COVERING 94% OF WORLD POPULATION AND 98% OF THE WORLD GDP

PROSPERITY ▼▲ FREEDOM ▼▲ INNOVATION

International Property Rights Index 2020

Full report

Dr. Sary Levy-Carciente
Author, 2020 Hernando de Soto Fellow

Lorenzo Montanari
Editor

With A Special Case Study By Dr. Hernando De Soto:
The Case Of Peru: The Mystery Of Capital Among The Indigenous Peoples Of The Amazon

Contributions by:
Dr. Hernando de Soto • Jacques Jonker and Martin van Staden • Carlos Augusto Chacón Monsalve and María Fernanda Gallego Ortiz • Philip Thompson and Mary Ann Cortese

PROPERTY RIGHTS ALLIANCE

I. Introduction

While writing these lines, Coronavirus is continuing to spread across the world, with nearly 40 million confirmed cases in 189 countries. The pandemic that has plagued us first broke in Wuhan, China, and quickly spread to the Far East, Europe, America and the rest of the world.

Global interconnectivity has allowed us to create networks of economic production, multicultural learning, scientific development and active citizen participation. However, the recent economic-financial crises showed its backhand: the vulnerability and volatility it exposes to the world.

Crises and catastrophes display the social and cultural structure better than any other event. They uncover institutional, organizational and regulatory failures, evidencing the causes and scope of impact. They even admit a *posteriori* re-creation of the micro-systemic dynamics and evaluate the effects on the macro-state. Thus, they become in a rich vein for research – not only to confront, but to understand, prevent or at least mitigate their impact, detecting nodes of sensitivity and vulnerability.

Crises show the fragility that interdependence generates. Simultaneously, this same interdependence has favored the coordination of actions by citizens all over the planet, as well as political decision-making by the leaders of nations, to mitigate the impact of the most immediate shock. Medium and long-term impact, and intergenerational externalities will be aspects that the world's societies will have to attend to when the emergency has receded.

There will be many lessons to be learned from this crisis. This unpleasant and regrettable contagion already highlights the importance of transparency in the dissemination and management of reliable and timely information, the importance of having professionals and research and innovation centers capable to face the problem, and the need for international coordination and cooperation.

At the core of successfully satisfying these essential tasks lies a system that preserves, promotes and enhances freedom.

In free societies we find the multidimensional and multicomprehensive well-being for individuals. A free society is the one that opens the path for a productive thrust, giving consumers a variety of alternatives to choose the one that best suits their requirements. A free society stimulates creativity, scientific innovation, and artistic innovation, pushing forward the frontiers of human achievements. And when it comes to relationships, less control and more freedom is the recipe: it's all about trust. Free societies boost trust, allowing the emergence of a dense network of relationships. Freedom is a crucial, key ingredient of societies.

Embedded within a free society is a robust property rights system: *a complex legal institution that allows owners to use parts of nature and limit their use by others* (Freyfogle, 2010). A property rights system is also a condition for exercising other rights; and constitutes a positive feedback loop with freedom. Moreover, the literature reporting the positive and strong relations between property rights and prosperity, a better quality

of life, and the development of virtuous social circles, is prolific[1]. This has been shown by the International Property Rights Index (IPRI), in all its editions.

Whether physical or intellectual property rights, both are essential for development. Perhaps in the 21st century, there is a greater challenge in terms of the latter, given their relevance in the so-called knowledge society.

In the midst of the Covid-19 pandemic, the world turned its eyes to doctors, epidemiologists, research institutes and pharma companies. Everyone was expecting answers, treatments, vaccines, and innovations that would address the pandemic and end the suffering and fear. It is taken for granted that those professionals and centers would do their best to achieve that goal as soon as possible.

But none of this would be possible if those capabilities weren't there: founded, organized, and in many cases, financed with venture capital that accepted risk for a long-term investment, expecting a reward for that risk. And the cornerstone of all that structure are intellectual property rights. The relevance of respecting intellectual property rights is the promotion of social and economic incentives to stimulate creation, innovation and its dissemination. And its positive results are evidenced in the creation of dynamic, efficient systems with short and long terms effects, that impact different arenas inlcuding education, research, innovation, endogenous development of technologies, economic growth, etc.

Last but not least, we should insist that property rights are human rights, and that is the fundamental reason for the preference of a system with strong private property rights: *private property rights protect individual liberty.*

Sary Levy-Carciente

October 20, 2020

1. Among others: Hayek, 1960, 1997; Friedman, 1962; Rand, 1964; Demsetz, 1967; Alchian & Demsetz, 1973; Nozick, 1974; Epstein, 1985, 1995; Buchanan, 1993;; Delong, 1997; North 1981, 1990; Pipes, 1999; Von Mises, 2002, De Soto, 2000; De Soto & Cheneval, 2006; Barzel, 1997, Knack y Keefer, 1995; Hall & Jones, 1999; Acemoglu et al 2001, 2002, 2005; Johnson, McMillan & Woodruff, 2002; T. R. Machan, 2002; David & Foray, 2003; Easterly & Levine, 2003; Field & Torero, 2004; Rodrik et al. 2004; Galiani & Schargrodsky, 2005; Sandefur, 2006; Paldam & Gundlach, 2007; Wang 2008; Feyrer & Sacerdote, 2009; Hansson, 2009; Besley & Ghatak, 2010; Dong & Togler, 2011; Waldron, 2012; Zhang, 2015.

II. IPRI Structure & Methodology

The International Property Rights Index, IPRI, is a measure created to offer a comprehensive insight into the status of property rights in the world's nations. Created in 2007 by the Property Rights Alliance (PRA), they instituted the *Hernando de Soto Fellowship* to produce its yearly edition.

The Index's originators took an institutional approach, as property rights are a linchpin institution for a free society based on the creation of a citizenry that controls its own life and builds its own destiny. There is an extensive and rich literature on property rights, which was considered to conceptualize and operationalize the Index, setting its core categories (here-to referred as components or sub-indices) and the items included in each of them.

The following are the three core components of the IPRI:

- Legal and Political Environment (LP)
- Physical Property Rights (PPR)
- Intellectual Property Rights (IPR)

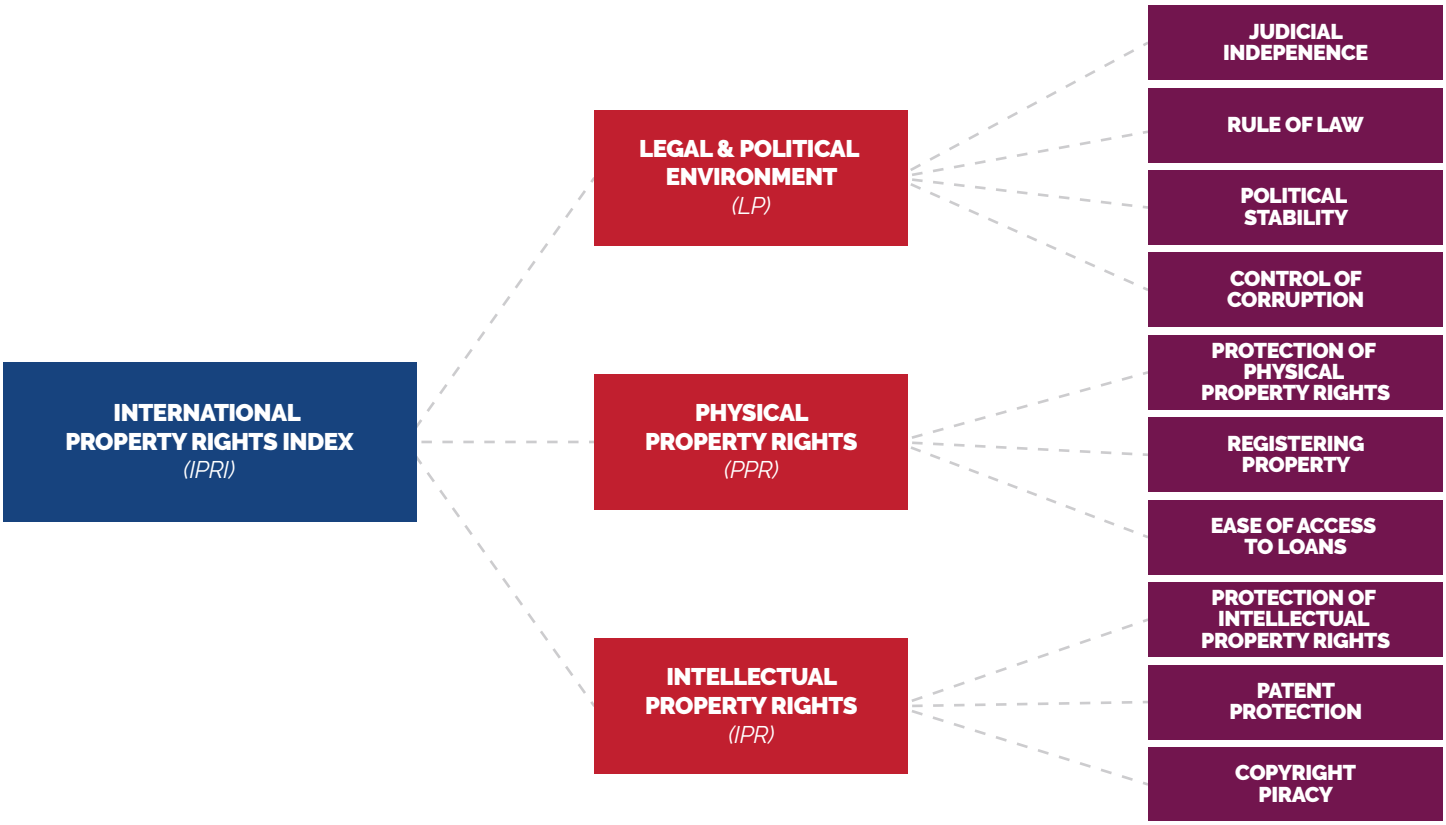
The Legal and Political Environment (LP) component provides information of the strength of a country's institutions, the respect for the 'rules of the game' among citizens. Therefore, the items included in the LP are wide-ranging. This component has a significant influence on the development and protection of physical and intellectual property rights.

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

As a result, the IPRI is comprised of 10 items grouped under one of these three components: LP, PPR, or IPR.

While there are numerous items associated to property rights, the final IPRI is specific to the core factors that are directly related to the strength and defense of physical and intellectual property rights. Furthermore, items for which data were available more regularly and for a larger amount of countries were given preference, guaranteeing that scores were comparable across countries and years. The 2020-IPRI keeps the previous years' methodology allowing for a full comparison of its results with previous editions.

Figure 1. International Property Rights Index Structure



Legal and Political Environment (LP)

The Legal and Political Environment component grasps 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 stability of its political system, and the control of corruption.

Judicial Independence

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

For this item, the chosen source was The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004, from the World Economic Forum (https://www.weforum.org/reports/global-competitiveness-report-2019). The original data scale is [1 to 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 agents' confidence and behavior 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 is the World Bank's Worldwide Governance Indicators 2019 (http://info.worldbank.org/governance/wgi/index.aspx#home). 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 is the World Bank, The Worldwide Governance Indicators 2019 (http://info.worldbank.org/governance/wgi/index.aspx#home). 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 -3.002). Therefore, this country value was considered as the extreme of the range scale (minimum value) for the rescaling process. This situation happened also in the last three years, 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 from petty to grand forms of corruption, as well as the 'capture' of the state by elites and group-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 also influences the degree of informality in the economy, which is a deterrence to the expansion of respect for legal private property.

The data source chosen for this item is from World Bank, The Worldwide Governance Indicators 2019 (http://info.worldbank.org/governance/wgi/index.aspx#home). The original data scale is [-2.5 to 2.5], where 2.5 is the best score.

Physical Property Rights (PPR)

A strong property rights regime promotes people's confidence in its effectiveness to protect private property rights. It also offers an integrated, effective and efficient system for registering the property, and it allows access to the required credit to convert that 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 expert views of the quality of judicial protection of private property, including financial assets. Additionally, it incorporates expert opinions on the precision of the legal definition of property rights.

The data source chosen for this item is The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004, from the World Economic Forum's 2019 (https://www.weforum.org/reports/global-competitiveness-report-2019). 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' points of view on the complexity for 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. The relevance of this information derives from the fact that the more difficult the property registration is, the more likely it is that assets stay in the informal sector, thus limiting the development of the broader public's understanding and support for a strong legal and 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:

$$\text{Registering Property} = (0.7 * \text{number of days}) + (0.3 * \text{number of procedures})$$

The data source chosen for measuring this item was The World Bank Group's 2019 Doing Business Report (http://www.doingbusiness.org/custom-query). 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 play a crucial complementary role – along with a strong property rights system – to bring economic assets into the formal economy. Credit facilities have always been an important channel trying to alleviate poverty.

The data chosen for this item is the The Global Competitiveness Index Historical Dataset © 2007-2017 from World Economic Forum (www3.weforum.org/docs/GCR2017-2018/GCI_Dataset_2007-2017.xlsx). 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]

Intellectual Property Rights (IPR)

The assignment of intellectual property rights does not confer exclusive possession (such as physical property rights), but the benefits of its economic exploitation, promoting the generation of economic incentives towards research and innovation, as well as stimulating the open exposure of ideas, encouraging indirect effects of creativity.

The Intellectual Property Rights component evaluates the protection of this kind property. 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 IPR.

The data source chosen is The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004 from the World Economic Forum (https://www.weforum.org/reports/global-competitiveness-report-2019). 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 raise 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, membership in international treaties, restrictions on patent rights, enforcement mechanisms, and protection duration.

The data used for this item is the Patent Rights Index (Park W. 2008, International Patent Protection: 1960-

2005, Research Policy, Vol. 37 (4): 761-766) in its last update for 2015[2] (downloaded on April 26, 2019). This source is updated five-yearly. The original data scale is [0 - 5], where 5 is the highest score.

Copyright Piracy

The level of piracy in the IP sector is an important indicator of the effectiveness of the intellectual property rights enforcement in a country.

The data source chosen for this item is the BSA Global Software Survey; The Compliance Gap (2018 edition, downloaded on February 26, 2020 at https://www.bsa.org/~/media/Files/StudiesDownload/2018_BSA_GSS_Report_en.pdf) which estimates the volume and value of unlicensed software installed on personal computers, and 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.

IPRI Methodology

The 2020 IPRI's 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 come in different styles and scales. Consequently, data is rescaled in order to accurately compare among countries and within IPRI's individual components and the overall score.

The grading scale of the IPRI ranges from [0 – 10], where 10 is the highest value for a property rights system 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 variables.

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 2020 IPRI uses data from period 2017 – 2019. 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 one year (see Appendix I), so the time difference among data should not affect our analysis.

2. The updating of the Patent Rights Index for 2015 was a joint effort of PRA (in the person of Dr. Levy-Carciente) and Dr. Walter Park advanced on 2018. Following updates were completed by Dr. Park.

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:

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

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:

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

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

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

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

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 could be ranked #1, while Country B and Country C #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, this way the final scores were differentiated, and such were the ranking positions.

Countries and Groups

The 2020 IPRI includes 129 countries. This year there are two (2) countries included in the index that were not in 2019: Gabon and Madagascar; while two (2) that were part of the index last year, are not included in this edition: Liberia and Sierra Leone.

Availability of required data is the only factor that determines countries' inclusion in the IPRI. In order to keep the meaningfulness of the data and analysis, only country-year combinations respecting specific rules have been considered. Since 2013, such rule is to have at least 2/3 of the data required for each component; or, more specifically, 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. Regions: Africa (A), East Asia, South Asia and Pacific (AO), Central and Eastern Europe & Central Asia (CEECA), Latin America & the Caribbean (LAC), Middle East & North Africa (MENA), North America (NA), and Western Europe (WE).

2. Geographical regions: Western Europe, North America, Latin America & the Caribbean, South America, Middle East and North Africa, Africa, East Asia, South Asia and Pacific, Central and Eastern Europe, and Central Asia.

3. Income classification (World Bank, July 2019): High income, Upper Middle income, Lower Middle income, and Low income.

4. Regional and Development classification (International Monetary Fund, April 2016): Advanced Economies; Commonwealth of Independent States; Emerging & Developing Asia; Emerging and Developing Europe; Latin America & the Caribbean; Middle East, North Africa & Pakistan; and Sub-Saharan Africa.

5. Economic and Regional Integration Agreements (acronyms): OECD, EU, SADC, ECOWAS, ASEAN, PARLACEN, GCC, AP, MERCOSUR, SAARC, CEMAC, MCCA, CIS, ARAB M UNION, CARICOM, CAN, EFTA, IGAD, USMCA, OPEC, CEEAC, TPP-11, PROSUR.

III. 2020 IPRI Results

This section presents the results of the 2020 IPRI. Starting with the scores of the overall IPRI and its three (3) components, we follow showing countries' score and rankings. Variations between 2019 and 2020 of both individual IPRI components and of the overall IPRI score were considered. This chapter also includes an analysis of the IPRI for groups of countries.

Table 1. Average Score: IPRI and its Components. 2016 - 2020.

	IPRI	LP	PPR	IPR
Average 2016	5.446	5.130	5.875	5.333
Average 2017	5.634	5.172	6.227	5.503
Average 2018	5.741	5.216	6.464	5.542
Average 2019	5.729	5.160	6.474	5.553
Average 2020	5.728	5.140	6.500	5.545

As an average, the sample of the 129 countries showed a score of 5.73, where the Legal and Political Environment (LP) was the weakest component with a score of 5.14, followed by the Intellectual Property Rights (IPR) component with a score of 5.55; Physical Property Rights (PPR) was the strongest component with a score of 6.5.

For a second consecutive year, the data show a slight set back of the average score of the IPRI, and the LP and the IPR components, while the PPR score keeps improving for a continuous fifth year (see Table 1). We must point out that the LP component requires particular attention, as it shows an important regression during these years, placing it in values close to those of 2016.

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

Table 2. Statistics. 2020 IPRI and Components.

		IPRI	LP	PPR	IPR
N	Valid	129	129	129	129
	Missing	0	0	0	0
Mean		5.7256	5.1380	6.5000	5.5395
Std. Error of Mean		0.12483	0.15708	0.10534	0.14246
Median		5.5000	4.8000	6.5000	5.4000
Std. Deviation		1.41776	1.78410	1.19641	1.61808
Variance		2.010	3.183	1.431	2.618
Range		6.00	7.40	7.50	7.20
Minimum		2.70	1.40	1.20	1.70
Maximum		8.70	8.80	8.70	8.90
Percentiles	25	4.8000	3.8000	5.9000	4.4000
	50	5.5000	4.8000	6.5000	5.4000
	75	6.6500	6.4000	7.3000	6.5500

Table 3. Normality Test. One-Sample Kolmogorov-Smirnov Test.

		IPRI	LP	PPR	IPR
N		129	129	129	129
Normal Mean		5.7255814	5.1379845	6.5000	5.53953488
Parameters Std. Deviation a,b		1.41776007	1.78409614	1.19641391	1.61808232
Most Extreme Absolute		0.10635167	0.09581709	0.06994403	0.10253689
Differences	Positive	0.10635167	0.09581709	0.04063034	0.10253689
	Negative	-0.05766939	-0.06194214	-0.06994403	-0.06608042
Kolmogorov-Smirnov Z		1.20792281	1.08827294	0.79441152	1.16459524
Asymp. Sig. (2-tailed)		0.10804952	0.18705562	0.55326125	0.13269403

A. Test distribution is Normal. B. Calculated from data.

Figure 2. Histogram: 2020 IPRI and its Components.

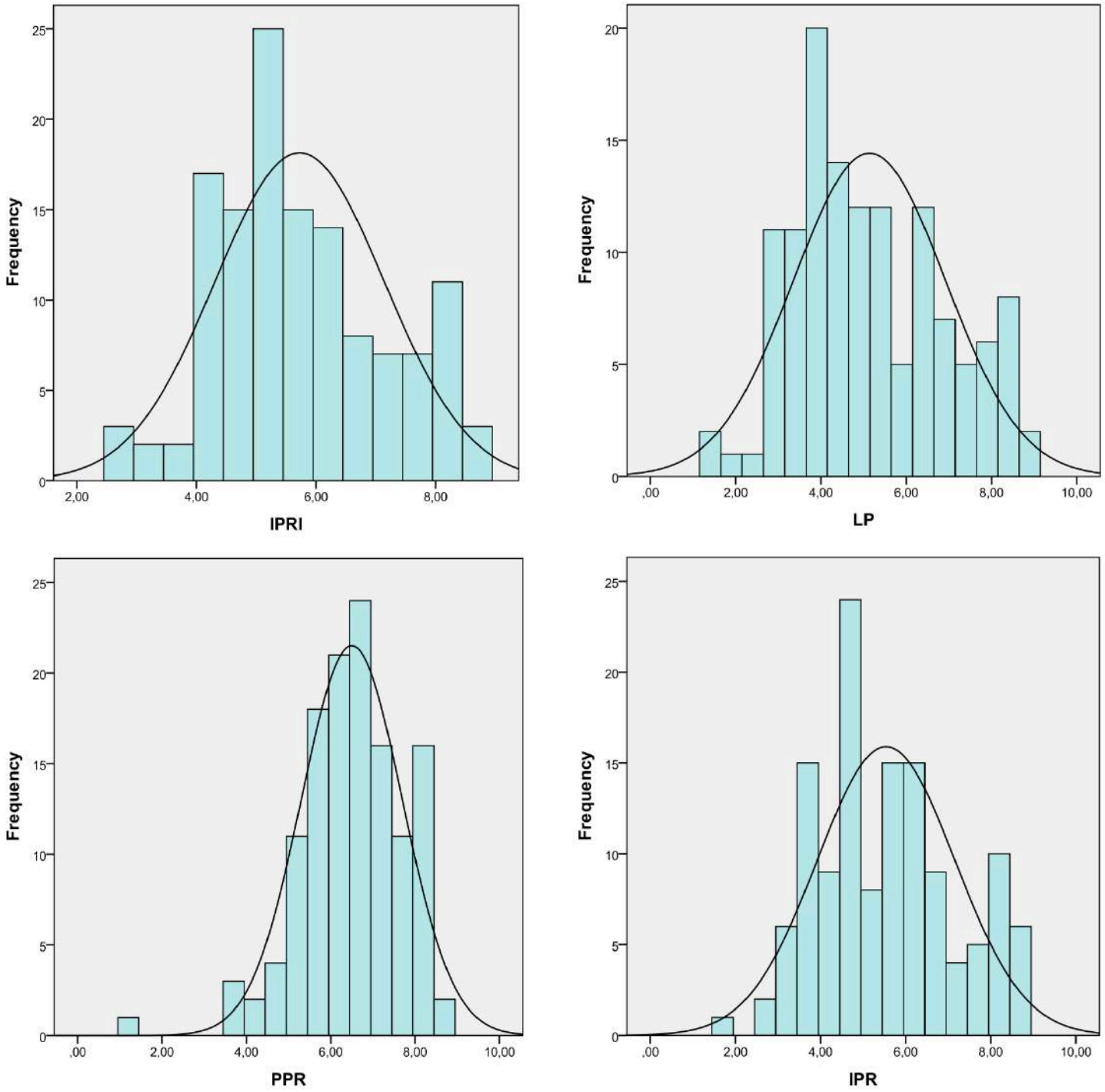


Table 4 shows, in alphabetical order, the score value of the 129 countries included in the 2020 IPRI and its components. Figure 3a displays countries organized by their IPRI scores from top to bottom, showing their IPRI rankings. Figures 3b, 3c and 3d display countries organized by IPRI components' scores (LP, PPR, IPR) from top to bottom, showing their rankings.

Table 5 shows the IPRI 2020 rankings by quintile for all the 129 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

18 countries, 2nd quintile 21 countries, 3rd quintile 25 countries, 4rd quintile 29 countries and 5th quintile 36 countries). Hence, the fourth and the fifth quintiles include 65 countries which is a 50.4% of our sample, while the first three quintiles include almost the same amount of countries, 64 countries, being the 49.6% of the sample.

Table 4. IPRI 2020 and its Components: Scores by Country.

COUNTRY	IPRI	LP	PPR	IPR	COUNTRY	IPRI	LP	PPR	IPR	COUNTRY	IPRI	LP	PPR	IPR
ALBANIA	4.293	4.040	5.788	3.052	GEORGIA	5.236	5.252	7.184	3.273	NICARAGUA	4.133	2.714	5.749	3.935
ALGERIA	4.389	3.934	5.636	3.597	GERMANY	7.741	7.599	7.483	8.142	NIGERIA	3.719	2.770	4.682	3.705
ANGOLA	3.362	3.160	3.887	3.038	GHANA	5.612	5.138	5.893	5.804	NORWAY	8.248	8.503	8.259	7.983
ARGENTINA	5.111	4.480	5.453	5.400	GREECE	5.232	4.984	5.163	5.550	OMAN	6.654	6.415	7.749	5.796
ARMENIA	5.032	4.656	7.002	3.439	GUATEMALA	4.966	3.545	6.845	4.507	PAKISTAN	4.142	3.350	5.343	3.732
AUSTRALIA	8.358	8.141	8.326	8.605	HAITI	2.655	2.752	1.167	4.047	PANAMA	5.630	4.231	7.284	5.375
AUSTRIA	8.145	7.957	8.029	8.447	HONDURAS	4.864	3.605	6.510	4.478	PARAGUAY	4.544	3.426	6.373	3.832
AZERBAIJAN	5.348	4.350	7.224	4.471	HONG KONG	7.941	8.051	8.209	7.562	PERU	5.059	3.854	6.401	4.921
BAHRAIN	6.388	5.296	7.987	5.880	HUNGARY	6.254	5.346	6.622	6.795	PHILIPPINES	5.322	3.647	6.591	5.729
BANGLADESH	3.293	3.502	3.576	2.802	ICELAND	7.616	8.168	8.009	6.670	POLAND	5.661	5.339	5.445	6.199
BELGIUM	7.706	7.464	7.458	8.195	INDIA	5.708	4.718	6.520	5.886	PORTUGAL	6.939	6.847	6.893	7.076
BENIN	4.650	4.247	4.408	5.295	INDONESIA	5.341	4.644	6.990	4.389	QATAR	7.100	6.735	8.189	6.376
BOLIVIA	4.048	2.984	4.959	4.199	IRAN	4.249	3.312	5.424	4.010	ROMANIA	5.880	5.243	6.314	6.082
BOSNIA AND HERZEGOVINA	4.331	3.792	5.664	3.538	IRELAND	7.529	7.775	6.982	7.831	RUSSIA	4.998	3.734	5.882	5.376
BOTSWANA	5.934	6.385	6.798	4.618	ISRAEL	7.120	6.251	7.501	7.606	RWANDA	6.241	5.822	7.163	5.738
BRAZIL	5.478	4.243	6.032	6.159	ITALY	6.152	5.506	6.155	6.794	SAUDI ARABIA	6.462	5.806	7.579	6.001
BRUNEI DARUSSALAM	4.793	6.341	3.467	4.570	JAMAICA	5.934	5.324	6.388	6.091	SENEGAL	5.066	4.632	5.969	4.598
BULGARIA	5.721	4.914	6.370	5.878	JAPAN	8.362	7.987	8.424	8.676	SERBIA	4.820	4.496	6.039	3.925
BURKINA FASO	5.243	4.098	6.408	5.223	JORDAN	6.286	5.610	7.405	5.843	SINGAPORE	8.481	8.496	8.730	8.217
BURUNDI	4.411	2.688	5.962	4.583	KAZAKHSTAN	5.006	4.611	6.520	3.888	SLOVAKIA	6.365	5.384	7.109	6.601
CAMEROON	4.205	2.936	5.338	4.341	KENYA	5.003	3.872	6.390	4.749	SLOVENIA	6.149	6.282	6.084	6.082
CANADA	8.046	8.072	8.037	8.028	KOREA, REP.	6.675	6.251	6.890	6.884	SOUTH AFRICA	6.213	5.322	6.432	6.885
CHAD	3.991	2.445	4.983	4.546	KUWAIT	5.676	5.362	6.924	4.742	SPAIN	6.599	6.090	6.785	6.922
CHILE	6.973	6.787	7.634	6.498	LATVIA	6.030	5.844	6.603	5.644	SRI LANKA	5.159	4.852	6.177	4.447
CHINA	6.045	4.965	7.149	6.022	LEBANON	4.349	3.046	6.529	3.474	SWEDEN	8.187	8.218	8.051	8.290
COLOMBIA	5.563	3.927	6.516	6.246	LITHUANIA	6.522	6.270	7.080	6.216	SWITZERLAND	8.530	8.621	8.366	8.603
CONGO, DEM. REP.	3.492	1.749	5.082	3.645	LUXEMBOURG	8.242	8.558	8.081	8.087	TAIWAN	7.391	6.807	8.282	7.084
COSTA RICA	6.404	6.061	6.803	6.347	MACEDONIA, FYR	4.806	4.024	6.661	3.732	TANZANIA	5.265	4.247	5.664	5.885
CôTE D'IVOIRE	4.883	3.592	6.833	4.225	MADAGASCAR	3.956	3.300	4.633	3.936	THAILAND	5.474	4.585	7.045	4.793
CROATIA	5.232	5.017	5.870	4.808	MALAWI	4.757	4.234	5.516	4.523	TRINIDAD AND TOBAGO	5.657	5.040	5.934	5.997
CYPRUS	6.355	6.306	6.471	6.287	MALAYSIA	6.717	6.157	7.771	6.223	TUNISIA	5.094	4.583	6.133	4.567
CZECH REPUBLIC	7.007	6.566	7.071	7.383	MALI	4.532	2.991	5.811	4.795	TURKEY	5.404	3.762	6.802	5.648
DENMARK	8.211	8.446	7.902	8.285	MALTA	6.635	6.505	7.279	6.123	UGANDA	4.863	3.811	6.165	4.615
DOMINICAN REPUBLIC	5.031	3.927	6.457	4.708	MAURITANIA	4.149	3.281	4.099	5.066	UKRAINE	4.466	3.063	5.772	4.563
ECUADOR	5.001	3.792	5.878	5.332	MAURITIUS	6.359	6.516	7.328	5.235	UNITED ARAB EMIRATES	7.495	7.065	8.227	7.192
EGYPT	5.506	4.461	6.429	5.628	MEXICO	5.261	3.665	6.172	5.947	UNITED KINGDOM	7.678	7.355	7.500	8.178
EL SALVADOR	4.728	3.888	5.938	4.358	MOLDOVA	4.329	3.670	6.111	3.205	UNITED STATES	8.050	7.229	8.229	8.693
ESTONIA	7.179	7.349	7.645	6.545	MONTENEGRO	4.952	5.245	5.903	3.708	URUGUAY	6.199	7.070	6.622	4.906
ESWATINI	5.212	4.668	6.475	4.492	MOROCCO	5.926	4.846	7.052	5.879	VENEZUELA, BOL. REP	2.848	1.398	4.670	2.477
ETHIOPIA	4.053	3.728	5.408	3.023	MOZAMBIQUE	4.340	3.133	5.240	4.648	VIETNAM	5.132	4.736	6.030	4.631
FINLAND	8.654	8.763	8.276	8.924	NEPAL	4.909	3.973	6.549	4.204	YEMEN, REP.	2.707	1.452	4.942	1.728
FRANCE	7.212	6.910	6.930	7.797	NETHERLANDS	8.281	8.355	7.945	8.544	ZAMBIA	4.504	4.127	5.761	3.624
GABON	4.804	3.699	5.941	4.773	NEW ZEALAND	8.424	8.819	8.598	7.855	ZIMBABWE	3.960	3.048	5.058	3.773

Figure 3a. IPRI 2020. Scores and Rankings.

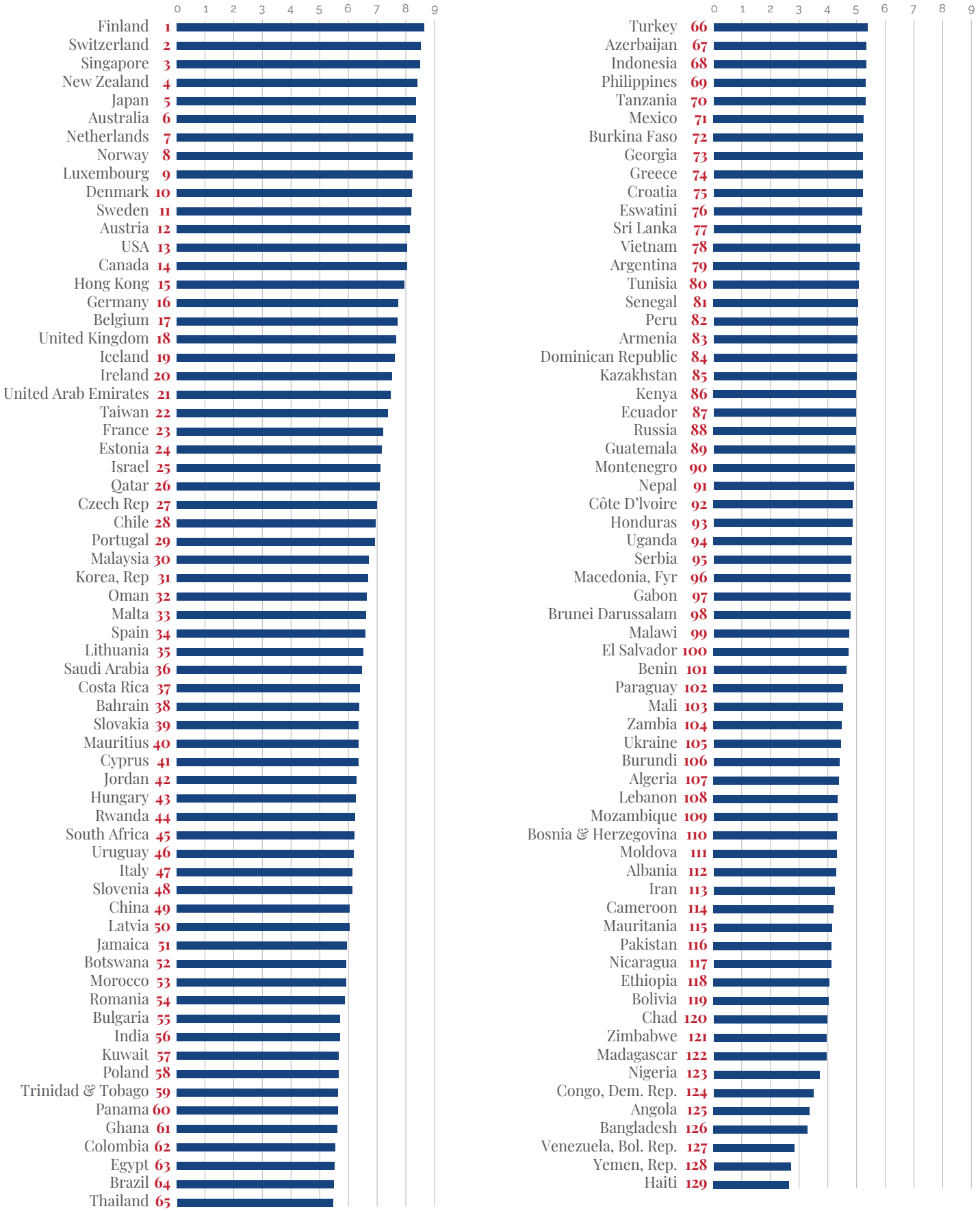


Figure 3b. LP 2020. Scores and Rankings.

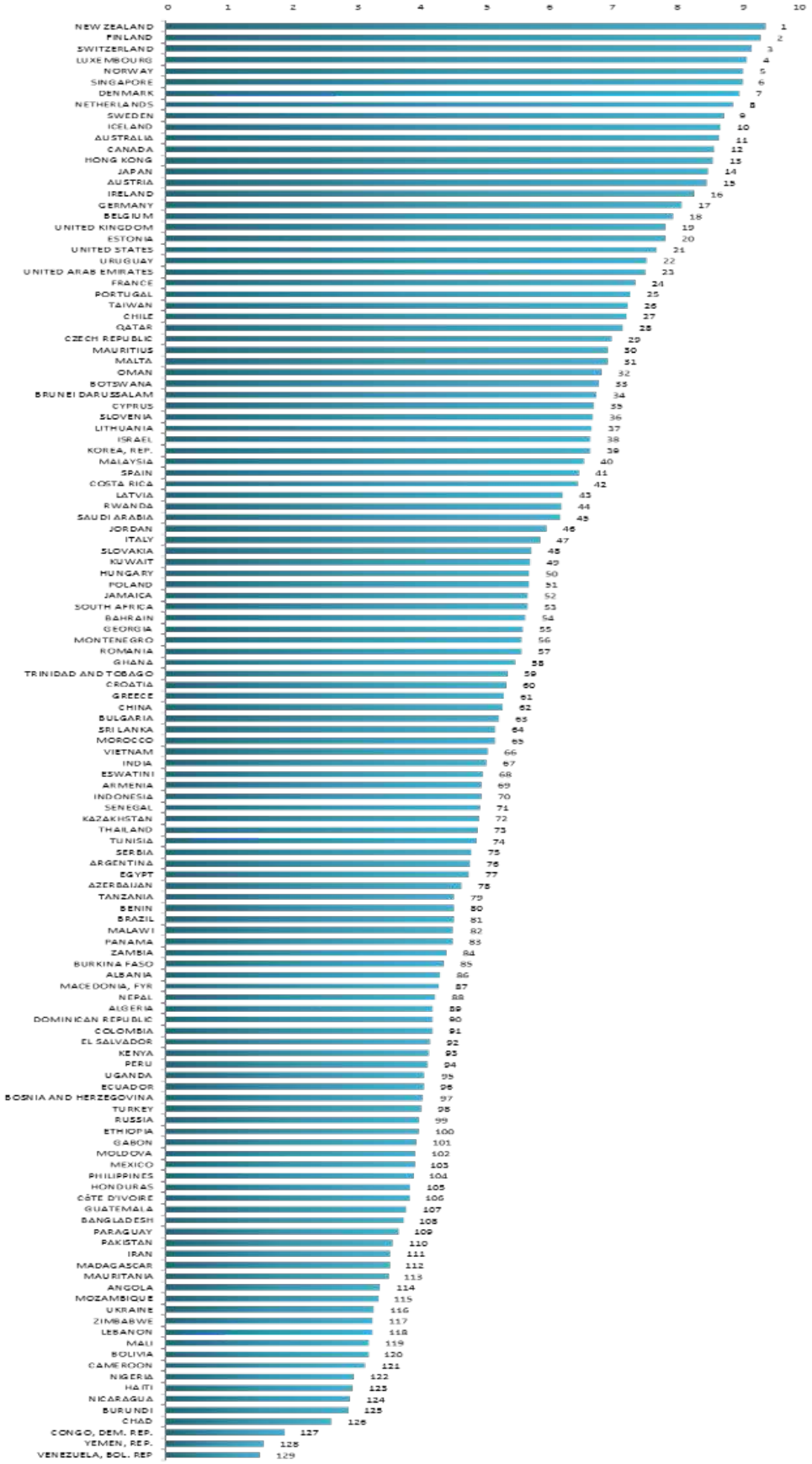


Figure 3c. PPR 2020. Scores and Rankings.

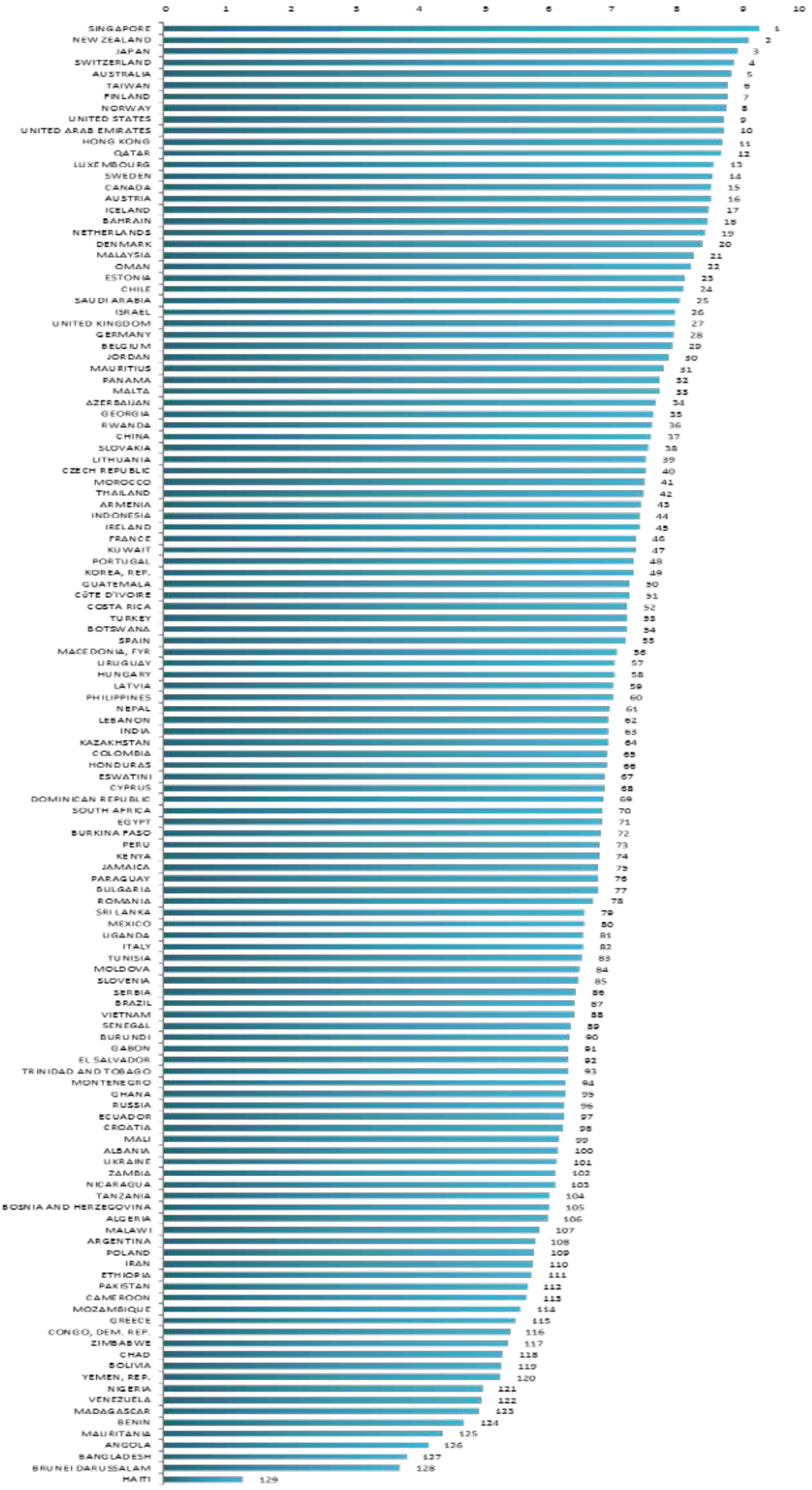


Figure 3d. IPR 2020. Scores and Rankings.

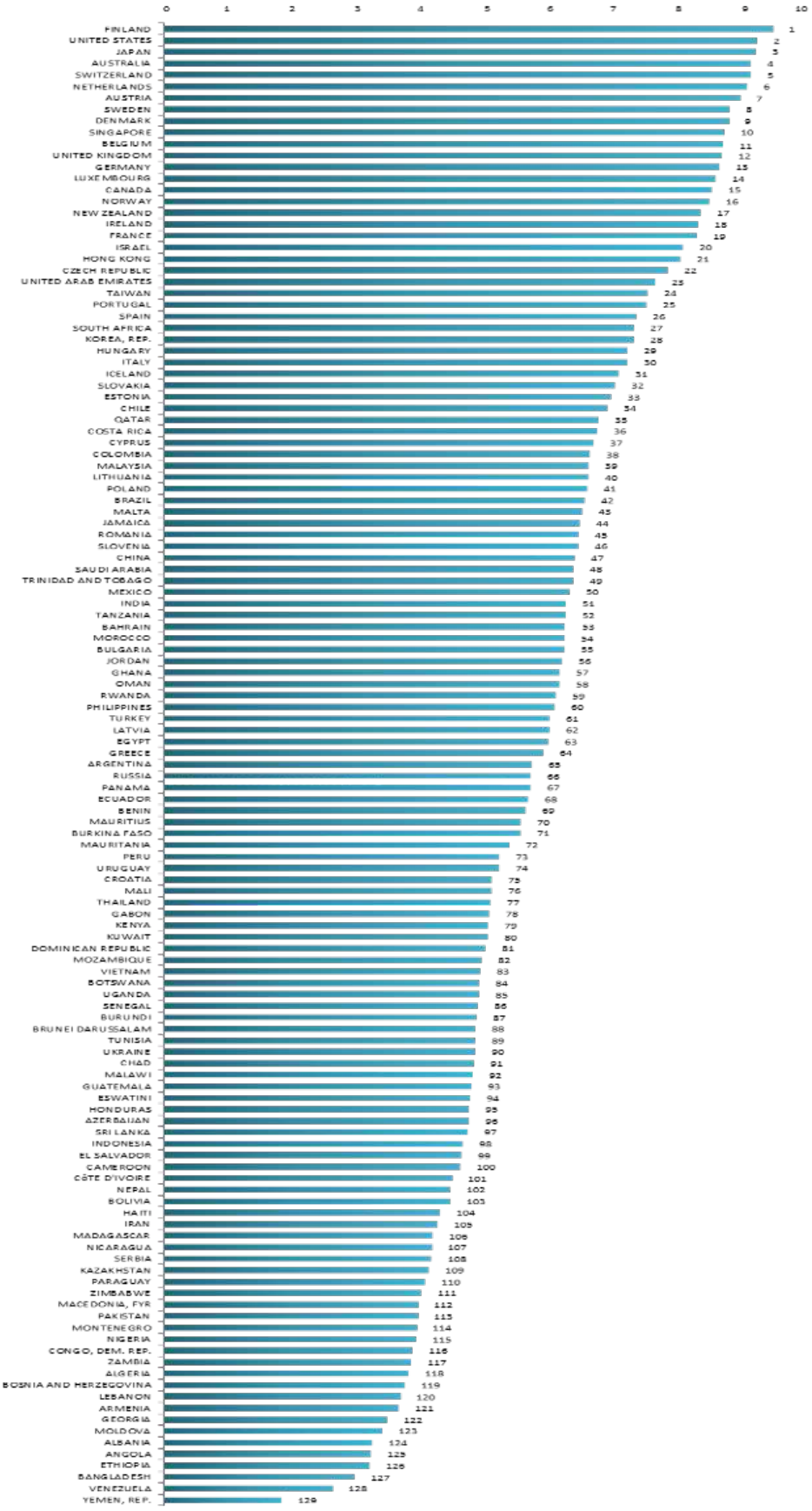
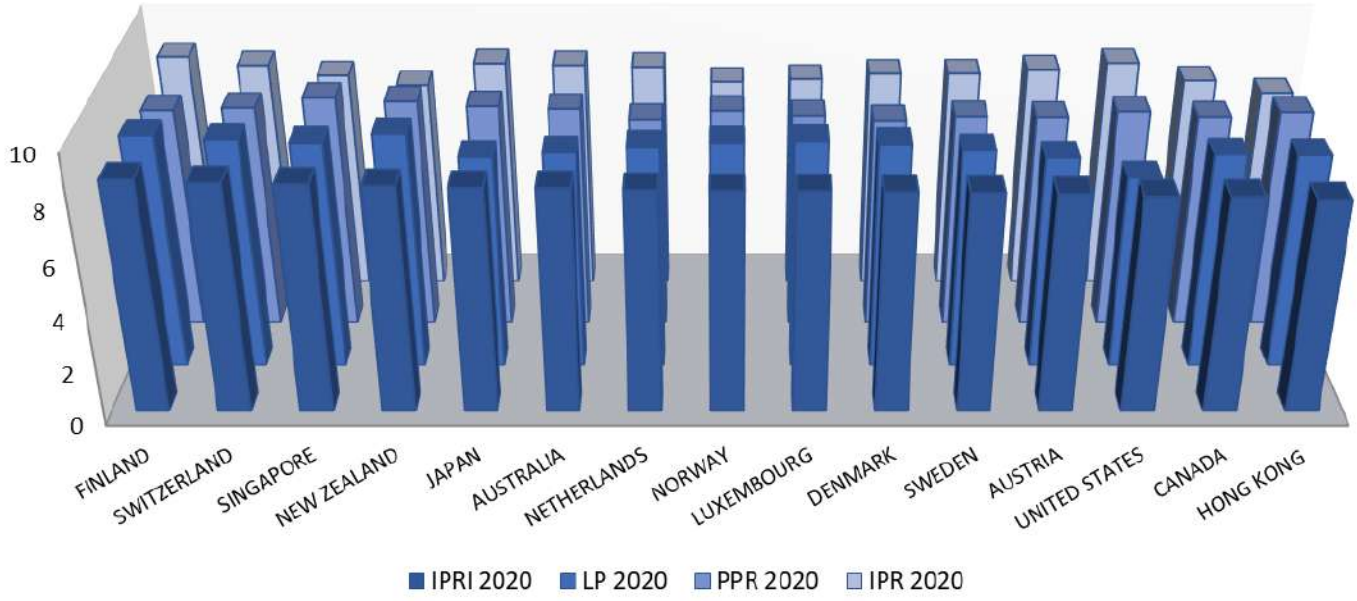


Table 5. 2020 IPRI: Rankings by Quintiles.

	Top 20 Percent	2nd Quintile	3rd Quintile	4th Quintile	Bottom 20 Percent
Strongest	Finland	Iceland	Mauritius	Thailand	Uganda
	Switzerland	Ireland	Cyprus	Turkey	Serbia
	Singapore	United Arab Emirates	Jordan	Azerbaijan	Macedonia, Fyr
	New Zealand	Taiwan	Hungary	Indonesia	Gabon
	Japan	France	Rwanda	Philippines	Brunei Darussalam
	Australia	Estonia	South Africa	Tanzania	Malawi
	Netherlands	Israel	Uruguay	Mexico	El Salvador
	Norway	Qatar	Italy	Burkina Faso	Benin
	Luxembourg	Czech Republic	Slovenia	Georgia	Paraguay
	Denmark	Chile	China	Greece	Mali
	Sweden	Portugal	Latvia	Croatia	Zambia
	Austria	Malaysia	Jamaica	Eswatini	Ukraine
	United States	Korea, Rep.	Botswana	Sri Lanka	Burundi
	Canada	Oman	Morocco	Vietnam	Algeria
	Hong Kong	Malta	Romania	Argentina	Lebanon
	Germany	Spain	Bulgaria	Tunisia	Mozambique
	Belgium	Lithuania	India	Senegal	Bosnia and Herzegovina
	United Kingdom	Saudi Arabia	Kuwait	Peru	Moldova
		Costa Rica	Poland	Armenia	Albania
		Bahrain	Trinidad and Tobago	Dominican Republic	Iran
		Slovakia	Panama	Kazakhstan	Cameroon
			Ghana	Kenya	Mauritania
			Colombia	Ecuador	Pakistan
			Egypt	Russia	Nicaragua
			Brazil	Guatemala	Ethiopia
				Montenegro	Bolivia
				Nepal	Chad
				Côte d'Ivoire	Zimbabwe
				Honduras	Madagascar
					Nigeria
					Congo, Dem. Rep.
					Angola
					Bangladesh
					Venezuela, Bol. Rep
					Yemen, Rep.
Weakest					Haiti

Figure 4 shows the top 15 countries for the 2020 IPRI edition. Finland leads the 2020 IPRI (8.65) as well as the IPR component (8.924), followed by the USA (8.693) in that component. Switzerland ranks 2nd overall (8.530) followed by Singapore (8.481) who additionally leads the PPR component (8.730). New Zealand is in 4th place (8.462) and leads the LP component (8.819). The following countries continue the IPRI rankings: Japan, Australia, Netherlands, Norway, Luxemburg, Denmark, Sweden, Austria, USA, Canada and Hong Kong. The IPRI scores of these countries come in a range of 8.654 to 7.941.

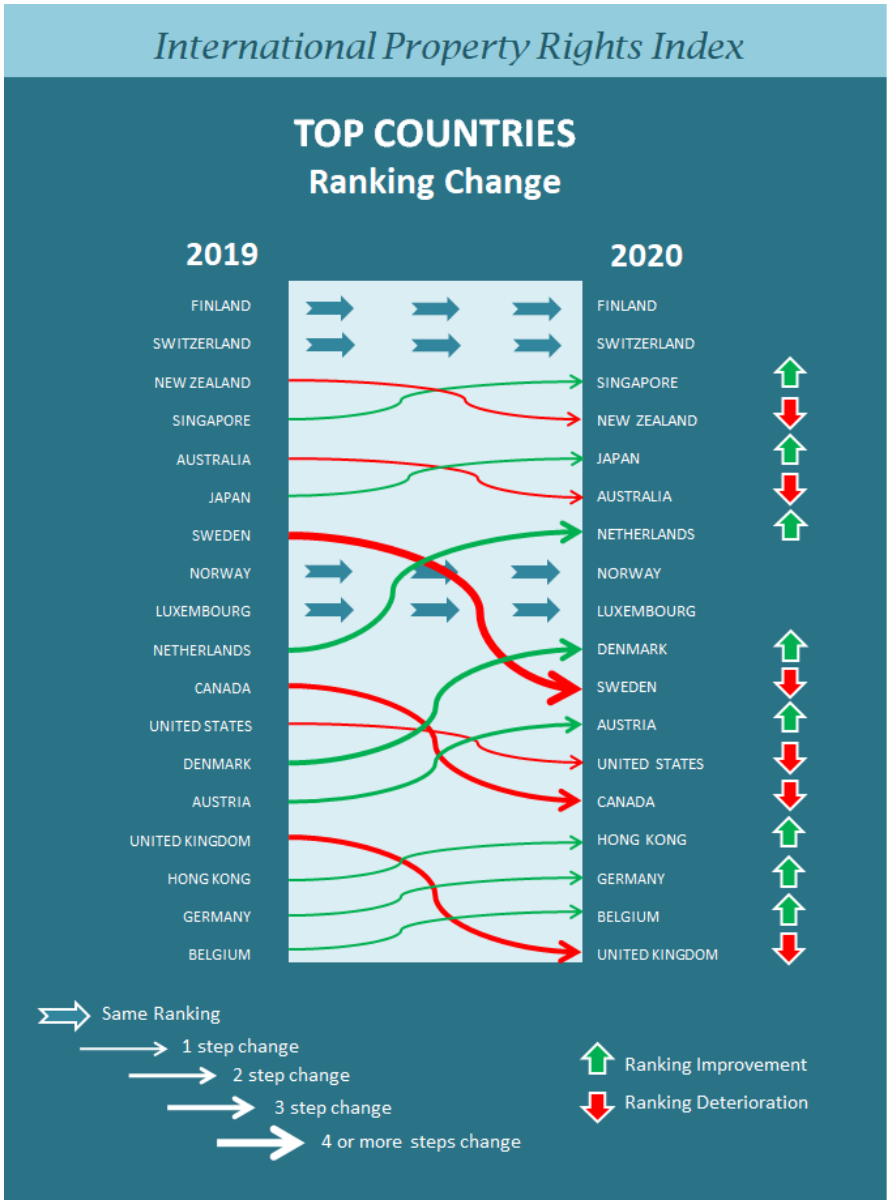
Figure 4. 2020 IPRI & Components: Top 15 Countries.



It is worth noting that since 2017, IPRI top countries are the same, with a different lineup (see Figure 5).

Of the first 15 countries, seven (7) of them show the IPR as their strongest component (Finland, Japan, Australia, Netherlands, Sweden, Austria, USA); six (6) of them show the LP (Switzerland, New Zealand, Norway, Luxemburg, Denmark, Canada) and two (2) show the PPR component (Singapore, Hong Kong).

Figure 5. 2020 IPRI vs. 2019 IPR: Top Countries Ranking Change.

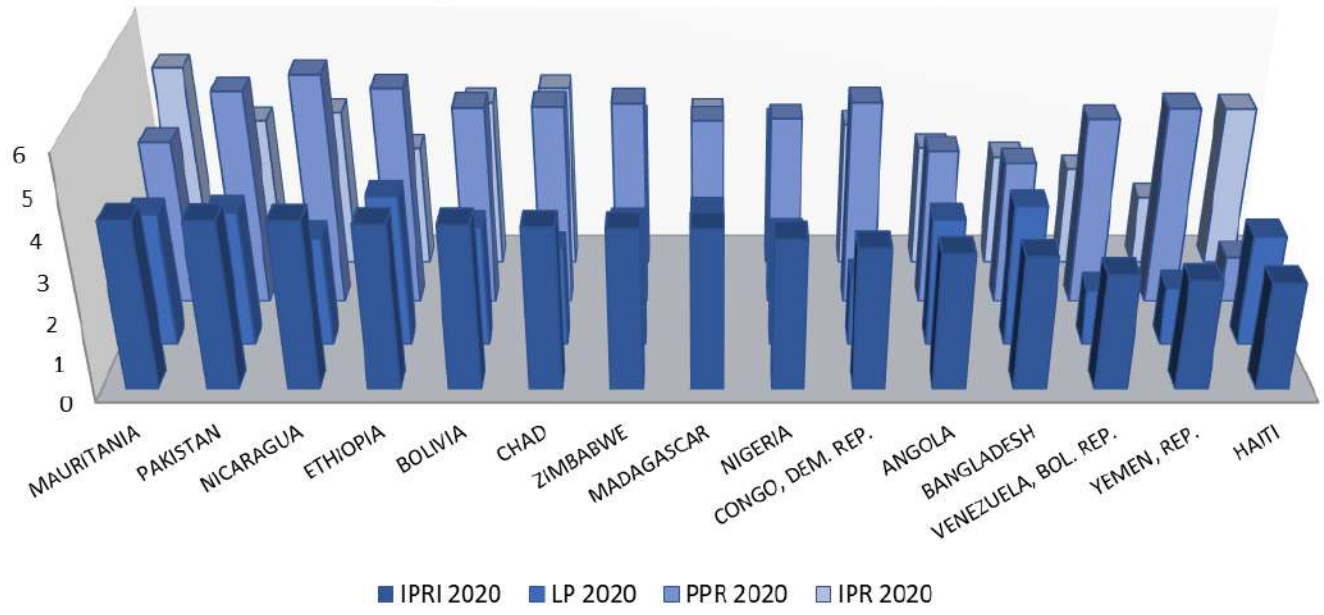


As shown in figure 6, the bottom 15 countries of this 2020 IPRI edition are: Haiti (2.655), Rep. of Yemen (2.707), Bolivarian Rep. of Venezuela (2.848), Bangladesh (3.293), Angola (3.362), Democratic Rep. of Congo (3.492), Nigeria (3.719), Madagascar (3.956), Zimbabwe (3.960), Chad (3.991), Bolivia (4.048), Ethiopia (4.053), Nicaragua (4.133), Pakistan (4.142) and Mauritania (4.149).

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

- LP: Bolivarian Rep. of Venezuela (1.398), Yemen, Rep. (1.452) and Congo, Dem. Rep. (1.749)
- PPR: Haiti (1.167), Bangladesh (3.576) and Angola (3.887)
- IPR: Yemen, Rep. (1.728), Bolivarian Rep. of Venezuela (2.477) and Bangladesh (2.802)

Figure 6. 2020 IPRI & Components: Bottom 15 Countries.



Most of the bottom countries show the PPR as their strongest component; just Mauritania and Haiti show the IPR as the more robust sub-index. On the other hand, most of these countries display the LP as its weakest sub-index. Just Ethiopia, Angola and Bangladesh show the IPR; and in Haiti the PPR is its most fragile component.

This year, four countries show the highest relative improvement in their IPRI score: Burundi (16.11%), Angola (7.89%), Pakistan (6.88%) and Zimbabwe (5.92%); while these other four exhibit the highest relative decreases: Ethiopia (-7.73%), Iran (-7.22%), Poland (-5.6%) and Albania (-5.56%). See Figure 7.

For the LP component, Burundi heads relative improvement (25.75%), followed by Angola (11.95%), Armenia (10.25%), Ecuador (7.03%) and Cote D'Ivoire (6.17%). On the other extreme we find Nicaragua (-18.79%), Iran (-10.96%) and Venezuela, Bolivarian Rep. (-10.79%). See Figure 8.

The countries with most relevant improvement for the PPR component are: Burundi (17.09%), Pakistan (11.28%), Angola (8.12%) and Bahrain (5.91%). Those with the highest retreat are: Poland (-15.25%), Haiti (-9.3%) and Ethiopia (-8.54%). See Figure 9.

The most significant relative increases in the IPR component were reported by Burundi (13.63%), Zimbabwe (10.86%) and Azerbaijan (9.09%); while the highest relative decreases were shown by Ethiopia (-15.31%), Albania (-10.03%), Uganda (-9.96%), Algeria (-9.95%) and Iran (-9.03%). Changes in the IPR component scores 2020-2019 can be seen in Figure 10.

It should be highlighted that this year, Burundi – in spite of its low IPRI score of 3.8 – is the country with the highest increase relative to 2019, not only in the overall IPRI score, but also in all of its components.

Figure 7. IPRI Score 2020-2019 and Variation (%).

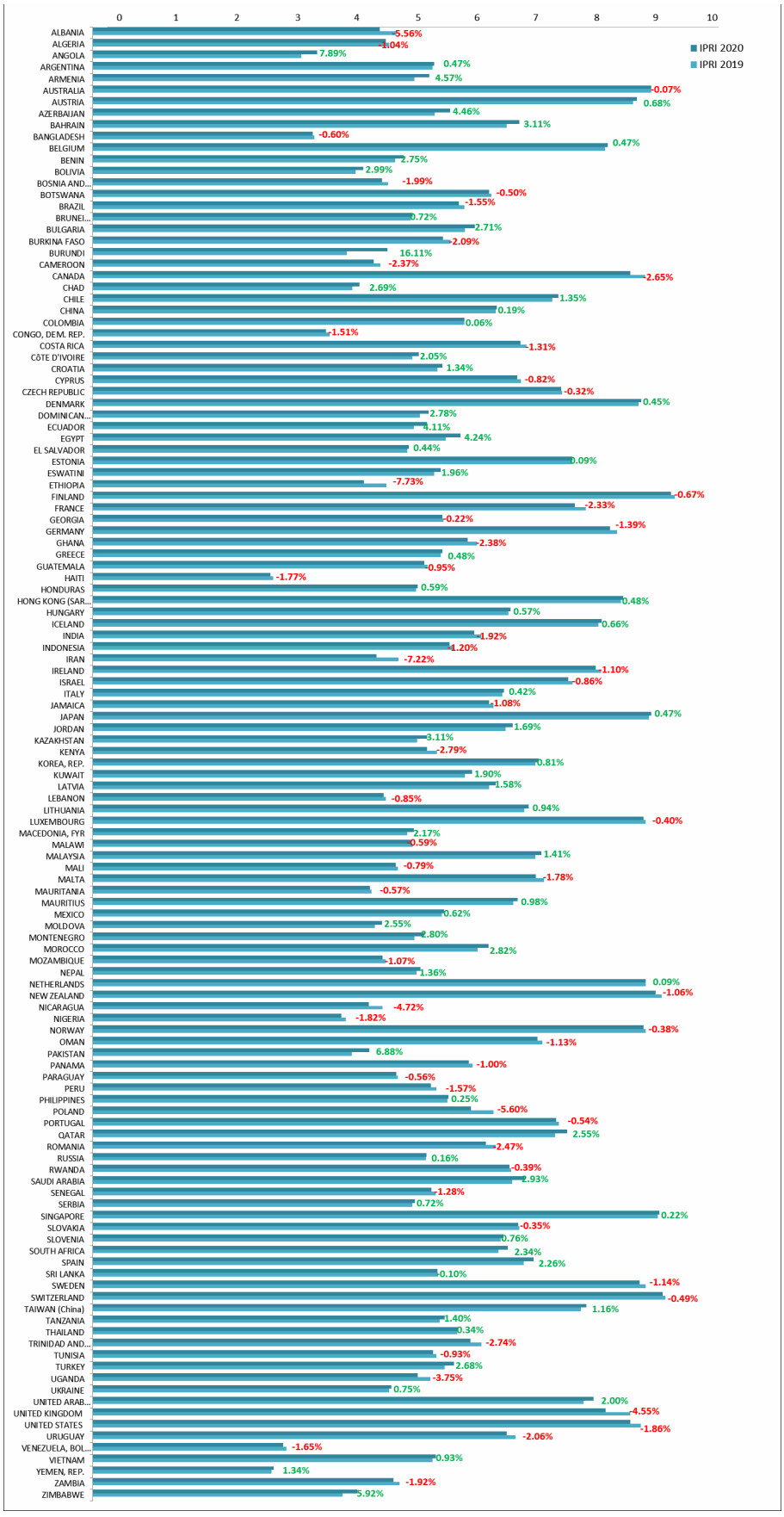


Figure 8. LP Score 2020-2019 and Variation (%).

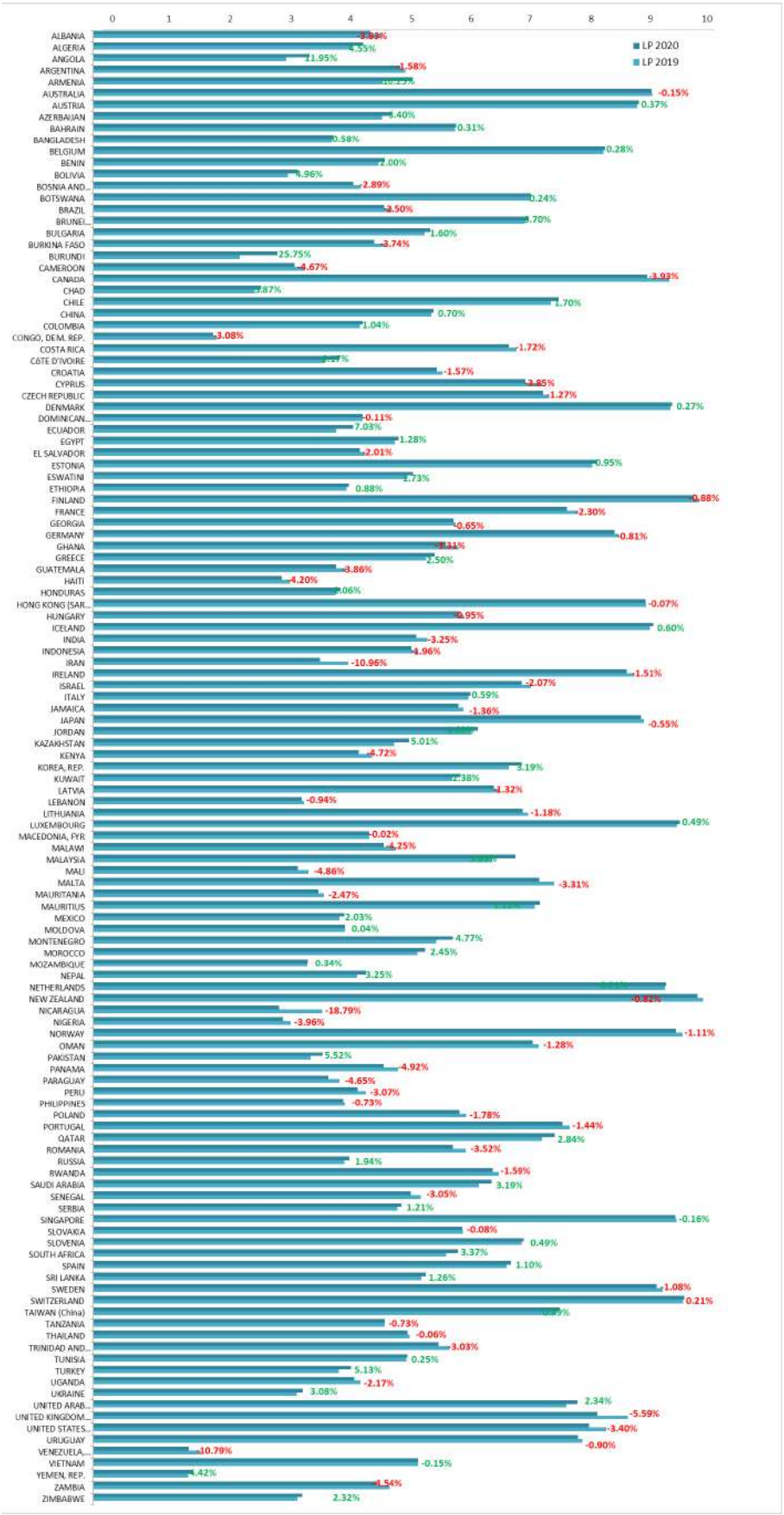


Figure 9. PPR Score 2019-2018 and Variation (%).

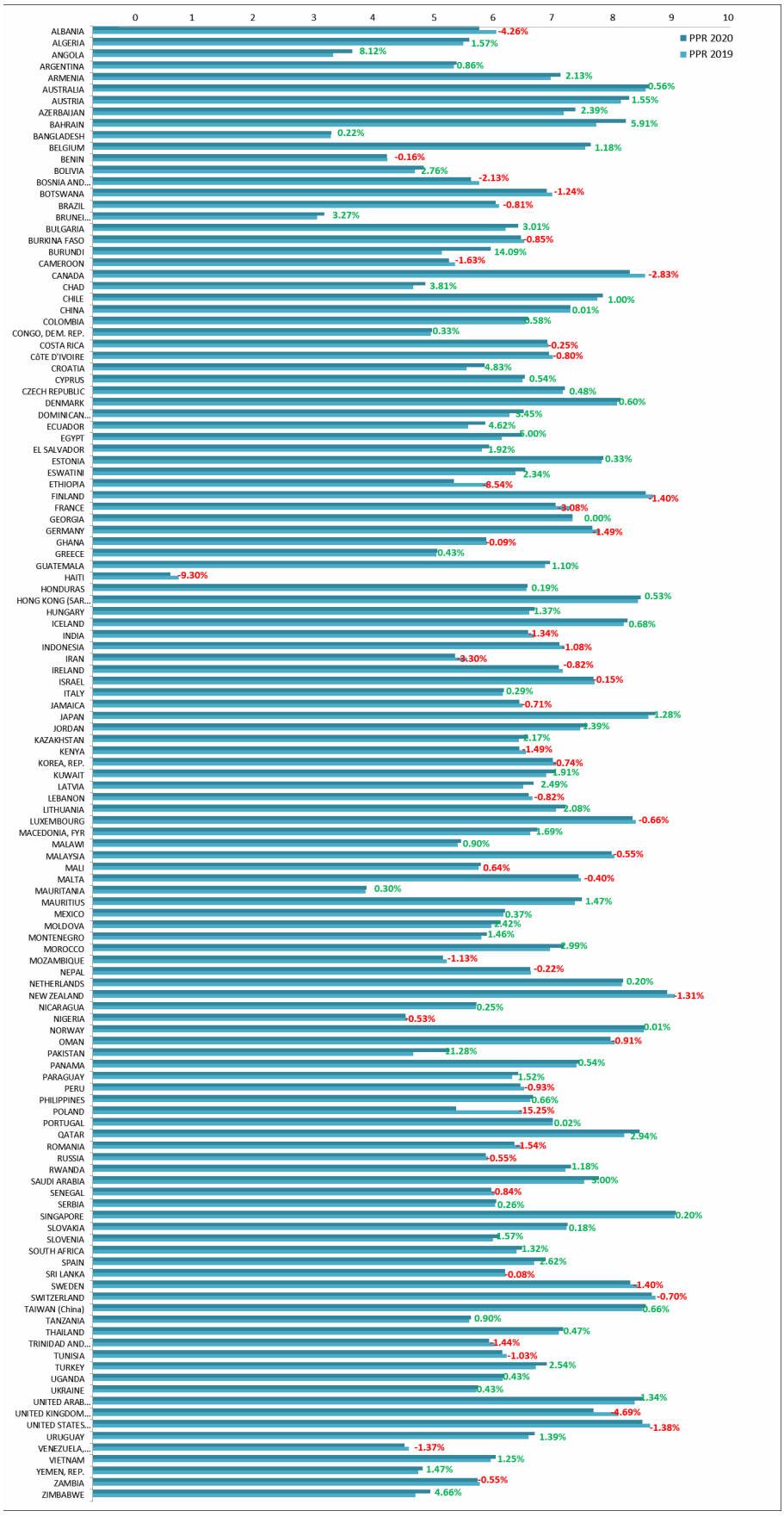
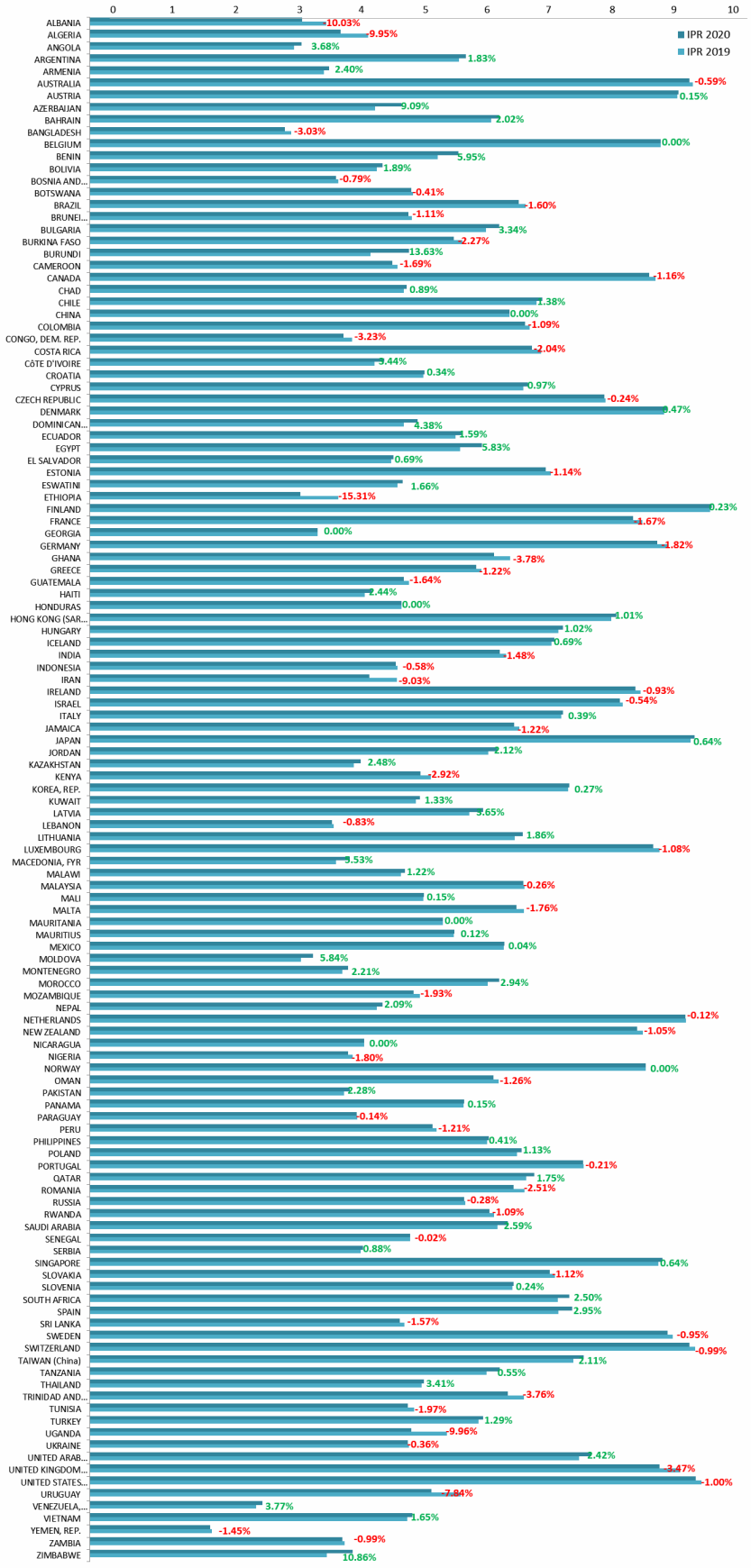


Figure 10. IPR Score 2020-2019 and Variation (%).



IV. IV. 2020 IPRI & Groups

The IPRI analysis was also performed for groups of countries, which were gathered following these different criteria: geographical regions, income level, and degree of development and participation in integration agreements. For each group, we calculated the IPRI score and its components. Former years' classification (Regional) was also kept for comparison purposes (see Table 6 and Figures 11-15).

Table 6. 2020 IPRI and Components: Groups Score.

Name Group	Group	IPRI	LP	PPR	IPR
Groups Regional	A	4.7422	3.9156	5.6902	4.6208
	AO	6.1930	5.7907	6.8773	5.9111
	CEECA	5.4950	4.9822	6.4494	5.0534
	LAC	5.0517	4.1293	5.9898	5.0362
	MENA	5.6933	4.9449	6.9137	5.2214
	NA	8.0478	7.6505	8.1328	8.3602
	WE	7.5546	7.5066	7.4497	7.7074
Geographical Regions	European Union	6.9106	6.6854	6.9856	7.0609
	Rest Of Europe	5.5043	5.0733	6.6743	4.7652
	Africa	4.8030	3.9832	5.7679	4.6579
	North America	7.1190	6.3220	7.4791	7.5558
	Central America & Caribe	5.0001	4.1088	5.9075	4.9842
	South America	5.0824	4.1962	6.0538	4.9971
	Asia	5.8575	5.2791	6.8648	5.4286
	Oceania	8.3908	8.4802	8.4619	8.2302
Income Group *(World Bank, July 2019)*	High Income	7.0833	6.8916	7.3274	7.0309
	Upper Middle Income	5.2163	4.4363	6.4048	4.8080
	Lower Middle Income	4.6810	3.8322	5.7725	4.4382
	Low Income	4.3793	3.4168	5.3187	4.4022
Regional & Development Classification *(IMF, April 2016)*	Advanced Economies	7.4442	7.2981	7.5232	7.5114
	Commonwealth of Independent States	4.9164	4.1909	6.5278	4.0306
	Emerging and Developing Asia	5.2631	4.7382	6.1696	4.8814
	Emerging and Developing Europe	5.2139	4.6561	6.1343	4.8513
	Latin America and The Caribbean	5.0517	4.1293	5.9898	5.0362
	Middle East, North Africa, and Pakistan	5.4107	4.6596	6.6029	4.9695
	Sub-Saharan Africa	4.7642	3.9391	5.7491	4.6043

Name Group	Group	IPRI	LP	PPR	IPR
Regional & Economic Integration Agreements	OECD	7.2428	6.9851	7.3483	7.3951
	EU	6.9106	6.6854	6.9856	7.0609
	SADC	4.7796	4.1573	5.6562	4.5252
	ECOWAS	4.8150	3.9239	5.7148	4.8064
	ASEAN	5.8944	5.5151	6.6607	5.5074
	PARLACEN	4.8918	3.6517	6.4638	4.5600
	GCC	6.6291	6.1132	7.7760	5.9980
	AP	5.7140	4.5584	6.6807	5.9030
	MERCOSUR	5.3331	4.8048	6.1200	5.0745
	SAARC	4.6421	4.0792	5.6329	4.2142
	CEMAC	4.3335	3.0266	5.4205	4.5534
	MCCA	5.0188	3.9626	6.3690	4.7248
	CIS	4.8631	4.0141	6.4184	4.1569
	ARAB M UNION	4.8895	4.1611	5.7300	4.7773
	OPEC	4.8004	4.0298	5.8848	4.4867
	CARICOM	4.7489	4.3722	4.4964	5.3782
	CAN	4.9175	3.6394	5.9386	5.1745
	EFTA	8.1312	8.4308	8.2111	7.7517
	IGAD	4.6400	3.8036	5.9874	4.1290
	USMCA	7.1190	6.3220	7.4791	7.5558
	CEEAC	4.3580	3.2142	5.4792	4.3806
	TPP	6.8733	6.6414	7.2355	6.7429
	PROSUR	5.3898	4.3586	6.3267	5.4841

Group members were updated by January 2020. Compared to the previous edition there is only one change: the United Kingdom is no more a member of the EU. For groups members, see Appendix II.

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.

Figure 11. 2020 IPRI and Components. Regional Groups Score.

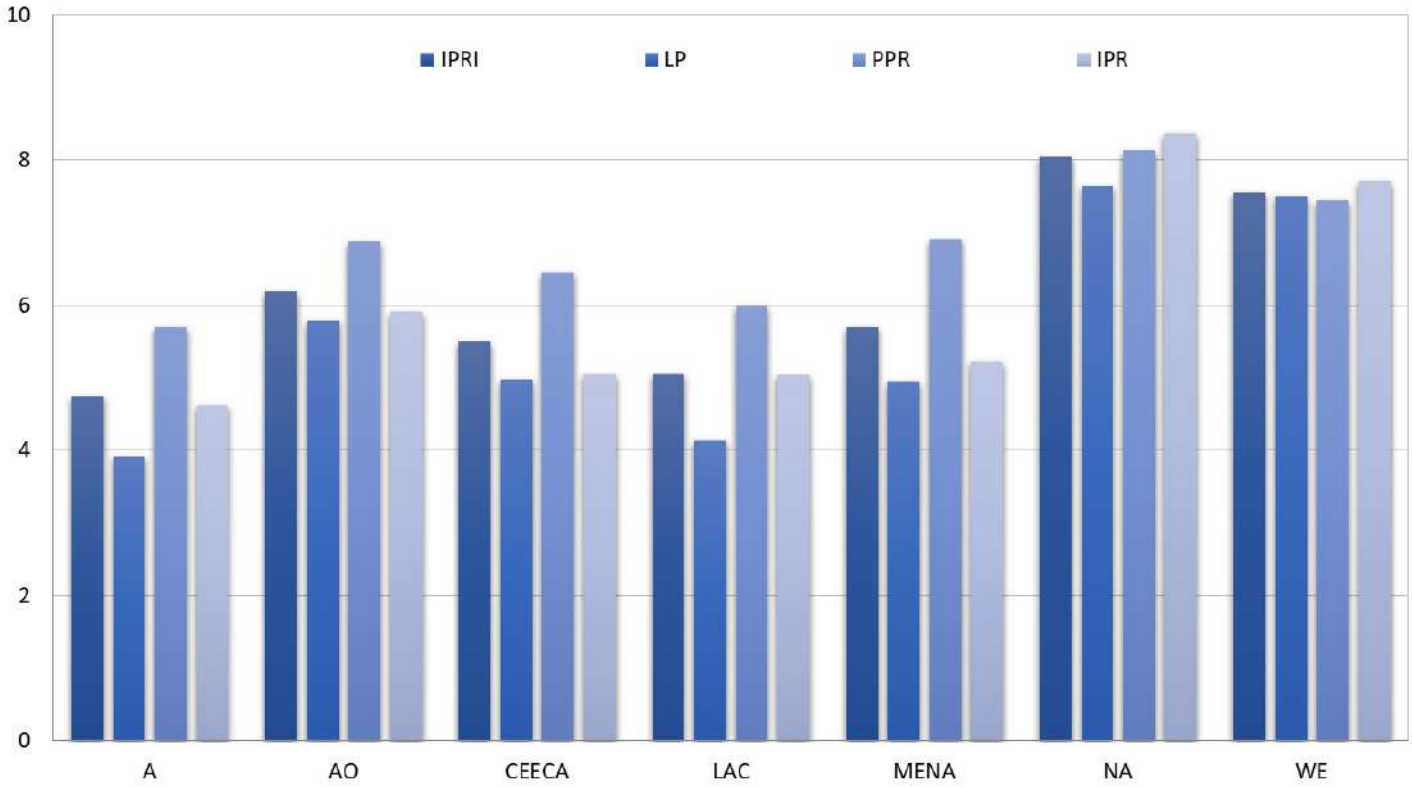


Figure 12. 2020 IPRI and Components. Geographical Groups Score.

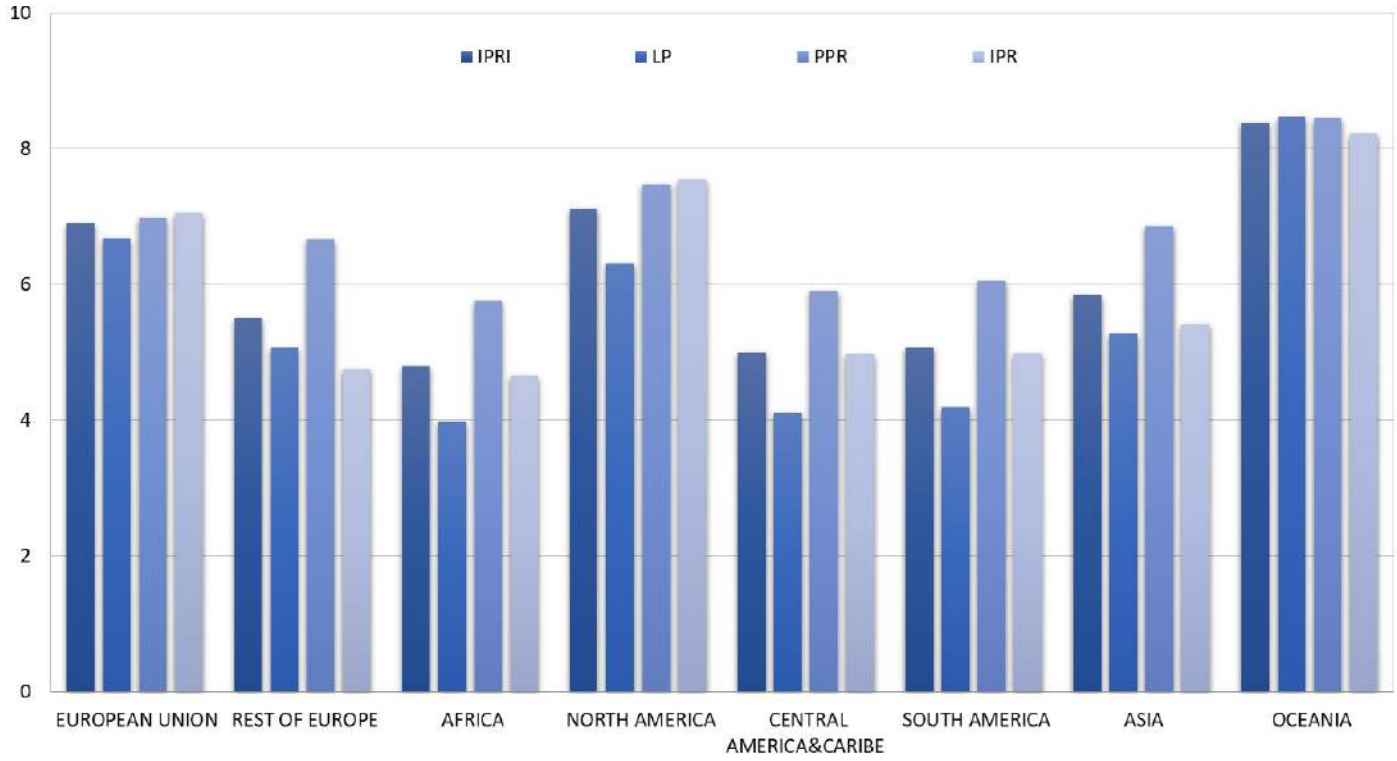


Figure 13. 2020 IPRI and Components. Region & Development Groups Score.

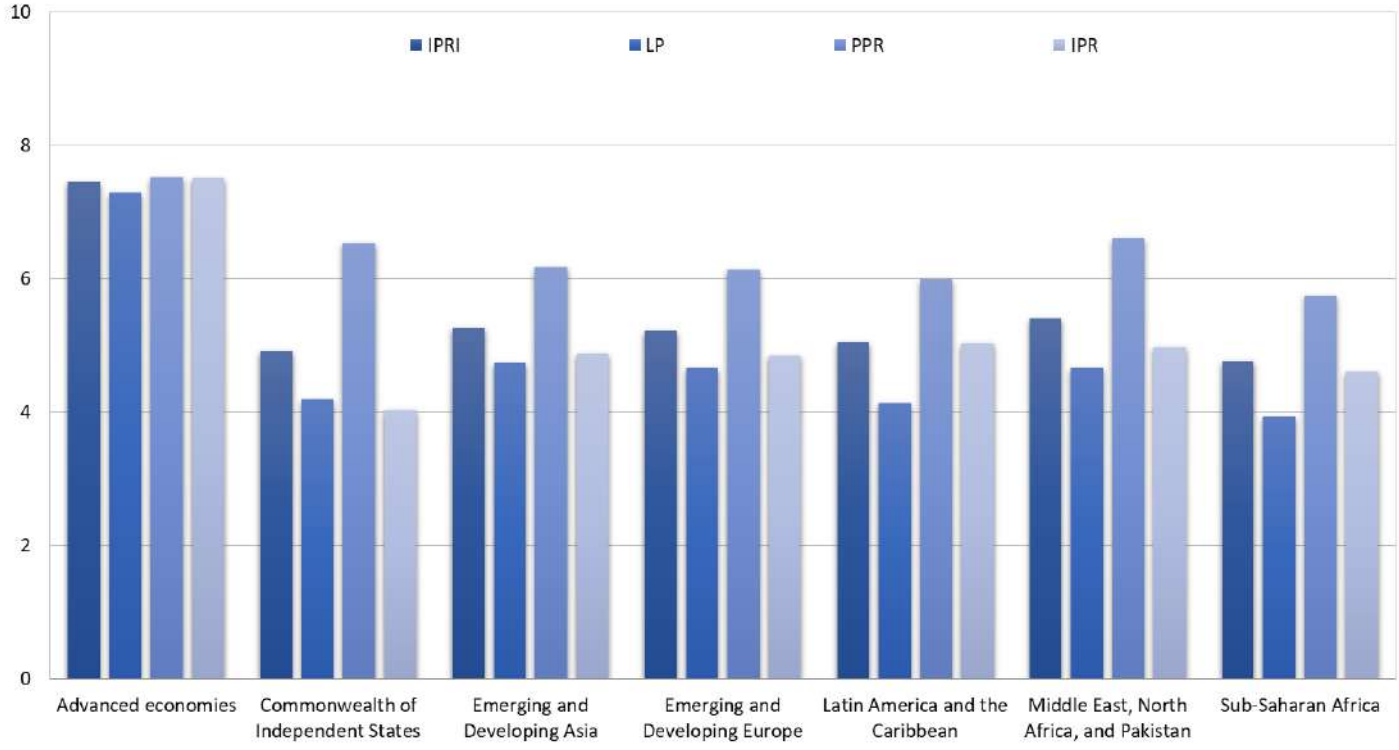


Figure 14. 2020 IPRI and Components. Income Groups Score.

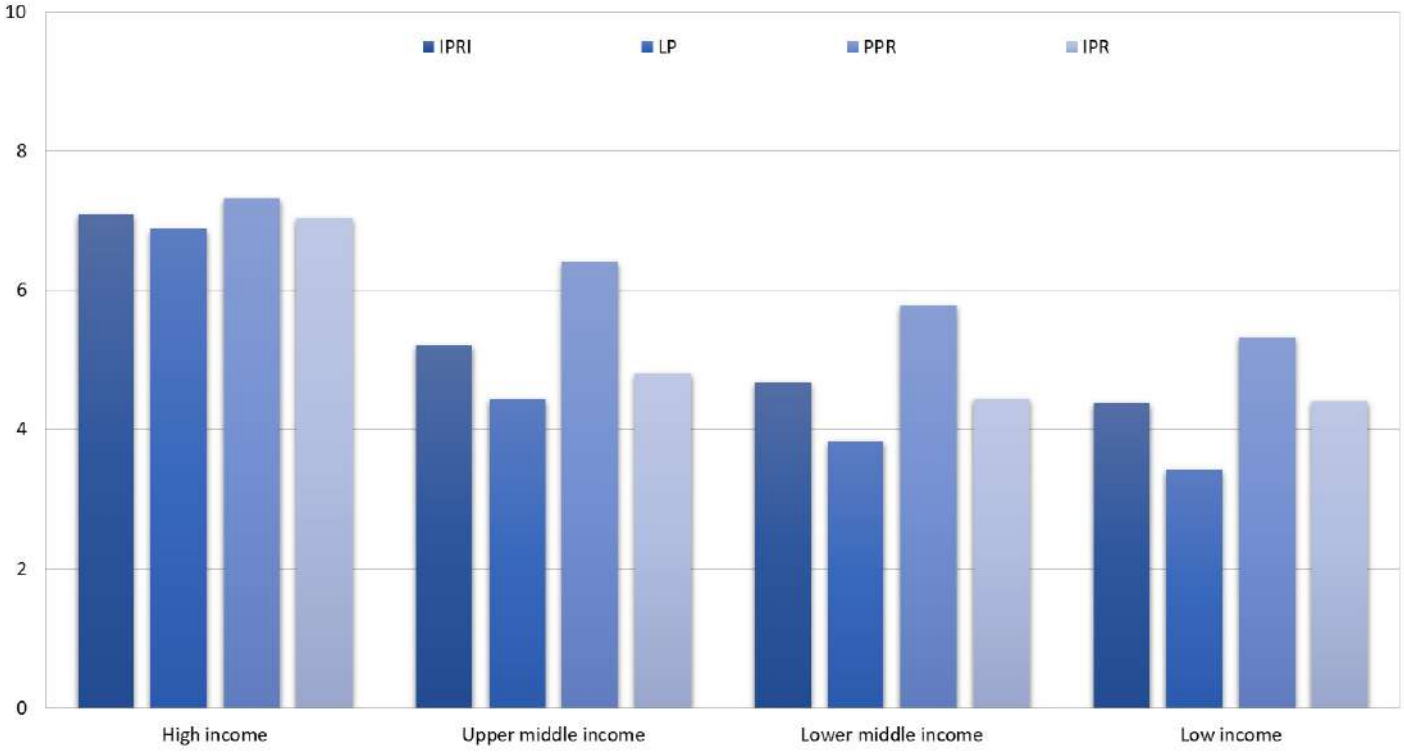
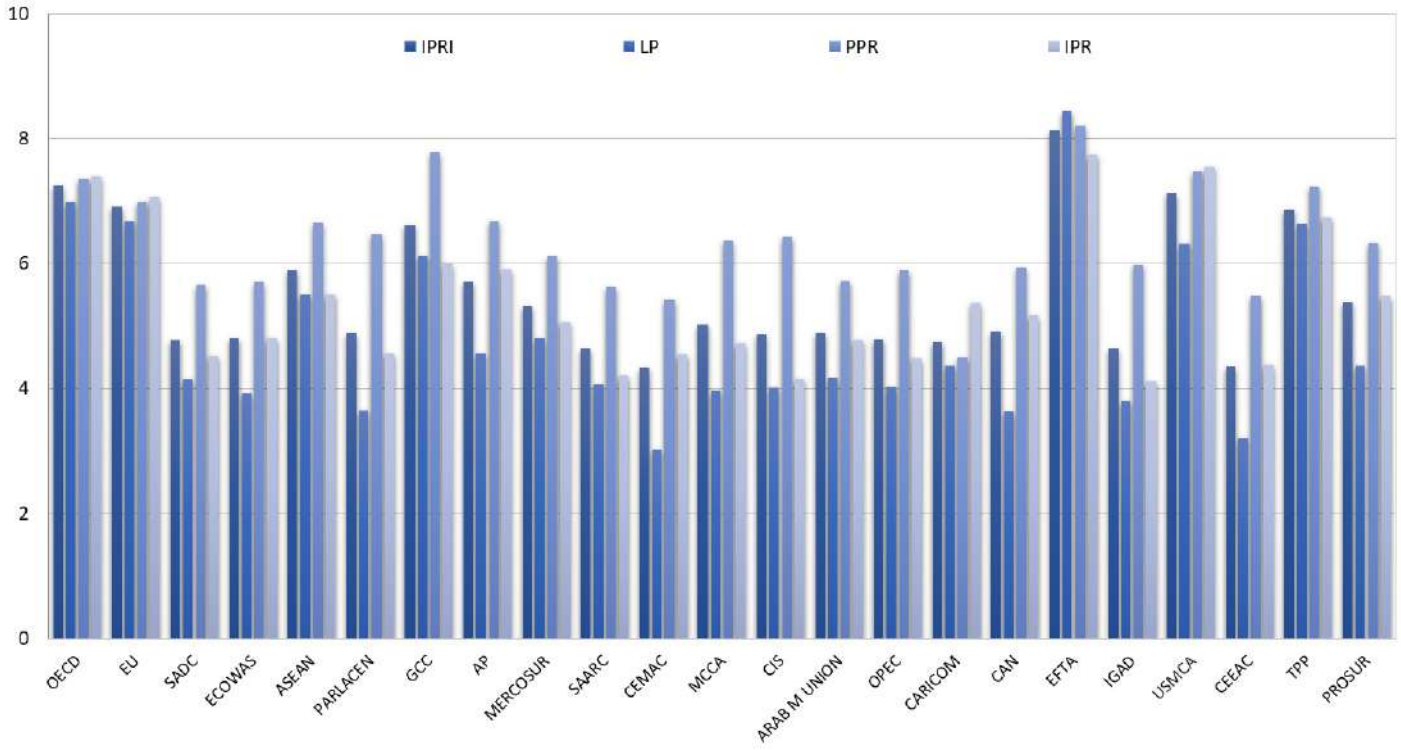


Figure 15. 2020 IPRI and Components. Integration Agreement Groups Score.



If compared with 2019, we find mixed results. Some groups improved their IPRI score while others decreased. These results are the same if we evaluate the subcomponents of the index as well. Below is a brief analysis of the groups' results:

a. Regional Groups: NA (8.05) leads the IPRI score, followed by WE (7.55) and AO (6.19). On the other extreme we find A (4.74) and LAC (5.05) countries. Three of the groups slightly improved their IPRI score: AO (0.42%), CEECA (0.5%) and MENA (0.86) which is a result in an increase of all of the component scores too. On the other hand, the rest of the groups reduced their results, headed by NA (-2.26%) and WE (-0.53%), and also showed a decrease in all the components. LAC and A showed slight reductions in their IPRI scores (-0.36% and -0.34%) as a result of LP and IPR components retreat, however both of them showed improvements in the PPR component (0.63% and 0.48%).

b. Geographical Groups: at the top we find Oceania (8.39), North America (7.12) and European Union (6.91); while at the bottom are Africa (4.80), Central America and the Caribbean (5.00), and South America (5.08). The scores' change compared to 2019 were very smooth, positive and negative ones. Asia and the Rest of Europe showed the most relevant improvement (0.8% and 0.53%), showing improvement in all of the IPRI components. North America, Oceania and European Union showed reduction of the IPRI scores (-1.56%; -0.57%; -0.44%) and also in all of the components. The most relevant decreases were shown in the LP component of Central America & the Caribe (-3.43%), and North America (-2.63%).

c. Regional & Development Groups (IMF classification): Advanced Economies (7.44) leads the group followed by MENA & Pakistan (5.41), Emerging and Developing Asia (5.26), Emerging and Developing Europe (5.21), Latin America and the Caribbean (5.05), CIS (4.92), and ending with the Sub-Saharan Africa (4.76). Three of the seven groups improved in their IPRI score. The CIS leads the improvements by a 2.19% and also of all the IPRI components, being the higher, the increase in LP (3.26%). Additionally, MENA & Pakistan group improved in the IPRI score (1.21%) and all of its components. Decreases of the IPRI scores are shown by Latin America & the Caribbean (-0.36%), Advanced Economies (-0.35%), and Sub-Saharan Africa (-0.34%).

d. Income Group (WB, 2019 classification): as in previous editions, this year the income classification groups show the same display of the IPRI score. High Income (7.08) remains at the top, followed by Upper Middle (5.21), Lower Middle (4.68) and Low Income (4.38) countries. Only the Upper Middle group shows IPRI score improvement (0.64%), while the decrease is very important for Low Income countries (-3.5%), mainly due to a dramatic set back in LP scores (-6.24%)

e. Integration Agreements: since 2017, the five top groups are EFTA (8.13), OECD (7.24), USMCA (7.12), EU (6.91) and TPP-11 (6.87). However, all these groups reduced their IPRI score and its components. Heading the set back was USMCA (-1.56%). At the bottom, we find CEMAC (4.33), CEEAC (4.36), IGAD (4.64), SAARC (4.64) and CARICOM (4.75). Simultaneously, CEMAC and CEEAC are the groups with the highest improvement for IPRI scores (5.78% and 4.93%) as a result of an increase of all the components. Meanwhile, IGAD is the group with the highest decline (-4.61%), showing decreases in all the IPRI components. A second level of overall improvement is shown by CIS (2.63%), GCC (1.87%), OPEC (0.9%) and ASEAN (0.39%).

V. 2020 IPRI & POPULATION

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.

Although the 2020 IPRI average score is 5.728, when population weighs in, it reduces to 5.649, which is a decrease of 1.03% from last year (5.7086). However, there is an improvement if compared to 2018 IPRI-population (5.645) and 2017 IPRI-population (5.522), presenting a promising scenario where more people around the world enjoy property rights protection. However, 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 129 countries has a population of 7.32 thousand millions people –representing 93.91% of world population – and it shows that 73% of that population live in 84 countries with an IPRI between 4.5 and 7.4.

Table 7. 2020 IPRI: Population.

2020 IPRI (Ranges)	Number of Countries	Population (000)	Population (%)	Incidence (%)	IPRI-Population (%)	% GDP
2.5 a 3.4	5	267,220	3.7	2.0	2.0	1.07
3.5 a 4.4	19	928,038	12.7	10.6	9.0	2.08
4.5 a 5.4	40	1,452,678	19.8	27.0	18.0	9.07
5.5 a 6.4	29	3,576,978	48.9	23.4	50.6	28.20
6.5 a 7.4	15	315,450	4.3	14.0	5.2	10.11
7.5 a 8.4	18	759,549	10.4	19.5	14.8	47.87
8.5 a 9.4	3	20,046	0.3	3.5	0.4	1.60
	129	**7,319,959**	**100.0**	**100.0**	**100.0**	**100.0**

Almost half the sample population (48.9%) lives in 29 countries with a middle score of this index, [5.5-6.4]. On the two extremes of the sample, we find that 10.7% of the population enjoys higher levels of property rights protection in 21 countries [7.5-9.4]; and 16.4% sample population live in 24 countries with lower levels of property rights [2.5-4.4].

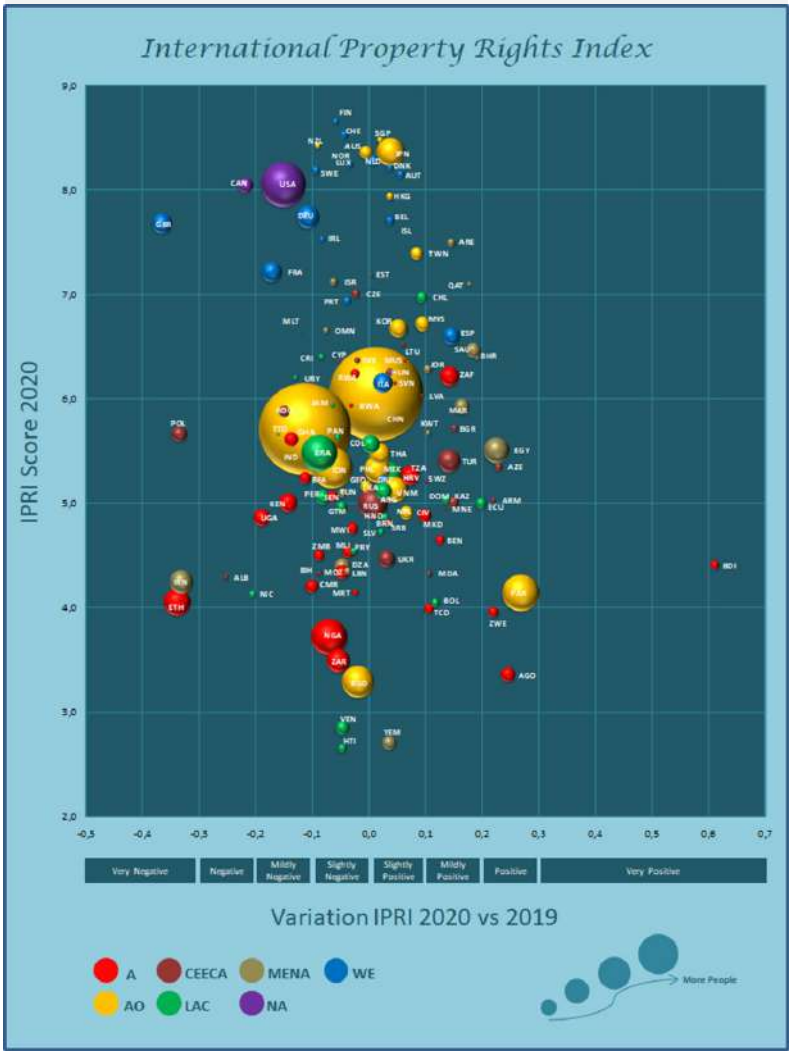
Simultaneously, we can complement this IPRI-Population analysis with GDP results, as follows:

- 2020-IPRI countries include 93.91% of world population, accounting for 97.72% of world GDP.
- Almost 60% of the total GDP comes from 36 countries with 15% of the total population, and they show robust property rights systems in a range [6.5 – 9.4] of the IPRI.
- Particularly 47.87% of the total GDP is from 18 countries with 10.4% of total population with an IPRI score in a range of [7.5 – 8.4].
- 28.2% of the total GDP lies in 29 countries with 48.9% of the total population, and they show middle IPRI scores in a range [5.5 - 6.4].
- 12.22% of the total GDP is manufactured in 64 countries with 36.2% of the total population, and they weak property rights systems, with low IPRI scores, in a range [2.5 – 5.4].

This information evidences the positive relationship between a robust property rights system and economic strength: an element to be considered carefully by densely populated countries.

Figure 16 shows a combination of elements while analyzing changes in the IPRI scores: country, population, and their belonging to a regional group. It's positive news to see that most of the countries have improved their scores, particularly those densely populated.

Figure 16. 2020 IPRI: Country Score Changes (Population and Groups).



VI. 2020 IPRI & Gender

Being a subject of human rights and social justice, Gender Equality is a goal in itself. It refers to the equal rights, responsibilities and opportunities for women and men, girls and boys. Gender Equality has been demonstrated to foster development for less developed and developing countries, particularly in areas like health, education, agriculture and unbiased access to credit for reducing poverty.

Although the unit of analysis of the IPRI are countries, it aims to show the property rights protection of people, so its gender component grasps possible bias due to this condition. The data used to calculate the Gender Equality component for the IPRI is the Social Institutions and Gender Index, SIGI (by OECD). We chose those items more closely related to property rights and its impact in economic development. 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 (GE), this chapter extends the standard IPRI measure to include a measure of GE concerning property rights. The IPRI formula was modified to incorporate Gender Equality as following:

$$IPRI\text{-}GE = IPRI + 0.2*GE$$

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.

Simultaneously, to make easier the comparison of the IPRI and the IPRI-GE and make it more informing for policy makers, this year we rescaled the final IPRI-GE from 0-10.

Data & Methodology

The GE component is calculated using the following indicators (Source: OECD Gender, Institutions, and Development Database 2019 (GID-DB). Details in Appendix III):

1. **Women's Access to Land Ownership:** Estimates whether women and men have equal and secure access to land assets, use, control and ownership.

2. **Women's Access to Bank Loans:** Measures whether women and men have equal and secure access to formal 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:** Measures whether women and men have the same legal rights to inheritance of land and non-land assets.

5. **Women's Social Rights:** Covers broader aspects of women's equality, and it is a composite of seven other items crucial to equal standing in society. This year we included *Workplace Rights* in this component. Items:

    i. *Divorce:* Measures whether women and men have the same legal rights to initiate divorce and have the same requirements for divorce or annulment.

    ii. *Household responsibilities:* Measures whether women and men have the same legal rights, decision-making abilities and responsibilities within the household.

    iii. *Female genital mutilation:* Measures the occurrence of female genital mutilation.

    iv. *Violence against women:* Measures whether the legal framework protects women from violence – including intimate partner violence, rape, and sexual harassment – without legal exceptions and in a comprehensive approach.

    v. *Freedom of movement:* Measures whether women and men have the same rights to apply for national identity cards (if applicable) and passports, and to travel outside the country.

    vi. *Citizenship rights:* Measures whether women and men have the same citizenship rights and ability to exercise their rights.

    vii. *Workplace rights:* Measures whether women and men have the same legal rights and opportunities in the workplace.

The original data has three levels: 0 (Best), 0.5 (Average) and 1 (Worst). All data series were rescaled to the IPRI scale of (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 where calculated also as equally weighted. A minimum score (0) means complete discrimination against women, while maximum score (10) is given to countries with gender equality. 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.

IPRI-GE and GE: Country Results

As an average, the 129 countries show a GE score of 7.248, which is higher by 0.05% than last year (7.243), but still lower than the value showed in 2018 (7.458).

Looking into details of the GE components, we find that of the five components, Women's Social Rights is the weakest, showing an average score of 5.28, followed by Inheritance Practices (6.783), Women's Access to Land Ownership (7.597), Women's Access to Property other than Land (7.907); and the strongest is Women's Access to Bank Loans (8.624). Inside Women Social Rights we find that the strongest component is Freedom of Movement (8.295), then Citizenship Rights (7.461), Divorce Rights (6.628), Household Responsibilities (4.283), Violence against Women (4.244), Workplace Rights (3.463); and the weakest is Female Genital Mutilation (2.558).

Fifteen countries show a range of [9.5-9.786] for the GE score: Austria, Malta, Sweden, Belgium, Portugal, Norway, Australia, New Zealand, Denmark, Estonia, Iceland, Ireland, Netherlands, Switzerland and USA. Seventeen other countries score from [9-9.5] for a total of 32 [9-top]. On the other extreme we find 21 countries with GE scores lower than 5. See Figure 17a for GE scores and rankings.

The average of the 2020 IPRI-GE score is 5.982 (in a scale 0-10), which is a slight improvement from last year (5.981 in a scale 0-10, or 7.177 in a scale 0-12). See Figure 17 b for IPRI-GE(0-10) scores and rankings.

Finland leads the IPRI-GE(0-10) (8.772), followed by Switzerland (8.692), New Zealand (8.615), Australia (8.560), Netherlands (8.484), Norway (8.481), Singapore (8.472), Sweden (8.453), Luxemburg (8.428), Denmark (8.426), Austria (8.418), Japan (8.314), USA (8.292), Canada (8.157) and Hong Kong (8.141). All of them are very close in their score values and are over 8.

On the other extreme of the IPRI-GE(0-10), with scores below four (4), we find Yemen Rep. (3.185), Bangladesh (3.411), Haiti (3.439), Angola (3.706), Bolivarian Rep. Venezuela (3.885), Democratic Rep. Congo (3.910), Mauritania (3.945) and Nigeria (3.956).

Some of these countries report this low value due to their low IPRI scores and not their GE scores, which is the case for Bolivarian Rep. Venezuela, with GE=9.071 (IPRI-GE=3.89), Haiti with GE=7.357 (IPRI-GE=3.44), and Democratic Rep. Congo with GE=6.00 (IPRI-GE=3.91).

On the contrary we find countries with a low GE score that boost their IPRI-GE, thanks to their IPRI results. Those are the cases of Kuwait with GE=1.357 and IPRI-GE=4.956, Egypt with GE=2.929 and IPRI-GE=5.076, and Oman with GE=4.643 and IPRI-GE=6.318.

Fig. 17a. 2020 GE. Scores & Rankings.

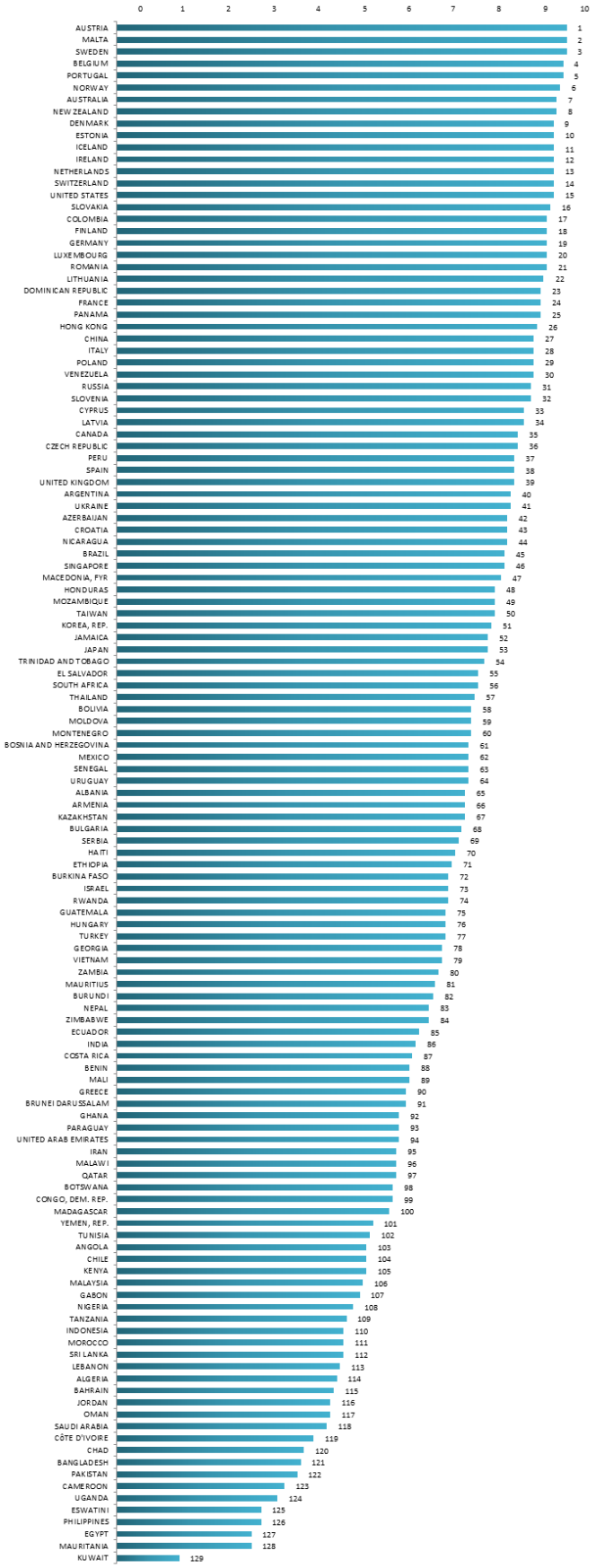
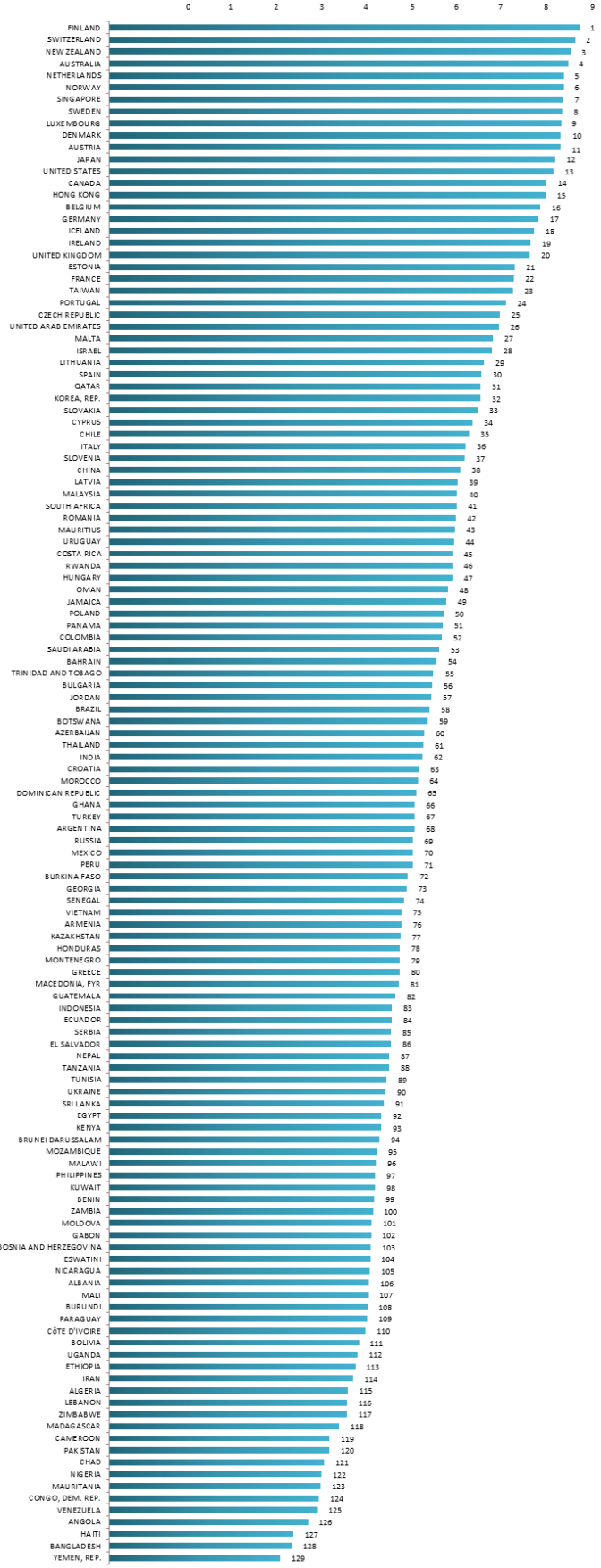


Fig. 17b. 2020 IPRI-GE. Scores (0-10) & Rankings.



Analyzing the IPRI-GE by groups, we found the following results (see Figure18a - 18e):

- Geographical Regions: At the top we find Oceania (8.59), North America (7.37), European Union (7.26), Rest of Europe (5.95), and Asia (5.90); while at the bottom are Africa (4.95), Central America & Caribbean (5.50) and South America (5.53).

- Regional and Development Criteria (2016, IMF classification): Advanced Economies (7.71) is leading the group followed by Emerging and Developing Europe (5.67), Latin America and the Caribbean (5.52), Emerging and Developing Asia (5.38), CIS (5.43), MENA & Pakistan (5.28), ending with Sub-Saharan Africa (4.96). CIS countries show a high GE score (8.0) but the IPRI pulls down their IPRI-GE, similarly with Latin America and the Caribbean (GE=7.87), and Emerging and Developing Europe (GE=7.95); while the opposite happens with MENA & Pakistan (GE=4.6).

- Income classification (2019, World Bank classification): This year the IPRI-GE and the GE display the same pattern as the IPRI, holding the relationship between robustness of property rights systems and economic strength.

- Economic and Regional Integration Agreements: As in the IPRI, the five top groups are EFTA (8.37), OECD (7.51), USMCA (7.37), EU (7.26) and TPP-11 (7.01). The bottom groups are CEMAC (4.33), CEEAC (4.55), SAARC (4.74), IGAD (4.77), Arab Monetary Union (4.83) and OPEC (4.91). It should be noted that PARLACEN, CIS, CAN, CARICOM, MERCOSUR, MCCA and PROSUR show high GE scores, but their IPRI scores reduce their IPRI-GE values.

Figure 18a. 2020 IPRI-GE(0-10) and GE. Regional Groups Scores.

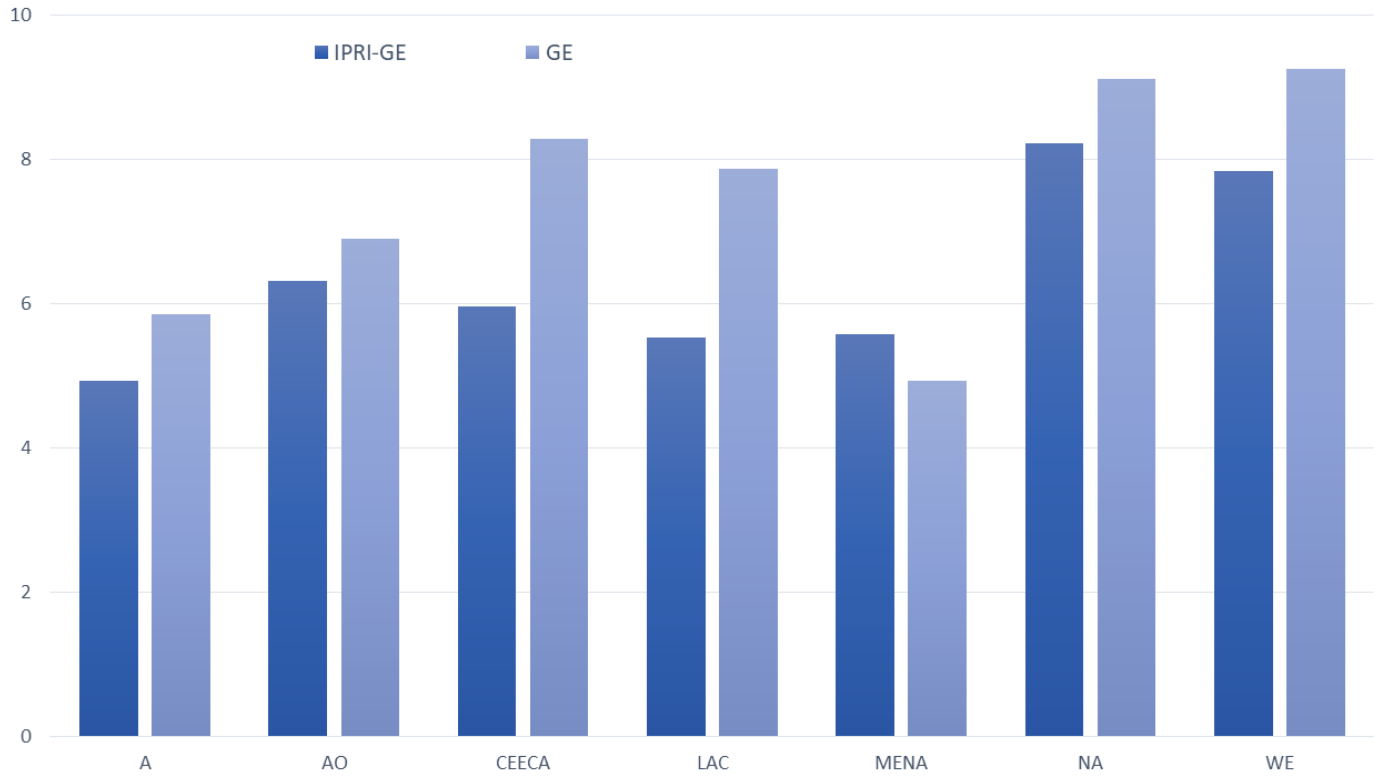


Figure 18b. 2020 IPRI-GE(0-10) and GE. Geographical Groups Scores.

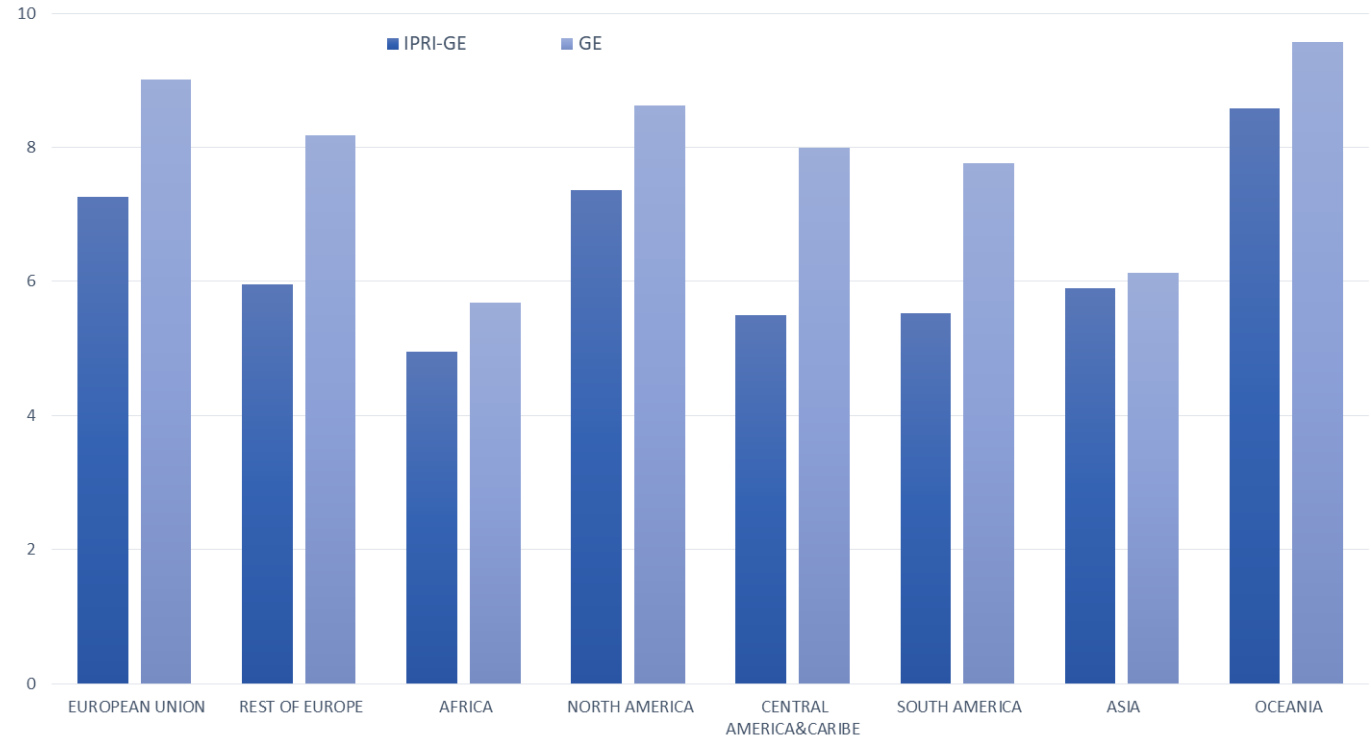


Figure 18c. 2020 IPRI-GE(0-10) and GE. Regional and Development Groups Scores.

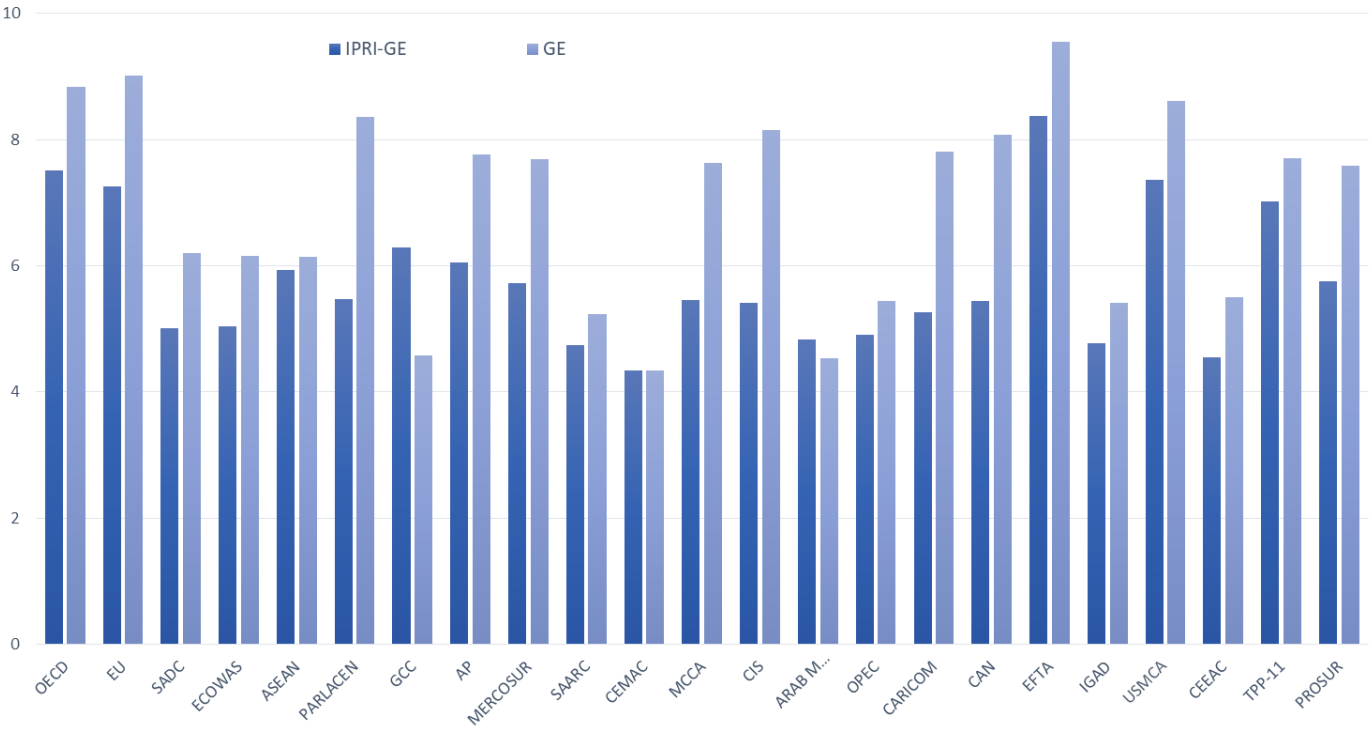


Figure 18d. 2020 IPRI-GE(0-10) and GE. Income Groups Scores.

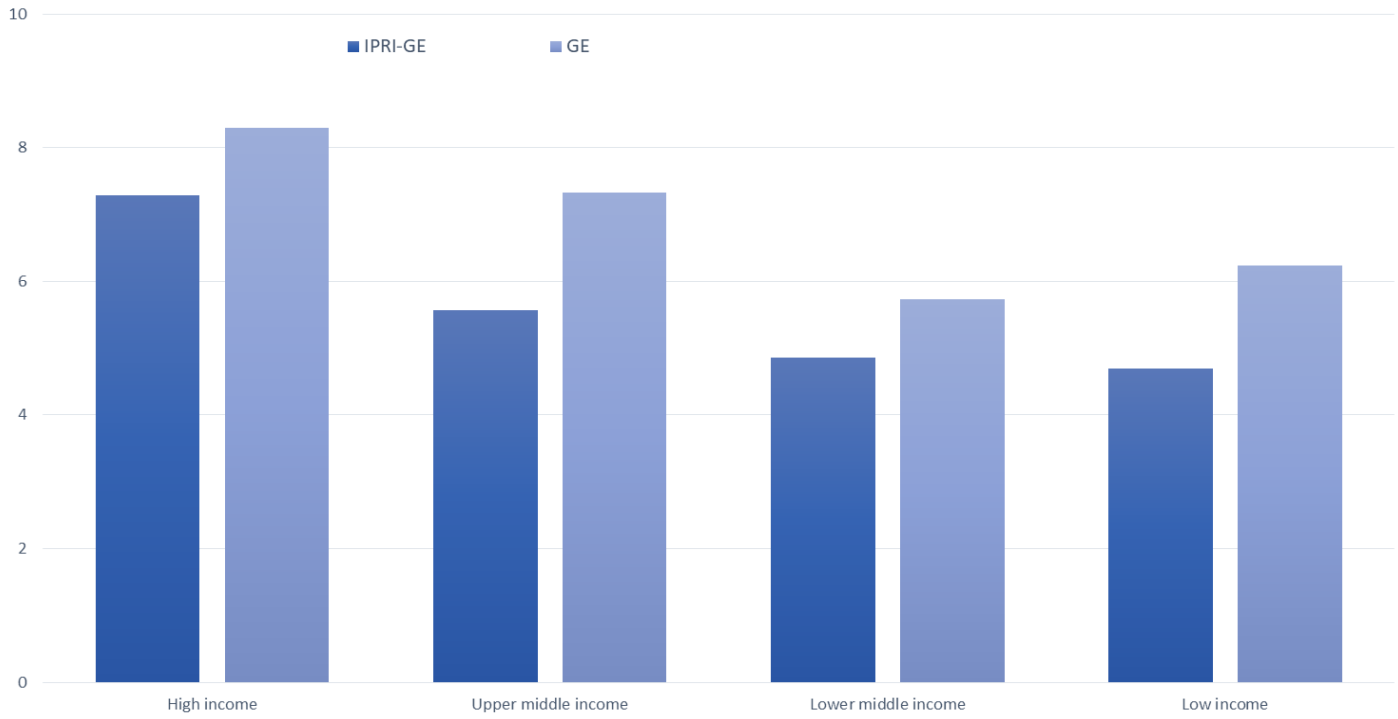


Figure 18e. 2020 IPRI-GE(0-10) and GE. Integration Agreements Groups Scores.

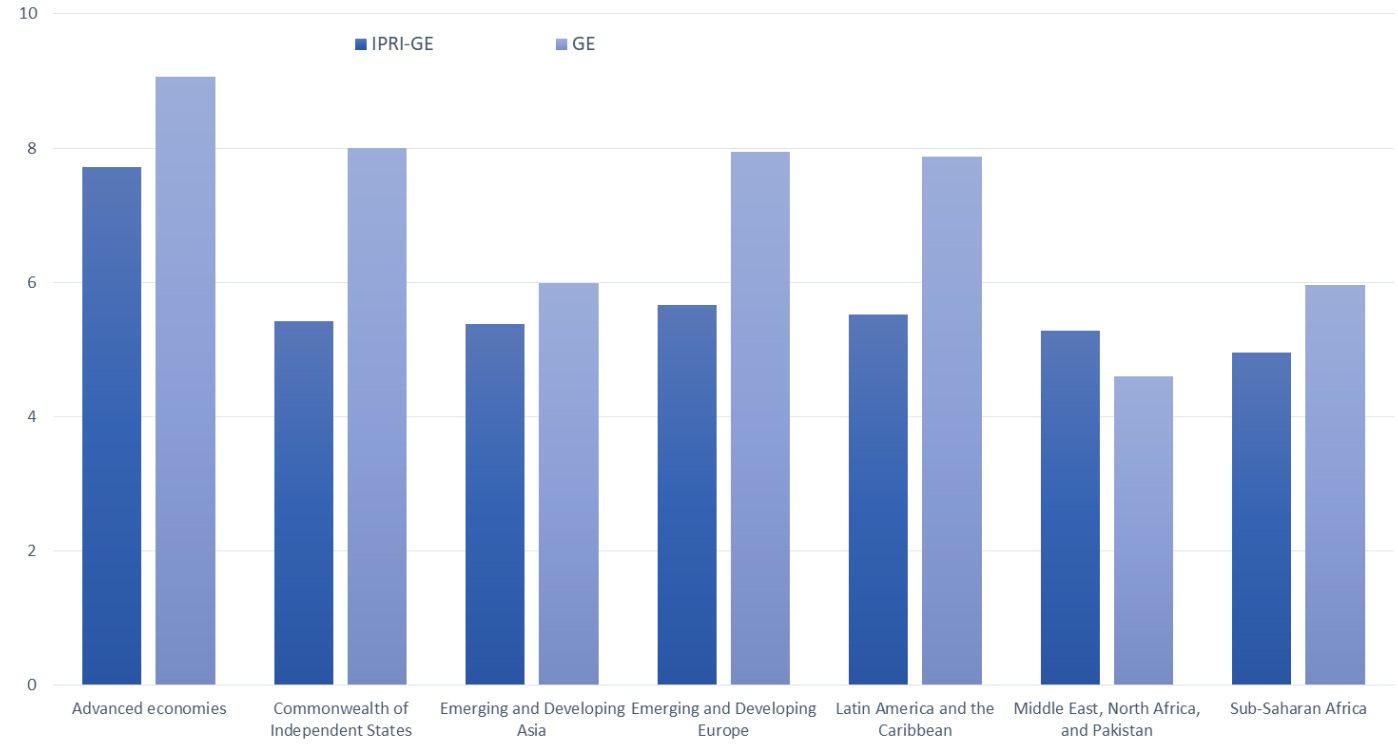


Table 8 shows the 2020 IPRI-GE$_{(0-10)}$ rankings by quintile for the 129 countries in the sample. As in the IPRI, the number of countries belonging to each quintile increases from the top 20% to the bottom 20% (1st quintile 18 countries, 2nd quintile 22 countries, 3rd quintile 25 countries, 4th quintile 29 countries, and 5th quintile 35 countries). Hence, the fourth and the fifth quintiles include 49.6% of the countries (64 countries) of the sample.

Table 8. 2020 IPRI-GE Ranking by quintiles

	Top 20 Percent	2nd Quintile	3rd Quintile	4th Quintile	Bottom 20 Percent
Strongest	Finland	Ireland	South Africa	Ghana	Mozambique
	Switzerland	United Kingdom	Romania	Turkey	Malawi
	New Zealand	Estonia	Mauritius	Argentina	Philippines
	Australia	France	Uruguay	Russia	Kuwait
	Netherlands	Taiwan	Costa Rica	Mexico	Benin
	Norway	Portugal	Rwanda	Peru	Zambia
	Singapore	Czech Republic	Hungary	Burkina Faso	Moldova
	Sweden	United Arab Emirates	Oman	Georgia	Gabon
	Luxembourg	Malta	Jamaica	Senegal	Boznia & Herzegovina
	Denmark	Israel	Poland	Vietnam	Eswatini
	Austria	Lithuania	Panama	Armenia	Nicaragua
	Japan	Spain	Colombia	Kazakhstan	Albania
	United States	Qatar	Saudi Arabia	Honduras	Mali
	Canada	Korea, Rep.	Bahrain	Montenegro	Burundi
	Hong Kong	Slovakia	Trinidad & Tobago	Greece	Paraguay
	Belgium	Cyprus	Bulgaria	Macedonia, Fyr	Côte d'Ivoire
	Germany	Chile	Jordan	Guatemala	Bolivia
	Iceland	Italy	Brazil	Indonesia	Uganda
		Slovenia	Botswana	Ecuador	Ethiopia
		China	Azerbaijan	Serbia	Iran
		Latvia	Thailand	El Salvador	Algeria
		Malaysia	India	Nepal	Lebanon
			Croatia	Tanzania	Zimbabwe
			Morocco	Tunisia	Madagascar
			Dominican Republic	Ukraine	Cameroon
				Sri Lanka	Pakistan
				Egypt	Chad
				Kenya	Nigeria
				Brunei Darussalam	Mauritana
					Congo, Dem. Rep.
					Venezuela, Bol. Rep.
					Angola
					Haiti
					Bangladesh
Weakest					Yemen, Rep.

VII. 2020 IPRI & LIFE ENHANCING

Extensive literature informs of the relevant connections between the respect for property rights and improving the quality of life of citizens. Therefore, we examined different items to evaluate possible correlations with the IPRI, drawing empirically-based conclusions. Those indices were gathered in five (5) groupings:

- Productive Drive
- Underlying Conditions
- Human Mobility
- Digital Society
- Health & Life

Productive Drive

Economic dynamism is always a first step, within a wider approach, to capture the conditions people enjoy in their daily life. Simultaneously we may evaluate those outcomes in at least in two levels: macro and micro. This year, five items are included in three categories (source details in Appendix IV):

- **Production:** Using the Gross Domestic Product (GDP) in constant USD (2010=100) *per capita* terms and also adjusted by the Gini Coefficient . Adjusting the GDP by the Gini coefficient was considered to capture income inequality (Data Source: World Bank and UN DESA).
- **Investment:**
  - ***Domestic investment:*** Using the Gross Capital Formation in current *per capita* terms, which consists of outlays in addition to the fixed assets of the economy plus net changes in the level of inventories (Data Source: World Bank and UN DESA).
  - ***Foreign investment:*** Using the Foreign Direct Investment (FDI) Inward in current *per capita* terms that measure the value of foreign investors' equity in and net loans to enterprises resident in the reporting economy. FDI Inward is measured in USD (Data Source: World Bank and UN DESA).
- **Business Thrust:** Using the newly registered companies with limited liability (LLC) or its equivalent, in *per capita* terms *per* calendar year, regardless of size (Data Source: World Bank's Entrepreneurship Survey and database; and UN DESA).

We used the Pearson's Correlation Coefficient, which is a measure of the linear dependence between two variables, to evaluate their associations with the IPRI and its components. We found that these correlations were significant and relevant (see Table 9).

The tranches or correlation ranges are as follow: 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 were as expected.

Table 9. Pearson's Correlation Coefficients.

		IPRI	LP	PPR	IPR
Production	GDP *per capita*	0.82	0.828	0.618	0.785
	GDP *per capita* * GINI	0.817	0.809	0.627	0.792
Investment	GKF, *per capita*	0.772	0.786	0.602	0.718
	FDI Inward, *per capita*	0.428	0.46	0.307	0.398
Business Thrust	New LLC, *per capita*	0.502	0.556	0.429	0.388

GDP *per capita* and the GDP adjusted by Gini Coefficient show strong correlations with the IPRI and the LP component, while good correlation for PPR and IPR. For these last two, the correlations increased slightly when adjusted by the Gini, which is a measure of dispersion or inequality.

Domestic investments (Gross Capital Formation) showed good correlations with the IPRI and its components, the highest being the LP (0.786) component, followed by the IPRI (0.772), IPR (0.718) and PPR (0.602). On the other hand, Foreign Investment showed soft correlation being more relevant for the LP (0.460) followed by the IPRI (0.428).

The correlation with New LLC showed moderate levels for the IPRI (0.502) and LP (0.553), while soft for PPR (0.429) and IPR (0.388).

All the items included showed significant results, pointing to property rights as a building blocks of a healthy and dynamic economy.

Figures 19a and 19b show the best-fit curve for the IPRI and its components with each element considered for productive drive analysis and the coefficients of determination (R2). Figure 19a displays the relationship with a demographic perspective. The relevant proportion of population (represented by the radius of each circle) live in countries of middle level IPRI and low to mid economic results.

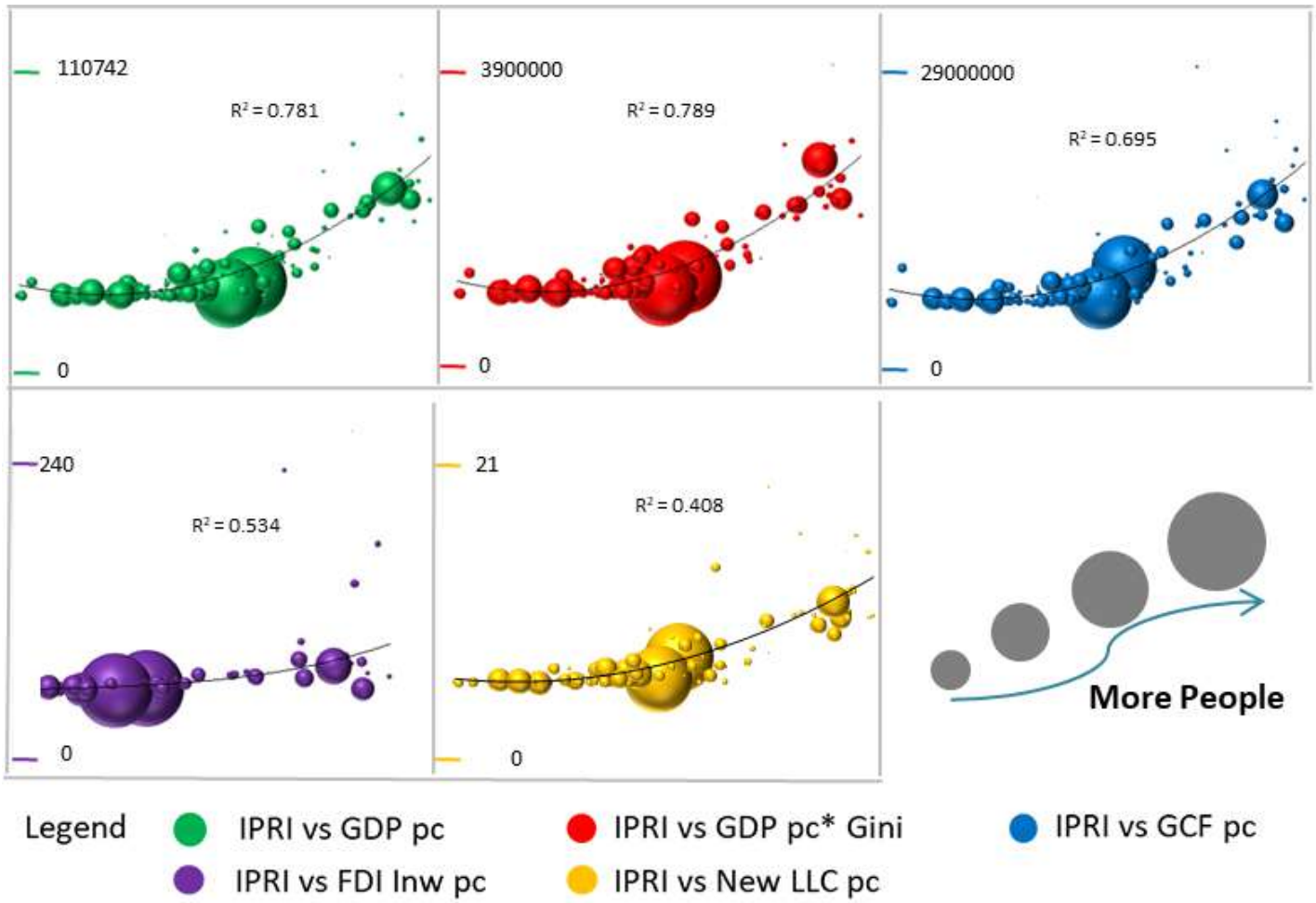

110742
R² = 0.781
0
3900000
R² = 0.789
0
29000000
R² = 0.695
0
240
R² = 0.534
0
21
R² = 0.408
0
More People
Legend
IPRI vs GDP pc
IPRI vs GDP pc* Gini
IPRI vs GCF pc
IPRI vs FDI Inw pc
IPRI vs New LLC pc

Figure 19a. Productive Drive and IPRI Correlations (Including Demographic Impact)

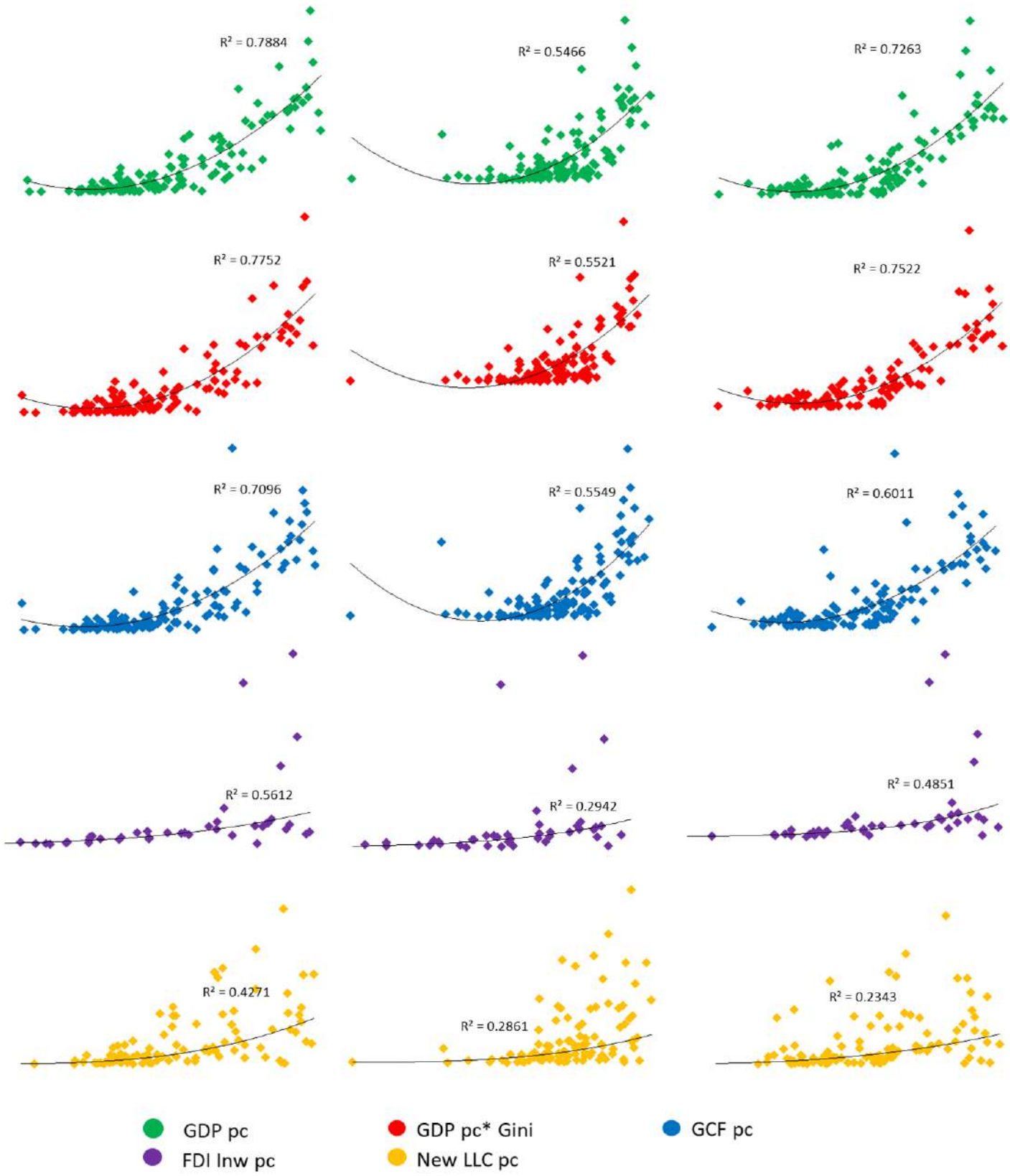
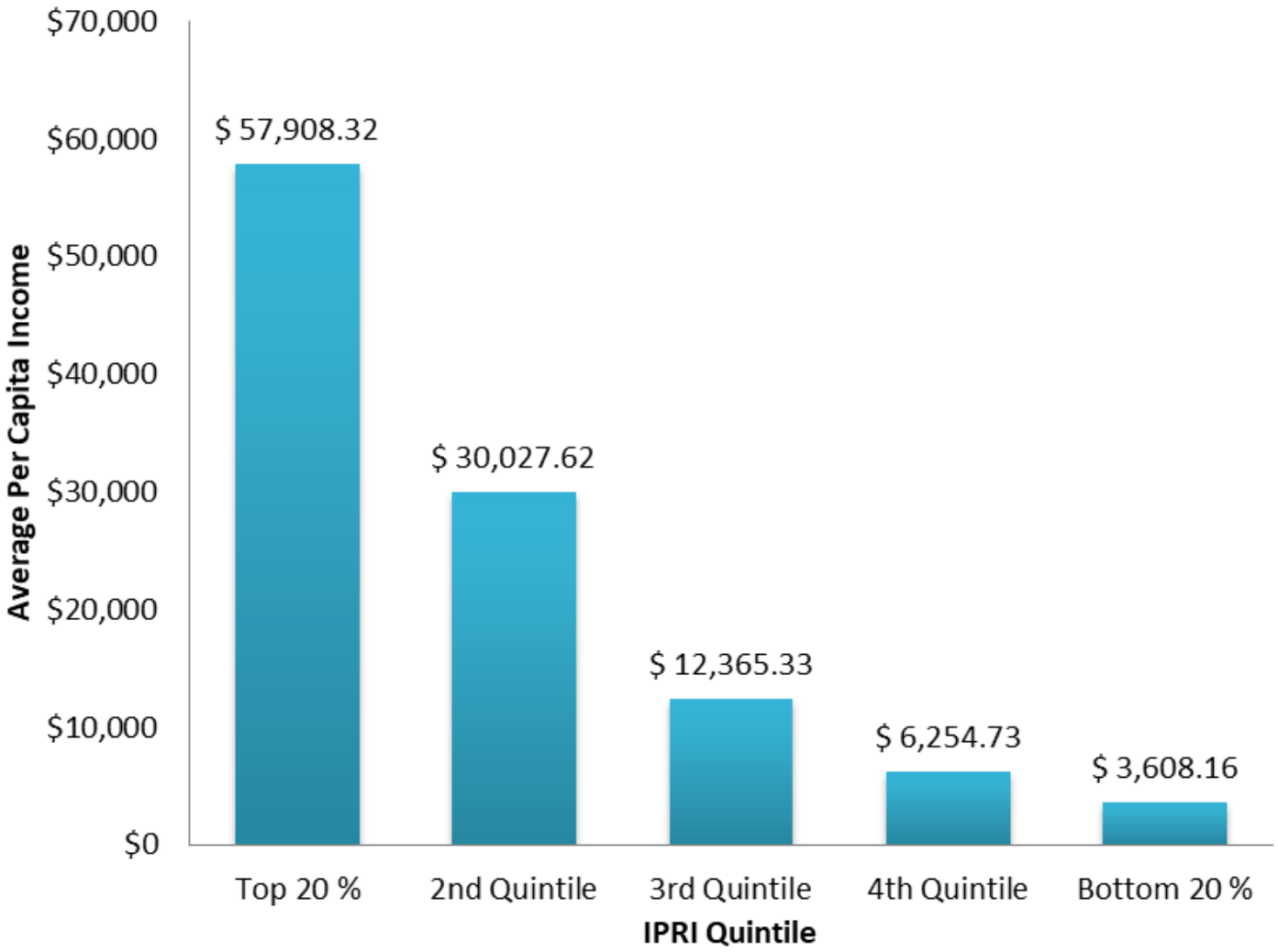


Figure 19b. Productive Drive and IPRI Components' Correlations.

Figure 20 shows that, on average, countries in the top quintile of IPRI scores (i.e. top 20%) show a *per capita* income almost 16 times that of the countries in the bottom quintile. That disparity is the same as last year, however it shows improvement if compared with 2015 when it was almost 24 times. Statistics are based on the averages of IPRI-2020 scores and corresponding data on average GDP *per capita* in USD constant terms (2010=100, source: World Bank data) for the last available year. These results reinforce the significant, positive relationship between prosperity and a property rights system.

Figure 20: Average Income *per capita* by 2020-IPRI Quintiles.



Underlying Conditions

Achieving performance is the result of creative actions in favorable environments that allow the emergence of positive and fertile synergies. Institutions or 'rules of the game', infrastructure, facilities, easiness of orchestration, and professional know how, are some of these essential elements for production and its positive benefit for the whole society.

In this section we include six elements for their evaluation with the IPRI and its components (source details in Appendix IV):

- **Competitiveness:** We used The Global Competitiveness Index (by the IMD World Competitiveness Center and the World Economic Forum) that measures the set of institutions, policies, and factors that set the sustainable current and medium-term levels of economic prosperity to their citizens.

- **Economic Freedom:** Using the Fraser Institute's Economic Freedom of the World Index which measures the degree to which the policies and institutions of countries are supportive of economic freedom.

- **Business Freedom:** We chose the Business Freedom item of the Regulatory Efficiency component of The Index of Economic Freedom developed by The Heritage Foundation. It measures the extent to which the regulatory and infrastructure environments constrain the efficient operation of businesses. It includes elements as procedures, time, cost and capital to starting a business, obtaining a license, closing a business or getting some facilities.

- **Financial Freedom:** Recognizing the relevance of financing opportunities for people and business, we included the Financial Freedom item of the Regulatory Efficiency component of The Index of Economic Freedom developed by The Heritage Foundation. It is an indicator of banking efficiency as well as a measure of independence from government control and interference in the financial sector. This item scores an economy's financial freedom by looking at five broad areas: the extent of government regulation of financial services; the degree of state intervention in banks and other financial firms through direct and indirect ownership; government influence on the allocation of credit; the extent of financial and capital market development; and openness to foreign competition.

- **Economy Openness:** Openness brings the opportunity to have a larger variety of goods, financial products, and services at competitive prices, as well as exposure to innovation, promoting a positive feedback for creation. This interdependence makes us all partners in the world's global performance. We used two items for this analysis:

  - ***The Trade Barrier Index***, by Property Rights Alliance, evaluates countries on their use of the most direct barriers to trade: tariff's and non-tariff measures, services restrictions, and their ability to facilitate trade.

  - ***The Logistic Performance Index*** by World Bank assesses the logistics friendliness for countries. It measures performance along the logistics supply chain within a country, combining operators on ground information (global freight forwarders and express carriers) and quantitative data on the performance of key components of the logistics chain in the country.

Table 10. Pearson's Correlation Coefficients.

	IPRI	LP	PPR	IPR
Global Competitiveness Index	0.903	0.876	0.786	0.827
Economic Freedom Index	0.749	0.746	0.676	0.649
Business Freedom	0.764	0.788	0.681	0.637
Financial Freedom	0.741	0.711	0.662	0.672
Trade Barrier Index	-0.646	-0.687	-0.404	-0.642
Logistic Performance Index	0.871	0.822	0.712	0.864

As shown in table 10, the highest correlation coefficient is with the Global Competitiveness Index followed by the Logistic Performance Index, both of them showing strong correlations. Then comes Business Freedom, the Economic Freedom Index, Financial Freedom, and the Trade Barrier Index (inverse correlation), showing good correlations. For most of the measurements, the correlation is higher with the IPRI, followed by the LP component, and then the IPR.

Figures 21a and 21b show the best-fit curve for the IPRI and its components with each element considered for underlying conditions analysis with their coefficients of determination (R2). Figure 21a displays the relationship with a demographic perspective. The relevant proportion of population, represented by the radius of each circle, live in countries of middle level IPRI and low to mid economic results. It is very interesting to focus where those densely populated countries are placed; for some indices they are above the best-fit curve (Trade Barrier Index and Logistic Performance Index) while in others, they are placed below (Business and Financial Freedom).

Figure 21a. Underlying Conditions and IPRI Correlations (w/demographic incidence).

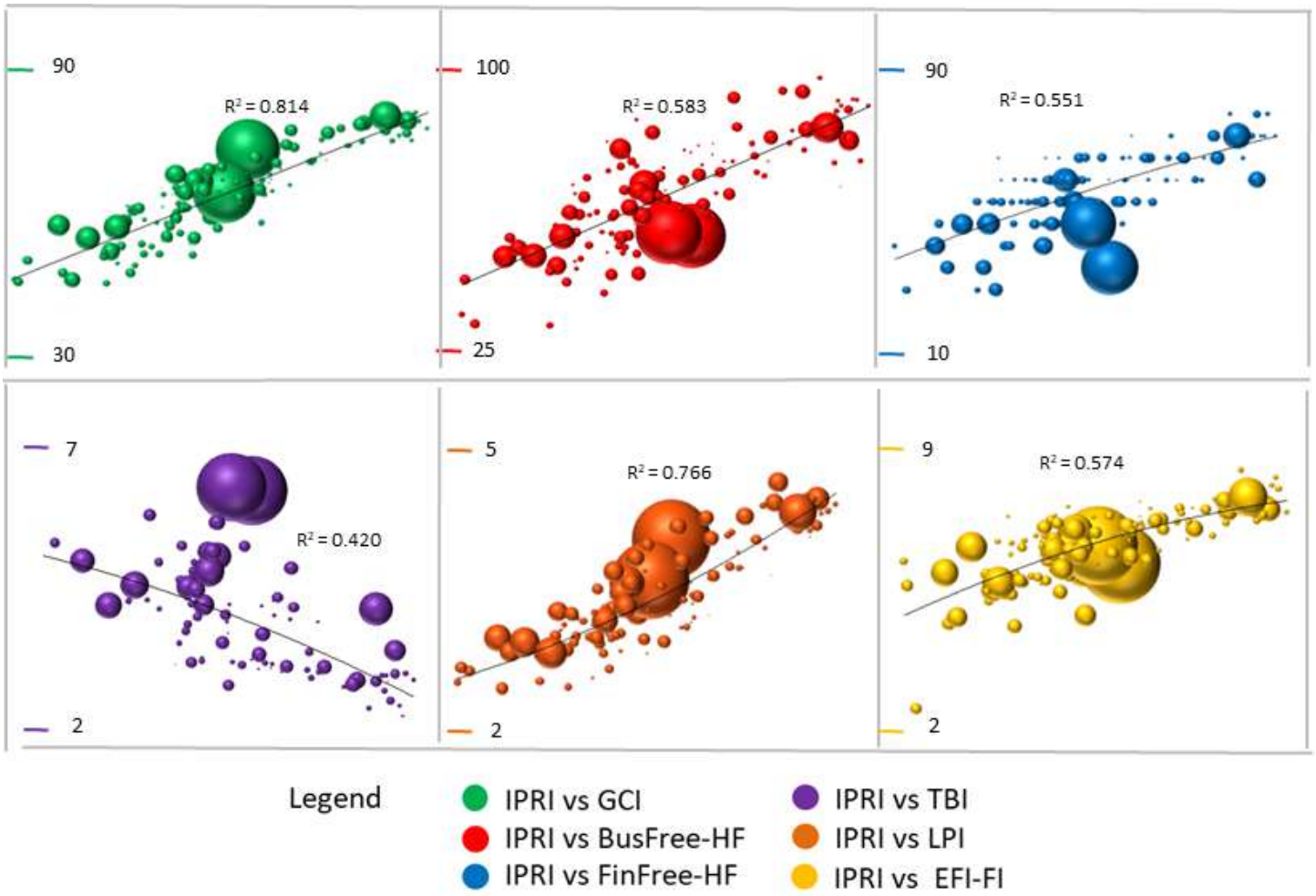
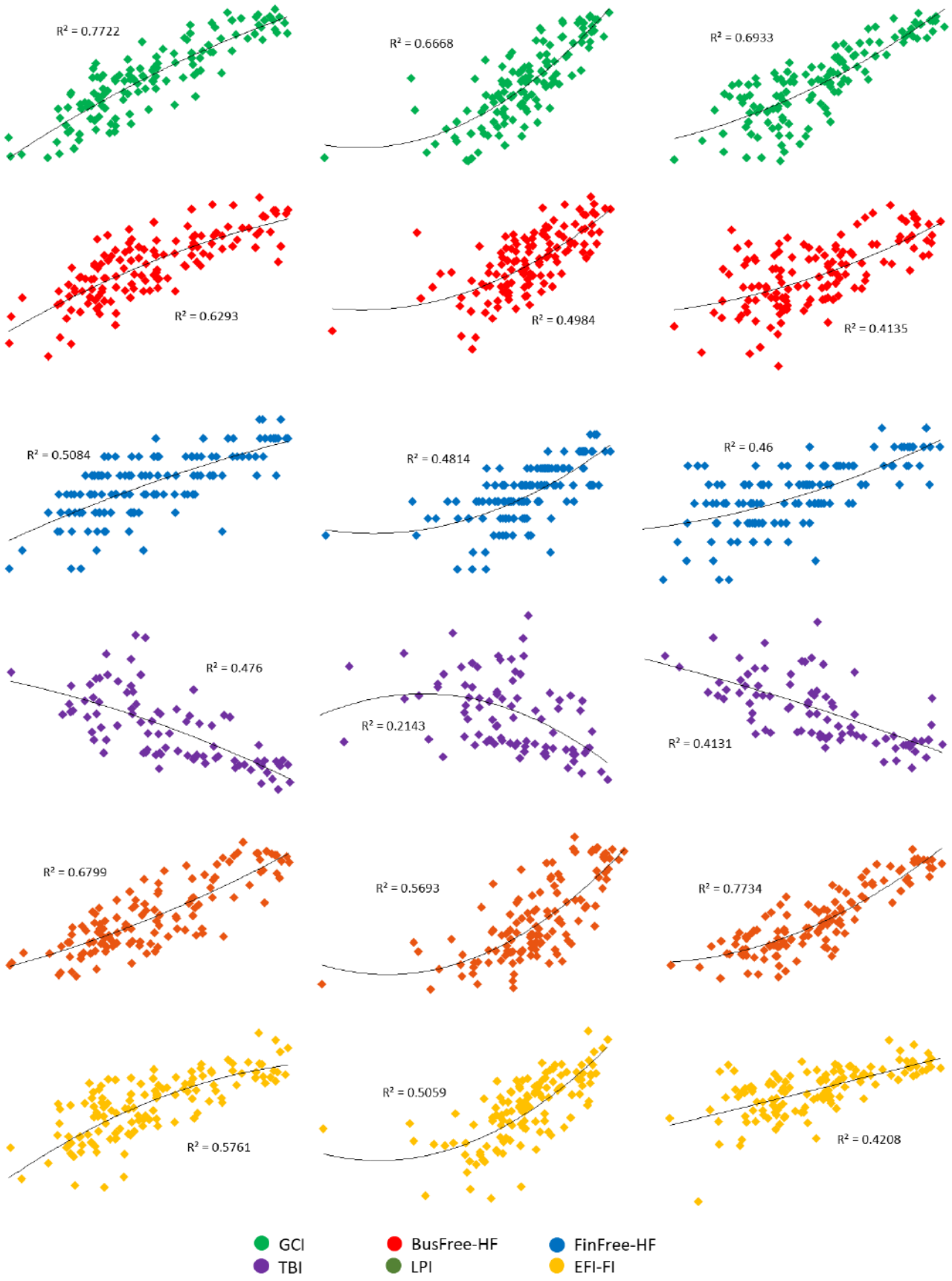


Figure 21b. IPRI Components Correlations with Underlying Conditions.



Human Mobility

International migration is a growing complex phenomenon, affecting almost all countries in the world. There are all kind of explanations for this mobility, as travel and leisure, or working demands, while others are closely related to socio-economic or political motivations. It is a common saying: *People vote with their feet.* Humans try to migrate toward prosperous conditions, and flee from places that limit their personal growth or threaten their to life.

Looking for connection between human mobility and the robustness of a property rights system we focused on two elements: the freedom and necessity for that mobility. The indicators included were (source details in Appendix IV):

- **Freedom of Mobility:** We chose ***The Henley Passport Index*** that ranks countries according to the travel freedom for their citizens, that is, according to the number of countries their citizens can travel to visa-free.

- **Necessity of Mobility:** we use The Fragile States Index (FSI), produced by The Fund for Peace and two of its items.

  - ***The Fragile States Index*** highlights not only the normal pressures that all states experience, but also when those pressures intensify. The Index is based on 12 indicators organized in three dimensions: political, social and economic.

  - ***FSI-Refugees and Internally Displaced People (IDP)*** is one of the social indicators of the FSI and grasps the pressures associated with population displacement, tensioning public services, and has the potential to pose a security threat.

  - ***FSI-Human Flight and Brain Drain*** is one of the social indicators of the FSI, and captures the loss in human capital when people migrate, especially those highly qualified.

Table 11. Pearson's Correlation Coefficients.

	IPRI	LP	PPR	IPR
Passport Index	0.719	0.72	0.517	0.715
Fragile States Index	-0.864	-0.901	-0.662	-0.784
Refugees & IDP	-0.624	-0.665	-0.466	-0.56
Human Flight & Brain Drain	-0.81	-0.803	-0.663	-0.749

Table 11 shows a very strong inverse correlation of IPRI and its components with FSI, telling us that the most fragile a state is, the weakest its property rights system; and vice versa, the most robust a property rights system, the most stable and vigorous a state is. It should be noted that the LP's inverse correlation is even higher, which is not a surprise. The Human Flight & Brain Drain-FSI measure also shows a high inverse correlation for the IPRI and the LP, followed by the Passport Index and Refugees & IDP-FSI. We can see that LP correlations are generally the highest for all these measures.

Figures 22a and 22b show the best-fit curve for the IPRI and its components with each element considered for human mobility analysis and their coefficients of determination (R2). Figure 22a displays the relationship with a demographic perspective. The relevant proportion of population, represented by the size of each circle, live in countries of middle level IPRI and low to mid economic results. While the more populated countries in the world are placed below the best-curve fit for Henley Passport Index, in the case of Fragile State Index, they place over it. In the case of the Flight & Drain Sub index of FSI, India is over the curve, while China is on the curve.

Figure 22a. Human Mobility with IPRI Correlations (with demographic incidence).

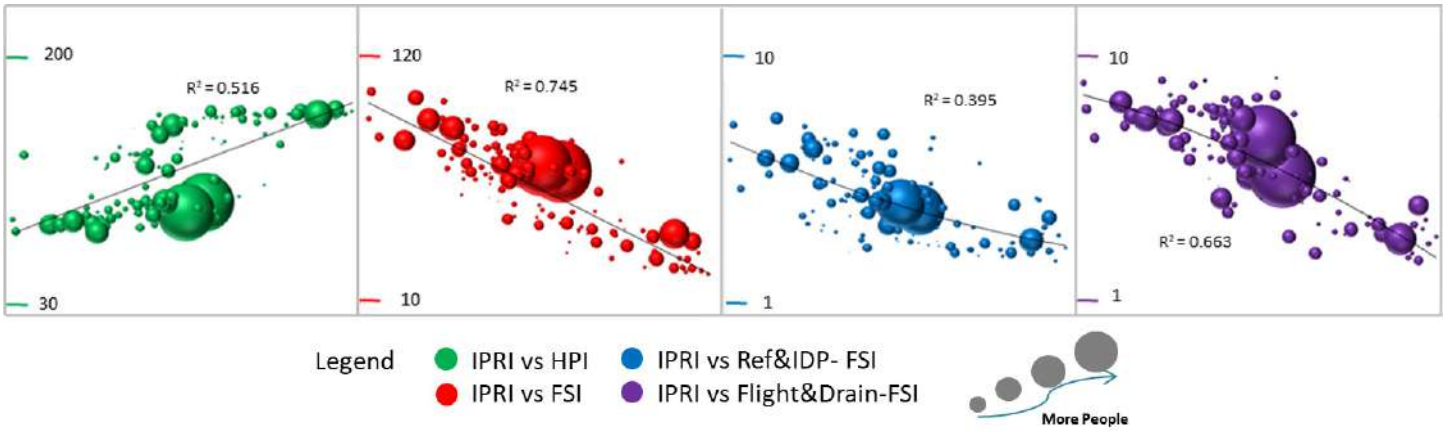
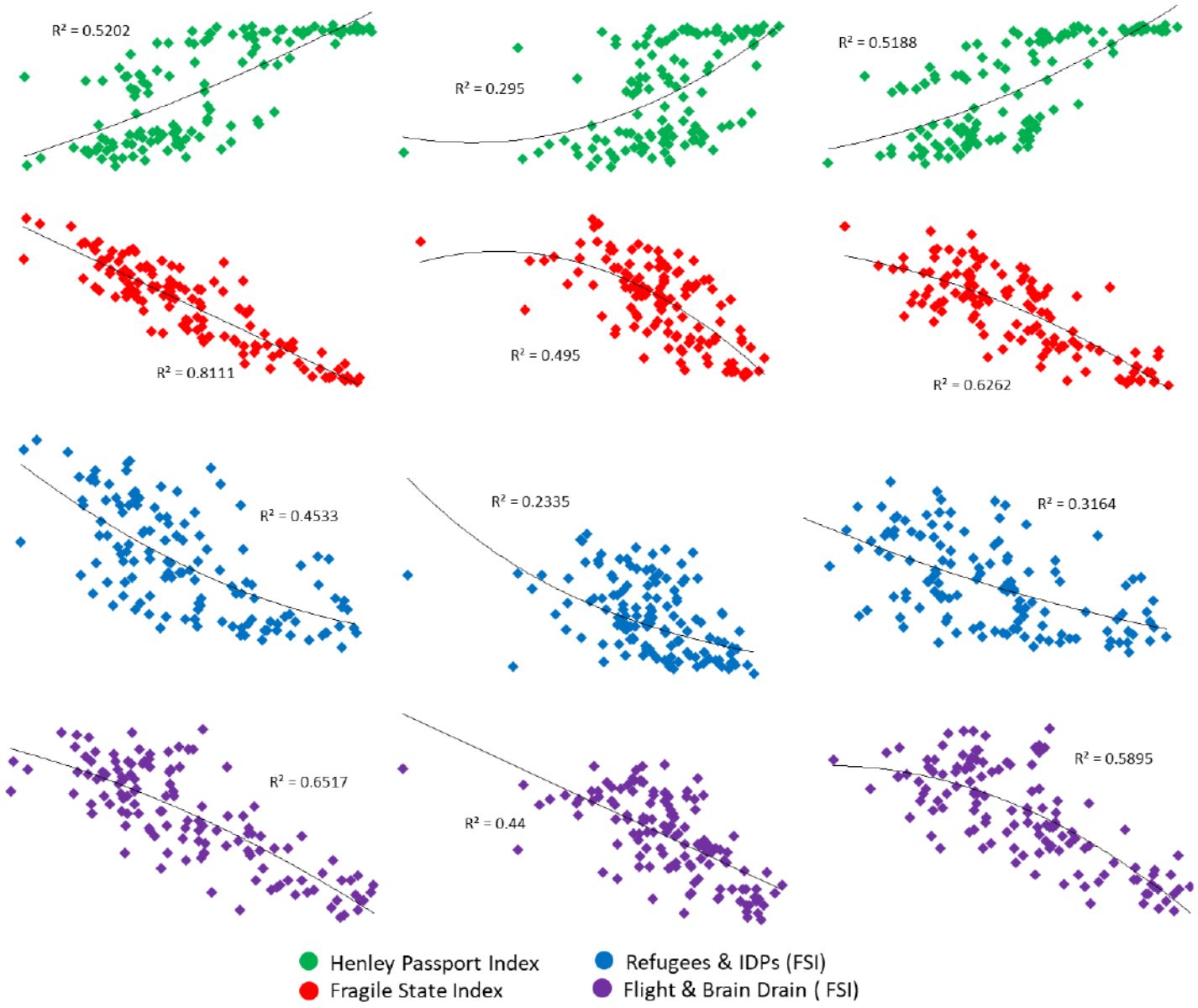


Figure 22b. IPRI Components Correlations with Human Mobility.



Digital Society

Information and telecommunication technologies are fundamental ingredients for the 21st century. They are part of our daily life, at home, schools, universities, work and leisure; reshaping our social interactions, our culture, our finance, and our economy.

This leads us to evaluate the appropriateness, competence, and relevance of property rights systems for the new digital society. With this in mind, we examined the relationship of the IPRI and its components with (for source details see Appendix IV):

- **Innovation Capabilities:** We included the ***Global Innovation Index*** (Cornell University, INSEAD, and the World Intellectual Property Organization) that aims to capture the multidimensional facets of innovation, assessing the capacity of countries for success in it. It relies on two sub-indices – the Innovation Input Sub-Index and the Innovation Output Sub-Index – each built around different key pillars.

- **Connectivity Infrastructure:** We chose the ***Telecommunication Infrastructure Index***, TII, (UN Dpt. 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.

- **Connectivity Practice:** We used the ***Networked Readiness Index***, NRI, (The World Economic Forum, INSEAD) which measures the propensity for countries to exploit the opportunities offered by ICT. It is a composite index made up of four main categories, 10 subcategories, and 53 individual indicators, as follows: [1] Environment (political and regulatory environment, and business and innovation environment); [2] Readiness (infrastructure, affordability, and skills); [3] Usage (individual usage, business usage, and government usage) and [4] Impact (economic impact and social impact).

- **Digital Embracing:** We chose to include two indices for this item:

  - ***The Digital Quality of Life Index*** (by Surfshark) was created to determine the critical problem areas and the gaps between people's online experience in different countries, including: affordability and speed of connectivity; security of citizens' personal information; the digital advancement of specific country in terms of its cybersecurity; the development of a country in terms of availability of e-services offered by its government; and the variety of content to access.

  - ***The Digital Adoption Index – People***: is a sub-index of the Digital Adoption Index (World Bank) that measures countries' digital implementation across three dimensions of the economy: People, Government, and Business. The DAI-People comprises technologies necessary for the people to promote development in the digital era: increasing productivity and accelerating broad-based growth for business, expanding opportunities and improving welfare for people, and increasing the efficiency and accountability of service delivery for government.

Table 12. Pearson's Correlation Coefficients.

	IPRI	LP	PPR	IPR
Global Innovation Index	0.863	0.837	0.687	0.837
Telecom Infrastructure Index	0.800	0.808	0.678	0.709
Networked Readiness Index	0.892	0.870	0.767	0.850
Digital Quality of Life Index	0.787	0.741	0.625	0.796
Digital Adoption Index – People	0.817	0.816	0.714	0.721

As shown in Table 12, the highest correlation coefficient is with the Networked Readiness Index, followed by the Global Innovation Index, the People Digital Adoption Index, and Telecom Infrastructure Index. For the IPRI, and the IPR, most of the correlations are strong (except for DQLI, which is good). The correlation of the indices with PPR is the weakest, albeit being good.

Figures 23a and 23b show the best-fit curve for the IPRI and its components with each element considered for digital society indicators' analysis and their coefficients of determination (R2). Figure 23a displays the relationship with a demographic perspective. The relevant proportion of population (represented by the radius of each circle) live in countries of middle level IPRI and low to mid economic results.

Figure 23a. IPRI Correlations with Digital Society Indicators (w/ demographic incidence).

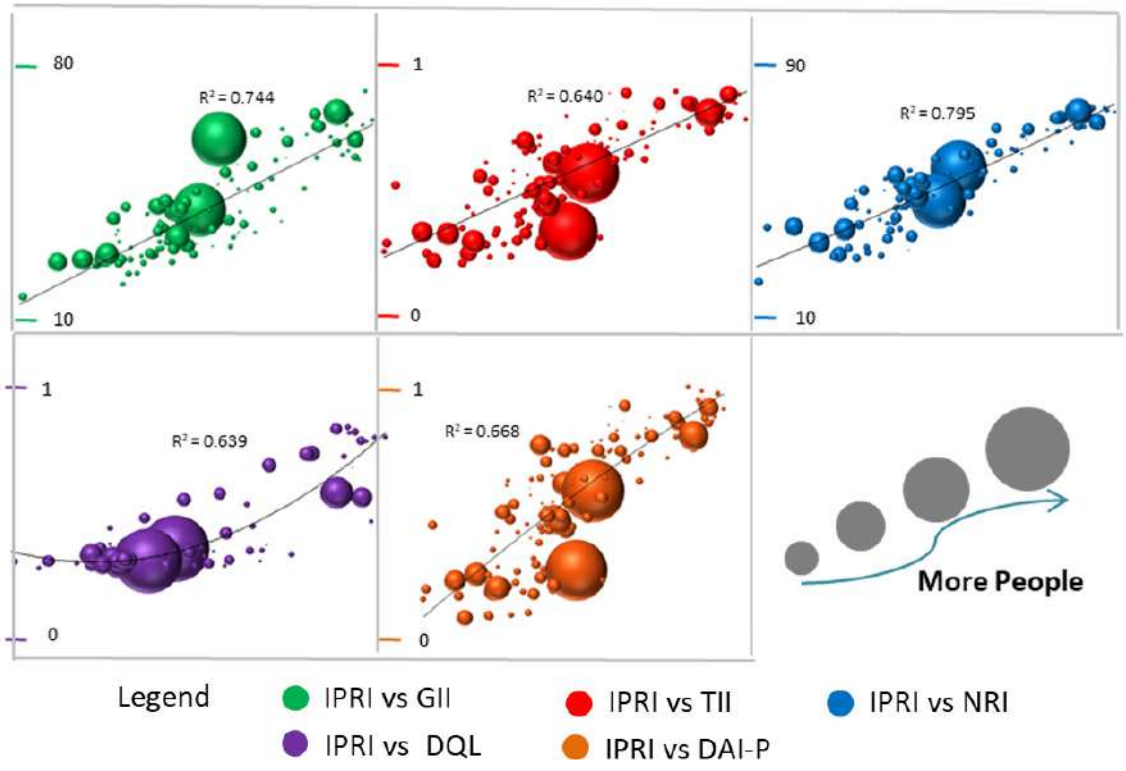
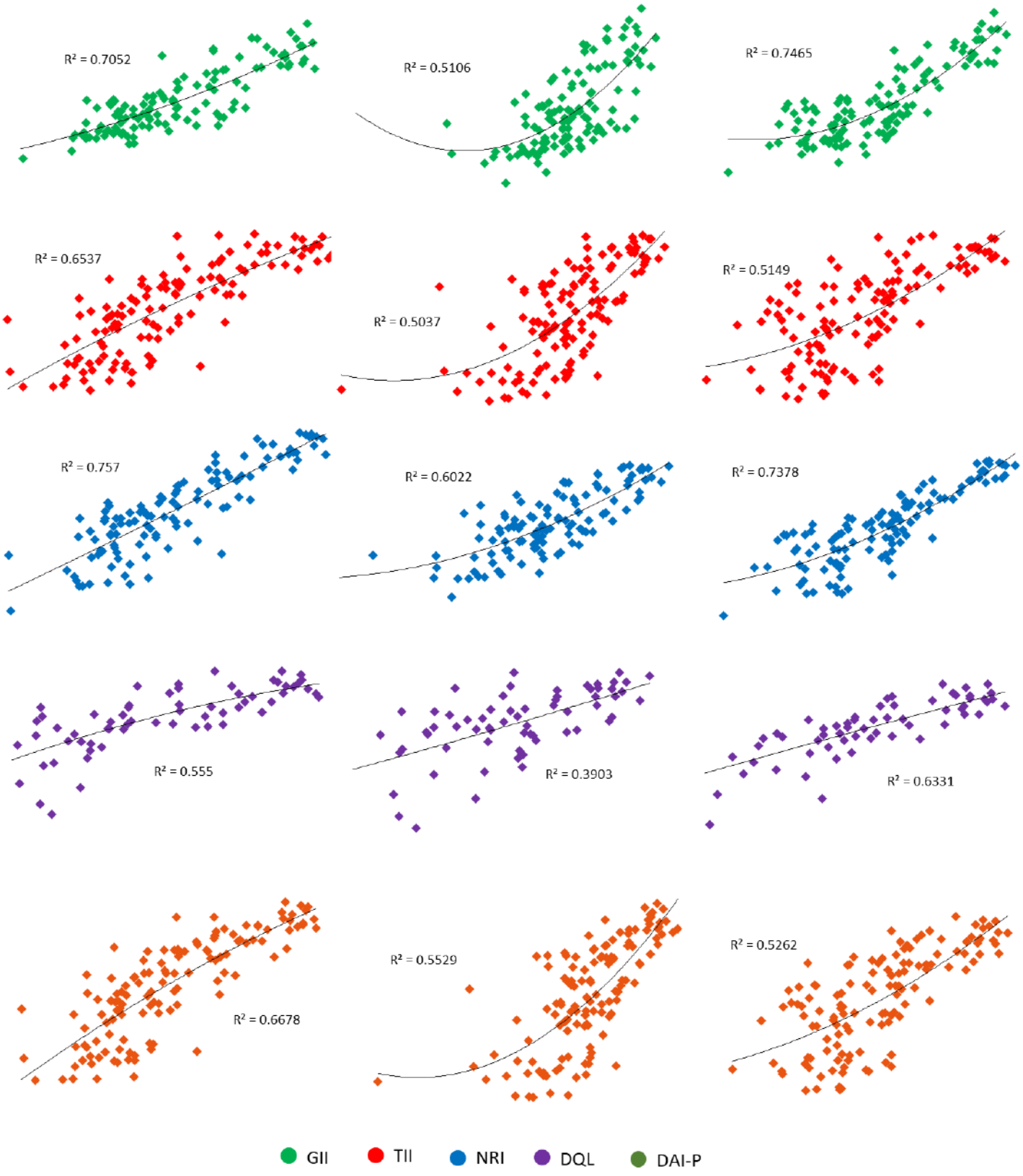


Figure 23b. IPRI Components Correlations with Digital Society Indicators.



Health & Life Quality

The goal of development is multidimensional and omni-comprehensive, and had evolved from focusing on macro-quantitative to micro-qualitative elements. This way, our society focuses particularly on individual wellbeing, or people's quality of life; in other words, the degree to which each member of the society is healthy, feels relaxed, and has the opportunity to participate in and enjoy life events. Thus, beyond the quantitative aspects, it is highly subjective and requires a balanced interplay among multiple elements. Among its dimensions, the health arena is highly relevant, being one of the primary needs of any human being. The Covid-19 pandemic has highlighted not only the global fragility of health systems, but also the urgent need to strengthen health research and biotechnology innovations. With this in mind, we assessed the relationship of the IPRI and its components with (source details in Appendix IV):

- **Prosperity:** Prosperity entails much more than wealth; it is about creating an environment where a person is able to reach their full potential. We decided to use The Prosperity Index (by Legatum Institute) which includes 104 items in 9 sub-indices, open to leaders around the world to set agendas for growth and development.

- **Country Perception:** We chose the Best Country (by BAV Group and The Wharton School of the Univ. of Pennsylvania, specifically prof. David J. Reibstein, in consultation with U.S. News & World Report). This measure is based on global perceptions (qualitative) defining countries, with the potential to drive trade, travel and investment and directly affect national economies. The included 65 attributes are organized into 9 sub-rankings, with different weights: Adventure (2%), Citizenship (15.88%), Cultural Influence (12.96%), Entrepreneurship (17.87%), Heritage (1.13%), Movers (14.36%), Open for Business (11.08%), Power (7.95%) and Quality of Life (16.77%). We also included two of those sub-rankings in our analysis:

  - ***Quality of Life:*** This sub-ranking includes elements like caring about human rights, careing about the environment, gender equality, progressivism, religious freedom, respect of property rights, trustworthiness, and well-distributed political power.

  - ***Citizenship:*** This sub-ranking considers the existence of a good job market, affordablility, economic stability, family friendly environment, income equality, political stability, safety, a well-developed public education system, and a well-developed public health system.

- **Health:** Human health is a main aspect for well-being, so we addressed the capability of the health system and the innovation in that area through two indices:

  - ***Global Health Security Index*** (by Johns Hopkins Center for Health Security, Nuclear Threat Initiative (NTI), and Economist Intelligence Unit (EIU): A comprehensive assessment and benchmarking of health security and related capabilities across the world. First published in 2019, it concluded that "*no country is fully prepared for epidemics or pandemics, and every country has important gaps to address*", something that the Covid-19 pandemic sadly demonstrated. The index includes 85 items gathered in 6 categories: Prevention, Detection and Reporting, Rapid Response, Health System, Compliance with International Norms, and Risk Environment.

» ***Global Biotech Innovation*** (by ThinkBiotech): Given the relevance of biotechnology and its broad impact in economies and policies, it can impact quality of life. We included this measure of innovation in biotech for 54 countries (53 are included in this IPRI edition). Its methodology includes seven (7) categories (productivity, intellectual property protection, intensity, enterprise support, education/workforce, foundations, and policy & stability).

Table 13. Pearson's Correlation Coefficients.

	IPRI	LP	PPR	IPR
Prosperity Index	0.902	0.912	0.759	0.820
Best Country Index	0.795	0.747	0.621	0.830
Quality of Life	0.832	0.820	0.639	0.831
Citizenship	0.816	0.816	0.584	0.828
Global Health Security Index	0.723	0.685	0.580	0.713
Global Biotech Innovation Index	0.917	0.872	0.769	0.902

As shown in Table 13, Global Biotech Innovation Index shows the strongest correlation with the IPRI (0.917), then comes the Prosperity Index (0.902), which it is even higher in the LP component (0.912). Then comes Quality of Life (0.832), and Citizenship (0.816), showing the same results for the LP component. Finally, we find Best Country overall (0.795) and the Global Health Security Index (0.723). It is worth noting that all the correlations are also important for the LP and IPR components.

Figures 24a and 24b show the best-fit curve for the IPRI and its components with each element considered for Health and Life's indicators analysis and their coefficients of determination (R2). Figure 24a displays the relationship with a demographic perspective. The relevant proportion of population (represented by the size of the circles) live in countries of middle level IPRI and low to mid economic results.

Figure 24a. IPRI Correlations with Health & Life (w/ demographic incidence).

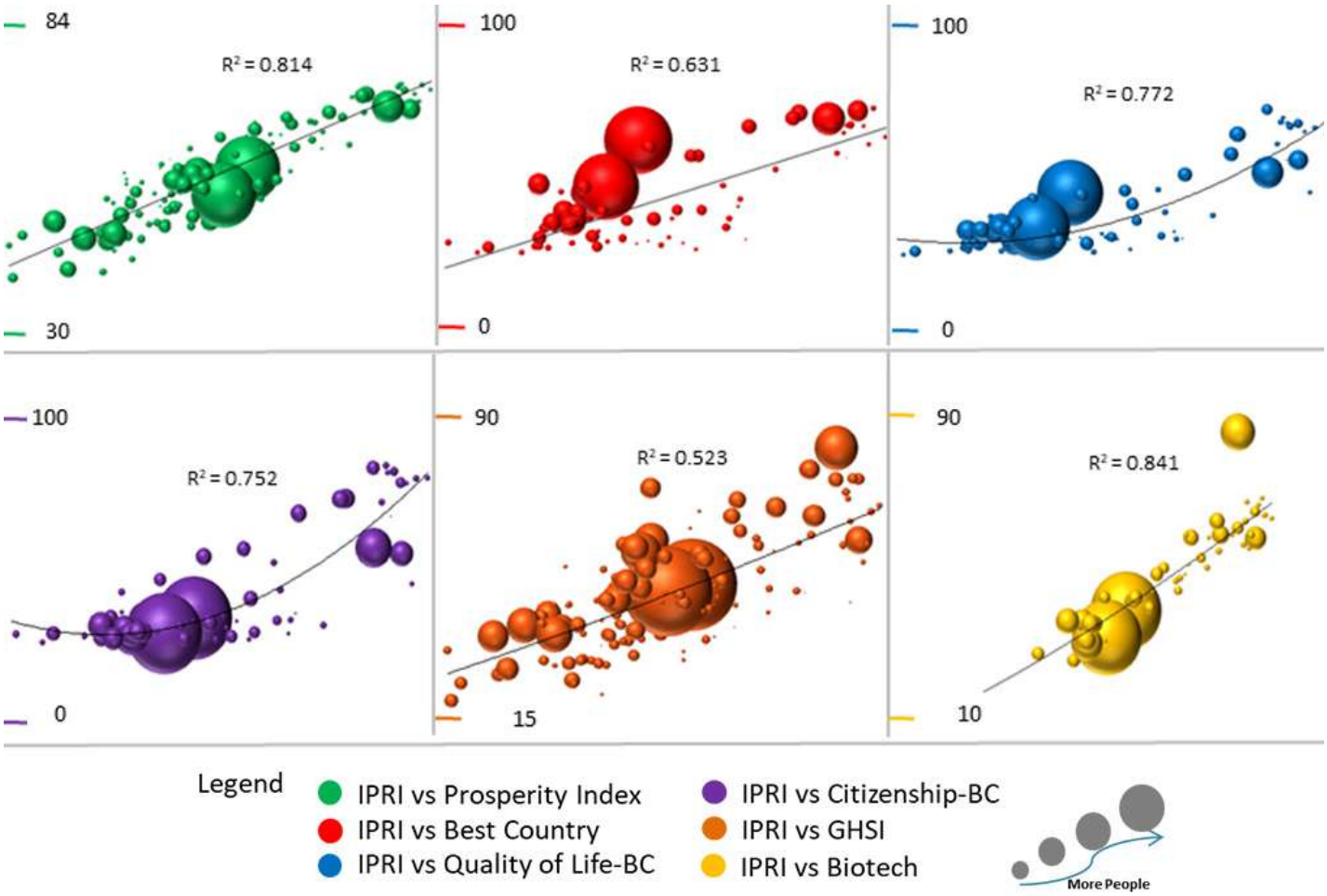
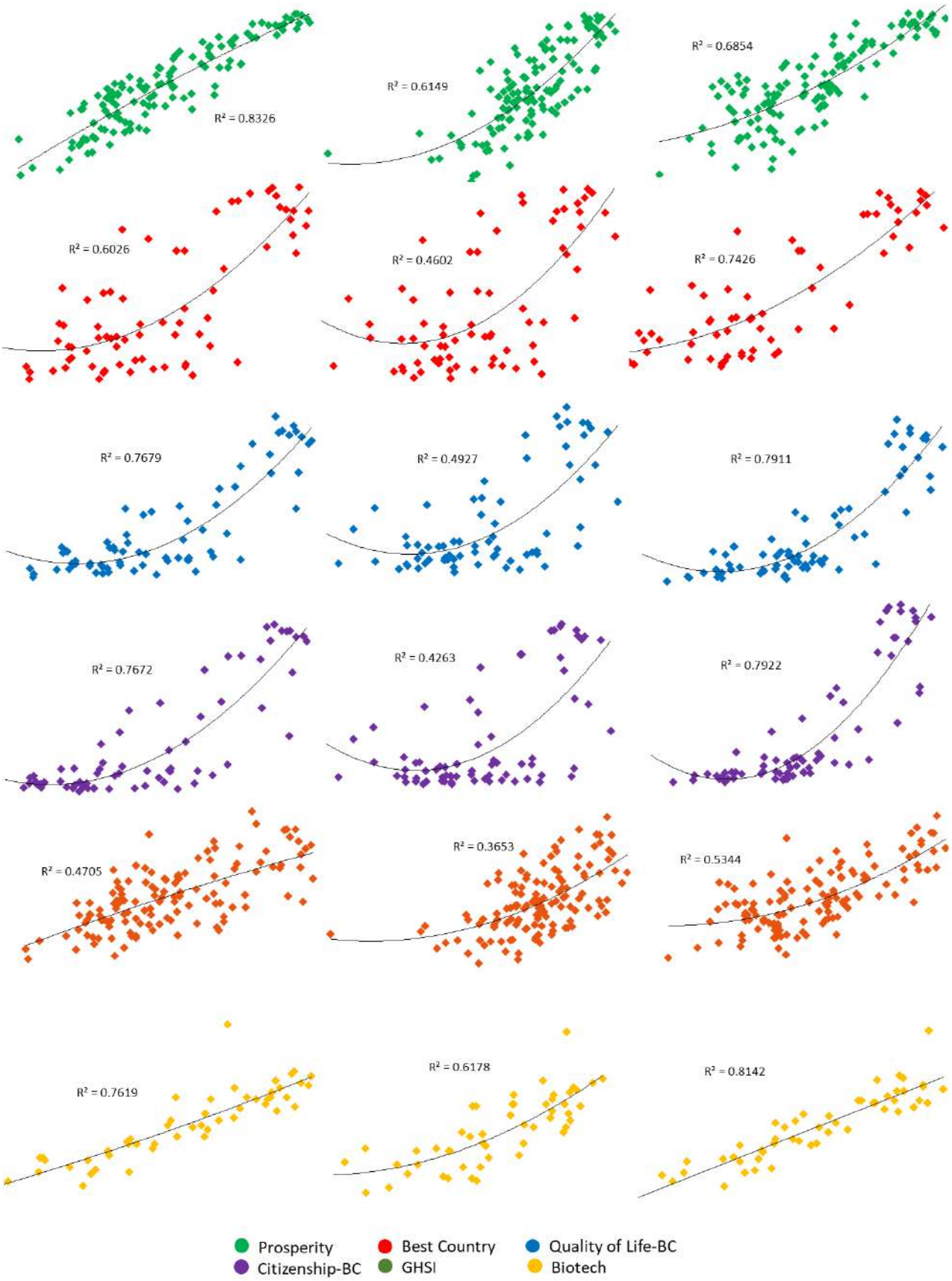


Figure 24b. IPRI Components Correlations with Health & Life Indicators.



VIII. Cluster's Analysis

The cluster analysis is useful for gathering similar entities into groups based on pre-defined indicators. We performed a cluster analysis for all the 129 countries according to their values in the IPRI components (LP, PPR, IPR). Then a group of illustrative variables – GE, IPRI-GE and those we used to evaluate correlations – were included contributing to describe each cluster.

In order to seize variability in the analysis – given the great differences among countries in the IPRI – we used Ward's Method with squared Euclidean distance that groups countries with minimal loss inertia.

We applied a Principal Component Analysis (PCA) for 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 called IPRI, which collects 84.83% of the inertia. The second and third factors – with inertias of 10.54% and 4.63% respectively – are the residue of the inertia. These entities do not contribute to the 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 (Table 14).

Table 14. Cluster's Analysis.

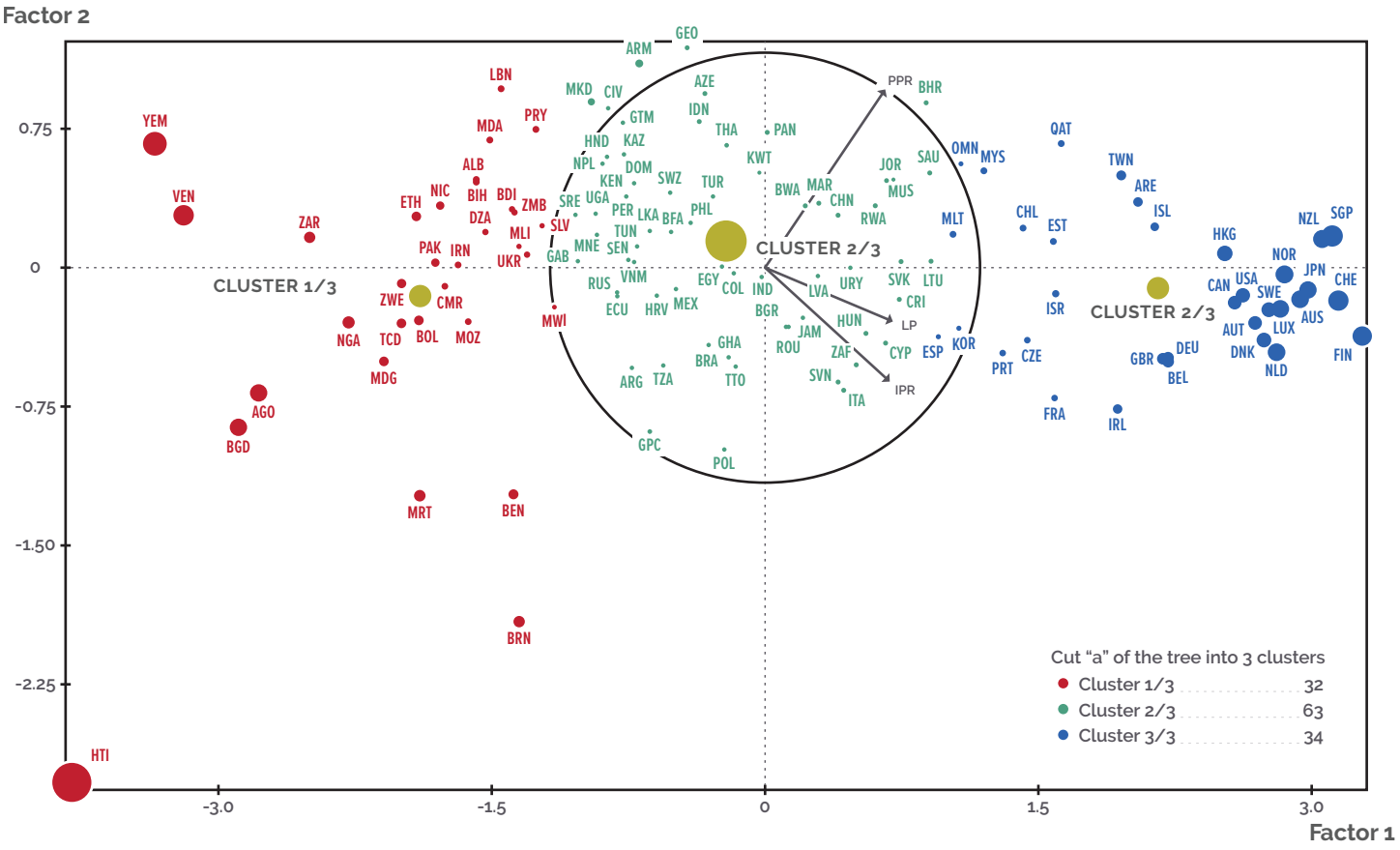
Cluster	Inertia	Countries #	Distance Centroid to Origin	Coordinates of Centroids		
				Factor 1	Factor 2	Factor 3
Between-clusters	2.15899					
Within cluster						
Cluster 1/3	0.29802	32	3.60042	-1.89111	-0.15071	-0.03746
Cluster 2/3	0.35916	63	0.06283	-0.20599	0.13793	0.03712
Cluster 3/3	0.18384	34	4.68641	2.16156	-0.11372	-0.03353

The analysis showed that the three clusters were sufficient to explain the grouping of countries; more specifically, the observed inertia within each group does not exceed the inertia among groups. Clusters are as shown in Table 15 and illustrated in Figure 25.

Table 15. Clusters' Members (ordered by distance from clusters' centroids).

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

Figure 25. Clusters' Members and Centroids.



Although the first factor contains 84.83% of inertia, which is enough to illustrate the formation of the clusters, Figure 25 illustrates Factors 1 and 2 as well as the three clusters' centroids (yellow). The size of the centroid depends on the number of countries.

Cluster 1 displays countries (red) located in the more negative coordinates of the first factor; this includes countries with low values of the LP, PPR and IPR. Cluster 2 includes countries (green) placed neighboring the origin, showing average values of the LP, PPR and IPR. Cluster 3 (blue) contains countries located on the most 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, 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.

This year we find important differences of clusters' organization and composition, compared to previous editions:

a. Cluster 2 is by far the one with the most amount of countries (63/129: 48.84%), while in previous editions that was a feature of Cluster 1.

b. Cluster 1 and Cluster 3 have similar amount of countries (32 and 34 respectively).

c. All cluster's centroids moved to the left: (-1.32, 0.04); (0.45, 0.03) and (2.54, -0.15) in 2019, to (1.89, -0.15); (-0.21, 0.14) and (2.16, -0.11) in 2020; with more relevant movement of Cluster 1 and Cluster 2.

This shift of overall behavior is due to a greater dispersion of values in certain areas of the Factor1-Factor2 space, favoring the displacement of the centroids of the clusters to the left, and giving rise to a new distribution of groups. We must remember that clustering results from an iterated procedure for each member (country) looking for the closest or with the greatest similarity (see Appendix VIII).

Besides the clusters, Figure 25 also shows the contribution of each country explaining the inertia gathered by the factors: the bigger the dot size representing the country, the higher its contribution. Very close countries refer their similarity, while they differ as distance increases.

In the central circle are those countries that have no-statistically significant contribution to the definition of the factors, and, as it has already been mentioned, they are close to the average and are members of Cluster 2. In addition, arrows represent each of the three dimensions of the IPRI: countries in the same direction of the vector, have a higher relationship with this dimension.

Subsequently, clusters' composition using income, population, participation in integration agreements, and regional and development criteria are shown in Figures 26a-d, where font size represents the frequency of the groups in the cluster.

The analysis of each cluster can describe the inner features of countries that belong to it. In this regard, Table 16 exhibits the features that are statistically significant in each group. Additional statistics are shown in Appendix V, VI and VII.

Figure 26a. Clusters' Composition by Income Classification.

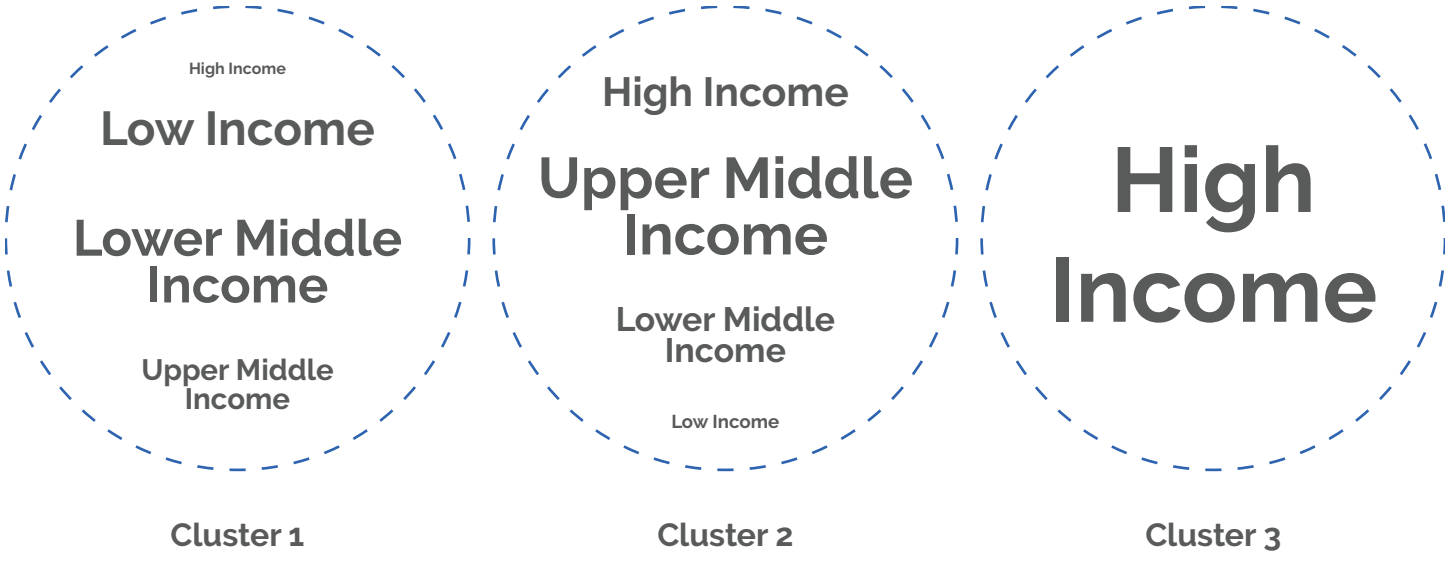


Figure 26b. Clusters' Composition by Regional and Development Criteria.

Figure 26c. Clusters' Composition by Economic and Regional Integration Agreements.

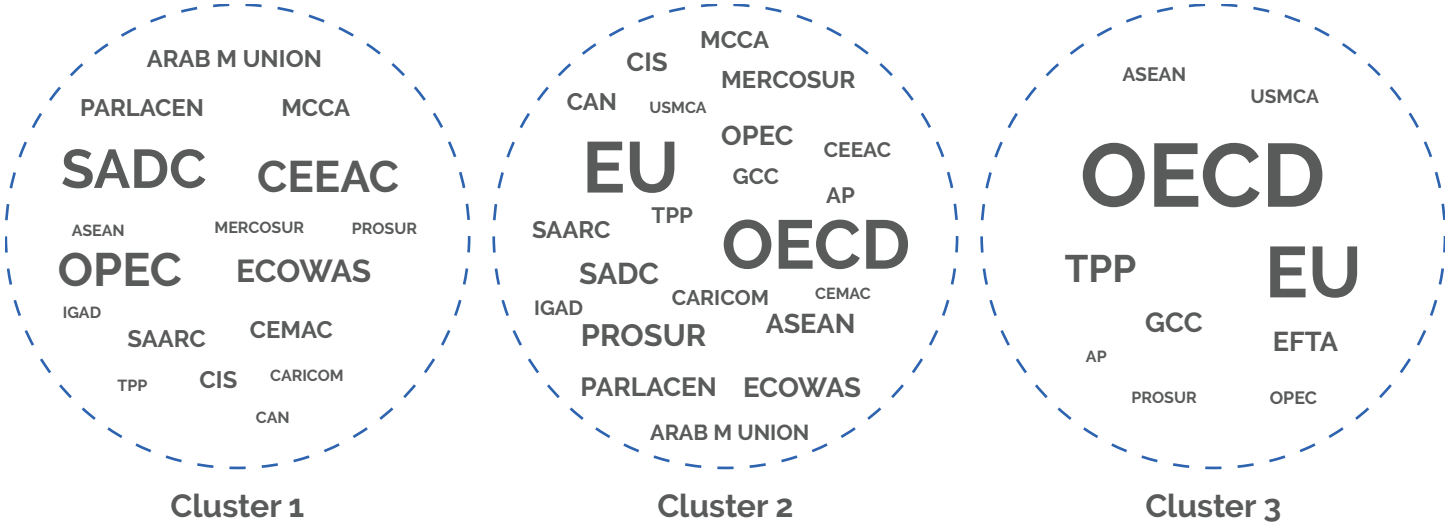


Figure 26d. Clusters' Composition and Population Weight (thousands).

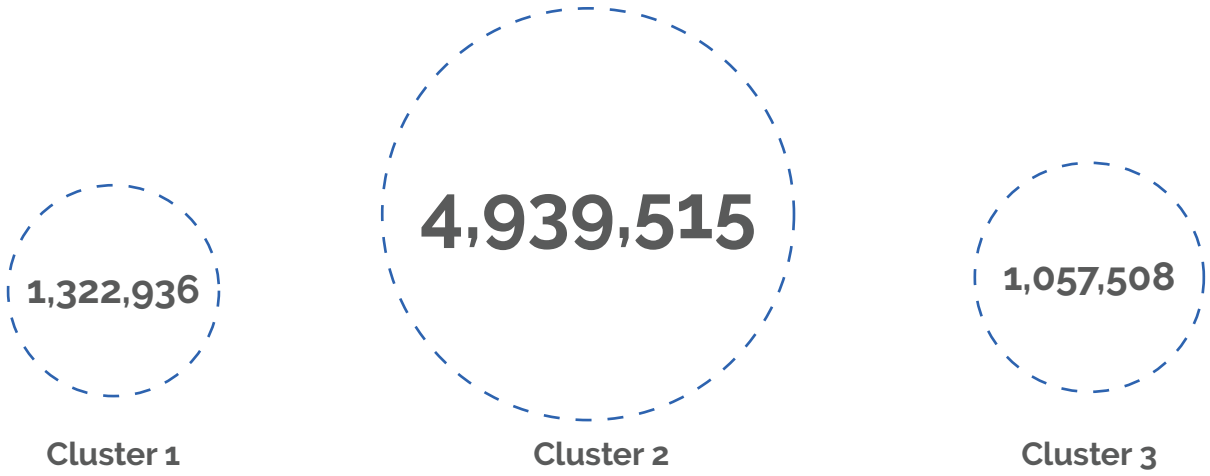


Table 16. Clusters' Statistics.

Cluster 1			Cluster 2			Cluster 3		
Characteristic variables	Test-value	Probability	Characteristic variables	Test-value	Probability	Characteristic variables	Test-value	Probability
FSI	6.24	0.000	TBI	3.09	0.001	IPRIGE	9.11	0.000
HFBD	5.95	0.000	HFBD	1.91	0.028	LP	9.06	0.000
REFUG	4.56	0.000	FSI	1.62	0.052	GDPPC	9.03	0.000
TBI	2.87	0.002	POPUL	1.34	0.090	GCFPC	8.82	0.000
POPUL	-0.56	0.287	REFUG	1.17	0.122	IPR	8.76	0.000
BCC	-1.29	0.098	PPR	0.04	0.482	GDPGINI	8.65	0.000
BCQL	-1.62	0.053	EFIF	-0.13	0.448	LPI	8.53	0.000
BCO	-1.90	0.029	DAIP	-0.58	0.280	GCI	8.49	0.000
LLCPC	-3.14	0.001	BFH	-0.88	0.189	GII	8.49	0.000
GEN	-3.20	0.001	GHSI	-1.03	0.152	PI	8.47	0.000
GCFPC	-3.87	0.000	TII	-1.07	0.142	NRI	8.16	0.000
DQLI	-3.87	0.000	GCI	-1.16	0.123	TII	7.62	0.000
GDPGINI	-4.30	0.000	FFH	-1.24	0.108	PPR	7.47	0.000
GDPPC	-4.31	0.000	PI	-1.33	0.092	DAIP	7.22	0.000
HPI	-5.18	0.000	GEN	-1.51	0.066	HPI	7.17	0.000
FFH	-5.51	0.000	IPRIGE	-1.66	0.048	BFH	7.11	0.000
GII	-5.59	0.000	LLCPC	-1.72	0.042	GHSI	6.94	0.000
GHSI	-5.75	0.000	HPI	-1.84	0.033	FFH	6.75	0.000
LPI	-5.98	0.000	IPR	-1.86	0.031	EFIF	6.45	0.000
NRI	-6.16	0.000	LP	-2.05	0.020	BCQL	6.04	0.000
BFH	-6.24	0.000	FDIPC	-2.53	0.006	BCC	5.99	0.000

Cluster 1			Cluster 2			Cluster 3		
Characteristic variables	Test-value	Probability	Characteristic variables	Test-value	Probability	Characteristic variables	Test-value	Probability
TII	-6.39	0.000	NRI	-2.54	0.005	BCO	5.87	0.000
EFIF	-6.43	0.000	LPI	-2.56	0.005	BIO	5.83	0.000
DAIP	-6.63	0.000	DQLI	-2.71	0.003	DQLI	4.98	0.000
IPR	-6.79	0.000	GII	-2.97	0.001	GEN	4.85	0.000
LP	-6.87	0.000	GDPGINI	-3.58	0.000	LLCPC	4.46	0.000
PI	-7.18	0.000	GDPPC	-4.16	0.000	FDIPC	2.53	0.006
GCI	-7.32	0.000	GCFPC	-4.37	0.000	POPUL	-0.97	0.165
IPRIGE	-7.36	0.000	BCO	-5.01	0.000	TBI	-5.25	0.000
PPR	-7.67	0.000	BCQL	-5.30	0.000	REFUG	-5.91	0.000
BIO **	-	-	BCC	-5.38	0.000	FSI	-8.10	0.000
FDIPC *	-	-	BIO	-5.40	0.000	HFBD	-8.16	0.000

Statistically significant only if Value-Test ≥ 1.96

* No available data

** Only one datum

Cluster Description

Cluster 1

In general terms, the IPRI sub-indices and the illustrative variables incorporated into the analysis show, in the countries belonging to Cluster 1, values below the general average of the 129 countries (for indicators with an inverse direction such as the Trade Barrier Index, Fragile State Index and its components, Refugees and IDPs, and Human Flight and Brain Drain, they show high values). This translates into poor performance in terms of economics, freedom, mobility, technology and quality of life.

Stand outs related to economic production: GDP *per capita*, GDP *per capita**GINI and GCF *per capita*, which are 81%, 83% and 75% respectively, below the general average; as well as indices for quality of life, like Best Country that shows results 91% below the general average. Indicators for human mobility, as the Fragile State Index and the Henley Passport Index, show respectively a 38% above the average (this index goes in inverse direction of IPRI) and 37% below the average.

On the other hand, a positive performance is seen with digital society measurements: The Telecommunication Infrastructure Index and Digital Adoption Index People surpass the general average by 47% in both cases.

Cluster 1 is composed by 32 countries with a combined population of more than 1.32 billion people. The country closest to its centroid is Zimbabwe, followed by Pakistan, Bolivia and Iran. Haiti is by far the most remote country of the cluster's centroid, followed by Brunei Darussalam, Rep. of Yemen, Bangladesh, and Bolivarian Rep. of Venezuela. These countries were in equivalent positions last year.

A close look at Cluster 1 countries' coordinates reveals that El Salvador is the closest to cluster's 2 centroid. Looking to the border between cluster 1 and cluster 2, the closest countries from Cluster 1 to Cluster 2 are El Salvador to Serbia, and Malawi to Gabon, informing similarity in conditions (see Fig. 25).

Countries in Cluster 1 are statistically significant for low scores in LP, PPR and IPR components. The same is true for the IPRI-GE. Cluster 1 countries also show low levels in all the dimensions we analyzed; that is, they show poor performances in Productive Drive, Underlying Environment – Embedded Conditions, Human Mobility, Digital Society, Health and Life. This is the result of a lack of policies or inappropriate ones to improve key elements for progress 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 Low income, Lower-Middle Income countries are highly represented in this cluster. The Southern African Development Community (7/12 members) is the most common economic and regional integration agreement in this cluster, followed by the Organization of Petroleum Exporting Countries (5/10 members), the Economic Community of Central African States (5/7 members), and the Economic Community of West African States (3/7 members).

Cluster 2

In the second cluster, the IPRI components and the illustrative variables display averages below or close to the general mean, illustrating an average performance, considering quality of life, productive drive, freedom, mobility and technology.

We find that GDP *per capita*, GDP *per capita* with GINI incidence and GCF *per capita* show an average of 46%, 41% and 50%, respectively, below the general mean; standing out, as well, that Best Country and its Quality of Life and Citizenship components, are 45%, 52% and 67% below the general average.

Cluster 2 has 63 countries with a combined population of around 4.94 billion people. The country closest to its centroid is Egypt, followed by India, Bulgaria and Burkina Faso; while the farthest countries are Georgia, Bahrain, Uruguay and Armenia. Figure 25 illustrates that Gabon and Serbia are the closest countries to Cluster's 1 centroid, and Lithuania and Slovakia are the closest countries to Cluster 3. The closest countries between Cluster 2 and 3 are Saudi Arabia and Lithuania (Cluster 2) to Oman and Malta (Cluster 3) respectively.

It is important to highlight that the most populous countries in the world, India and China, are included in this cluster, being the first of them very close to its centroid (distance to centroid from India=0.15733 and from China=0.46725). 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 of the measurements.

Using the regional and development criteria of the IMF, Latin America and the Caribbean and the Sub-Saharan Africa group are highly represented in this cluster, whereas by the income criteria of the World Bank, the Upper Middle Income and High Income countries represent over 71% of the cluster. Following the economic and regional integration agreements, we find that the European Union (with 12/28 members) and the OECD (10/36members) have the highest frequency in Cluster 2.

Cluster 3

Cluster 3 exhibit opposite characteristics to Cluster 1: all the variables are significant, with positive and high values, showing good performances in Productive Drive, Underlying Conditions, Human Mobility, Digital Society; and Health and Life Indicators, implying an overall promising performance.

Standing out in this group are GDP *per capita*, GDP *per capita**GINI and GCF *per capita*, which are 166%, 178% and 168%, respectively, above the general average; as well as Best Country and its Quality of Life and Citizenship components which are 73%, 84% and 104% above the general mean. Regarding technology, we find the Telecommunication Infrastructure Index and Digital Adoption Index-People surpassing the general average by 56% and 51%, and regarding human mobility, the Fragile State Index with 49% below the average (this index runs in inverse direction); and the Henley Passport Index with results of 49% above average.

Cluster 3 is composed of 34 countries showing a combined population of more than 1 billion people. The closest country to its centroid is Germany, followed by Canada, Belgium and United Kingdom. The farthest country of the group is Oman, followed by Spain, Malta, Malaysia and Finland. Spain and Malta are the closest countries to Cluster 2.

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 represents 97% of this cluster. Looking at economic and regional integration agreements, the OECD (26/36members) and the European Union are highly represented in Cluster 3 (16/28 members). They are followed by the Trans-Pacific Partnership (7/11 members), all the EFTA members (3/3), and half of the Gulf Cooperation Council (3/6).

The data suggest that most of the chosen integration agreements demonstrate some level of heterogeneity in terms of strength of property rights systems among their members. In 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 be also seen as an opportunity, as policies could be targeted to specific members of the agreement.

On the other hand, the integration agreement 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.

As conclusions of the cluster analysis, we found that:

- 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, their institutions, and their innovation, 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, also in other dimensions to 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 the 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.

- 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 International Property Rights Index in its 14th edition shows regularity with previous ones, allowing us to say that it has a proper structure for monitoring the performance of property rights systems and its relationship to societies' prosperity globally, regionally and within countries.

2020-IPRI edition includes 129 countries representing the 93.91% of world population and 97.72% of world GDP, with an average score of 5.73 (Max. 8.65; Min. 2.66) showing for a consecutive second year, a slight decrease from the previous edition. Results keep suggesting that countries with high IPRI scores and its components also show high income and high development levels, indicating the positive relationship between property rights regime and quality of life.

IPRI-2020 keeps the calculations of IPRI-GE – this year scaled 0-10 to make easier the comparative analyses – and IPRI-POP given the importance of showing the impact of gender equality and countries' demographic weight in analyzing property rights systems.

This edition includes 26 indicators gathered in 5 groups (productive drive, underlying conditions, human mobility, digital society and health & life) that were contrasted with the IPRI and its components. Results show the relevance of property rights systems and its association with the best performances and practices in societies.

We included a cluster analysis in order to gather countries in groups by their homogeneity. Therefore, the 129 countries were classified according to their values in the IPRI components in three clusters. The analysis of clusters' centroids and the countries by the boundaries between groups provides 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

Acemoglu, D., S. Johnson, and J. A. Robinson, 2001. "The colonial origins of comparative development: an empirical investigation" *American Economic Review*. Vol. 91(5):1369-1401.

Acemoglu, D., S. Johnson, and J. A. Robinson, 2002. "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution" *Quarterly Journal of Economics* Vol. 117(4):1231-1294.

Acemoglu, D., S. Johnson, and J. A. Robinson, 2005. "Institutions as a fundamental cause of long run growth" in: Aghion, P. & Durlauf, S. (eds.), *Handbook of Economic Growth*, Volume 1A, Chapter 6, Elsevier.

Alchian, A. A. and H. Demsetz, 1973. "The Property Right Paradigm" *The Journal of Economic History*, Vol. 33 (1-Mar): 16-27

Barzel, Y. 1997. *Economic Analysis of Property Rights*. Cambridge: Cambridge University Press, 2nd Ed.

Besley T. and M. Ghatak, 2010. "Property Rights and Economic Development" In Dani Rodrik and Mark Rosenzweig (eds): *Handbook of Development Economics*, Vol. 5, The Netherlands: North-Holland, 2010, pp. 4525-4595.

Buchanan, J.M., 1993. *Property as a Guarantor of Liberty*. Aldershot, Hants, England: E. Elgar.

David, P. and D. Foray, 2003. "Economic Fundamentals of the Knowledge Society" *Policy Futures in Education*, Vol. 1(1):20-49

De Soto, H. 2000. *El misterio del capital: Por qué el capitalismo triunfa en occidente y fracasa en el resto del mundo*. NY: Basic Books, London: Bantam Press/Random House, Lima: El Comercio.

De Soto, H. y F. Cheneval (eds.) 2006. *Realizing Property Rights*. Swiss Human Rights Book. Vol. 1. Zurich: Ruffer and Rub

Delong, J.M., 1997. *Property Matters*. New York: Free Press.

Demsetz, H., 1967: "Toward a theory of property rights" *American Economic Review* Vol. 57(2-May): 347-359.

Dong B., y B. Torgler. 2011. "Democracy, Property Rights, Income Equality, and Corruption" Nota Di Lavoro. *Global Challenges Series*. Fondazione Eni Enrico Mattei.

Easterly, W. and R. Levine, 2003. "Tropics, germs and crops: how endowments influence economic development" *Journal of Monetary Economics*. Vol.50:3-39.

Epstein, R. 1985. *Takings: Private Property and the Power of Eminent Domain*. Cambridge: Harvard University Press

Epstein, R. 1995. *Simple Rules for a Complex World*. Cambridge. MA: Harvard. University Press.

Feyrer, J. and B. Sacerdote 2009. "Colonialism and Modern Income: Islands as Natural Experiments," *The Review of Economics and Statistics* Vol. 91(2):245-262.

Field, E. y M. Torero, 2004. *Do Property Titles Increase Credit Access Among the Urban Poor?* Evidence from a Nationwide Titling Program. Disponible: http://www.rwj.harvard.edu/papers/field/Field%20Do%20Property%20Titles%20Increase%20Credit....pdf

Freyfogle, E.T., 2010. "Property and Liberty" *Harvard Environmental Law Review* Vol. 34(1):75-118 [http://ssrn.com/abstract=1024574 or http://dx.doi.org/10.2139/ssrn.1024574]

Friedman, M., 1962. *Capitalism and Freedom*. Chicago: University of Chicago Press

Friedman, T. L. 2016. *Thank you for being late. An Optimist´s Guide to thriving in the Age of Accelerations*, NY: Farnar, Straus and Giroux.

Galiani, S. y E. Schargrodsky, 2005. "Property Rights for the Poor: Effects of Land Titling" Universidad. Torcuato Di Tella, *Business School Working Paper* # 06/2005.

Hall, R. H. and C. Jones, 1999. "Why Do Some Countries Produce So Much More Output per Worker than Others?" *NBER Working Paper* No. 6564. June 1999

Hansson, G. 2009. "What determines rule of law? An empirical investigation of rival models" *Kyklos* Vol.62 (3):371-393.

Hayek, F.A., 1997. *La fatal arrogancia*. Los errores del socialismo. Madrid: Unión Editorial.

Hayek, F.A., 1960. *The Constitution of Liberty*. Chicago: University of Chicago Press

Johnson, S., J. McMillan y C. Woodruff. 2002. "Property Rights and Finance" *American Economic Review* Vol. 92(5):1335-56.

Knack S. and Keefer, P. 1995. "Institutions and Economic Performance" *Economics and Politics* Vol 7 (3):207-227

Lee, Arthur. 1775. *An appeal to the justice and interest of the people of Great Britain in the present dispute with America*, 4th edition. New York

Levy-Carciente, S., 2013. *La imperiosa necesidad de Reglas de Juego Claras*. Caracas: Documento del Observatorio Económico Legislativo de CEDICE.

Machan, T.R., 2002. *The Right to Private Property*. Stanford: The Hoover Institution Press.

North, D. C. 1981, *Structure and change in economic history*, New York: W. W. Norton & Co.

North, D. C. 1990, *Institutions, Institutional Change and Economic Performance*, Cambridge: Cambridge University Press.

Nozick, R., 1974. *Anarchy, State and Utopia*, Oxford: Basil Blackwell.

Paldam M. y E. Gundlach, 2007. "Two Views on Institutions and Development: The Grand Transition vs the Primacy of Institutions". Presented in *DEGIT XII*, Melbourne, Australia, June 29-30, 2007.

Pipes, R., 1999. *Property and Freedom*. New York: Alfred A. Knopf; London: The Harvill Press.

Rand, A., 1964. *The Virtue of Selfishness*. New York: Penguin Books

Rodrik, D., A. Subramanian, and F. Trebbi, 2004. "Institutions rule: the primacy of institutions over geography and integration in economic development" *Journal of Economic Growth* Vol. 9: 131-165

Sandefur, T., 2006. *Cornerstone of Liberty: Property Rights in 21st century America*. Washington: Cato Institute.

Waldron, J., 2012 "Property and Ownership" *The Stanford Encyclopedia of Philosophy* (Spring Edition), Edward N. Zalta (ed.) [http://plato.stanford.edu/archives/spr2012/entries/property/]

Wang, S-Y. 2008. *Credit Constraints, Job Mobility and Entrepreneurship*: Evidence from a Property Reform in China. NY: NYU. Disponible: http://www.nyudri.org/assets/publications/2008/creditconstraints.pdf

Zhang, W. 2015. *The Logic of the Market: An Insider's View of Chinese Economic Reform*. Washington DC: Cato Inst.

XI. Appendices

Appendix I. Data Source: IPRI 2020.

IPRI	Data	Download Date	Original Scale	Year (data)	Source	Link
Legal and Political Environment (LP)	Judicial Independence	Feb. 26, 2020	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset - Version 20191004	https://www.weforum.org/reports/global-competitiveness-report-2019
	Rule Law	Feb. 26, 2020	[(-2,5)-(2,5)] best	2018	The Worldwide Governance Indicators 2019	http://info.worldbank.org/governance/wgi/index.aspx#home
	Political Stability	Feb. 26, 2020	[(-2,5)-(2,5)] best	2018	The Worldwide Governance Indicators 2019	http://info.worldbank.org/governance/wgi/index.aspx#home
	Control Corruption	Feb. 26, 2020	[(-2,5)-(2,5)] best	2018	The Worldwide Governance Indicators 2019	http://info.worldbank.org/governance/wgi/index.aspx#home
Physical Property Rights (PPR)	Property Rights	Feb. 26, 2020	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset - Version 20191004	https://www.weforum.org/reports/global-competitiveness-report-2019
	Registering Property	Feb. 26, 2020	1-infinite (worst)	2019	World Bank Group. Doing Business	http://www.doingbusiness.org/custom-query
	Ease of Access to Loans	Feb. 26, 2020	[1-7](best)	2017-2018	The Global Competitiveness Index Historical Dataset © 2007-2017 World Economic Forum	www3.weforum.org/docs/GCR2017-2018/GCI_Dataset_2007-2017.xlsx
Intellectual Property Rights (IPR)	Intellectual Property Protection	Feb. 26, 2020	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset - Version 20191004	https://www.weforum.org/reports/global-competitiveness-report-2019
	Patent Protection	April 26, 2019	[0-5](best)	2015	Patent Index 2015. Walter Park	http://fs2.american.edu/wgp/www/Patent%20index1960%20-%202015.xlsx
	Copyright Piracy Level	Feb. 26, 2020	[0-100%] (worst)	2017	BSA Global Software Survey 2018	https://www.bsa.org/~/media/Files/StudiesDownload/2018_BSA_GSS_Report_en.pdf
IPRI Population	Population	Jan. 31, 2020	Thousands	2019	United Nations, Department of Economic and Social Affairs, Population Division (2019). *World Population Prospects 2019*, Onine Edition.	https://population.un.org/wpp/Download/Standard/Population/

Appendix II. Groups Conformation: IPRI 2020.

	Group	#	Countries
Regional Group	A	28	Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Chad; Congo, Dem. Rep.; Côte d'ivoire; Eswatini; Ethiopia; Ghana; Kenya; Liberia; Malawi; Mali; Mauritania; Mauritius; Mozambique; Nigeria; Rwanda; Senegal; Sierra Leone; South Africa; Tanzania, United Republic Of; Uganda; Zambia; Zimbabwe
	AO	20	Australia; Bangladesh; Brunei Darussalam; China; Hong Kong (Sar Of China); India; Indonesia; Iran; Japan; Korea, Rep; Malaysia; Nepal; New Zealand; Pakistan; Philippines; Singapore; Sri Lanka; Taiwan (China); Thailand; Vietnam
	CEECA	25	Albania; Armenia; Azerbaijan; Bosnia And Herzegovina; Bulgaria; Croatia; Cyprus; Czech Republic; Estonia; Georgia; Hungary; Kazakhstan; Latvia; Lithuania; Macedonia, Fyr; Moldova; Montenegro ; Poland; Romania; Russia; Serbia; Slovakia; Slovenia; Turkey; Ukraine
	LAC	21	Argentina; Bolivia; 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	14	Algeria; Bahrain; Egypt; Israel; Jordan; Kuwait; Lebanon; Morocco; Oman; Qatar; Saudi Arabia; Tunisia; United Arab Emirates; Yemen, Rep.
	NA	2	Canada; United States
	WE	18	Austria; Belgium; Denmark; Finland; France; Germany; Greece; Iceland; Ireland; Italy; Luxembourg; Malta; Netherlands; Norway; Portugal; Spain; Sweden; Switzerland
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
	Rest of Europe	14	Albania; Armenia; Bosnia And Herzegovina; Georgia; Iceland; Macedonia, Fyr; Moldova; Montenegro; Norway; Russia; Serbia; Switzerland; Turkey; Ukraine
	Africa	32	Algeria; Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Chad; Congo, Dem. Rep.; Côte d'ivoire; Egypt; Eswatini; Ethiopia; Ghana; Kenya; Liberia; Malawi; Mali; Mauritania ; Mauritius; Morocco; Mozambique; Nigeria; Rwanda; Senegal; Sierra Leone; South Africa; Tanzania, United Republic Of; Tunisia; Uganda; Zambia; Zimbabwe
	North America	3	Canada; Mexico; United States (USA)
	Central America and the Caribbean	10	Costa Rica; Dominican Republic; El Salvador; Guatemala; Haiti; Honduras; Jamaica; Nicaragua; Panama; Trinidad And Tobago
	South America	10	Argentina; Bolivia; 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 Classifications	High income	50	Australia; Austria; Bahrain; Belgium; Brunei Darussalam; Canada; Chile; Croatia; Cyprus; Czech Rep; 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; Panama; Poland; Portugal; Qatar; Saudi Arabia; Singapore; Slovakia; Slovenia; Spain; Sweden; Switzerland; Taiwan (China); Trinidad And Tobago; United Arab Emirates; United Kingdom; United States; Uruguay
	Upper middle income	37	Albania; Algeria; Argentina; Armenia; Azerbaijan; Bosnia And Herzegovina; Botswana; Brazil; Bulgaria; China; Colombia; Costarica; Dominican Republic; Ecuador; Gabon; Georgia; Iran; Jamaica; Jordan; Kazakhstan; Lebanon; Macedonia, Fyr; Malaysia; Mauritius; Mexico; Montenegro; Paraguay; Peru; Romania; Russia; Serbia; South Africa; Sri Lanka; Thailand; Turkey; Venezuela, Bolivarian Rep

	Group	#	Countries
Income Classifications (cont.)	Lower middle income	26	Angola; Bangladesh; Bolivia; Cameroon; Côte d'ivoire; Egypt; El Salvador; Eswatini; Ghana; Honduras; India; Indonesia; Kenya; Mauritania; Moldova; Morocco; Nicaragua; Nigeria; Pakistan; Philippines; Senegal; Tunisia; Ukraine; Vietnam; Zambia; Zimbabwe
	Low income	16	Benin; Burkina Faso; Burundi; Chad; Congo, Dem. Rep.; Ethiopia; Haiti; Liberia; Madagascar; Malawi; Mali; Mozambique; Nepal; Rwanda; Tanzania, United Rep Of; Uganda; Yemen, Rep
Region Classification	Advanced economies		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; United States
	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	11	Albania; Bosnia And Herzegovina; Bulgaria; Croatia; Hungary; Macedonia, Fyr; Montenegro; Poland; Romania; Serbia; Turkey
	Latin America and the Caribbean	21	Argentina; Bolivia; 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, North Africa, and Pakistan	16	Algeria; Bahrain; Egypt; Iran; Jordan; Kuwait; Lebanon; Mauritania; Morocco; Oman; Pakistan; Qatar; Saudi Arabia; Tunisia; United Arab Emirates; Yemen, Rep.
	Sub-Saharan Africa	28	Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Chad; Congo, Dem. Rep.; Côte d'ivoire; Eswatini; Ethiopia; Gabon; Ghana; Kenya; Madagascar; Malawi ; Mali ; Mauritius; Mozambique; Nigeria; Rwanda; Senegal; South Africa; Tanzania, United Republic Of; Uganda; Zambia; Zimbabwe
Regional Integration Agreements	OECD	36	Australia; Austria; Belgium; Canada; Chile; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Israel; Italy; Japan; Korea, Rep; Latvia; Lithuania; Luxembourg; Mexico; Netherlands; New Zealand; Norway; Poland; Portugal; Slovakia; Slovenia; Spain; Sweden; Switzerland; Turkey; United Kingdom; United States
	EU	27	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
	SADC	16	Angola; Botswana; Comoros; Congo, Dem. Rep.; Eswatini; Lesotho; Madagascar; Malawi; Mauritius; Mozambique; Namibia; Seychelles; South Africa; Tanzania, United Republic Of Zambia; Zimbabwe
	ECOWAS	15	Benin; Burkina Faso; Cape Verd, Côte d'ivoire; Gambia; Ghana; Ginea; Ginea Bissau; Liberia; Mali; Niger; Nigeria; Senegal; Sierra Leone; Togo
	ASEAN	10	Brunei Darussalam; Cambodia; Indonesia; Lao; Malaysia; Myanmar; 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	4	Chile; Colombia; Mexico; Peru
	MERCOSUR	4	Argentina; Brazil; Paraguay; Uruguay
	SAARC	8	Afghanistan; Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka

	Group	#	Countries
Regional Integration Agreements (cont)	CEMAC	6	Cameroon; Central African Rep; Congo; Gabon; Equatorial Guiena; Chad
	MCCA	5	Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua
	CIS	11	Armenia; Azerbaijan; Belorussia; Kazakhstan; Kyrgyz Rep; Moldova; Russia; Tajikistan; Uzbekistan; Turkmenistan; Ukraine
	ARAB M UNION		Algeria; Libya; Mauritania; Morocco; Tunisia
	CARICOM	15	Antigua; Bahamas; Barbados; Belize; Dom1nica; Grenada; Guyana; Haiti; Jamaica; Montserrat; St. Kitts & Nevis; St. Lucia; St. Vincent And Grenadines; Suriname; Trinidad & Tobago
	CAN	4	Bolivia; Colombia; Ecuador; Peru
	EFTA	4	Iceland; Liechtenstein; Norway; Switzerland
	IGAD	7	Ethiopia; Kenya; Uganda; Sudan; Djibouti; Eritrea; Somalia
	NAFTA	3	Canada; Mexico; United States
	OPEC	14	Algeria; Angola; Congo Rep; Ecuador; Gabon; Equatorial Ghinea; Iran; Kuwait; Libya; Nigeria; Saudi Arabia; United Arab Emirates; Venezuela, Bolivarian Rep
	CEEAC	6	Angola; Burundi; Cameroon; Central African Rep; Chad; Congo, Dem. Rep.; Gabon; Equatorial Guinea; Rwanda; Sao Tome And Principe
	TPP-11	11	Australia; Brunei Darussalam; Canada; Chile; Japan; Malaysia; Mexico; New Zealand; Peru; Singapore; Vietnam
	PROSUR	7	Argentina; Brazil; Chile; Colombia; Ecuador; Paraguay; Peru

Appendix III. GE Data Source: IPRI 2020.

IPRI-GE	OCDE GID-DB	Download Date	Original Scale	Year	Source
Women's Access to Bank Loans	Secure access to formal financial services	Feb. 26, 2020	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
Women's Access to Land Ownership	Secure access to land assets				
Women's Access to Property Other than land	Access to non-land assets				
Inheritance Practices	Inheritance				
Women Social Rights	Divorce				
	Household Responsibilities				
	Female genital mutilation				
	Violence against women				
	Freedom of movement				
	Citizenship rights				

Appendix IV. Correlations Data Sources.

	Indicator	Download Date	Original Scale	Year	Source	Link
Productive Drive	GDP *per capita* (constant 2010 US$)	March 21, 2020	[0-∞](best)	2018	The World Bank Database	https://data.worldbank.org/indicator/ny.gdp.pcap.kd
	GDP *per capita* (constant 2010 US$) *GINI			GDP 2018, GINI most recent year available	The World Bank Database	https://data.worldbank.org/indicator/SI.POV.GINI
	Gross capital formation (current US$) *Per capita*			2018	The World Bank Database	https://data.worldbank.org/indicator/NE.GDI.TOTL.CD
	FDI stock inward MLN USD *Per capita*			2018	OECD Database	https://data.oecd.org/fdi/fdi-stocks.htm
	Number New limited liability companies *per capita*			2018	World Bank's Entrepreneurship Survey and database	http://www.doingbusiness.org/data/exploretopics/entrepreneurship
Underlying Conditions	Global Competitiveness Index	March 21, 2020	[0-100](best)	2018	World Economic Forum. The Global Competitiveness Index 2019.	http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf
	Business Freedom (Heritage Foundation)		[0-100](best)	2020	The Heritage Foundation, 2020 Index of Economic Freedom	https://www.heritage.org/index/download
	Financial Freedom (Heritage Foundation)		[0-100](best)	2020	The Heritage Foundation, 2020 Index of Economic Freedom	https://www.heritage.org/index/download
	Trade Barrier Index (PRA)		[1-10](worst)	2019	Property Rights Alliance	https://www.tradebarrierindex.org/tbi-downloads
	Logistic Performance Index		[1-5](best)	2018	The World Bank Database	https://lpi.worldbank.org/international/global
	Economic Freedom Index (Fraser Inst.)		[0-10](best)	2017	Fraser Institute	https://www.fraserinstitute.org/economic-freedom/dataset

	Indicator	Download Date	Original Scale	Year	Source	Link
Human Mobility	Henley Passport Index	March 21, 2020	[0-195](best)	2020	Henley and Partners	https://www.henleypassportindex.com/global-ranking
	Fragile State Index		[0-120](worst)	2019	The Fund for Peace	https://fragilestatesindex.org/data/
	Fragile State Index: Refugees and IDPs		[0-10](worst)	2019	The Fund for Peace	https://fragilestatesindex.org/data/
	Fragile State Index: Human Flight and Brain Drain		[0-10](worst)	2019	The Fund for Peace	https://fragilestatesindex.org/data/
Digital Society	Global Innovation Index	March 21, 2020	[0-100](best)	2019	World Intellectual Property Organization (WI PO)	https://www.globalinnovationindex.org/analysis-indicator
	Telecommunication Infrastructure Index		[0-1](best)	2018	United Nations Department of Economic and Social Affairs	https://www.un.org/development/desa/publications/2018-un-e-government-survey.html
	Network Readiness Index		[0-100](best)	2019	Portulans Institute & WITSA (Originally by WEF)	https://networkreadinessindex.org
	DQL Index		[0-1](best)	2019	Surfshark	https://surfshark.com/dql
	DAI People Sub-index		[0-1](best)	2016	The World Bank Database	https://www.worldbank.org/en/publication/wdr2016/Digital-Adoption-Index
Health and Life	Prosperity Index	March 21, 2020	[0-100](best)	2019	Legatum Institute Foundation	https://www.prosperity.com/download_file/view_inline/3690
	Best Country: Overall		[0-100](best)	2020	US News, BAV Group, Wharton University of Pennsylvania	https://www.usnews.com/news/best-countries/countries-index
	Best Country: Quality of Life		[0-100](best)	2020	US News, BAV Group, Wharton University of Pennsylvania	https://www.usnews.com/news/best-countries/countries-index
	Best Country: Citizenship		[0-100](best)	2020	US News, BAV Group, Wharton University of Pennsylvania	https://www.usnews.com/news/best-countries/countries-index
	Global Health Security Index		[0-100](best)	2019	NTI, Johns Hopkins Center for Health Security, The Economist Intelligence Unit	https://www.ghsindex.org
	iBiotech		[0-100](best)	2019	ThinkBiotech LLC	http://www.thinkbiotech.com/globalbiotech/

Appendix V. Clusters Member's Position

Country-Cluster 1	Distance to Centroid	Country-Cluster 2	Distance to Centroid	Country-Cluster 2	Distance to Centroid	Country-Cluster 3	Distance to Centroid
Zimbabwe	0.02255	Egypt	0.08011	Azerbaijan	0.6492	Germany	0.15819
Pakistan	0.04561	India	0.15733	Russia	0.65285	Canada	0.18526
Bolivia	0.07297	Bulgaria	0.16404	Honduras	0.68919	Belgium	0.19645
Iran	0.07451	Burkina Faso	0.1682	Rwanda	0.72369	United Kingdom	0.20073
Cameroon	0.14664	Eswatini	0.23089	Tanzania	0.72663	Hong Kong	0.21217
Madagascar	0.1729	Thailand	0.27077	Gabon	0.73057	United Arab Emirates	0.22976
Nigeria	0.18537	Tunisia	0.30093	Kazakhstan	0.73434	Austria	0.32816
Mozambique	0.22892	Peru	0.32094	Argentina	0.7475	Sweden	0.37935
Algeria	0.33566	Romania	0.34448	Guatemala	0.83021	Denmark	0.42625
Nicaragua	0.35858	Kuwait	0.34527	Jordan	0.87176	Taiwan	0.43557
Chad	0.39954	Jamaica	0.35068	Serbia	0.93004	Iceland	0.502
Bosnia & Herzegovina	0.40017	Croatia	0.35358	Côte d'Ivoire	0.96263	Ireland	0.50416
Ethiopia	0.40972	Vietnam	0.35497	Hungary	0.98618	Luxembourg	0.51454
Malawi	0.55586	Sri Lanka	0.35826	Costa Rica	0.99971	Norway	0.52507
Ukraine	0.57215	Latvia	0.36037	Botswana	1.0358	Estonia	0.5359
Zambia	0.6002	Senegal	0.36497	Slovakia	1.04313	Israel	0.53945
El Salvador	0.70143	Dominican Rep	0.38532	Slovenia	1.08653	Netherlands	0.54535
Mail	0.71533	Kenya	0.39303	South Africa	1.1093	United States	0.58008
Albania	0.74501	Ghana	0.39335	Cyprus	1.11466	Australia	0.63801
Congo, Dem. Rep.	0.79522	Morocco	0.4031	Italy	1.12018	Czech Republic	0.64601
Burundi	0.89025	Turkey	0.4254	Macedonia, Pyr	1.18021	Chile	0.68397

Country-Cluster 1	Distance to Centroid	Country-Cluster 2	Distance to Centroid	Country-Cluster 2	Distance to Centroid	Country-Cluster 3	Distance to Centroid
Moldova	0.94015	China	0.46725	Greece	1.25266	France	0.72147
Paraguay	1.20883	Trinidad & Tobago	0.4753	Montenegro	1.25287	Japan	0.75847
Angola	1.28666	Indonesia	0.47655	Poland	1.27016	Portugal	0.85885
Mauritania	1.29127	Philippines	0.54013	Lithuania	1.28852	Qatar	0.89522
Benin	1.42135	Uganda	0.55896	Mauritius	1.35357	Switzerland	0.97693
Lebanon	1.46248	Panama	0.56896	Saudi Arabia	1.36229	New Zealand	0.98366
Venezuela, Bol Rep	1.91185	Ecuador	0.57956	Armenia	1.51991	Singapore	0.98398
Bangladesh	2.01877	Colombia	0.5952	Uruguay	1.72199	Korea, Rep.	1.26168
Yemen, Rep.	2.79619	Mexico	0.60768	Bahrain	1.80441	Finland	1.31078
Brunei Darussalam	4.92861	Brazil	0.63058	Georgia	1.9082	Malaysia	1.33313
Haiti	10.7494	Nepal	0.64596			Malta	1.41135
						Spain	1.56441
						Oman	1.68889

Appendix VI. Illustrative Variables. Averages by Clusters.

	Cluster 1	Cluster 2	Cluster 3
Total Countries	32	63	34
Total Population (000)	1322936	4939515	1057508
Average IPRI	4.07	5.53	7.65
Average LP	3.27	4.81	7.51
Average PPR	5.09	6.5	7.82
Average IPR	3.86	5.27	7.63
Average IPRIGE	4.45	5.77	7.81
Average GEN	6.3	6.99	8.62
Average GDPPC	3370.64	9571.58	47043.83
Average GDPGINI	95692.19	323475.3	1524229.11
Average GCFPC	1076642.56	2164592.51	11507404.81
Average FDIPC	*	4.81	43.76
Average LLCPC	0.45	2.25	5.27
Average GCI	47.34	60.15	77.21
Average BFH	53.75	66.03	81.81
Average FFH	40.32	53.17	72.06
Average TBI	4.6	4.23	3.42
Average LPI	2.49	2.89	3.71
Average EFIF	6.05	6.93	7.81
Average HPI	74.03	108.73	176
Average FSI	85.37	65.53	31.57

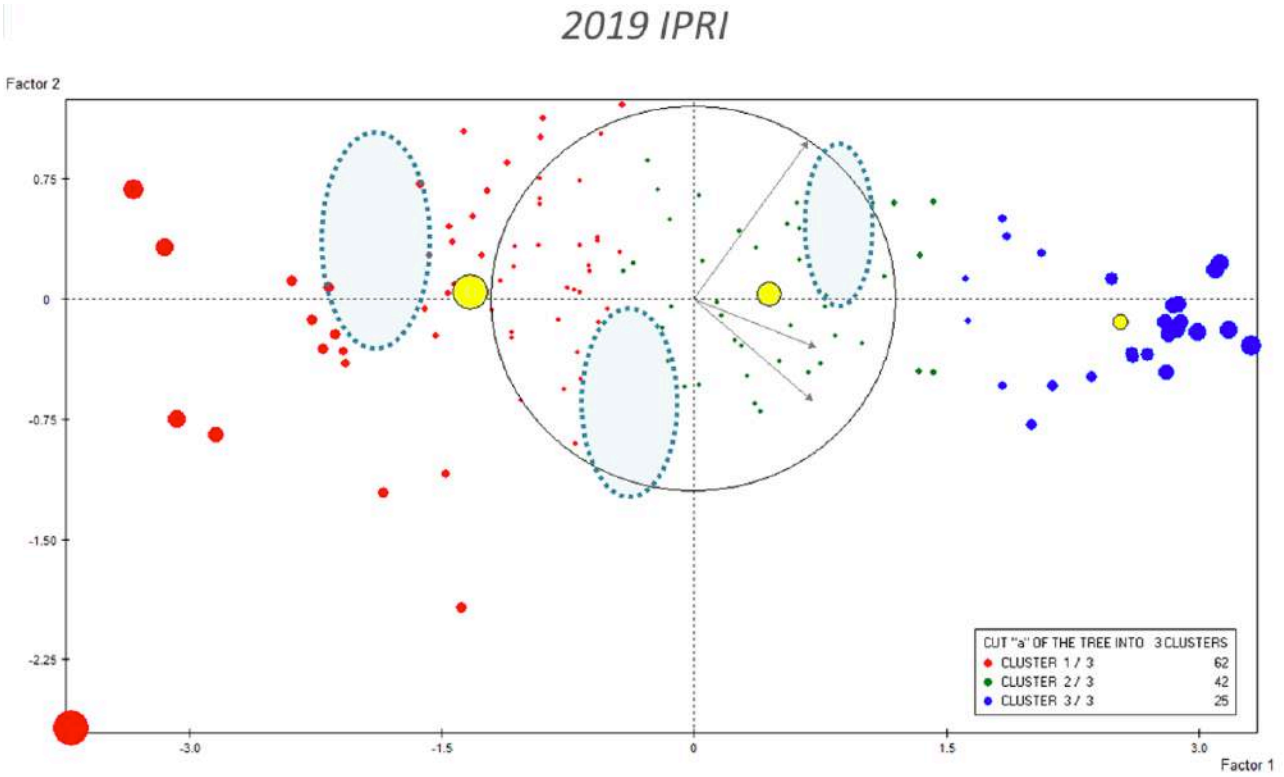
	Cluster 1	Cluster 2	Cluster 3
Average REFUG	6.37	4.99	2.63
Average HFBD	6.89	5.38	2.48
Average GII	25.44	33.9	52.23
Average TII	0.25	0.46	0.74
Average NRI	32.61	48.62	72.74
Average DQLI	0.39	0.55	0.7
Average DAIP	0.27	0.5	0.77
Average PI	45.69	58.89	76.84
Average BCO	3.4	21.4	66.86
Average BCQL	4.13	14.76	57.23
Average BCC	3.8	9.35	57.01
Average GHSI	33.76	44.76	60.86
Average BIO	**	23.75	47.8

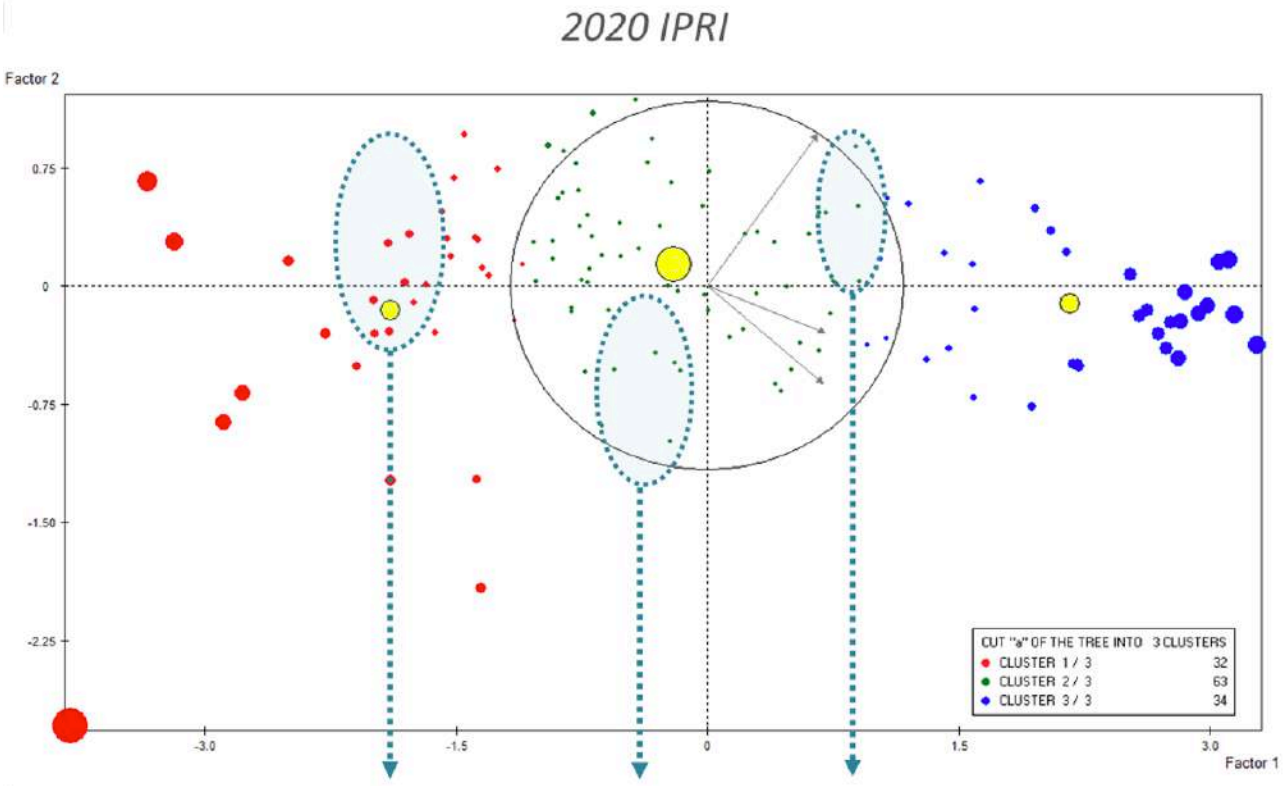
*No available data **Only 1 datum

Appendix VII. Regional Integration Agreements and Cluster.

	Regional Integration Agreements	Countries	Cluster 1	%	Cluster 2	%	Cluster 3	%
OECD	Organisation for Economic Co-operation and Development	36			10	27.78%	26	72.22%
EU	European Union	28			12	42.86%	16	57.14%
SADC	Southern African Development Community	12	7	58.33%	5	41.67%		
ECOWAS	Economic Community Of West African States	7	3	42.86%	4	57.14%		
ASEAN	Association of Southeast Asian Nations	7	1	14.29%	4	57.14%	2	28.57%
PARLACEN	Central American Parliament	6	2	33.33%	4	66.67%		
GCC	Gulf Cooperation Council	6			3	50.00%	3	50.00%
AP	Pacific Alliance	4			3	75.00%	1	25.00%
MERCOSUR	Southern Common Market	4	1	25.00%	3	75.00%		
SAARC	South Asian Association for Regional Cooperation	5	2	40.00%	3	60.00%		
CEMAC	Central African Economic and Monetary Community	3	2	66.67%	1	33.33%		
MCCA	Central American Common Market	5	2	40.00%	3	60.00%		
CIS	Commonwealth of Independent States	6	2	33.33%	4	66.67%		
ARAB M UNION	Arab Mahgreb Union	4	2	50.00%	2	50.00%		
CARICOM	Caribbean Community	3	1	33.33%	2	66.67%		
CAN	Andean Community	4	1	25.00%	3	75.00%		
EFTA	European Free Trade Association	3					3	100.00%
IGAD	Intergovernmental Authority on Development	3	1	33.33%	2	66.67%		
NAFTA	North American Free Trade Agreement	3			1	33.33%	2	66.67%
OPEP	Organization of the Petroleum Exporting Countries	10	5	50.00%	4	40.00%	1	10.00%
CEEAC	La Communaute Economique des Etats de l'Afrique Central e	7	5	71.43%	2	28.57%		
TPP	Trans-Pa cific Partnership	11	1	9.09%	3	27.27%	7	63.64%
PROSUR	The Forum for the Progress and Development of South America	7	1	14.29%	5	71.43%	1	14.29%

Appendix VIII. Clusters Organization Comparison. 2019-2020.





ZIMBABWE	CAMEROON	GHANA	BRAZIL	BAHREIN
PAKISTAN	NICARAGUA	TRINIDAD	TANZANIA	SAUDI ARABIA
BOLIVIA	CHAD	AND TOBAGO	POLAND	LITHUANIA
IRAN	ETHIOPIA			MAURITIUS

INTERNATIONALPROPERTYRIGHTSINDEX.ORG