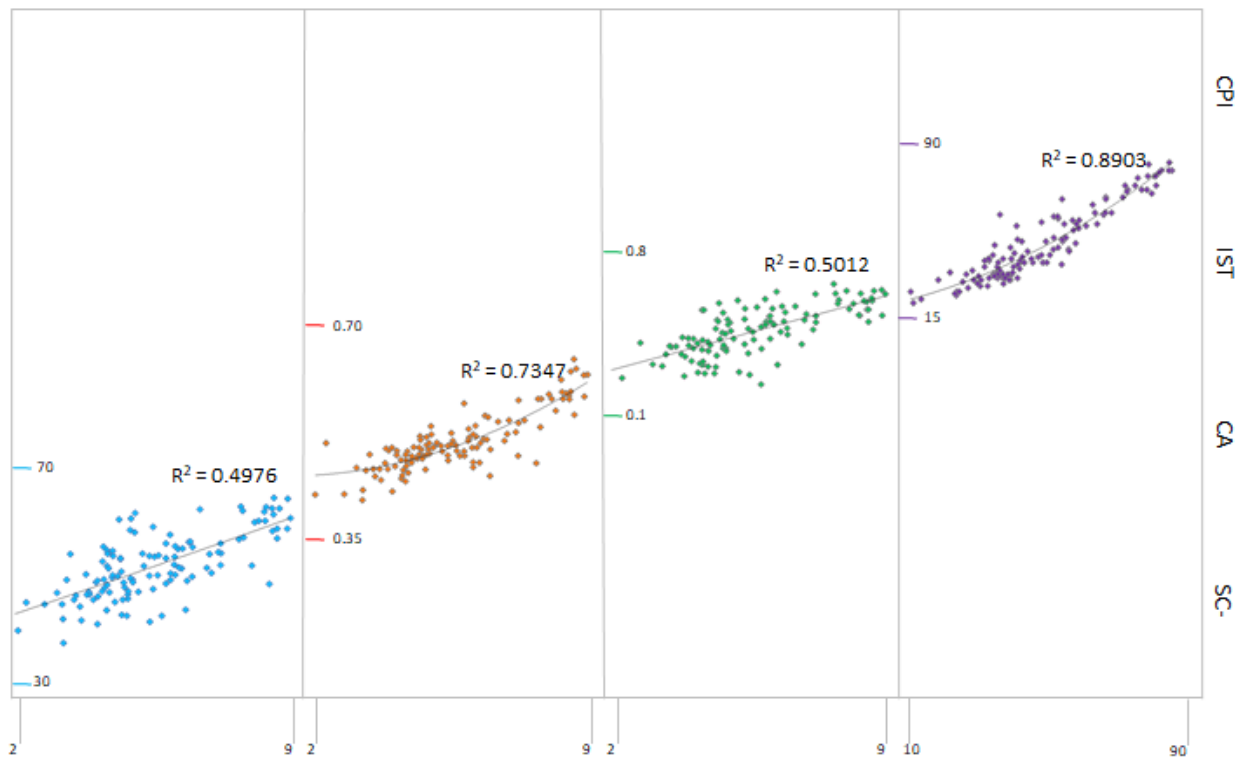
Legend

- IPRI vs Social Capital- SC-PI
- IPRI vs Civic Activism (CA)

- IPRI vs Interpersonal Safety and Trust (IST)
- IPRI vs Corruption Perceptions Index (CPI)



Figure 22b. IPRI Components Correlations with Social Capital Indicators



- IPRI
- ◆ IPRI vs Social Capital (SC-PI)
 - ◆ IPRI vs Civic Activism (CA)
 - ◆ IPRI vs Interpersonal Safety and Trust (IST)
 - ◆ IPRI vs Corruption Perceptions Index (CPI)

VII.4. E-Society

Citizens in the digital era demand credible, efficient, open, public institutions capable of innovating and offering quality services. Today's society is strengthened as individuals develop their capacities freely and responsibly. They favor creation and innovation of alternatives that address the multiplicity of social needs with trust being a fundamental factor for governance and success of public policies.

The development of new Information and Communication Technologies (ICT) and their potential to favor transparency and participation open a suggestive debate. Political institutions, organizations in the public sector, and new relationships with citizens link a healthy governability and progress of nations. Discussion then revolves around terms like e-government, e-participation, open data, connectivity practice, access, and infrastructure.

These questions directed us to examine the relationship of some indicators of the e-society with the IPRI and its components. We used the following indicators (for source details see Appendix IV):

- E-politics: Using E-government Development and E-participation Indices of the UN Department of Economic and Social Affairs:
 - E-government Development Index (EGDI): A comparative ranking of 193 countries according to three primary indicators: a) the OSI – Online Service Index that measures the online presence of the government in terms of service delivery; b) the TII – Telecommunication Infrastructure Index; c) HCI – Human Capital Index.
 - E-Participation Index (EPI): Measures e-participation according to a three-level model of participation that includes: (a) e-information – provision of information on the Internet, (b) e-consultation – organizing public consultations online, and (c) e-decision-making – involving citizens directly in decision processes.
- Connectivity Practice: Using two indices:
 - The Networked Readiness Index (NRI) by The World Economic Forum (INSEAD) measures the propensity for countries to exploit the opportunities offered by Information and Communications Technology (ICT). It is a composite index made up of four main categories, 10 subcategories, and 53 individual indicators as follows: [1] Environment (political & regulatory environment, and business & innovation environment); [2] Readiness (infrastructure, and affordability & skills); [3] Usage (individual usage, business usage, and government usage); and [4] Impact (economic impact, and social impact).
 - Global Connectivity Index (GCI) was created by Huawei to analyze a broad spectrum of indicators for ICT infrastructure and digital transformation to provide a comprehensive map of the global digital economy.
- Connectivity Infrastructure: Using three indices:
 - Telecommunication Infrastructure Index (TII) (UN Department of Economic and Social Affairs): A composite weighted average index of six primary indices based on basic infrastructural indicators which define a country's ICT infrastructure capacity.
 - ICT Development Index (IDI) (UN International Telecommunication Union): A standard tool that governments, operators, development agencies, researchers, and others can

use to measure the digital divide and compare ICT performance within and across countries. The IDI is based on 11 ICT indicators grouped in three clusters: access, use, and skills.

- Online Service Index (UN Department of Economic and Social Affairs): A composite indicator measuring the use of ICT by governments to deliver public services at national level.
- Data Access,: Evaluated through two indices:
 - The Global Open Data Index (Open Knowledge International) provides a comprehensive snapshot available of the state of open government data publication.
 - Open Data Barometer (ODB) (World Wide Web Foundation) aims to uncover the true prevalence and impact of open data initiatives around the world.

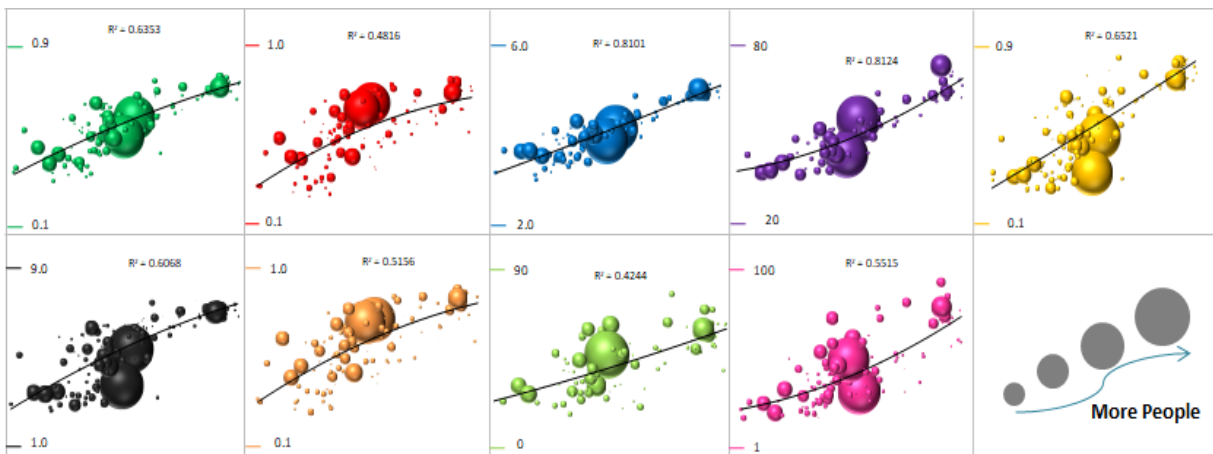
Table 12. Pearson Correlation Coefficients

	E-Government Index	E-Participation Index	NRI	Global Connectivity Index	
IPRI	0.794	0.684	0.900	0.893	
LP	0.784	0.650	0.877	0.855	
PPR	0.714	0.649	0.833	0.775	
IPR	0.700	0.605	0.802	0.883	
	TII	IDI	Online Service Index	Global Open Data	Open Data Barometer
IPRI	0.807	0.776	0.712	0.651	0.735
LP	0.804	0.781	0.688	0.610	0.681
PPR	0.707	0.675	0.655	0.555	0.609
IPR	0.717	0.681	0.632	0.666	0.749

As shown in Table 12, all the indices showed good to strong correlations, giving us support for the importance of property rights for the e-society measured in different angles. The strongest correlation was found between the IPRI and NRI (0.9), followed by IPRI-Global Connectivity Index (0.893). These two indices also show strong correlations with IPRI components. The third index with strong correlations is TII showing a Pearson Coefficient with IPRI of 0.807 and with LP of 0.804.

In a second group with very good correlations, we find the E-government index, IDI, Online Service Index, and Open Data Barometer, with a Pearson Coefficient near 0.7. In the third group, we find E-participation Index and Global Open Data, with coefficients between [0.6-0.7]. Both sets show good correlations (see Fig. 23 a, b).

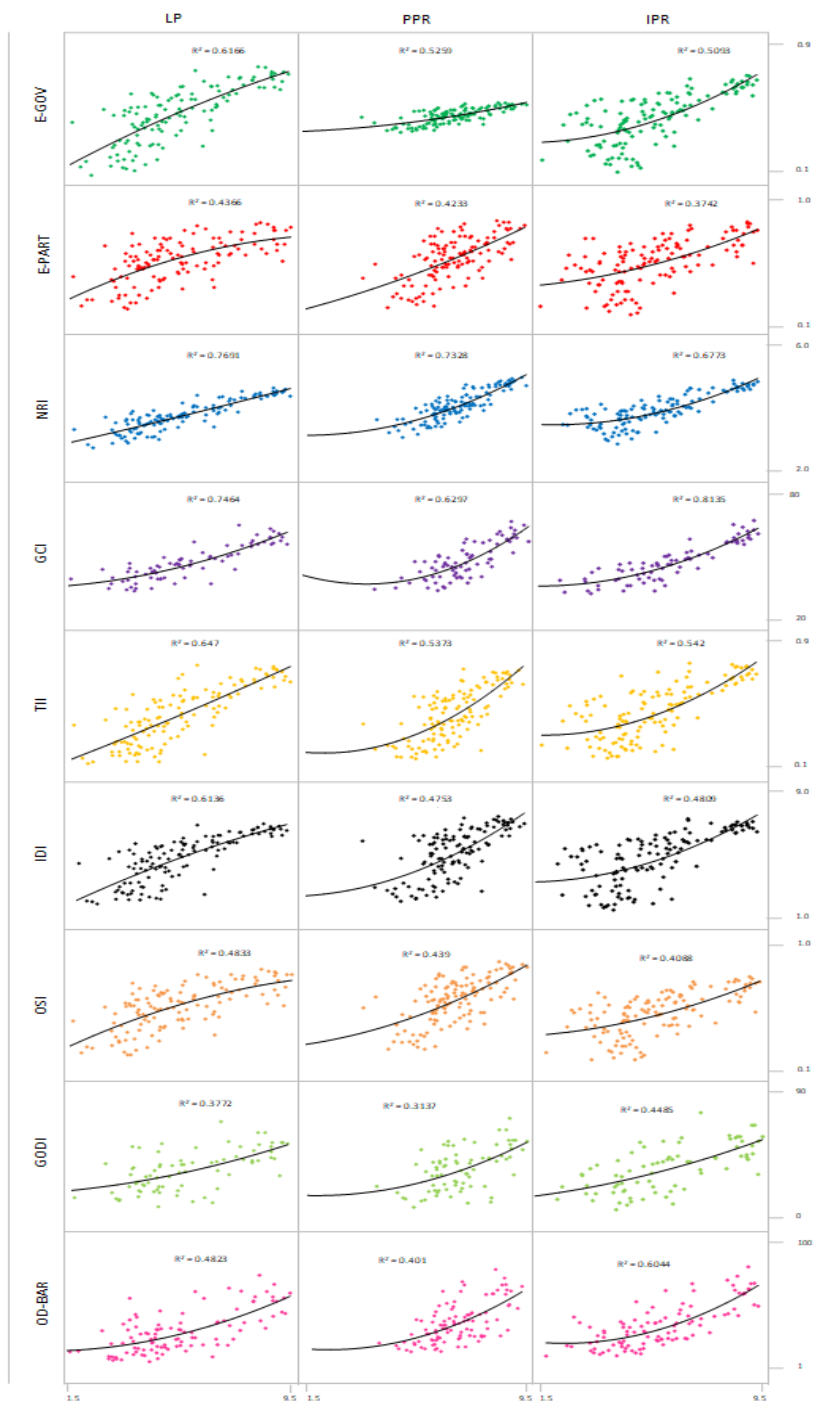
Figure 23a. IPRI Correlations with E-society Indicators (w/demographic perspective)



Legend

- IPRI vs E-Government Index (E-GOV)
 - IPRI vs The Networked Readiness Index (NRI)
 - IPRI vs Telecommunication Infrastructure Index (TII)
 - IPRI vs Online Service Index (OSI)
 - IPRI vs Open Data Barometer (OD-BAR)
- IPRI vs E-Participation Index (E-PART)
 - IPRI vs Global Connectivity Index (GCI)
 - IPRI vs ICT Development Index (IDI)
 - IPRI vs Global Open Data Index (GODI)

Figure 23b. IPRI Components Correlations with E-society Indicators



Legend

- ◆ IPRI vs E-Government Index (E-GOV)
- ◆ IPRI vs E-Participation Index (E-PART)
- ◆ IPRI vs The Networked Readiness Index (NRI)
- ◆ IPRI vs Global Connectivity Index (GCI)
- ◆ IPRI vs Telecommunication Infrastructure Index (TII)
- ◆ IPRI vs ICT Development Index (IDI)
- ◆ IPRI vs Online Service Index (OSI)
- ◆ IPRI vs Global Open Data Index (GODI)
- ◆ IPRI vs Open Data Barometer (OD-BAR)

VIII. IPRI Cluster Analysis

Cluster analysis aims to group similar entities into clusters. It classifies individuals into groups as homogeneous as possible based on observed variables.

We performed a cluster analysis for all the 125 countries according to their values in LP, PPR, and IPR. Additionally, we included illustrative variables that do not influence the formation of the cluster but will bring an important contribution to describe them⁹. Those variables were the ones we used to calculate correlations (section VII) mainly to expose the conditions or features in the resulting clusters.

Given great differences among countries and to seize the variability in the analysis we used Ward's Method¹⁰ with squared Euclidean distance. This groups countries with minimal loss inertia.

A Principal Component Analysis (PCA) was applied with the aim of handling variables by factors, given the high correlation among them. The results of the PCA express that the three components of the IPRI (LP, PPR, IPR) define a dimension which collects 85.90% of the inertia. The second and third factors – with inertias of 9.64% and 4.46% respectively – are residue of inertia. These entities do not contribute to first factor inertia and are generally very close to the origin of the first factor. They could be subdivided into groups more associated to the PPR dimension defining the second factor, and those more associated to LP and IPR defining the third factor.

Next, we used the mobile centers algorithm to show inertia within groups and the criteria to decide the optimal number of classes or clusters (see Table 13).

Table 13. Cluster Analysis

Cluster	Inertia	Countries	Distance of Centroids to origin	Coordinates of centroids		
				Factor 1	Factor 2	Factor 3
Inter-classes	2.20276					
Intra-classes						
Class 1 / 3	0.49374	57	1.91621	-1.38382	0.01876	-0.02982
Class 2 / 3	0.20458	42	0.11856	0.33847	0.04364	0.04576
Class 3 / 3	0.09892	26	6.19778	2.48702	-0.11162	-0.00853

Analysis showed that the three clusters were sufficient to explain grouping of countries where the observed inertia within each group does not exceed the inertia among groups. Clusters are formed as shown in Table 14 and illustrated in Figure 24.

⁹We used the statistical software SPAD® which allows the inclusion of illustrative variables in the analysis.

¹⁰Ward's Method joins cases looking for minimizing the variance within each group, creating homogeneous groups. First, it calculates the media of all variables in each cluster, then the distance between each case and the cluster's media that will be added. Subsequently, clusters are grouped in a way to minimize increases in the sum of distances inside each cluster.

Table 14. Clusters' Members (countries ordered alphabetically)

Countries		
Cluster 1	Cluster 2	Cluster 3
Albania	Bahrain	Australia
Algeria	Brazil	Austria
Armenia	Bulgaria	Belgium
Azerbaijan	Chile	Canada
Bangladesh	China	Denmark
Benin	Colombia	Estonia
Bosnia and Herzegovina	Costa Rica	Finland
Brunei Darussalam	Cyprus	France
Burundi	Czech Republic	Germany
Cameroon	Ghana	Hong Kong (SAR)
Chad	Hungary	Iceland
Congo, Dem Rep.	India	Ireland
Croatia	Indonesia	Israel
Dominican Republic	Italy	Japan
Ecuador	Jamaica	Luxembourg
Egypt	Jordan	Netherlands
El Salvador	Korea, Rep.	New Zealand
Ethiopia	Kuwait	Norway
Georgia	Latvia	Qatar
Greece	Lithuania	Singapore
Guatemala	Malaysia	Sweden
Haiti	Malta	Switzerland
Honduras	Mauritius	Taiwan (China)
Iran	Morocco	United Arab Emirates
Kazakhstan	Oman	United Kingdom
Kenya	Panama	United States of America
Lebanon	Peru	
Liberia	Philippines	
Madagascar	Poland	
Malawi	Portugal	
Mali	Romania	
Mauritania	Rwanda	
Mexico	Saudi Arabia	
Moldova	Slovakia	
Montenegro	Slovenia	
Mozambique	South Africa	
Nepal	Spain	
Nicaragua	Thailand	
Nigeria	Trinidad & Tobago	
Pakistan	Tukey	
Paraguay	Uruguay	
Russia		
Senegal		
Serbia		
Sierra Leone		
Sri Lanka		
Swaziland		
Tanzania United Republic Of		
Tunisia		
Uganda		
Ukraine		
Venezuela, Bolivarian Republic Of		
Vietnam		
Yemen, Rep.		
Zambia		
Zimbabwe		

Although the first factor contains 85.37% of inertia, which is enough to illustrate formation of clusters, Fig. 24 illustrates Factors 1 and 2 as well as the three cluster centroids (yellow). Cluster 1 displays countries (red) located in the negative coordinates of the first factor and includes countries with low values of the LP, PPR, and IPR. Cluster 2 includes countries (green) placed very close to the origin, showing average values of the LP, PPR, and IPR. Cluster 3 (blue) contains countries located in the positive coordinates of the first factor, and its members are linked to high values of the LP, PPR, and IPR.

The second factor consists mostly of countries in Cluster 2, including those whose scores are very close to the average. This includes both neighboring between Cluster 2 and Cluster 1, and those neighboring Cluster 2 and Cluster 3. Cluster 1 and Cluster 3 are outright opposites, and their individuals are not directly associated with each other.

In comparison with clusters from the previous edition (IPRI 2017) we found a very slight movement from left to right of cluster 1 and 2, whose origin relays on the improvement of some countries in their positions (See Fig. 16). Clusters' structure is almost the same to the previous edition with exceptions made for:

- Greece, Guatemala, México, Sri Lanka, and Uganda that moved from cluster 2 to cluster 1 due to a decrease in IPRI values in comparison to last year results.
- Bulgaria, Cyprus, Latvia, Romania, and Turkey moved from cluster 1 to cluster 2 due to the improvement in their IPRI values in comparison to last year.
- Israel moved from cluster 2 to cluster 3 for the sustained improvements in its IPRI values.

Besides clusters, Figure 24 also shows the contribution of each country explaining inertia gathered by factors; the bigger the dot size representing the country, the higher its contribution. Very close countries show how they are similar and how they differ as the distance increases between them.

In the central circle are those countries that have no-statistically significant contribution to the definition of factors; and as it has already been mentioned, they are close to the average and are mostly members of Cluster 2. Arrows represent the three dimensions of the IPRI. Their definite direction indicates the direct relationship with the individuals, i.e., as countries are in the same direction of the vector, countries tend to have a higher relationship with this dimension. As a country direction diverts from the vector, the relationship between the country decreases to the point of being contrary to it. This can be exemplified in the case of Haiti. It has an opposite direction of vector PPR, coinciding with its low score in this sub-index: Haiti being the bottom country of the sample.

Subsequently, clusters composition using income, population, participation in economic & regional integration agreements, and regional & development criteria are shown in Fig. 25a-d, where font size represents frequency of groups in the cluster.

The analysis of each cluster may describe the internal characteristics of the countries within it. In this regard, Table 15 exhibits the features that are statistically significant¹¹ in each group. Additional statistics are shown in Table 16, Table 17, and Appendix IV.

¹¹To be statistically significant the value must be less or equal to -1.96, or greater or equal to 1.96

Fig. 24. Clusters' Members and Centroids: Factor 1 & Factor 2

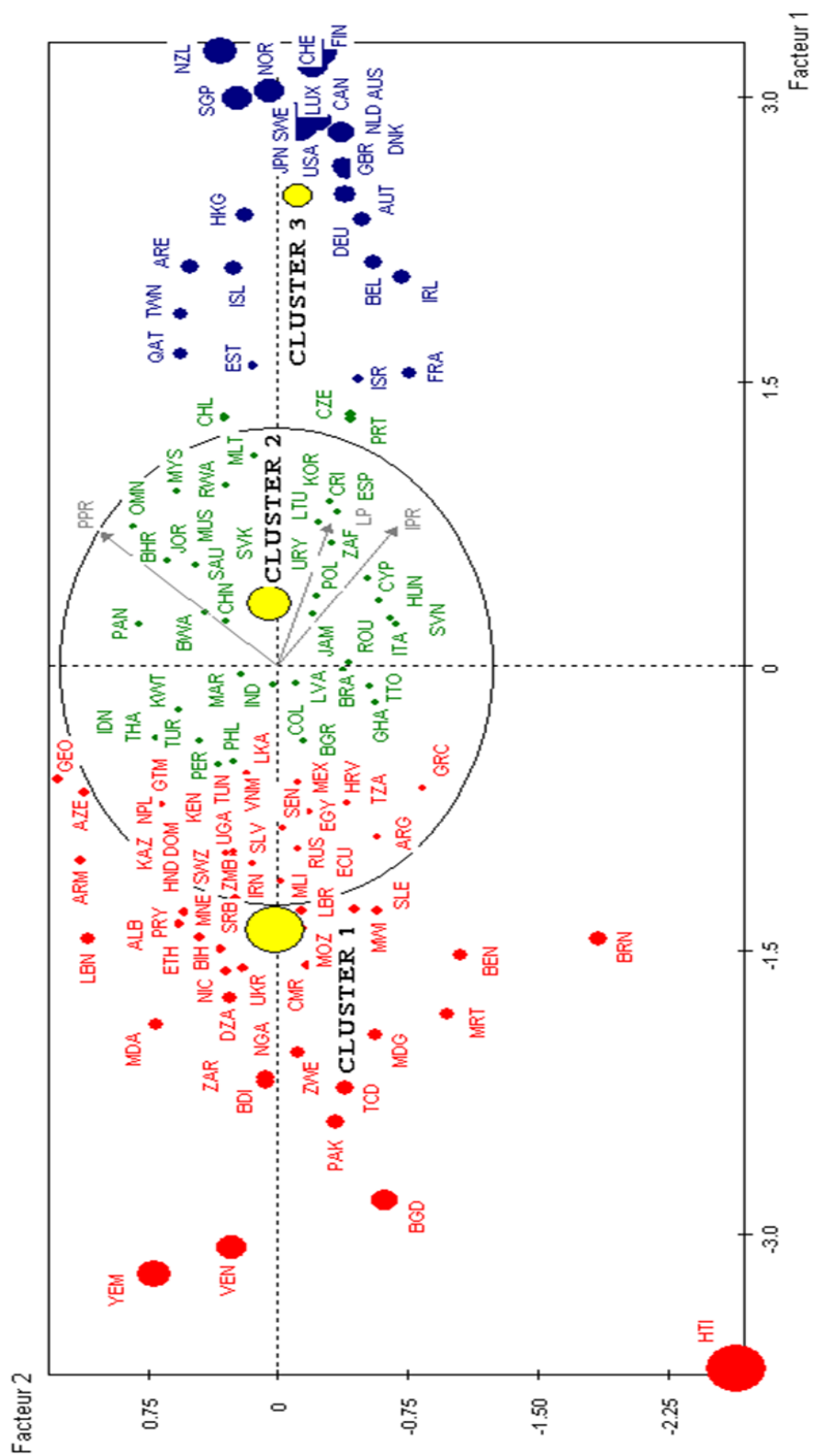


Figure 25a. Clusters Composition by Income Classification

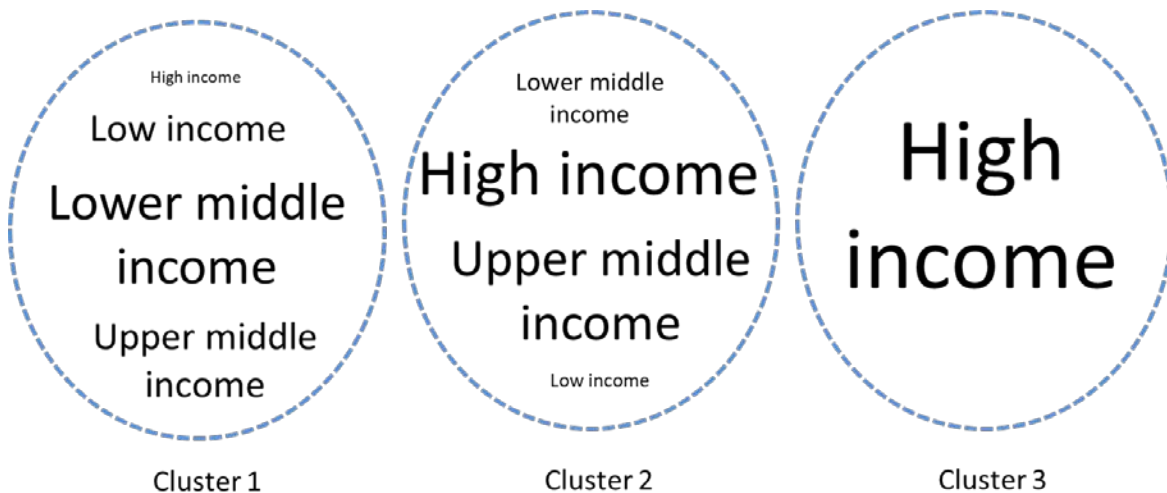


Figure 25b. Clusters Composition by Regional and Development Criteria

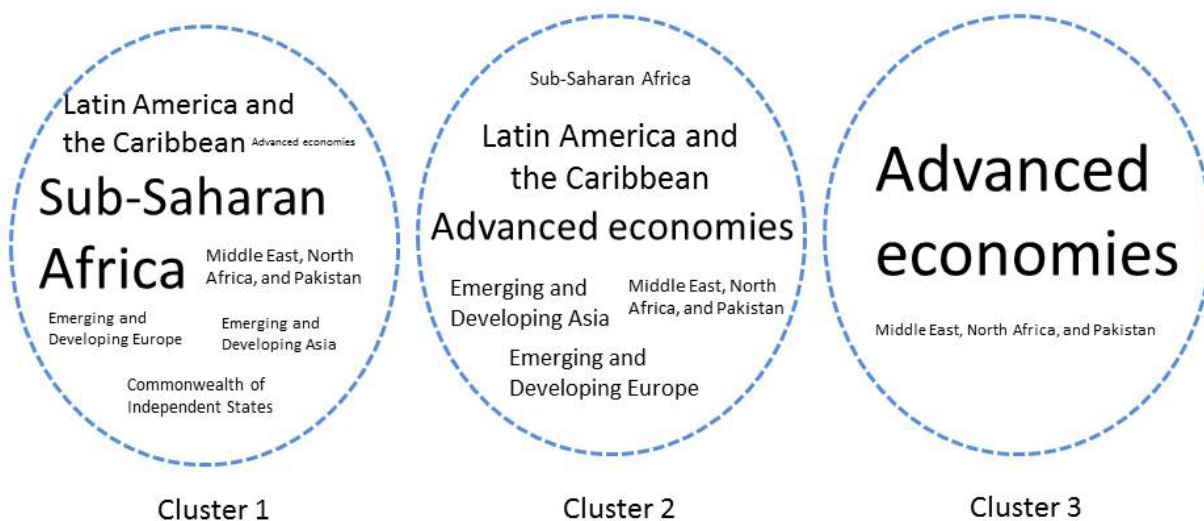


Figure 25c. Clusters Composition by Economic and Regional Integration Agreements

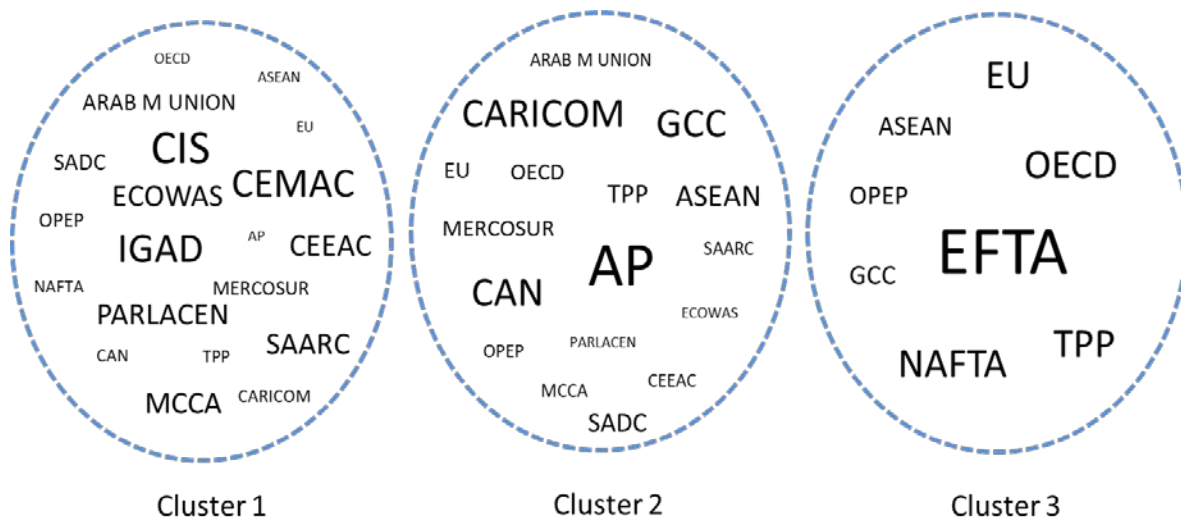


Figure 25d. Clusters Composition and Population Weight (thousands)



Table 15. Cluster Statistics

Cluster 1			Cluster 2			Cluster 3		
Characteristic Variables	Value-Test	Probability	Characteristic Variables	Value-Test	Probability	Characteristic Variables	Value-Test	Probability
GSH	4,13	0,000	HCI	2,35	0,009	GDPpc	9,37	0,000
NINA	3,12	0,001	LEF	2,01	0,022	COR	9,02	0,000
PITR	2,63	0,004	EDP	1,96	0,025	GDPpcG	8,94	0,000
GINI	1,04	0,148	E_GI	1,88	0,030	GCFpercap	8,85	0,000
Pob	-1,20	0,116	Pob	1,86	0,032	GEI	8,77	0,000
GCF	-2,27	0,012	PPR	1,84	0,033	LP	8,61	0,000
TBH	-2,75	0,003	TII	1,81	0,035	IPR	8,54	0,000
NINAp	-3,94	0,000	E_PI	1,76	0,039	IPRIGE	8,50	0,000
OPEN	-3,96	0,000	IDI	1,76	0,039	NRI	8,25	0,000
INC	-4,12	0,000	GINI	1,75	0,040	CA	7,75	0,000
GEH	-4,26	0,000	HFI	1,72	0,043	WEFI	7,71	0,000
IC	-4,37	0,000	LEH	1,68	0,046	FEI	7,64	0,000
Gen	-4,82	0,000	IPRIGE	1,68	0,047	PPR	7,40	0,000
GCI	-5,04	0,000	OSI	1,68	0,047	EDP	7,37	0,000
CA	-5,46	0,000	IPR	1,59	0,056	LEH	7,16	0,000
ODB	-5,54	0,000	FEI	1,53	0,063	TII	7,06	0,000
IST	-5,68	0,000	Gen	1,46	0,073	GCI	6,98	0,000
GCFpercap	-5,88	0,000	WEFI	1,42	0,078	UND	6,94	0,000
LEG	-6,01	0,000	PITR	1,39	0,082	E_GI	6,79	0,000
E_PI	-6,02	0,000	LP	1,23	0,109	IDI	6,58	0,000
CE	-6,06	0,000	GEH	1,03	0,151	HFI	6,49	0,000
GDPpcG	-6,18	0,000	NRI	1,03	0,152	LEG	6,41	0,000
GDPpc	-6,30	0,000	CE	1,00	0,158	ODB	6,36	0,000
OSI	-6,31	0,000	UND	0,84	0,202	CE	6,07	0,000
UND	-6,45	0,000	IST	0,83	0,203	OSI	5,93	0,000
HCI	-6,57	0,000	LEG	0,82	0,206	LEF	5,78	0,000
LEF	-6,61	0,000	GCF	0,77	0,221	IST	5,75	0,000
HFI	-6,92	0,000	COR	0,50	0,310	OPEN	5,48	0,000
IDI	-7,07	0,000	IC	0,39	0,350	E_PI	5,47	0,000
E_GI	-7,19	0,000	GEI	0,29	0,386	HCI	5,46	0,000
TII	-7,34	0,000	ODB	0,19	0,426	INC	5,46	0,000
LEH	-7,46	0,000	NINAp	-0,10	0,458	NINAp	4,91	0,000
GEI	-7,51	0,000	INC	-0,44	0,329	IC	4,86	0,000
WEFI	-7,55	0,000	TBH	-0,46	0,324	Gen	4,23	0,000
FEI	-7,67	0,000	GSH	-0,64	0,261	GEH	4,03	0,000
PPR	-7,78	0,000	GDPpcG	-0,69	0,246	TBH	3,89	0,000
NRI	-7,82	0,000	NINA	-0,69	0,245	GCF	1,91	0,028
COR	-7,82	0,000	CA	-1,02	0,154	Pob	-0,70	0,243
EDP	-7,86	0,000	OPEN	-1,15	0,125	NINA	-2,97	0,001
LP	-8,18	0,000	GCFpercap	-1,31	0,095	GINI	-3,52	0,000
IPR	-8,47	0,000	GDPpc	-1,32	0,094	PITR	-4,16	0,000
IPRIGE	-8,51	0,000	GCI	-1,69	0,046	GSH	-4,32	0,000

Statistically significant only if Value-Test \geq |1.96|

Table 16. Illustrative Variables: Averages by Clusters

	Cluster 1	Cluster 2	Cluster 3
# Countries	57.00	42.00	26.00
Population (000)	1,927,636.80	3,987,682.04	858,068.43
Average IPRI	4.50	6.03	7.98
Average LP	3.77	5.49	7.94
Average PPR	5.54	6.75	8.03
Average IPR	4.20	5.86	7.96
Average Gen	6.36	7.89	9.18
Average IPRIGE	5.77	7.59	9.84
Average GDPpc	4,387.04	13,894.60	52,971.14
Average GDPpcG	144,477.40	467,149.77	1,713,266.58
Average GCFpc	913,534,094	3,057,726,832	12,234,995,843
Average PITR	0.52	0.48	0.24
Average GSH	73.27	62.45	47.40
Average TBH	21.31	23.53	31.15
Average GEH	28.20	34.17	40.44
Average NINApC	120.74	319.10	764.29
Average CE	-0.74	0.11	1.11
Average GEI	21.21	37.07	66.66
Average FEI	3.23	5.26	7.72
Average EDP	3.39	5.46	7.58
Average UND	3.47	5.18	7.74
Average LEH	56.47	66.16	76.77
Average LEF	6.35	7.17	7.84
Average HFI	6.35	7.32	8.30
Average WEFI	47.44	59.85	76.16
Average LEG	47.47	52.42	59.68
Average CA	0.48	0.52	0.60
Average IC	0.64	0.70	0.75
Average IST	0.41	0.48	0.59
Average INC	0.45	0.47	0.56
Average COR	32.39	48.29	77.38
Average E_GI	0.43	0.62	0.82
Average E_PI	0.44	0.64	0.82
Average HCI	0.57	0.74	0.88
Average TII	0.27	0.49	0.74
Average OSI	0.44	0.64	0.85
Average OPEN	29.22	38.00	61.81
Average IDI	4.05	6.11	8.21
Average ODB	19.48	35.31	62.89
Average GCI	33.82	43.52	65.00
Average NRI	3.48	4.36	5.59

Table 17. Regional Integration Agreements and Cluster

Accr.	Regional Integration Agreements	Total	Cluster 1	%	Cluster 2	%	Cluster 3	%
OECD	Organisation for Economic Co-operation and Development	35	2	5.71	12	34.29	21	60.00
EU	European Union	28	2	7.14	14	50.00	12	42.86
SADC	Southern African Development Community	11	8	72.73	3	27.27		0.00
ECOWAS	Economic Community Of West African States	7	6	85.71	1	14.29		0.00
ASEAN	Association of Southeast Asian Nations	7	2	28.57	4	57.14	1	14.29
PARLACEN	Central American Parliament	6	5	83.33	1	16.67		0.00
GCC	Gulf Cooperation Council	6		0.00	4	66.67	2	33.33
AP	Pacific Alliance	6	1	16.67	5	83.33		0.00
MERCOSUR	Southern Common Market	4	2	50.00	2	50.00		0.00
SAARC	South Asian Association for Regional Cooperation	5	4	80.00	1	20.00		0.00
CEMAC	Central African Economic and Monetary Community	2	2	100.00		0.00		0.00
MCCA	Central American Common Market	5	4	80.00	1	20.00		0.00
CIS	Commonwealth of Independent States	6	6	100.00		0.00		0.00
ARAB M UNION	Arab Mahgreb Union	4	3	75.00	1	25.00		0.00
CARICOM	Caribbean Community	3	1	33.33	2	66.67		0.00
CAN	Andean Community	3	1	33.33	2	66.67		0.00
EFTA	European Free Trade Association	3		0.00		0.00	3	100.00
IGAD	Intergovernmental Authority on Development	3	3	100.00		0.00		0.00
NAFTA	North American Free Trade Agreement	3	1	33.33		0.00	2	66.67
OPEP	Organization of the Petroleum Exporting Countries	9	5	55.56	2	22.22	2	22.22
CEEAC	La Communauté Economique des Etats de l'Afrique Centrale	5	4	80.00	1	20.00		0.00
TPP	Trans-Pacific Partnership	11	3	27.27	3	27.27	5	45.45

VIII.1. Cluster Description

Cluster 1

Cluster 1 is composed of 57 countries with a total cluster population of more than 1.9 billion people. The country closest to its centroid is Liberia, followed by Iran, El Salvador, Nicaragua, and Cameroon. Haiti is by far the most remote country of cluster's centroid, followed by Brunei Darussalam, Yemen, Bangladesh, Georgia, and Venezuela.

A close look at Cluster 1 countries' coordinates reveals that Sri Lanka is the closest to the Cluster 2 centroid. Looking simultaneously at Cluster 1 and Cluster 2, the closest countries are Vietnam (Cluster 1) and Philippines (Cluster 2), which also means similarity in conditions (see Fig. 24).

Countries in Cluster 1 are statistically significant for LP, PPR, and IPR components with low scores in each category. The same is true for the gender component and the IPRI-GE. Cluster 1 countries also show low levels in all dimensions analyzed; that is, they show poor performances in economic outcomes, freedom, social capital and e-society. This is the result of a lack of policies or inappropriate ones to improve key elements as entrepreneurship, opportunities & freedom in education, social capital, and development.

Using the regional and development criteria of the IMF and the income criteria of the World Bank, the Sub-Saharan Africa group and the Lower middle income, Upper-Middle-Income, and the Low-Income group are highly represented in this cluster.

The Southern African Development Community (8/11 members) is the most common economic and regional integration agreement in this cluster, followed by the Commonwealth of Independent States (6/6 members), and the Economic Community of West African States (6/7 members).

Cluster 2

Cluster 2 is composed of 42 countries with a total cluster population of almost 4 billion people. The country closest to its centroid is Poland, followed by Jamaica, Saudi Arabia, China, and Slovakia. Uruguay is the farthest country from the centroid, followed by Czech Rep., Portugal, Indonesia, Turkey, and Chile. Figure 24 illustrates that Peru and Philippines are the closest countries to Cluster 1 centroid, and Portugal, Chile, and Czech Republic are the closest countries to Cluster 3. The closest countries from Cluster 2 and 3 are Czech Republic (Cluster 2) and Israel (Cluster 3).

It is important to highlight that the most populous countries in the world, China and India, are included in this cluster, and both are very close to its centroid (0.1955 and 0.2881 respectively).

Since Cluster 2 is very close to the origin of the factors' axes, this produces results that are not significant for most of the variables. In this sense, they are countries whose results are very close to the average in the indicators.

Using the regional and development criteria of the IMF, Advanced Economies and Latin America & the Caribbean are highly represented in this cluster; whereas by the income criteria of the World Bank, the High Income and Upper Middle-Income countries exhibit the highest frequency in the cluster.

Following the perspective that focuses on economic and regional integration agreements, we can see that the European Union (with 14/28 members) and the Organization for Economic Co-operation and Development (12/35 members) have the highest frequency in Cluster 2.

Cluster 3

Cluster 3 is composed of 26 countries showing a total cluster population of more than 850 million people. The closest country to its centroid is Austria, followed by United Kingdom, Denmark, Luxembourg, and Hong Kong. The farthest country of the group is France, followed by Israel, Qatar, Estonia, and New Zealand. Israel, France, and Estonia are the closest countries to Cluster 2.

Compared to Cluster 1, countries belonging to Cluster 3 exhibit opposite results: all the variables are significant, but with positive and high values, showing good performances in economic outcomes, freedom, social capital, and e-society. They also show positive results in human development, liberties, and opportunities for their citizens.

Using the regional and development criteria of the IMF, Advanced Economies is highly represented in this cluster. By the income criteria of the World Bank, High Income group is the only one represented in this cluster. Looking at economic and regional integration agreements, the Organization for Economic Co-operation and Development (21/35 members) and the European Union are highly represented in Cluster 3 (12/28 members), followed by the Trans-Pacific Partnership (5/11 members).

When speaking on economic and regional integration agreements, the following should be noted: Of the 125 countries included in the IPRI-2018 selection, there are 12 that do not belong to any of the agreements chosen, 59 that belong to only one agreement, 50 countries that are members of two of them, 3 countries that are members of three integration agreements, and 1 that is part of 4 of them. Also, there is a great disparity in the number of countries that are part of the agreements, some with many members (OECD has 35 members and EU has 28 members) and others just a few.

The Organization for Economic Co-operation and Development, European Union, Association of Southeast Asian Nations, Organization of the Petroleum Exporting Countries, and the Trans-Pacific Partnership have members in all three clusters. The members of The Central African Economic and Monetary Community, Pacific Alliance, Commonwealth of Independent States, Caribbean Community, and European Free Trade Association belong only to one cluster. The rest of the agreements have members in two clusters in different proportions.

The data suggest that most of the chosen integration agreements demonstrate some level of heterogeneity in terms of the strength of property rights systems among their members. In the presence of homogeneity, it would be easier for an integration agreement to promote common policies to enhance the strength of property rights. Simultaneously, heterogeneity could also be seen as an opportunity, as policies could be targeted to specific members of the agreement.

On the other hand, the integration agreements showing members in just one cluster reveal homogeneity amongst their countries' property rights systems. Even those agreements participating in two clusters show members in cluster boundaries and could be seen as a possible transition from one cluster to the other.

Conclusions of the cluster analysis show:

- Each cluster represents more than a grouping by variables directly associated with property rights; they are groups with common characteristics within them and with different features among clusters. This confirms the consistency of the IPRI and the relevance of property rights systems influencing societies.
- Cluster 1 and Cluster 3 are two extreme poles in terms of the performance of their economies, freedom, social capital, and e-society, as well as their IPRI scores.
- Cluster 2 statistical values reflected its intermediate positions, and, depending on the decisions taken in the present and near future of each country, will be inclined to one of the two polar classes. Those countries that keep their position very close to Cluster 1 should revise their policies regarding property rights. But as had been shown, revision in other dimensions would improve their performance and the well-being of their citizens.
- Countries in Cluster 1 should make particular efforts to strengthen their legal and political environment to protect physical and intellectual properties, which are still weak, in order to improve quality of life in their societies.
- Countries in the boundaries between two clusters have to make special efforts to mind the gap, which will place them in a higher level. Such was the successful cases of Bulgaria, Cyprus, Latvia, Romania, and Turkey that moved from Cluster 1 to Cluster 2, and of Israel that moved from Cluster 2 to Cluster 3.
- The observed displacement of cluster centroids between the 2017 and 2018 editions demonstrates the importance of each country to have a long-term view of property rights reform policies. That is, they must be able to continue reaching higher levels of property rights protections, to avoid being left behind in the near future by world progress in this matter.
- Specific analyses of countries and of groups of them related to their cluster are a rich open vein for future investigations.

IX. Final Remarks

The 12th edition of the International Property Rights Index, 2018 IPRI, showed consistency with previous editions, revealing a proper structure for the index. In this sense, its follow-up in years ahead is crucial to monitor the performance of property rights systems and its relationship to societies' prosperity globally, regionally, and within countries.

Results suggest that countries with high IPRI scores and its components also show high income and high development levels indicating the positive relationship between property rights and well-being.

In this edition, we included a group of indicators, under the umbrella of E-society and contrasted them with property rights. Our results show that the IPRI is strongly associated with economic opportunities and liberties within countries, as well as their social cohesion and indicators used to measure adaptability to challenges posed by the 21st century.

Each of these dimensions was evaluated using different items: production, investment, entrepreneurship ecosystem, economic complexity, state ability to citizenship demands, economic freedom, electoral freedom, absence of coercion, inclusion, civic activism, cohesion, interpersonal safety and trust, social capital, number of researchers, connectivity propensity and infrastructure, open data, e-government, and e-participation. All the items showed a strongly positive association with the IPRI and its components.

In this way, IPRI results can be used as guidelines for policy makers in different countries – as in multilateral or integration agreements, to which they belong – to enhance their policies aimed to foster development defined as a multidimensional and synergic term.

2018 IPRI includes 125 countries with an average score of 5.7406, showing an increase of 0.107 points (1.9%) compared to 2017. This edition includes two countries (Haiti and Swaziland) that were not in the IPRI-2017, although four countries had to be excluded (Bolivia, Cote D'Ivoire, Gabon, and Macedonia) due to the absence of enough information.

Country performance was quite dissimilar. We found countries with very high scores while others with very low ones. Once a country grasps the top positions it usually keeps it. We are glad to highlight four countries with an improvement over 0.8: Azerbaijan (+1.09), Ukraine (+0.86), Russia (+0.85), and Moldova (+0.82). However, as some countries improved, others showed a setback. This was the case of South Africa (-0.65) which showed the biggest recoil this year mainly because of PPR decline (-1.18).

2018-IPRI keeps the calculations of IPRI-GE and IPRI-POP given the importance of showing the impact of gender equality and countries' demographic weight in analyzing property rights systems.

IPRI-GE was calculated for a total of 121 countries (there was no information available for Brunei Darussalam, Malta, Montenegro, and Taiwan). 2018 average score was 7.228 showing a slight but persistent improvement of 1.6% (2017 IPRI-GE = 7.118; 2016 IPRI-GE = 6.933; 2015 IPRI-GE = 6.76). 2018-GE score was 7.458 which was higher (2.68%) than last year (7.438).

2018-IPRI-POP was calculated for the 125 countries, arousing a score of 5.661. This showed an improvement compared to 2017 (5.522). This is because 68% of world population lives in 66

countries with an IPRI between 4.5 and 6.4, insisting on the importance of fostering property rights systems in densely populated countries.

2018-IPRI also included a cluster analysis, in order to gather countries in groups by their homogeneity. Therefore, the 125 countries were classified according to their values in the IPRI and its three components in three clusters. The analysis of clusters' centroids and countries by boundaries between groups provided important information about their characteristics and challenges. Cluster analysis also confirmed the consistency of the IPRI since the assembled countries exhibited a high degree of homogeneity showing the relevance of property rights systems in shaping societies.

X. References

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XI. Appendices***XI.1. Appendix I. Data Source. IPRI 2018***

IPRI 2018	Data	Download Date	Original Scale	Source	Link
SUBINDEX: Legal and Political Environment (LP)	Judicial independence	28.05.2018	(1-7)(best)	The Global Competitiveness Index Historical Dataset 2007-2017 World Economic Forum	http://reports.weforum.org/global-competitiveness-index-2017-2018/downloads/
	Rule of Law	28.05.2018	(-2.5) to (2.5) best	The Worldwide Governance Indicators	http://info.worldbank.org/governance/wgi/index.aspx#home
	Political Stability	28.05.2018	(-2.5) to (2.5) best	The Worldwide Governance Indicators	http://info.worldbank.org/governance/wgi/index.aspx#home
	Control of Corruption	28.05.2018	(-2.5) to (2.5) best	The Worldwide Governance Indicators	http://info.worldbank.org/governance/wgi/index.aspx#home
SUBINDEX: Physical Property Rights (PPR)	Property Rights	28.05.2018	(1-7)(best)	The Global Competitiveness Index Historical Dataset 2007-2017 World Economic Forum	http://reports.weforum.org/global-competitiveness-index-2017-2018/downloads/
	Registering Property	28.05.2018	1-infinite worst	World Bank Group Doing Business	http://www.doingbusiness.org/custom-query
	Ease of Access to Loans	28.05.2018	(1-7)(best)	The Global Competitiveness Index Historical Dataset 2007-2017 World Economic Forum	http://reports.weforum.org/global-competitiveness-index-2017-2018/downloads/
SUBINDEX: Intellectual Property Rights (IPR)	Intellectual Property Rights	28.05.2018	(1-7)(best)	The Global Competitiveness Index Historical Dataset 2007-2017 World Economic Forum	http://reports.weforum.org/global-competitiveness-index-2017-2018/downloads/
	Patent Protection	28.05.2018	(0-5)(best)	Patent Index 2015 Park	http://fs2.american.edu/wgp/www/Patent%20Index1960%20-%202015.xlsx
	Copyright Piracy Level	28.05.2018	(0-100%)Worst	BSA Global Software Survey 2016	http://globalstudy.bsa.org/2016/downloads/studies/BSA_GSS_US.pdf

XI.1. Appendix II. Groups Conformation. IPRI 2018

	Group	#	Countries
Regional group	A	26	BENIN;BOTSWANA;BURUNDI;CAMEROON;CHAD;CONGO, DEM. REP.;ETHIOPIA;GHANA;KENYA;LIBERIA;MADAGASCAR;MALAWI; MALI;MAURITANIA; MAURITIUS; MOZAMBIQUE;NIGERIA;RWANDA;SENEGAL;SIERRA LEONE;SOUTH AFRICA;SWAZILAND;TANZANIA, UNITED REPUBLIC OF;UGANDA; ZAMBIA;ZIMBABWE
	AO	19	AUSTRALIA;BANGLADESH;BRUNEI DARUSSALAM;CHINA;HONG KONG (SAR of China);INDIA;INDONESIA;JAPAN;KOREA, REP.;MALAYSIA;NEPAL;NEW ZEALAND;PAKISTAN;PHILIPPINES;SINGAPORE;SRI. LANKA;TAIWAN (China);THAILAND;VIETNAM
	CEECA	24	ALBANIA;ARMENIA;AZERBAIJAN;BOSNIA AND HERZEGOVINA;BULGARIA;CROATIA;CYPRUS;CZECH REPUBLIC;ESTONIA;GEORGIA;HUNGARY; KAZAKHSTAN; LATVIA;LITHUANIA;MOLDOVA;MONTENEGRO;POLAND;ROMANIA;RUSSIA;SERBIA;SLOVAKIA;SLOVENIA;TURKEY;UKRAINE
	LAC	20	ARGENTINA;BRAZIL;CHILE;COLOMBIA;COSTA RICA;DOMINICAN REPUBLIC;ECUADOR;EL SALVADOR;GUATEMALA;HAITI; HONDURAS;JAMAICA;MEXICO; NICARAGUA; PANAMA;PARAGUAY;PERU;TRINIDAD AND TOBAGO;URUGUAY;VENEZUELA, BOLIVARIAN REPUBLIC OF
	MENA	15	ALGERIA;BAHRAIN;EGYPT;IRAN;ISRAEL;JORDAN;KUWAIT;LEBANON;MOROCCO;OMAN;QATAR;SAUDI ARABIA;TUNISIA;UNITED ARAB EMIRATES;YEMEN, REP.
	NA	2	ALGERIA;BAHRAIN;EGYPT;IRAN;ISRAEL;JORDAN;KUWAIT;LEBANON;MOROCCO;OMAN;QATAR;SAUDI ARABIA;TUNISIA;UNITED ARAB EMIRATES;YEMEN, REP.;
	WE	19	AUSTRIA;BELGIUM;DENMARK;FINLAND;FRANCE;GERMANY;GREECE;ICELAND;IRELAND;ITALY;LUXEMBOURG;MALTA;NETHERLANDS;NORWAY;PORTUGAL;SPAIN; SWEDEN;SWITZERLAND;UNITED KINGDOM (UK)
Geographical Regions	EUROPEAN UNION	28	AUSTRIA;BELGIUM;BULGARIA;CROATIA;CYPRUS;CZECH REPUBLIC;DENMARK;ESTONIA;FINLAND;FRANCE;GERMANY;GREECE;HUNGARY;IRELAND;ITALY; LATVIA;LITHUANIA;LUXEMBOURG;MALTA;NETHERLANDS;POLAND;PORTUGAL;ROMANIA;SLOVAKIA;SLOVENIA;SPAIN;SWEDEN;UNITED KINGDOM (UK)
	REST OF EUROPE	13	ALBANIA;ARMENIA;BOSNIA AND HERZEGOVINA;GEORGIA;ICELAND;MOLDOVA;MONTENEGRO;NORWAY;RUSSIA;SERBIA;SWITZERLAND;TURKEY;UKRAINE
	AFRICA	30	ALGERIA;BENIN;BOTSWANA;BURUNDI;CAMEROON;CHAD;CONGO, DEM. REP.;EGYPT;ETHIOPIA;GHANA;KENYA;LIBERIA;MADAGASCAR;MALAWI; MALI; MAURITANIA; MAURITIUS;MOROCCO;MOZAMBIQUE;NIGERIA;RWANDA;SENEGAL;SIERRA LEONE;SOUTH AFRICA;SWAZILAND;TANZANIA, UNITED REPUBLIC OF;TUNISIA;UGANDA;ZAMBIA;ZIMBABWE
	NORTH AMERICA	3	CANADA;MEXICO;UNITED STATES (USA)
	CENTRAL AMERICA&CARIBE	10	COSTA RICA;DOMINICAN REPUBLIC;EL SALVADOR;GUATEMALA;HAITI;HONDURAS;JAMAICA;NICARAGUA;PANAMA;TRINIDAD AND TOBAGO
	SOUTH AMERICA	9	ARGENTINA;BRAZIL;CHILE;COLOMBIA;ECUADOR;PARAGUAY;PERU;URUGUAY;VENEZUELA, BOLIVARIAN REPUBLIC OF
	ASIA	30	AZERBAIJAN;BAHRAIN;BANGLADESH;BRUNEI DARUSSALAM;CHINA;HONG KONG (SAR of China);INDIA;INDONESIA; IRAN;ISRAEL;JAPAN;JORDAN; KAZAKHSTAN; KOREA, REP.;KUWAIT;LEBANON;MALAYSIA;NEPAL;OMAN;PAKISTAN;PHILIPPINES;QATAR;SAUDI ARABIA;SINGAPORE;SRI. LANKA;TAIWAN (China);THAILAND; UNITED ARAB EMIRATES;VIETNAM;YEMEN, REP.
OCEANIA	2	AUSTRALIA;NEW ZEALAND	
Income Classification	High income	49	AUSTRALIA;AUSTRIA;BAHRAIN;BELGIUM;BRUNEI DARUSSALAM;CANADA;CHILE;CROATIA;CYPRUS;CZECH REPUBLIC;DENMARK;ESTONIA;FINLAND;FRANCE; GERMANY;GREECE;HONG KONG (SAR of China);HUNGARY;ICELAND;IRELAND;ISRAEL;ITALY;JAPAN;KOREA, REP.;KUWAIT;LATVIA; LITHUANIA;LUXEMBOURG;MALTA; NETHERLANDS;NEW ZEALAND;NORWAY;OMAN;POLAND;PORTUGAL;QATAR;SAUDI ARABIA;SINGAPORE;SLOVAKIA;SLOVENIA; SPAIN;SWEDEN;SWITZERLAND; TAIWAN (China);TRINIDAD AND TOBAGO;UNITED ARAB EMIRATES;UNITED KINGDOM (UK);UNITED STATES (USA);URUGUAY
	Low income	18	BENIN;BURUNDI;CHAD;CONGO, DEM. REP.;ETHIOPIA;HAITI;LIBERIA;MADAGASCAR;MALAWI;MALI;MOZAMBIQUE;NEPAL;RWANDA;SENEGAL;SIERRA LEONE;TANZANIA, UNITED REPUBLIC OF;UGANDA;ZIMBABWE
	Lower middle income	25	ARMENIA;BANGLADESH;CAMEROON;EGYPT;EL SALVADOR;GHANA;GUATEMALA;HONDURAS;INDIA;INDONESIA;KENYA; MAURITANIA;MOLDOVA;MOROCCO; NICARAGUA;NIGERIA; PAKISTAN;PHILIPPINES; SRI. LANKA;SWAZILAND;TUNISIA;UKRAINE;VIETNAM;YEMEN, REP.;ZAMBIA
	Upper middle income	33	ALBANIA;ALGERIA;ARGENTINA;AZERBAIJAN;BOSNIA AND HERZEGOVINA;BOTSWANA;BRAZIL;BULGARIA;CHINA;COLOMBIA;COSTA RICA;DOMINICAN REPUBLIC; ECUADOR;GEORGIA;IRAN;JAMAICA;JORDAN;KAZAKHSTAN;LEBANON;MALAYSIA;MAURITIUS;MEXICO;MONTENEGRO;PANAMA;PARAGUAY;PERU;ROMANIA;RUSSIA;SER BIA;SOUTH AFRICA;THAILAND;TURKEY;VENEZUELA, BOLIVARIAN REPUBLIC OF
Region Classification	Advanced economies	36	AUSTRALIA;AUSTRIA;BELGIUM;CANADA;CYPRUS;CZECH REPUBLIC;DENMARK;ESTONIA;FINLAND;FRANCE;GERMANY;GREECE;HONG KONG (SAR of China);ICELAND; IRELAND;ISRAEL;ITALY;JAPAN;KOREA, REP.;LATVIA;LITHUANIA;LUXEMBOURG;MALTA;NETHERLANDS;NEW ZEALAND;NORWAY;PORTUGAL; SINGAPORE;SLOVAKIA; SLOVENIA; SPAIN; SWEDEN;SWITZERLAND;TAIWAN (China);UNITED KINGDOM (UK);UNITED STATES (USA)
	Commonwealth of Independent States	7	ARMENIA;AZERBAIJAN;GEORGIA;KAZAKHSTAN;MOLDOVA;RUSSIA;UKRAINE
	Emerging and Developing Asia	11	BANGLADESH;BRUNEI DARUSSALAM;CHINA;INDIA;INDONESIA;MALAYSIA;NEPAL;PHILIPPINES;SRI. LANKA;THAILAND;VIETNAM
	Emerging and Developing Europe	10	ALBANIA;BOSNIA AND HERZEGOVINA;BULGARIA;CROATIA;HUNGARY;MONTENEGRO;POLAND;ROMANIA;SERBIA;TURKEY
	Latin America and the Caribbean	20	ARGENTINA;BRAZIL;CHILE;COLOMBIA;COSTA RICA;DOMINICAN REPUBLIC;ECUADOR;EL SALVADOR;GUATEMALA;HAITI;HONDURAS;JAMAICA;MEXICO;NICARAGUA; PANAMA;PARAGUAY;PERU;TRINIDAD AND TOBAGO;URUGUAY;VENEZUELA, BOLIVARIAN REPUBLIC OF
	Middle East, N. Africa, and Pakistan	16	ALGERIA;BAHRAIN;EGYPT;IRAN;JORDAN;KUWAIT;LEBANON;MAURITANIA;MOROCCO;OMAN;PAKISTAN;QATAR;SAUDI ARABIA;TUNISIA;UNITED ARAB EMIRATES; YEMEN, REP.
Regional Integration Agreements	Sub-Saharan Africa	25	BENIN;BOTSWANA;BURUNDI;CAMEROON;CHAD;CONGO, DEM. REP.;ETHIOPIA;GHANA;KENYA;LIBERIA;MADAGASCAR;MALAWI;MALI;MAURITIUS; MOZAMBIQUE; NIGERIA;RWANDA;SENEGAL;SIERRA LEONE;SOUTH AFRICA;SWAZILAND;TANZANIA, UNITED REPUBLIC OF;UGANDA;ZAMBIA;ZIMBABWE
	OECD	35	AUSTRALIA;AUSTRIA;BELGIUM;CANADA;CHILE;CZECH REPUBLIC;DENMARK;ESTONIA;FINLAND;FRANCE;GERMANY;GREECE;HUNGARY; ICELAND;IRELAND;ISRAEL; ITALY; JAPAN;KOREA, REP.;LATVIA;LUXEMBOURG;MEXICO;NETHERLANDS;NEW ZEALAND;NORWAY;POLAND;PORTUGAL;SLOVAKIA;SLOVENIA;SPAIN;SWEDEN; SWITZERLAND;TURKEY;UNITED KINGDOM (UK);UNITED STATES (USA)
	EU	28	AUSTRIA;BELGIUM;BULGARIA;CROATIA;CYPRUS;CZECH REPUBLIC; DENMARK;ESTONIA;FINLAND;FRANCE;GERMANY;GREECE;HUNGARY; IRELAND;ITALY;LATVIA; LITHUANIA;LUXEMBOURG;MALTA;NETHERLANDS;POLAND;PORTUGAL;ROMANIA;SLOVAKIA;SLOVENIA;SPAIN;SWEDEN;UNITED KINGDOM (UK)
	SADC	11	BOTSWANA;CONGO, DEM. REP.;MADAGASCAR;MALAWI;MAURITIUS;MOZAMBIQUE;SOUTH AFRICA;SWAZILAND;TANZANIA, UNITED REPUBLIC OF;ZAMBIA; ZIMBABWE
	ECOWAS	7	BENIN;GHANA;LIBERIA;MALI;NIGERIA;SENEGAL;SIERRA LEONE
	ASEAN	7	BRUNEI DARUSSALAM;INDONESIA;MALAYSIA;PHILIPPINES;SINGAPORE;THAILAND;VIETNAM
	PARLACEN	6	DOMINICAN REPUBLIC;EL SALVADOR;GUATEMALA;HONDURAS;NICARAGUA;PANAMA
	GCC	6	BAHRAIN;KUWAIT;OMAN;QATAR;SAUDI ARABIA;UNITED ARAB EMIRATES
	AP	6	CHILE;COLOMBIA;COSTA RICA;MEXICO;PANAMA;PERU
	MERCOSUR	4	ARGENTINA;BRAZIL;PARAGUAY;URUGUAY
	SAARC	5	BANGLADESH;INDIA;NEPAL;PAKISTAN;SRI. LANKA
	CENMAC	2	CAMEROON;CHAD
	MCCA	5	COSTA RICA;EL SALVADOR;GUATEMALA;HONDURAS;NICARAGUA
	CIS	6	ARMENIA;AZERBAIJAN;KAZAKHSTAN;MOLDOVA;RUSSIA;UKRAINE
	ARAB M UNION	4	ALGERIA;MAURITANIA;MOROCCO;TUNISIA
	CARICOM	3	HAITI;JAMAICA;TRINIDAD AND TOBAGO
	CAN	3	COLOMBIA;ECUADOR;PERU
EFTA	3	ICELAND;NORWAY;SWITZERLAND	
IGAD	3	ETHIOPIA;KENYA;UGANDA	
NAFTA	3	CANADA;MEXICO;UNITED STATES (USA)	
OPEP	9	ALGERIA;ECUADOR;IRAN;KUWAIT;NIGERIA;QATAR;SAUDI ARABIA;UNITED ARAB EMIRATES;VENEZUELA, BOLIVARIAN REPUBLIC OF	
CEEAC	5	BURUNDI;CAMEROON;CHAD;CONGO, DEM. REP.;RWANDA	
TPP	11	AUSTRALIA;BRUNEI DARUSSALAM;CANADA;CHILE;JAPAN;MALAYSIA;MEXICO;NEW ZEALAND;PERU;SINGAPORE;VIETNAM	

XI.1. Appendix III. GE Data Source. 2018 IPRI.

	OECD-GED	SI GI	Original Scale	Year	Number of Countries	Source
Women's Access to Bank Loans	Access to Financial Services	Restricted resources and assets	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/
Women's Access to Land Ownership	Secure access to land	Restricted resources and assets	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/
Women's Access to Property Other than Land	Secure access to non-land assets	Restricted resources and assets	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/
Inheritance Practices	Inheritance: widows	Discriminatory family code	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/
	Inheritance: daughters	Discriminatory family code	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/
Women's Social Rights	Parental authority: in marriage	Discriminatory family code	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/
	Parental authority: after divorce	Discriminatory family code	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/
	Female genital mutilation	Restricted physical integrity	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/
	Access to public space	Restricted civil liberties	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/
	Son preference in education	Son bias	0 (best) 0.5 (Average) 1 (worst)	2014	160	https://www.genderindex.org/

XI.1. Appendix IV. Correlations Data Sources

Dimension	Indicator	Source	Link
Economic outcomes	GDP per capita (constant 2010 US\$)	World Development Indicators, World Bank.	https://data.worldbank.org/indicator/NY.GDP.PCAP.KD
	GDP per capita (constant 2010 US\$) * GINI	Own calculation. GINI Source: UNDP	https://report.hdr.undp.org/
	Gross capital formation (current US\$) + Per Capita	Own calculation. Population source: UN	https://esa.un.org/unpd/wpp/Download/Standard/Population/
	Personal Income Tax Rate. Tax Attractiveness Index.	Institute for Taxation and Accounting	https://www.tax-index.org/
	Net investment in nonfinancial assets per capita (constant 2010 US\$)	Own calculation. Population source: UN. Net Investment Source: World Development Indicators, World Bank.	https://data.worldbank.org/indicator/GC.NFN.TOTL.GD.ZS?view=chart
	Economic Complexity Index	The Observatory of Economic Complexity	https://atlas.media.mit.edu/en/rankings/country/
	Global Entrepreneurship Index	The Global Entrepreneurship and Development Institute	http://thegeedi.org/global-entrepreneurship-and-development-index/
	Fragile States Index (**)	The Fund for Peace	https://fundforpeace.org/fsi/2018/04/24/fragile-states-index-2018-annual-report/
	Economic decline and poverty component: Fragile States Index. (**)	The Fund for Peace	https://fundforpeace.org/fsi/2018/04/24/fragile-states-index-2018-annual-report/
	Uneven development. Fragile States Index. (**)	The Fund for Peace	https://fundforpeace.org/fsi/2018/04/24/fragile-states-index-2018-annual-report/
Freedom	Government Spending. Index of Economic Freedom (Heritage)	The Heritage Foundation	http://www.heritage.org/index/about
	Tax burden as a percentage of GDP. Index of Economic Freedom (Heritage)	The Heritage Foundation	http://www.heritage.org/index/about
	Index of Economic Freedom (Heritage)	The Heritage Foundation	http://www.heritage.org/index/about
	Economic Freedom of the World (Fraser)	Fraser Institute	http://www.heritage.org/index/about
	Political Rights-Freedom in the World (**)	Freedom House	https://www.freedomhouse.com/
	Civil Liberties-Freedom in the World (**)	Freedom House	https://freedomhouse.org/report-types/freedom-world
	Human Freedom Index	Freedom House	https://freedomhouse.org/report-types/freedom-world
	WEFF- IMLE Political Development Index PDI-HDP	CATO Institute, Fraser Institute, Visio Institut	https://www.cato.org/human-freedom-index
	Social Capital. The Legatum Prosperity Index	The Foundation for the Advancement of Liberty	http://www.fundallib.org/en/imle-2018/
	Civic Activism	Legatum Institute Foundation, The Legatum Prosperity Index	https://www.prosperity.com/#/
Social Capital	Intergroup Cohesion	International Institute of Social Studies	http://www.indosocdev.org/data-access.html
	Interpersonal Safety and Trust	International Institute of Social Studies	http://www.indosocdev.org/data-access.html
	Inclusion of Minorities	International Institute of Social Studies	http://www.indosocdev.org/data-access.html
	Corruption Perception Index	Transparency International	https://www.transparency.org/research/cpi/overview
	E-Government Index	United Nations Department of Economic and Social Affairs	https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016
E-Society	E-Participation Index	United Nations Department of Economic and Social Affairs	https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016
	Online Service Index	United Nations Department of Economic and Social Affairs	https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016
	Human Capital Index	United Nations Department of Economic and Social Affairs	https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016
	Telecommunication Infrastructure Index	United Nations Department of Economic and Social Affairs	https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016
	Global Open Data Index	Open Knowledge International	https://index.okfn.org/
	ICT Development Index-IDI	United Nations International Telecommunication Union	http://www.itu.int/net4/ITU-D/idi/2017/
	Open Data Barometer	World Wide Web Foundation	https://opendatabarometer.org/?year=2016&indicator=ODB
	The Networked Readiness Index (NRI)	The World Economic Forum, INSEAD	http://reports.weforum.org/global-information-technology-report-2015
	Global Connectivity Index	Huawei	http://www.huawei.com/minisite/igt/en/index.html

XI.1. Appendix V. Cluster Information. 2018-IPRI

Country	Accr.	Cluster	Distance to Centroid	Country	Accr.	Cluster	Distance to Centroid	Country	Accr.	Cluster	Distance to Centroid
LIBERIA	LBR	1	0,0647	POLAND	POL	2	0,0734	AUSTRIA	AUT	3	0,1119
IRAN	IRN	1	0,1088	JAMAICA	JAM	2	0,0939	UNITED KINGDOM (UK)	GBR	3	0,1208
EL SALVADOR	SLV	1	0,1386	SAUDI ARABIA	SAU	2	0,1687	DENMARK	DNK	3	0,1219
NICARAGUA	NIC	1	0,1505	CHINA	CHN	2	0,1955	LUXEMBOURG	LUX	3	0,1409
CAMEROON	CMR	1	0,1743	SLOVAKIA	SVK	2	0,2111	HONG KONG (SAR of China)	HKG	3	0,1448
BOSNIA AND HERZEGOVINA	BIH	1	0,2191	MOROCCO	MAR	2	0,2229	JAPAN	JPN	3	0,1674
ETHIOPIA	ETH	1	0,2250	JORDAN	JOR	2	0,2259	GERMANY	DEU	3	0,1714
SWAZILAND	SWZ	1	0,2323	LITHUANIA	LTU	2	0,2762	CANADA	CAN	3	0,1721
MOZAMBIQUE	MOZ	1	0,2395	INDIA	IND	2	0,2881	NETHERLANDS	NLD	3	0,1761
DOMINICAN REPUBLIC	DOM	1	0,2477	KOREA, REP	KOR	2	0,2960	SWEDEN	SWE	3	0,1938
ALGERIA	DZA	1	0,2519	ROMANIA	ROU	2	0,3007	AUSTRALIA	AUS	3	0,1969
PARAGUAY	PRY	1	0,2768	SPAIN	ESP	2	0,3786	BELGIUM	BEL	3	0,3462
UGANDA	UGA	1	0,2778	SOUTH AFRICA	ZAF	2	0,4113	UNITED STATES (USA)	USA	3	0,3466
SERBIA	SRB	1	0,3049	BAHRAIN	BHR	2	0,4191	SINGAPORE	SGP	3	0,3887
MALAWI	MWI	1	0,3139	LATVIA	LVA	2	0,4537	NORWAY	NOR	3	0,3938
SENEGAL	SEN	1	0,3486	RWANDA	RWA	2	0,4541	SWITZERLAND	CHE	3	0,4839
MALI	MLI	1	0,3602	HUNGARY	HUN	2	0,4686	UNITED ARAB EMIRATES	ARE	3	0,5356
ZAMBIA	ZMB	1	0,3618	CYPRUS	CYP	2	0,4736	IRELAND	IRL	3	0,5890
UKRAINE	UKR	1	0,3847	COSTA RICA	CRI	2	0,4853	FINLAND	FIN	3	0,5940
ECUADOR	ECU	1	0,4271	TRINIDAD AND TOBAGO	TTO	2	0,5195	ICELAND	ISL	3	0,6329
RUSSIA	RUS	1	0,4393	BRAZIL	BRA	2	0,5561	TAIWAN (China)	TWN	3	0,8774
NIGERIA	NGA	1	0,4425	BULGARIA	BGR	2	0,5801	NEW ZEALAND	NZL	3	0,8787
EGYPT	EGY	1	0,4448	ITALY	ITA	2	0,5851	ESTONIA	EST	3	0,9583
SIERRA LEONE	SLE	1	0,4463	MAURITIUS	MUS	2	0,6239	QATAR	QAT	3	1,1528
HONDURAS	HND	1	0,4545	GHANA	GHA	2	0,6356	ISRAEL	ISR	3	1,1611
VIETNAM	VNM	1	0,4886	MALTA	MLT	2	0,6626	FRANCE	FRA	3	1,3082
ALBANIA	ALB	1	0,5093	MALAYSIA	MYS	2	0,6669				
TUNISIA	TUN	1	0,5261	SLOVENIA	SVN	2	0,7382				
KENYA	KEN	1	0,5362	KUWAIT	KWT	2	0,7418				
ARGENTINA	ARG	1	0,5887	PANAMA	PAN	2	0,7529				
ZIMBABWE	ZWE	1	0,6085	BOTSWANA	BWA	2	0,7887				
MADAGASCAR	MDG	1	0,6500	PERU	PER	2	0,8427				
MONTENEGRO	MNE	1	0,6537	OMAN	OMN	2	0,9154				
KAZAKHSTAN	KAZ	1	0,6552	THAILAND	THA	2	0,9345				
SRI LANKA	LKA	1	0,7555	COLOMBIA	COL	2	0,9346				
CROATIA	HRV	1	0,7708	PHILIPPINES	PHL	2	1,0074				
NEPAL	NPL	1	0,7817	CHILE	CHL	2	1,1037				
MOLDOVA	MDA	1	0,8322	TURKEY	TUR	2	1,1592				
TANZANIA, UNITED REPUBLIC OF	TZA	1	0,8767	INDONESIA	IDN	2	1,1774				
BURUNDI	BDI	1	0,9511	PORTUGAL	PRT	2	1,2044				
GUATEMALA	GTM	1	0,9885	CZECH REPUBLIC	CZE	2	1,2540				
CHAD	TCD	1	1,1535	URUGUAY	URY	2	1,2907				
CONGO, DEM. REP.	ZAR	1	1,1577								
PAKISTAN	PAK	1	1,1616								
BENIN	BEN	1	1,1746								
LEBANON	LBN	1	1,1961								
MEXICO	MEX	1	1,2051								
MAURITANIA	MRT	1	1,2193								
GREECE	GRC	1	1,2980								
ARMENIA	ARM	1	1,5275								
AZERBAIJAN	AZE	1	1,7404								
VENEZUELA, BOLIVARIAN REPUBLIC OF	VEN	1	2,9053								
GEORGIA	GEO	1	2,9412								
BANGLADESH	BGD	1	2,9598								
YEMEN, REP.	YEM	1	3,7966								
BRUNEI DARUSSALAM	BRN	1	5,1585								
HAITI	HTI	1	12,6138								