



Are competitiveness rankings and institutional measures helping emerging economies to improve?

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Abstract

Purpose – Based on the rankings of the global competitiveness index and the fragile states index, this paper aims to suggest alternative approaches to shed some light on the effectiveness of rankings in helping emerging economies improve their competitiveness from an institutional standpoint.

Design/methodology/approach – The statistical analysis consisted of a two-stage analysis; the first stage consisted of constructing an updated Alternative Institutional Quality Index (AIQI), intending to design a comparative measure between dimensions over time. The second stage consisted of evidencing the structure of each of the observed dimensions' variance to evidence the existing changes or gaps of the AIQI and its components. We incorporated the Kruskas-Wallis (KW) model to test our results.

Findings – This paper demonstrates that the analyzed countries generally maintain their competitive position, even though changes in their scores are reflected. This makes invisible the development and progress factors generated by the countries that are mainly found with low scores and only reflect stable structures that allow them to maintain their position.

Practical implications – The paper contributes to the applicable measurement of competitiveness and its structural change over time.

Originality/value – This paper proposed an alternative and simple methodology to assess the evolution of the competitiveness indicators; this methodology could be used to measure structural changes at different levels, which may be an input for the design and implementation of policies to foster competitiveness.

Keywords – Competitiveness, institutions, institutional quality, emerging economies.

Paper type – Research paper

1) Introduction

Hardly has an economic concept been so much at the forefront of policymakers' concerns in recent years as competitiveness. This growing interest may be due in part to their

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3 recognition that all countries must contend with higher economic efficiency standards
4 derived from accelerated globalization of goods and services, as well as the external shocks
5 generated by the recent crisis.
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8 Since the early 1980s, many articles and studies on competitiveness have been
9 published. In addition to the extensive academic literature, two major global rankings have
10 been developed and are widely used to assess competitiveness., the IMD World
11 Competitiveness Yearbook (WCY) published by the Institute for Management Development
12 and the Global Competitiveness Index (GCI) issued by the World Economic Forum.
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15 The WCY has been published since 1989 and covers 63 countries. It benchmarks the
16 performance of the economies based on more than 330 criteria measuring different facets of
17 competitiveness (Institute for Management Development, n.d.). The GCI was introduced in
18 2004 for measuring national competitiveness, taking into account the microeconomic and
19 macroeconomic foundations of national competitiveness; it covers more than 130 countries
20 and measures 12 pillars (Sala-I-Martin *et al.*, 2007).
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27 Global competitiveness rankings have frequently been the unifying theme of a large
28 number of government action programs; this covers a wide range of activities, such as
29 promoting the technological adaptation of companies, consolidating the bases of regional
30 economic development, promoting the networking of SMEs, and developing activities
31 considered strategic for national economic growth.
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36 The diversity of national approaches is determined by what countries consider to be
37 the risks to avoid and the opportunities to seize, as well as the nature of their "chronic
38 problems" and "critical resources." Their assessments of whether their economic
39 performance is commensurate with their scientific and technological potential become
40 critical.
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45 In many countries, government action continues to be motivated by the desire to
46 improve in the rankings. Countries largely lack an alternative conceptual framework for
47 analyzing the relationship between business competitiveness and national economic
48 performance. Moreover, it is somewhat surprising that the academic debate on
49 competitiveness focuses on the absence of a widely accepted theory of the origins of
50 competitiveness. (Anca, 2012; Bhawsar and Chattopadhyay, 2015; Buitrago R and Barbosa
51 Camargo, 2021; Olczyk, 2016).
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The aim of this paper is essentially to suggest an alternative approaches to shed some light on the effectiveness of rankings in helping emerging economies improve their competitiveness.

2) Competitiveness approaches

The literature review reveals a plethora of approaches to competitiveness; in addition to the two published rankings mentioned previously, numerous published and unpublished rankings are prepared by governments, consultants, and research institutions, all of which feed an insatiable appetite for benchmarking competitive performance and providing strategic guidance.

Academic approaches to competitiveness can be broadly classified into two large groups based on the level of analysis, country, and firm-level. Table I summarizes these approaches as published in Buitrago R and Barbosa Camargo (2021).

Table I – Competitiveness: levels of analysis

Level	Definition	Papers
Country	"the set of institutions and economic policies supportive of high rates of economic growth in the medium term."	(Baumann <i>et al.</i> , 2019), (Braja and Gemzik-Salwach, 2019), (Kubickova, 2019), (Peña-Vinces <i>et al.</i> , 2019), (Salas-Velasco, 2019), (Cárdenas <i>et al.</i> , 2018), (Kiseľáková <i>et al.</i> , 2018), (Wei and Nguyen, 2017), (Smit <i>et al.</i> , 2017), ,
	"set of institutions, market structures, and economic policies supportive of high current levels of prosperity" (Porter, Sachs, & Schwab, 2002, p.16)	(Cuervo-Cazurra, 2008), (Yamakawa <i>et al.</i> , 2008), (Hausmann <i>et al.</i> , 2007), (Acemoglu and Johnson, 2005), (Rodrik <i>et al.</i> , 2004), (Hitt <i>et al.</i> , 2004)
	"the degree to which a nation can, under free trade and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real income of its people over the long-term." (OECD, 1992. p. 237)	

Firm	"the capability of firms engaged in value-added activities in a specific industry in a particular country to sustain this value-added over long periods of time in spite of international competition." (Moon, Rugman, & Verbeke, 1998, p. 139)	(Mihailova <i>et al.</i> , 2020), (Zhu <i>et al.</i> , 2019), (Hu <i>et al.</i> , 2019), (Fernández-Méndez <i>et al.</i> , 2018), (Estrin <i>et al.</i> , 2018), (Mingo <i>et al.</i> , 2018), (Manolopoulos <i>et al.</i> , 2018), (Brandl <i>et al.</i> , 2018), (Cuervo-Cazurra <i>et al.</i> , 2018), (Banalieva <i>et al.</i> , 2018), (Marano <i>et al.</i> , 2017), (Bilgili <i>et al.</i> , 2016), (Hoffman <i>et al.</i> , 2016)
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Source: Author's elaboration, based on Buitrago R and Barbosa Camargo, 2021.

It also seems to be a consensus in the literature that a cornerstone to competitiveness is the quality of the institutions (Ervits and Zmuda, 2018; Guerrieri and Meliciani, 2004; Hollingsworth, 2000; Ingram and Silverman, 2002; Jaffe *et al.*, 1993; Moon *et al.*, 1998; Peng *et al.*, 2008; Porter, 1990; Porter and Linde, 1995; Rodriguez *et al.*, 2005; Soete, 1987; Tobey, 1990; Wan and Hoskisson, 2003). The concept of institutional quality has also been discussed in the literature as the basis of economic transformation (Acemoglu *et al.*, 2001, 2002, 2003, 2005; Acemoglu and Johnson, 2005; Jan-Erik Lane, 2014).

3) Competitiveness levels, goals, and outcomes

The construct competitiveness is applied to individuals, firms, industrial sectors, and countries (Buitrago R and Barbosa Camargo, 2021). Using the same concepts and methods to measure competitiveness at all levels of analysis can create complications due to the oversimplification of the phenomena. The idea of competitiveness is not the same for a country and a firm – to take just the two main levels of analysis – their objectives and the nature of competition differ (Krugman, 1991, 1994; Pedersen, 2010).

It should be noted that the fundamental objectives of competitiveness vary depending on whether it is a company or a country. While the main aim of a company is to survive and

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3 gain a foothold in the international competitive environment (Moon *et al.*, 1998), the primary
4 objective of a country – which is not concerned with survival – is to improve living standards
5 and welfare (OECD, 1992; Porter *et al.*, 2002). Different actors (companies or countries) will
6 rank these objectives differently depending on their strategic goals; a company may prefer to
7 increase its market share rather than maximize profits; a government may prioritize attracting
8 foreign direct investment rather than reducing inequality. Consequently, what should the
9 basis of competitiveness be?
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15 The aforementioned rankings comparatively measure national competitiveness based
16 on the results achieved by each country (Carvalho *et al.*, 2020; Moirangthem and Nag, 2021;
17 Tahir and Tahir, 2019). Results cannot be quantified in isolation because they are contingent
18 on the methods used and the context in which they were achieved. A competitiveness
19 assessment based solely on obtained results provides *ex-post* information and does not
20 indicate a country's potential capacity to accomplish its objectives (*ex-ante* review).
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25 Because national competitiveness is primarily defined as the capacity to generate
26 economic growth and welfare, governments focus their efforts on promoting all the factors
27 contributing to the economy's performance. It is critical to understand how to measure
28 competitiveness and the factors that influence it to determine aspects of improving to increase
29 competitiveness (Lall, 2001).
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34 If competitiveness analysis is valid, competitiveness rankings can be used to
35 benchmark national performance. Rankings can assist policymakers in assessing their
36 economies' shortcomings, much like technical benchmarking assists firms in assessing
37 themselves against competitors and developing appropriate strategies. The peril of the
38 rankings relies on the perception they generate; rankings are used to evaluate resource
39 allocation (i.e., local and foreign investment, aid, public expenditure); it could create perverse
40 incentives to follow an unreachable goal or to remain unchanged.
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46 Institutional conditions have reclaimed analytical relevance in recent years, as
47 evidenced by the (World Economic Forum, 2018) Global Competitiveness Report, which
48 asks, "Are institutions still important?" (p.12), highlighting the critical importance of an
49 adequate institutional framework for international competition. Countries with strong and
50 inclusive institutions are likely to ensure efficient factor allocation, encourage investment
51 activities to improve performance, reduce uncertainty, promote equitable distribution of
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3 private and social benefits, and facilitate economic agent interaction. On the contrary,
4 countries with weak institutions frequently face a range of economic difficulties, including
5 low investment flows, slow economic growth, and low per capita income (Acemoglu *et al.*,
6 2001; Hall and Jones, 1999; Knack and Keefer, 1995; Mauro, 1995; Rodrik *et al.*, 2004).
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10 (Graham and Naim, 1998) identified three types of institutional functions. The first is
11 the formulation of rules and legislation. Legislative, ministries, municipal councils, and
12 related agencies all fall under this category. The second category of the institutional role is
13 that of enforcing and administering rules and laws. Tribunals, boards, control, and regulatory
14 bodies are all involved in this. Thirdly, the institution is responsible for the provision of
15 public services. These are the institutions responsible for ensuring the provision of various
16 public goods and services.
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22 There are many explanations for institutional quality that could be classified into three
23 categories for analysis (Graham and Naim, 1998):
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- 25 • Resource conditions: those are about the quantity, quality, and distribution of
26 available resources.
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- 28 • Political conditions: co-optation, corruption, and politicization of resource
29 allocation.
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- 31 • Systemic conditions: these are those that pertain to the clarity with which
32 long-term goals are defined, the concentration of power in economic agents,
33 and external state intervention.
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39 Our study considered these conditions to evaluate the national competitiveness
40 outcomes from an institutional standpoint.
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44 **4) Methodology**

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48 The comparative analysis of economies based on rankings has become a fundamental
49 instrument for comparative monitoring of the progress and effects of different public policies
50 in a territory. However, these comparative forms have become a kind of stereotyped pseudo-
51 technicism, which does not allow us to observe the efforts generated by economies with
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limited capacities, and which highlight the progress of economies with ample resources, representing them as "winners".

This dynamic has led to the maintenance of imbalances among economies, driven mainly by "isomorphic" recommendations, which are not in line with the endogenous dynamics of each economy, creating an unbalanced allocation of opportunities. Hence, a reflection is required on how to rethink cohesion and regional development policies, from their concession to their implementation, by means of instruments and tools that address internal needs and cohesion between economies.

The purpose of this study is to examine the period 2007–2017 in 48 emerging and frontier economies (see Table II), for this selection we did a cross validation of four different classification sources (International Monetary Fund, 2020; Morgan Stanley Capital International, 2020; Standard & Poors, 2020). There is no recognized definition for emerging economies; however, according to the sources consulted, they have in common that they are economies with sustained growth and stability, capable of producing high-value-added goods, participating in global commerce, and integrating their financial markets. Additionally, these economies had experienced institutional transformations deploying transparent rules of the game that apply equally to all market participants; however, there is still a lag.

Table II – Countries included in this study

Region	Countries
Latin America and the Caribbean	Argentina, Brazil, Chile, Colombia, Jamaica, Mexico, Peru, and Venezuela
Europe	Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, Serbia, and Ukraine
Asia	Bangladesh, China, India, Indonesia, Kazakhstan, Malaysia, Pakistan, the Philippines, Sri Lanka, Thailand, Turkey, and Vietnam
Africa	Kenya, Nigeria, Namibia, South Africa, Uganda, and Zambia
MENA	Egypt, Jordan, Kuwait, Morocco, Qatar, Tunisia, and the United Arab Emirates

Source: Author's elaboration, based on International Monetary Fund, 2020; Morgan Stanley Capital International, 2020; Standard & Poors, 2020.

To carry out a comparative analysis of the evolution of institutional quality determinants in emerging countries, we categorized indicators from the GCI and the Fragile States Index (Fund for Peace, 2019) into three dimensions to identify the institutional conditions to compete, i) Policy, ii) Resources and iii) Systemic, the composition of each dimension is shown in Table III.

Table III – Variables and Dimensions of Institutional Quality

Var_Name	Description	Dimension	
fsi_fe	Factionalized Elites	Systemic	
fsi_gg	Group Grievance		
fsi_ei	Economic Inequality		
fsi_sl	State Legitimacy		
gci_pr	Property rights		
gci_ipp	Intellectual property protection		
gci_bgr	Burden of government regulation		
gci_art	Availability of research and training services		
gci_eap	Effectiveness of anti-monopoly policy		
gci_pfo	Prevalence of foreign ownership		
gci_bir	Business impact of rules on FDI		
fsi_bd	Human Flight and Brain Drain		Resources
fsi_ps	Public Services		
gci_ci	Capacity for innovation		
gci_qri	Quality of scientific research institutions		
gci_csr	Company spending on R&D		
gci_uic	University-industry collaboration in R&D		
gci_ase	Availability of scientists and engineers		
gci_qi	Quality of overall infrastructure		
gci_qes	Quality of the education system		
gci_qms	Quality of math and science education		
gci_flm	Financing through local equity market		

gci_vca	Venture capital availability	
gci_alt	Availability of latest technologies	
gci_ftf	FDI and technology transfer	
gci_dpf	Diversion of public funds	Political
gci_ptp	Public trust in politicians	
gci_fdg	Favoritism in decisions of government officials	
gci_tgp	Transparency of government policymaking	

Source: Author's elaboration.

A descriptive, longitudinal design study was conducted for the 48 emerging economies. The statistical analysis consisted of a three-stage analysis; the first stage consisted of the construction of an Alternative Institutional Quality Index (AIQI), through the implementation of the statistical method, principal component analysis (PCA), whose main objective is to synthesize a set of variables, recognizing the dynamics of the variance of each indicator. This allows to reduce the information to a set of smaller variables, called components. The first component captures the maximum amount of variance observed and will represent each dimension analyzed in this study.

By implementing this procedure in each of the observed years, a standard measurement is established, which will allow comparing them over time; however, to facilitate direct interpretation, a scaling process was implemented, so that their scores oscillate between 0 and 1.

The second stage consisted of comparing the structure of the variance of each of the observed dimensions, in order to analyze possible changes in the distribution of the observed countries. By means of these statistical tests, it will be possible to show whether, despite the efforts generated individually by each country, their structural behavior has been maintained.

Finally, to determine whether there are statistically significant differences between the groups of countries, based on regions, with respect to the AIQI, this study incorporated the Kruskas-Wallis (KW) model.

a. Alternative Institutional Quality Index (AIQI)

For the construction of the AIQI, we build a dataset of 30 indicators for 48 emerging economies from 2007 – 2017. The first step consisted of the aggregation of the dimensions using the multivariate statistical methodology, Principal Component Analysis (PCA). One of PCA's main objectives is constructing new variables trying to lose as little information as possible by constructing factors representing a proportion of the information collected, being the first factor that guarantees the best representation of the data.

Therefore, for the construction of each of the dimensions observed, only the first standardized factor is taken. The following formula is applied using its eigenvectors, which act as weighting factors within the new scores obtained.

$$\text{Newdimension} = \sum_{i=1}^n \lambda_i \left(\frac{x_i - \bar{x}_i}{\sigma_i} \right)$$

$\lambda_i = \text{Vector variable } i$

$x_i = \text{Variable } i$

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$\bar{x}_i = \text{Average variable } i$

$\sigma_i = \text{Standard deviation variable } i$

In addition, based on the new scores obtained, they are rescaled using the max-min function.

$$\text{Scalated dimension}_i = \frac{X_i - \min(X)}{\max(X) - \min(X)}$$

Finally, to obtain the AIQI, an average of the scores previously obtained for each dimension is taken. The complete results and rankings of the AIQI are in the annex 1.

b. Gap analysis.

As we mentioned before, the rankings become a benchmark for all the economies; benchmarking and other assessments naturally lead to gap analysis. Once the general expectation of a country's performance is established, the expectation can be compared to the top current level of performance; this comparison is transformed into a gap analysis.

For the analysis of the evolution of the proposed dimensions (political, resources, and systemic), we used a box diagram, which allowed us to visually compare the progress and

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3 distribution of the scores obtained in each dimension of the economies observed. To interpret
4 these results, it is helpful to keep in mind that the larger the box, the greater the dispersion in
5 the scores obtained, which translates into a larger gap between emerging economies. In the
6 opposite case, the smaller the box, the smaller the dispersion in the scores, which commonly
7 usually occurs when the countries are more homogeneous or when the leader is closer to the
8 others. The tails represent how the top or bottom 25% of the countries are distributed.
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10 To test the statistical changes in the structure of the AIQI and its determinants, the
11 statistical tests of variance ratio and the nonparametric Wilcoxon-Mann-Whitney test were
12 used to compare the annual evolution. Also, we rely on both tests' statistical value to
13 quantitatively assess the impact and direction of the gap. If the variance ratio is greater than
14 1, the gap widens; if it is less than 1, the gap narrows, and if it is statistically equal to 1, the
15 gap is maintained. The Wilcoxon test evaluates two related samples, and if it is statistically
16 significant, it indicates that the countries' behavior is statistically similar.
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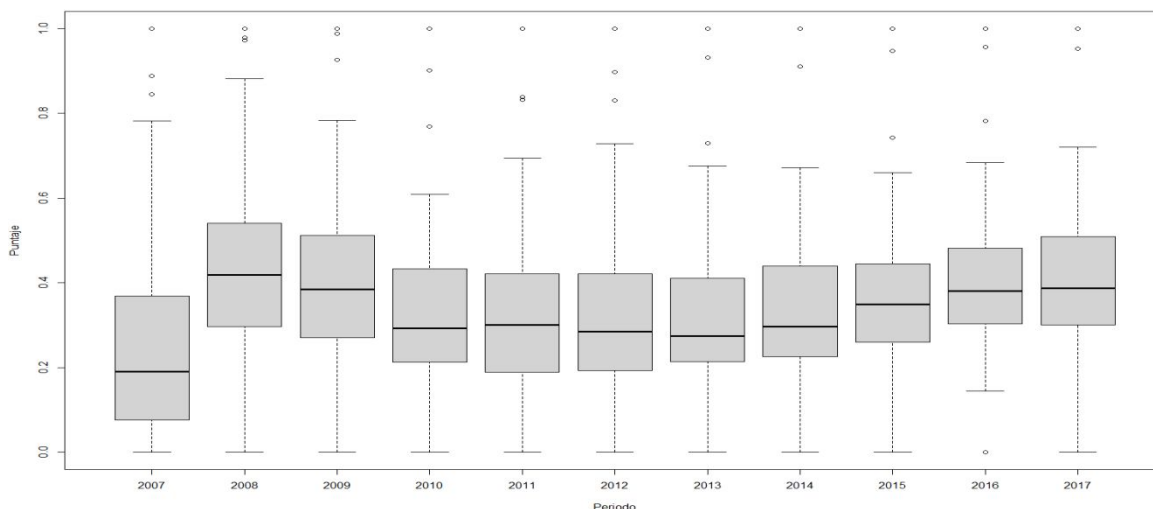
27 **5) Findings and discussion**

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29 In this section, we show the results of the AIQI in the period 2007 – 2017; we aim to
30 evidence the behavior of the emerging economies regarding the institutional conditions to
31 improve competitiveness.
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36 **a. Political Dimension**

37 Figure 1 shows the annual box plots of the countries' score concerning the political
38 dimension between 2007 and 2017. Observing the evolutionary behavior of the gaps between
39 countries in this dimension, it is evident that, since 2007, it has presented structural changes
40 in terms of closing political gaps.
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46 Figure 1 Political dimension scores, 2007 -2017.
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Source: Author's elaboration.

When comparing the variance's behavior concerning the previous year, it is evident that from 2007 to 2017, there are no statistically significant changes in its behavior. And when looking to observe whether there are structural changes in the variance concerning future periods, it is evident that from 2008 to 2017, the variance structure has remained the same.

When comparing the average behavior concerning the previous year, it is evident that from 2008 to 2017, there are no statistically significant changes in its behavior. See table IV.

Table IV Political dimension variance.

YEAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2007	1										
2008	Test:0.719 P-value: 0.262	1									
2009	Test:0.668 P-value: 0.17	Test:0.929 P-value:0.801	1								
2010	Test:0.597 P-value: 0.08	Test:0.83 P-value:0.524	Test:0.893 P-value:0.7	1							
2011	Test:0.674 P-value: 0.18	Test:0.938 P-value:0.826	Test:1.01 P-value:0.974	Test:1.13 P-value:0.676	1						
2012	Test:0.714 P-value: 0.251	Test:0.992 P-value:0.979	Test:1.068 P-value:0.821	Test:1.196 P-value:0.542	Test:1.058 P-value:0.847	1					
2013	Test:0.616 P-value: 0.1	Test:0.857 P-value:0.598	Test:0.922 P-value:0.783	Test:1.032 P-value:0.913	Test:0.914 P-value:0.758	Test:0.863 P-value:0.616	1				
2014	Test:0.551 P-value: 0.043	Test:0.766 P-value:0.363	Test:0.824 P-value:0.511	Test:0.923 P-value:0.785	Test:0.817 P-value:0.49	Test:0.772 P-value:0.377	Test:0.894 P-value:0.702	1			
2015	Test:0.547 P-value:0.041	Test:0.761 P-value:0.353	Test:0.82 P-value:0.498	Test:0.918 P-value:0.77	Test:0.812 P-value:0.478	Test:0.767 P-value:0.367	Test:0.889 P-value:0.688	Test:0.994 P-value:0.984	1		
2016	Test:0.525 P-value:0.029	Test:0.73 P-value:0.284	Test:0.786 P-value:0.411	Test:0.88 P-value:0.662	Test:0.778 P-value:0.393	Test:0.735 P-value:0.295	Test:0.852 P-value:0.585	Test:0.953 P-value:0.869	Test:0.958 P-value:0.885	1	
2017	Test:0.541 P-value:0.038	Test:0.752 P-value:0.333	Test:0.81 P-value:0.473	Test:0.907 P-value:0.739	Test:0.802 P-value:0.453	Test:0.758 P-value:0.346	Test:0.878 P-value:0.658	Test:0.982 P-value:0.952	Test:0.988 P-value:0.968	Test:1.031 P-value:0.917	1

Source: Author's elaboration.

However, when analyzing the moments in which the structural changes in the average behavior occurred, it became evident that two periods were reflected ahead for the years 2008, 2009, 2013, and 2014. For the years 2008 and 2009, these differences were negative, i.e., 50% of the countries presented a deterioration in the scores obtained. And for the periods 2013 and 2014, an improvement in the scores was observed.

For the periods 2010, 2011, and 2012, the behavior is statistically equal until 2016, when there is a structural change. See Table V.

Table V Political dimension median.

YEAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2007	1										
2008	Test: 1707 P-value: 0	1									
2009	Test: 1683 P-value: 0	Test: 1074 P-value: 0.57	1								
2010	Test: 1519 P-value: 0.007	Test: 835 P-value: 0.02	Test: 896 P-value: 0.061	1							
2011	Test: 1450 P-value: 0.029	Test: 786 P-value: 0.007	Test: 828 P-value: 0.018	Test: 1077 P-value: 0.585	1						
2012	Test: 1486 P-value: 0.015	Test: 799 P-value: 0.01	Test: 852 P-value: 0.028	Test: 1097 P-value: 0.69	Test: 1183 P-value: 0.823	1					
2013	Test: 1472 P-value: 0.019	Test: 758 P-value: 0.004	Test: 814 P-value: 0.013	Test: 1070 P-value: 0.55	Test: 1147 P-value: 0.974	Test: 1137 P-value: 0.915	1				
2014	Test: 1533 P-value: 0.005	Test: 798 P-value: 0.01	Test: 855 P-value: 0.03	Test: 1143 P-value: 0.95	Test: 1221 P-value: 0.616	Test: 1199 P-value: 0.733	Test: 1217 P-value: 0.636	1			
2015	Test: 1622 P-value: 0.001	Test: 918 P-value: 0.087	Test: 1000 P-value: 0.267	Test: 1272 P-value: 0.381	Test: 1369 P-value: 0.113	Test: 1337 P-value: 0.176	Test: 1388 P-value: 0.084	Test: 1322 P-value: 0.214	1		
2016	Test: 1703 P-value: 0	Test: 1108 P-value: 0.75	Test: 1185 P-value: 0.812	Test: 1457 P-value: 0.026	Test: 1540 P-value: 0.005	Test: 1506 P-value: 0.01	Test: 1555 P-value: 0.003	Test: 1497 P-value: 0.012	Test: 1351 P-value: 0.146	1	
2017	Test: 1685 P-value: 0	Test: 1091 P-value: 0.658	Test: 1171 P-value: 0.892	Test: 1442 P-value: 0.034	Test: 1484 P-value: 0.015	Test: 1475 P-value: 0.018	Test: 1521 P-value: 0.007	Test: 1478 P-value: 0.017	Test: 1318 P-value: 0.225	Test: 1119 P-value: 0.812	1

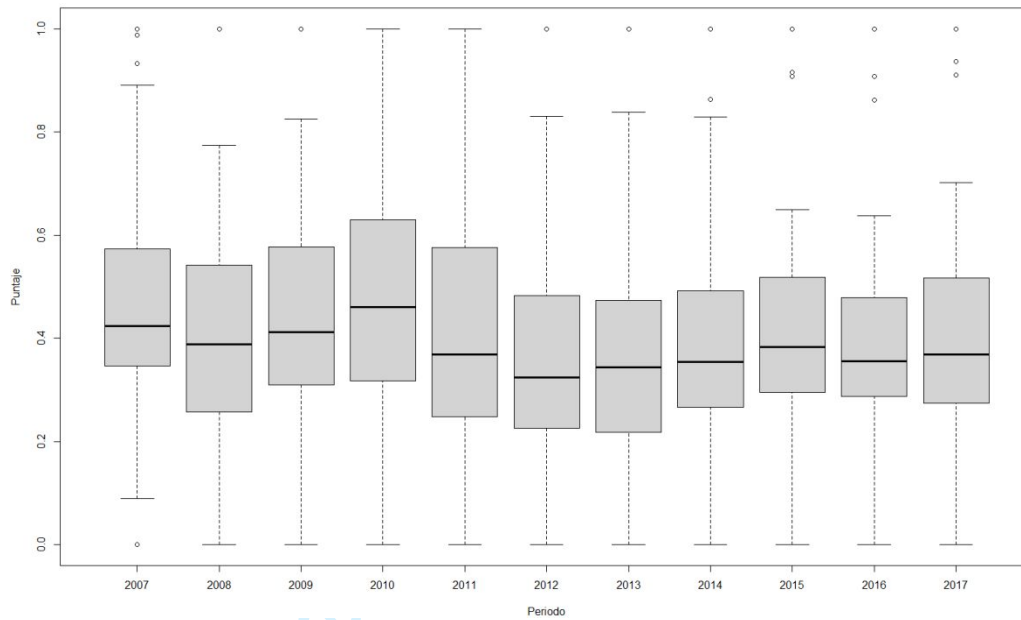
Source: Author's elaboration.

b. Resources Dimension

The annual behavior of the scores obtained in the Resources dimension by the countries between 2007 and 2017 is shown in the box plots in Figure 2.

In the Resources dimension, it is important to note that the increase in the gap corresponds mainly to the improvement performance of leading countries, which generates a distancing effect with the other countries.

Figure 2 Resource dimension scores, 2007 -2017.



Source: Author's elaboration.

When comparing the behavior of the variance of a given year compared to the immediately preceding year, it is evident that from 2007 to 2017, there are no statistically significant changes in its behavior. Likewise, when looking to observe if there are structural changes in the variance for future periods, it is evident that the structure of the variance has been maintained in all periods.

Furthermore, if the average behavior is compared to the previous year, it is evident that from 2007 to 2017, there are no statistically significant changes in its behavior. See Table VI.

Table VI Resource dimension variance.

YEAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2007	1										
2008	Test:0.889 P-value:0.689	1									
2009	Test:1 P-value:0.999	Test:1.124 P-value: 0.69	1								
2010	Test:1.193 P-value:0.547	Test:1.342 P-value: 0.317	Test:1.194 P-value: 0.546	1							
2011	Test:0.993 P-value:0.982	Test:1.117 P-value: 0.706	Test:0.994 P-value: 0.983	Test:0.833 P-value: 0.532	1						
2012	Test:0.767 P-value:0.366	Test:0.862 P-value: 0.613	Test:0.767 P-value:0.367	Test:0.643 P-value: 0.133	Test:0.772 P-value: 0.154	1					
2013	Test:0.784 P-value:0.408	Test:0.882 P-value: 0.669	Test:0.785 P-value: 0.409	Test:0.658 P-value: 0.154	Test:0.79 P-value: 0.132	Test:1.023 P-value: 0.938	1				
2014	Test:0.766 P-value:0.363	Test:0.861 P-value: 0.61	Test:0.766 P-value: 0.364	Test:0.642 P-value: 0.132	Test:0.771 P-value: 0.159	Test:0.999 P-value: 0.996	Test:0.976 P-value: 0.934	1			
2015	Test:0.788 P-value:0.418	Test:0.886 P-value: 0.681	Test:0.789 P-value: 0.419	Test:0.661 P-value: 0.159	Test:0.794 P-value: 0.126	Test:1.028 P-value: 0.924	Test:1.005 P-value: 0.987	Test:1.03 P-value: 0.921	1		
2016	Test:0.76 P-value:0.351	Test:0.855 P-value: 0.593	Test:0.761 P-value: 0.352	Test:0.637 P-value:0.312	Test:0.765 P-value:0.312	Test:0.992 P-value: 0.977	Test:0.969 P-value: 0.981	Test:0.993 P-value: 0.981	Test:0.965 P-value:0.902	1	
2017	Test:0.886 P-value: 0.681	Test:0.997 P-value: 0.991	Test:0.887 P-value: 0.682	Test:0.743 P-value:0.312	Test:0.892 P-value: 0.697	Test:1.156 P-value: 0.621	Test:1.13 P-value:0.678	Test:1.158 P-value:0.618	Test:1.124 P-value: 0.69	Test:1.166 P-value: 0.602	1

Source: Author's elaboration.

When analyzing the moments in which the structural changes in average behavior occur, it was reflected that for the years 2007 and 2010, the changes happen to 6 periods ahead, as in 2007. It is noteworthy that for the years 2007, 2008, 2009, 2010, and 2011 these differences were negative, i.e., most countries presented a decline in the scores obtained. In the periods 2012, 2013, 2014, and 2016 an improvement in the scores obtained in the dimension was observed; see Table VII.

Table VII Resource dimension median.

YEAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2007	1										
2008	Test: 986 P-value: 0.225	1									
2009	Test: 1079 P-value: 0.595	Test: 1256 P-value: 0.448	1								
2010	Test: 1205 P-value: 0.7	Test: 1379 P-value: 0.097	Test: 1271 P-value: 0.385	1							
2011	Test: 1004 P-value: 0.28	Test: 1167 P-value: 0.915	Test: 1079 P-value: 0.595	Test: 944 P-value: 0.128	1						
2012	Test: 816 P-value: 0.014	Test: 986 P-value: 0.225	Test: 894 P-value: 0.059	Test: 762 P-value: 0.004	Test: 968 P-value: 0.179	1					
2013	Test: 829 P-value: 0.018	Test: 1000 P-value: 0.267	Test: 921 P-value: 0.091	Test: 775 P-value: 0.006	Test: 985 P-value: 0.222	Test: 1167 P-value: 0.915	1				
2014	Test: 903 P-value: 0.069	Test: 1101 P-value: 0.711	Test: 979 P-value: 0.206	Test: 859 P-value: 0.032	Test: 1074 P-value: 0.57	Test: 1273 P-value: 0.377	Test: 1267 P-value: 0.401	1			
2015	Test: 986 P-value: 0.225	Test: 1189 P-value: 0.789	Test: 1059 P-value: 0.498	Test: 947 P-value: 0.134	Test: 1173 P-value: 0.881	Test: 1370 P-value: 0.111	Test: 1352 P-value: 0.144	Test: 1272 P-value: 0.381	1		
2016	Test: 884 P-value: 0.05	Test: 1108 P-value: 0.75	Test: 984 P-value: 0.22	Test: 872 P-value: 0.041	Test: 1097 P-value: 0.69	Test: 1286 P-value: 0.328	Test: 1271 P-value: 0.385	Test: 1165 P-value: 0.927	Test: 1044 P-value: 0.431	1	
2017	Test: 919 P-value: 0.088	Test: 1117 P-value: 0.8	Test: 1000 P-value: 0.267	Test: 894 P-value: 0.059	Test: 1108 P-value: 0.75	Test: 1305 P-value: 0.264	Test: 1279 P-value: 0.254	Test: 1200 P-value: 0.728	Test: 1078 P-value: 0.59	Test: 1167 P-value: 0.915	1

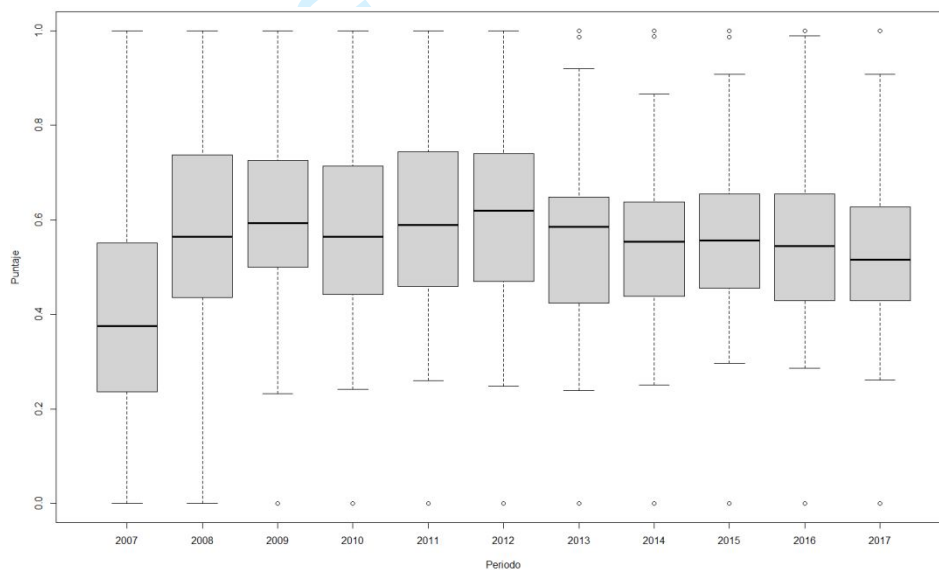
Source: Author's elaboration.

c. Systemic Dimension

Figure 3 shows the annual box plots of the countries' scores for the Systemic dimension between 2007 and 2017.

The observed evolution of the behavior of the gaps between countries for the systemic dimension shows that, since 2007, it has presented structural changes in terms of closing systemic gaps, where over the last five years, there has been a greater distance in the scores obtained, indicating a smaller distance between countries in this dimension. The increase in terms of gaps is attributed to the improvement in scores in leading countries, which generates a distancing effect with the other countries.

Figure 3 Systemic dimension scores, 2007 -2017.



Source: Author's elaboration.

Comparing the behavior of the variance of a year with the previous year, it is evident that from 2007 to 2017, there are no statistically significant changes in its behavior, furthermore, seeking to observe whether there are structural changes in the variance for future periods, it is evident that the structure of the variance has been maintained throughout the observation window.

Similarly, if we compare the average behavior with the previous year, it is evident that from 2008 to 2017, there are no statistically significant changes in its behavior.

Table VIII Systemic dimension variance.

YEAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2007	1										
2008	Test:0.811 P-value: 0.475	1									
2009	Test:0.616 P-value: 0.1	Test:0.76 P-value: 0.349	1								
2010	Test:0.678 P-value: 0.187	Test:0.837 P-value: 0.543	Test:1.101 P-value: 0.742	1							
2011	Test:0.695 P-value: 0.215	Test:0.857 P-value: 0.598	Test:1.128 P-value:0.681	Test:1.024 P-value: 0.935	1						
2012	Test:0.689 P-value: 0.205	Test:0.85 P-value: 0.579	Test:1.119 P-value: 0.702	Test:1.016 P-value: 0.957	Test:0.992 P-value: 0.978	1					
2013	Test:0.612 P-value: 0.096	Test:0.755 P-value: 0.339	Test:0.994 P-value: 0.984	Test:0.903 P-value: 0.727	Test:0.881 P-value: 0.667	Test:0.889 P-value: 0.687	1				
2014	Test:0.538 P-value: 0.036	Test:0.663 P-value: 0.163	Test:0.873 P-value: 0.644	Test:0.793 P-value: 0.429	Test:0.774 P-value: 0.383	Test:0.78 P-value: 0.398	Test:0.878 P-value: 0.658	1			
2015	Test:0.519 P-value: 0.027	Test:0.64 P-value: 0.13	Test:0.843 P-value:0.561	Test:0.766 P-value: 0.363	Test:0.748 P-value: 0.322	Test:0.754 P-value: 0.336	Test:0.848 P-value: 0.575	Test:0.966 P-value: 0.906	1		
2016	Test:0.536 P-value: 0.035	Test:0.661 P-value: 0.16	Test:0.871 P-value: 0.637	Test:0.791 P-value: 0.424	Test:0.772 P-value: 0.378	Test:0.778 P-value: 0.393	Test:0.876 P-value: 0.651	Test:0.997 P-value: 0.993	Test:1.033 P-value: 0.913	1	
2017	Test:0.538 P-value: 0.036	Test:0.664 P-value: 0.164	Test:0.874 P-value: 0.647	Test:0.794 P-value: 0.431	Test:0.775 P-value: 0.386	Test:0.781 P-value: 0.401	Test:0.879 P-value: 0.661	Test:1.001 P-value: 0.996	Test:1.037 P-value: 0.902	Test:1.004 P-value: 0.989	1

Source: Author's elaboration.

On the other hand, when analyzing the moments in which the structural changes in average behavior occur, it is evident that in 2007 they are reflected in all subsequent periods. In 2012, 2013, and 2015, these differences were negative, i.e., 50% of the countries presented a deterioration in the scores obtained. There were no years with general improvements in the scores obtained for the following periods.

For the periods 2008, 2009, 2010, and 2011 the behavior is statistically the same, until 2012 when a structural change occurs, as shown in Table IX.

Table IX Systemic dimension median.

YEAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2007	1										
2008	Test: 1601 P-value: 0.001	1									
2009	Test: 1684 P-value: 0	Test: 1264 P-value: 0.414	1								
2010	Test: 1647 P-value: 0	Test: 1184 P-value: 0.817	Test: 1069 P-value: 0.545	1							
2011	Test: 1674 P-value: 0	Test: 1234 P-value: 0.55	Test: 1125 P-value: 0.846	Test: 1209 P-value: 0.679	1						
2012	Test: 1665 P-value: 0	Test: 1241 P-value: 0.517	Test: 1134 P-value: 0.898	Test: 1212 P-value: 0.663	Test: 1168 P-value: 0.91	1					
2013	Test: 1590 P-value: 0.001	Test: 1107 P-value: 0.744	Test: 992 P-value: 0.242	Test: 1068 P-value: 0.541	Test: 1026 P-value: 0.358	Test: 984 P-value: 0.22	1				
2014	Test: 1577 P-value: 0.002	Test: 1058 P-value: 0.493	Test: 932 P-value: 0.108	Test: 1037 P-value: 0.401	Test: 977 P-value: 0.201	Test: 948 P-value: 0.136	Test: 1089 P-value: 0.647	1			
2015	Test: 1586 P-value: 0.001	Test: 1082 P-value: 0.611	Test: 962 P-value: 0.165	Test: 1055 P-value: 0.479	Test: 1000 P-value: 0.267	Test: 983 P-value: 0.217	Test: 1135 P-value: 0.904	Test: 1181 P-value: 0.835	1		
2016	Test: 1563 P-value: 0.003	Test: 1039 P-value: 0.41	Test: 923 P-value: 0.094	Test: 1013 P-value: 0.31	Test: 971 P-value: 0.186	Test: 943 P-value: 0.127	Test: 1103 P-value: 0.722	Test: 1133 P-value: 0.892	Test: 1111 P-value: 0.767	1	
2017	Test: 1527 P-value: 0.006	Test: 995 P-value: 0.251	Test: 864 P-value: 0.035	Test: 955 P-value: 0.15	Test: 920 P-value: 0.09	Test: 889 P-value: 0.054	Test: 1023 P-value: 0.346	Test: 1065 P-value: 0.526	Test: 1023 P-value: 0.346	Test: 1065 P-value: 0.526	1

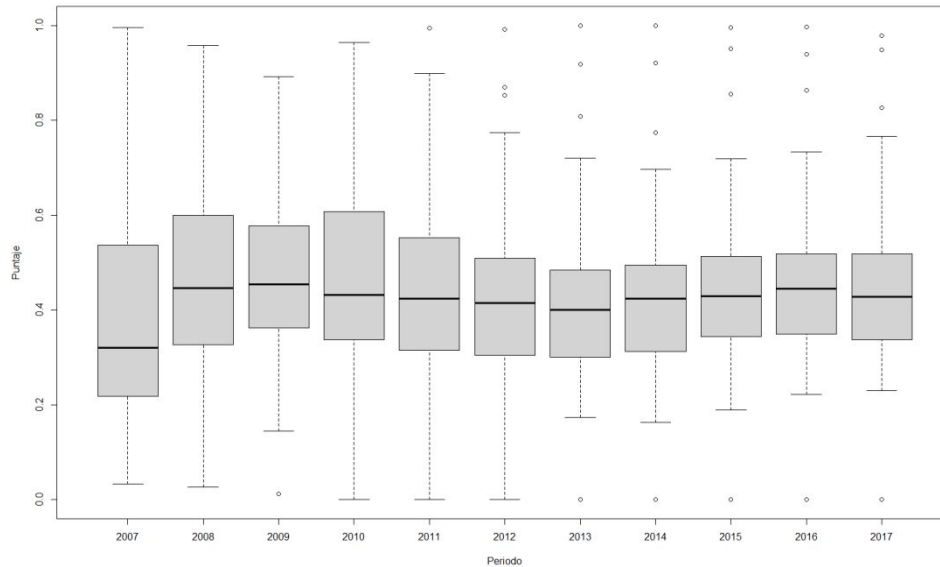
Source: Author's elaboration.

d. Alternative Institutional Quality Index

The annual box plots of the score obtained in the Institutional Index by the countries concerning the Policy dimension between 2007 to 2017 are observed in Figure 4.

Analyzing the staggered behavior of the territorial gaps for the AIQI, it can be seen that, since 2007, there have been structural changes in terms of closing the gaps in the index, almost every year there has been a smaller gap in the scores obtained, indicating a greater closeness of most of the emerging countries. However, it should be noted that this reduction in the gap corresponds essentially to improvements in the scores obtained by the leading countries, which has generated an effect of closeness to the other countries, also attributable to the scores obtained by the countries with greater opportunities for improvement.

Figure 4 Alternative Institutional Quality Index scores, 2007 -2017.



Source: Author's elaboration.

Contrasting the behavior of the variance of each year to the previous year, it is shown that from 2007 to 2017, there are no statistically significant changes in its behavior, furthermore, when wanting to observe if there are indeed structural changes in the variance for future periods, it is evident that the structure of the variance has been maintained from 2007 to 2017.

Likewise, when comparing the average behavior of a year to the previous year, it is identified that from 2007 to 2017, there are no statistically significant changes in this.

Table X Alternative Institutional Quality Index variance.

YEAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2007	1										
2008	Test:0.748 P-value: 0.323	1									
2009	Test:0.671 P-value: 0.175	Test:0.897 P-value:0.712	1								
2010	Test:0.729 P-value:0.281	Test:0.974 P-value: 0.929	Test:1.086 P-value:0.779	1							
2011	Test:0.726 P-value: 0.277	Test:0.971 P-value: 0.92	Test:1.082 P-value: 0.788	Test:0.997 P-value: 0.991	1						
2012	Test:0.677 P-value: 0.184	Test:0.905 P-value: 0.733	Test:1.008 P-value: 0.978	Test:0.929 P-value: 0.801	Test:0.932 P-value:0.809	1					
2013	Test:0.641 P-value: 0.132	Test:0.858 P-value: 0.601	Test:0.956 P-value: 0.877	Test:0.88 P-value: 0.664	Test:0.883 P-value: 0.672	Test:0.948 P-value: 0.856	1				
2014	Test:0.597 P-value: 0.08	Test:0.798 P-value: 0.443	Test:0.89 P-value: 0.69	Test:0.819 P-value: 0.498	Test:0.822 P-value: 0.505	Test:0.883 P-value:0.67	Test:0.931 P-value: 0.807	1			
2015	Test:0.607 P-value: 0.09	Test:0.811 P-value: 0.476	Test:0.904 P-value: 0.731	Test:0.833 P-value: 0.533	Test:0.835 P-value: 0.54	Test:0.897 P-value: 0.71	Test:0.946 P-value: 0.85	Test:1.016 P-value: 0.956	1		
2016	Test:0.586 P-value: 0.07	Test:0.783 P-value: 0.405	Test:0.872 P-value: 0.642	Test:0.804 P-value: 0.456	Test:0.806 P-value: 0.463	Test:0.865 P-value: 0.622	Test:0.913 P-value: 0.756	Test:0.981 P-value: 0.947	Test:0.965 P-value: 0.903	1	
2017	Test:0.606 P-value: 0.09	Test:0.811 P-value: 0.475	Test:0.904 P-value: 0.73	Test:0.832 P-value: 0.532	Test:0.835 P-value: 0.539	Test:0.896 P-value: 0.709	Test:0.945 P-value: 0.848	Test:1.016 P-value: 0.958	Test:1 P-value: 0.999	Test:1.036 P-value: 0.905	1

Source: Author's elaboration.

Similarly, when analyzing these structural changes in average performance could occur, it is evident that, as for the immediately consecutive periods, there are no significant changes from one year to the next. It is highlighted that for the years 2009, 2010, and 2011; these differences were negative, i.e., 50% of the countries presented a deterioration in the scores obtained in these years; an improvement was identified in 2013 and 2014. For the periods 2008, 2012, and 2015 the behavior is statistically equal.

Table XI Alternative Institutional Quality Index median.

YEAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2007	1										
2008	Test: 1503 P-value: 0.01	1									
2009	Test: 1569 P-value: 0.002	Test: 1221 P-value: 0.617	1								
2010	Test: 1516 P-value: 0.007	Test: 1158 P-value: 0.968	Test: 1087 P-value: 0.638	1							
2011	Test: 1448 P-value: 0.03	Test: 1068 P-value: 0.542	Test: 1003 P-value: 0.278	Test: 1058.5 P-value: 0.496	1						
2012	Test: 1418 P-value: 0.051	Test: 1008 P-value: 0.294	Test: 940 P-value: 0.122	Test: 1008.5 P-value: 0.295	Test: 1090.5 P-value: 0.655	1					
2013	Test: 1374 P-value: 0.105	Test: 949 P-value: 0.138	Test: 886 P-value: 0.051	Test: 941.5 P-value: 0.124	Test: 1028.5 P-value: 0.367	Test: 1083.5 P-value: 0.618	1				
2014	Test: 1416 P-value: 0.053	Test: 983 P-value: 0.218	Test: 919 P-value: 0.088	Test: 990.5 P-value: 0.238	Test: 1071.5 P-value: 0.558	Test: 1126.5 P-value: 0.855	Test: 1197 P-value: 0.744	1			
2015	Test: 1480 P-value: 0.016	Test: 1068 P-value: 0.542	Test: 1006 P-value: 0.288	Test: 1073.5 P-value: 0.568	Test: 1159.5 P-value: 0.959	Test: 1225.5 P-value: 0.593	Test: 1310.5 P-value: 0.247	Test: 1254.5 P-value: 0.455	1		
2016	Test: 1493 P-value: 0.012	Test: 1082 P-value: 0.612	Test: 1037 P-value: 0.403	Test: 1085.5 P-value: 0.629	Test: 1184.5 P-value: 0.815	Test: 1247.5 P-value: 0.486	Test: 1328.5 P-value: 0.197	Test: 1282.5 P-value: 0.341	Test: 1175.5 P-value: 0.866	1	
2017	Test: 1473 P-value: 0.018	Test: 1056 P-value: 0.486	Test: 999 P-value: 0.265	Test: 1049.5 P-value: 0.455	Test: 1153.5 P-value: 0.994	Test: 1206.5 P-value: 0.692	Test: 1288.5 P-value: 0.319	Test: 1237.5 P-value: 0.533	Test: 1134.5 P-value: 0.901	Test: 1107.5 P-value: 0.747	1

Source: Author's elaboration.

e. Kruskas-Wallis (KW) test

To determine whether there are statistically significant differences between the groups of countries, based on regions, with respect to the competitiveness indicator, this study incorporated the Kruskas-Wallis (KW) model (Bagui and Bagui, 2004; Wei, 1981). The groups of countries analyzed were the same as those covered by this research described in Table II. The relevance of this analysis consists in determining the explained variance with respect to the total variances of quadratic ranges, in relation to phenomena to which non-parametric tests would be applied.

The general model applied is based on:

$$KW = \left[\left(\frac{12}{N(N+1)} \right) \left(\sum_{i=1}^i \frac{R_j^2}{n_j} \right) \right] - 3(N+1) \dots (1)$$

Where:

N = number of units of study, 48 in this case
 $\left(\sum_{i=1}^i \frac{R_j^2}{n_j} \right)$ = Sum of quadratic Ranges of each group under study, each of them divided by the number of units observed.

The results of the application of the KW test for each of the years: 2007, 2012 and 2017, in relation to the calculated KW values were:

$$KW_{(Calc.2007)} = \left[\left(\frac{12}{48(49+1)} \right) (29149) \right] - 3(48+1); \dots KW_{(2007)} = 1.719$$

$$KW_{(Calc.2012)} = \left[\left(\frac{12}{48(49+1)} \right) (30067) \right] - 3(48+1); \dots KW_{(2012)} = 6,403$$

$$KW_{(Calc.2017)} = \left[\left(\frac{12}{48(49+1)} \right) (29834) \right] - 3(48+1); \dots KW_{(2017)} = 5.214$$

In each of these cases, a total of 4 degrees of freedom was used, since there were 5 groups. The tabulated KW values were: (i) with 5% error or goodness of fit: 9.488; and (ii) with 1% error: 13,277.

When comparing the calculated KW values with the tabulated ones for each year, it is evident that in all the years analyzed -2007, 2012 and 2017- the calculated values did not exceed the tabulated ones, even with a 5% error. Therefore, we confirm that there are no statistically significant differences between the groups of countries in terms of the AIQI.

6) Conclusions

By examining the structural dynamics of the indexes through the PCA methodology, it was possible to identify possible exogenous problems of the information and thus preserve the structure of the variance that best explains the behavior of the countries observed in each

1
2
3 of the pillars. This allowed the evolution of the scores during the observation window to be
4 evidenced and compared through standardization and rescaling.
5

6 Although the scores obtained by the studied countries vary over time, when
7 comparing whether changes are identified in the structure of the existing gap, it is evident
8 that it has remained constant in most of the observed periods, which means that the impact
9 of global policies and recommendations has not generated changes in the way these countries
10 relate to the scores obtained.
11
12
13
14

15 Likewise, when comparing the average behavior of the countries, it is evident that it
16 has remained constant, which implies that at least 50% of the analyzed countries have
17 maintained their relative scores during the observation window.
18
19

20 These two findings allow us to observe that the countries generally maintain their
21 position, even though changes in their scores are reflected. This makes invisible the
22 development and progress factors generated by the countries that are mainly found with low
23 scores and only reflect stable structures that allow them to maintain their position.
24
25
26

27 A critical factor to consider is the speed with which the various results are obtained.
28 Interpreting the "speed of reaction" factor can be tricky, even when the objectives are similar;
29 countries do not always start from the same location and may take different routes to fulfill
30 the goals. As a result, it is difficult to comprehend the nature of the issues at stake if
31 competitiveness is viewed as a quantifiable macroeconomic variable with a well-defined
32 causal origin.
33
34
35
36

37 The definition of policies based on the rankings may lead to a misdirected actions at
38 national and regional levels. As explained in this work, even if the common goal is to generate
39 growth and welfare, countries are externally and internally diverse, making no sense to
40 pursue standardization of the path to reach that goal.
41
42
43

44 A continuous quest to look like the best in the ranking can distract attention from the
45 actual requirements and vocations of the different economies. The benchmark is helpful if it
46 is taken as a reference, not as a goal; isolating disturbances in the indicators may help
47 understand the needed structural change to reach each country's competitiveness ultimate
48 goal.
49
50
51
52

53 Finally, a more comprehensive analysis must consider the market failures that impair
54 competitive capability, most notably the evolution of dynamic comparative advantage.
55
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Competitiveness strategies must determine which failures are addressable through policy and whether the government concerned possesses the capacity to implement such policy.

7) Contributions and limitations

This study adds to the existing body of knowledge in a variety of ways. First, it demonstrates that the analyzed countries generally maintain their competitive position, even though changes in their scores are reflected. Second, it highlights the importance of conducting a more in-depth analysis of the conditions that promote national competitiveness. Thirdly, it demonstrates the perils of using global rankings as a benchmark and not as a reference. Finally, it demonstrates the application of a novel method for assessing structural changes in emerging economies' competitiveness positions.

The current study has restrictions because it's concentrated on a few selected indicators based on the literature review. The limitations of this research may be overlooked in the future by adding additional variables and observations. In addition, the article could be improved by including intra- and inter-regional approaches to control based on the occurrence of specific circumstances (i.e., informal institutions, economic development, or factor endowments).

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Annex 1

Alternative Institutional Quality Index (AIQI)

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Argentina	0,24	0,22	0,21	0,23	0,23	0,22	0,17	0,16	0,19	0,22	0,25
Bangladesh	0,12	0,11	0,14	0,17	0,21	0,21	0,19	0,22	0,24	0,23	0,23
Brazil	0,29	0,33	0,41	0,42	0,41	0,42	0,39	0,37	0,33	0,26	0,23
Bulgaria	0,21	0,26	0,29	0,28	0,27	0,27	0,29	0,30	0,30	0,34	0,39
Chile	0,65	0,77	0,71	0,72	0,76	0,77	0,71	0,68	0,67	0,62	0,60
China	0,34	0,45	0,59	0,64	0,64	0,64	0,57	0,58	0,60	0,57	0,60
Colombia	0,32	0,37	0,40	0,35	0,33	0,37	0,32	0,33	0,35	0,34	0,32
Croatia	0,53	0,49	0,48	0,42	0,38	0,37	0,34	0,36	0,36	0,36	0,34
Czech Republic	1,00	0,61	0,62	0,67	0,60	0,51	0,49	0,47	0,49	0,56	0,57
Egypt	0,36	0,40	0,43	0,44	0,40	0,29	0,27	0,25	0,27	0,31	0,28
Estonia	0,15	0,80	0,81	0,78	0,75	0,77	0,72	0,70	0,72	0,73	0,77
Greece	0,21	0,55	0,51	0,46	0,39	0,34	0,28	0,31	0,37	0,37	0,35
Hungary	0,87	0,59	0,51	0,50	0,49	0,47	0,41	0,40	0,42	0,40	0,35
India	0,43	0,65	0,62	0,63	0,55	0,49	0,47	0,48	0,49	0,53	0,62
Indonesia	0,43	0,57	0,54	0,59	0,59	0,53	0,51	0,55	0,59	0,56	0,57
Jamaica	0,79	0,44	0,43	0,42	0,38	0,36	0,36	0,40	0,43	0,45	0,49
Jordan	0,32	0,65	0,72	0,71	0,60	0,54	0,56	0,59	0,61	0,60	0,62
Kazakhstan	0,29	0,38	0,41	0,38	0,32	0,31	0,38	0,43	0,46	0,48	0,48
Kenya	0,55	0,39	0,45	0,41	0,36	0,39	0,38	0,43	0,50	0,47	0,49
Kuwait	0,08	0,48	0,45	0,41	0,42	0,40	0,33	0,33	0,34	0,36	0,34
Latvia	0,41	0,49	0,47	0,44	0,40	0,44	0,45	0,48	0,52	0,52	0,47
Lithuania	0,79	0,56	0,56	0,50	0,49	0,48	0,48	0,52	0,55	0,57	0,56
Malaysia	0,26	0,96	0,88	0,79	0,77	0,85	0,81	0,77	0,86	0,86	0,83
Mexico	0,33	0,40	0,35	0,36	0,35	0,40	0,42	0,41	0,39	0,40	0,40
Morocco	0,17	0,51	0,48	0,42	0,45	0,49	0,49	0,48	0,51	0,49	0,47
Namibia	0,14	0,37	0,48	0,53	0,56	0,49	0,40	0,43	0,45	0,48	0,50
Nigeria	0,80	0,33	0,37	0,31	0,22	0,28	0,31	0,26	0,24	0,24	0,23
Pakistan	0,33	0,36	0,33	0,31	0,31	0,30	0,29	0,29	0,31	0,32	0,33
Peru	0,22	0,28	0,31	0,33	0,35	0,34	0,29	0,31	0,32	0,31	0,31
Philippines	0,36	0,31	0,33	0,27	0,23	0,27	0,37	0,43	0,48	0,45	0,39
Poland	0,63	0,44	0,41	0,49	0,52	0,50	0,46	0,44	0,47	0,49	0,48
Qatar	0,29	0,81	0,89	0,95	0,99	0,99	1,00	1,00	1,00	1,00	0,95
Romania	0,20	0,36	0,39	0,38	0,31	0,26	0,24	0,29	0,41	0,40	0,34
Russia	0,18	0,23	0,31	0,30	0,28	0,24	0,21	0,29	0,36	0,36	0,37
Slovak Republic	0,47	0,60	0,56	0,53	0,44	0,41	0,40	0,37	0,40	0,43	0,42
Slovenia	0,58	0,65	0,66	0,72	0,62	0,51	0,46	0,42	0,43	0,48	0,51
South Africa	0,55	0,66	0,68	0,63	0,55	0,53	0,51	0,51	0,51	0,51	0,53
Srb	0,24	0,28	0,31	0,28	0,23	0,19	0,18	0,23	0,25	0,25	0,27
Sri Lanka	0,29	0,50	0,56	0,50	0,52	0,53	0,47	0,48	0,50	0,50	0,48

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Thailand	0,03	0,60	0,55	0,52	0,49	0,45	0,42	0,43	0,42	0,44	0,43
Tunisia	0,41	0,89	0,88	0,81	0,86	0,69	0,55	0,46	0,43	0,40	0,40
Turkey	0,26	0,54	0,44	0,42	0,43	0,43	0,48	0,51	0,49	0,46	0,45
Uganda	0,19	0,30	0,32	0,28	0,30	0,35	0,35	0,33	0,34	0,37	0,35
Ukraine	0,62	0,25	0,34	0,28	0,23	0,23	0,24	0,24	0,30	0,34	0,30
United Arab Emirates	0,88	0,83	0,87	0,96	0,90	0,87	0,92	0,92	0,95	0,94	0,98
Venezuela	0,25	0,03	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Vietnam	0,26	0,37	0,45	0,49	0,45	0,36	0,32	0,35	0,38	0,42	0,41
Zambia	0,14	0,32	0,42	0,43	0,44	0,44	0,48	0,51	0,51	0,50	0,44

Source: Author's elaboration.

Ranking according to AIQI

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Argentina	34	46	46	46	42	45	47	47	47	47	44
Bangladesh	46	47	47	47	47	46	45	46	45	46	47
Brazil	26	36	31	26	26	24	26	29	38	43	46
Bulgaria	38	43	45	43	41	41	39	38	42	38	29
Chile	7	6	7	6	5	5	5	5	5	5	8
China	21	24	12	10	7	7	6	7	7	8	7
Colombia	25	32	34	36	35	30	35	35	35	39	39
Croatia	13	22	22	29	31	29	32	31	33	34	37
Czech Republic	1	11	11	9	10	12	11	17	16	10	10
Egypt	20	27	29	23	28	38	41	43	43	42	42
Estonia	43	5	5	5	6	4	4	4	4	4	4
Greece	37	17	19	22	29	35	40	37	32	32	33
Hungary	3	14	18	17	18	19	23	27	27	31	34
India	15	9	10	11	14	15	17	14	18	11	6
Indonesia	16	15	17	13	11	11	10	8	8	9	9
Jamaica	5	25	28	28	30	31	30	28	23	23	15
Jordan	24	8	6	8	9	8	7	6	6	6	5
Kazakhstan	28	30	33	33	36	36	28	21	21	18	19
Kenya	11	29	25	32	32	28	27	20	14	21	16
Kuwait	47	23	24	31	25	27	33	33	37	36	35
Latvia	17	21	23	24	27	22	20	13	10	12	20
Lithuania	6	16	13	19	17	18	14	9	9	7	11
Malaysia	31	1	2	4	4	3	3	3	3	3	3
Mexico	22	28	37	35	33	26	21	26	30	28	28
Morocco	42	19	20	27	20	17	12	16	12	16	21
Namibia	44	33	21	14	12	16	24	22	22	19	14
Nigeria	4	37	36	39	46	39	36	42	46	45	45
Pakistan	23	35	40	38	37	37	37	39	40	40	38
Peru	36	42	44	37	34	34	38	36	39	41	40

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3	Philippines	19	39	39	45	43	40	29	23	19	24	30
4	Poland	8	26	32	20	16	14	18	19	20	17	18
5	Qatar	27	4	1	2	1	1	1	1	1	1	2
6	Romania	39	34	35	34	38	42	43	41	28	29	36
7	Russia	41	45	42	40	40	43	44	40	34	35	31
8	Slovak Republic	14	13	15	15	22	25	25	30	29	26	25
9	Slovenia	10	10	9	7	8	13	19	25	25	20	13
10	South Africa	12	7	8	12	13	9	9	10	11	13	12
11	Srb	35	41	43	42	44	47	46	45	44	44	43
12	Sri Lanka	29	20	14	18	15	10	16	15	15	14	17
13	Thailand	48	12	16	16	19	20	22	24	26	25	24
14	Tunisia	18	2	3	3	3	6	8	18	24	30	27
15	Turkey	32	18	27	30	24	23	15	11	17	22	22
16	Uganda	40	40	41	41	39	33	31	34	36	33	32
17	Ukraine	9	44	38	44	45	44	42	44	41	37	41
18	United Arab Emirates	2	3	4	1	2	2	2	2	2	2	1
19	Venezuela	33	48	48	48	48	48	48	48	48	48	48
20	Vietnam	30	31	26	21	21	32	34	32	31	27	26
21	Zambia	45	38	30	25	23	21	13	12	13	15	23

Source: Author's elaboration.

Competitiveness Review

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Annex 2

Fragile States Index

“The Fragile States Index (FSI) produced by The Fund for Peace (FFP), is a critical tool in highlighting not only the normal pressures that all states experience, but also in identifying when those pressures are outweighing a states’ capacity to manage those pressures. By highlighting pertinent vulnerabilities which contribute to the risk of state fragility, the Index — and the social science framework and the data analysis tools upon which it is built — makes political risk assessment and early warning of conflict accessible to policy-makers and the public at large.

The strength of the FSI is its ability to distill millions of pieces of information into a form that is relevant as well as easily digestible and informative. Daily, FFP collects thousands of reports and information from around the world, detailing the existing social, economic and political pressures faced by each of the 178 countries that we analyze.” (Fund for Peace, 2019)

“PRACTICAL APPLICATION: THE FRAGILE STATES INDEX ANALYTICAL PROCESS

Though at the ground level, the CAST framework is applied using various practices such as individual incident reporting and observation by field monitors, the sheer volume of data to be analyzed at an international level required a different approach. To that end, technology was employed to enable researchers to process large volumes of data to perform the national level assessments that feed in to the FSI.

Based on CAST’s comprehensive social science approach, data from three main streams — pre-existing quantitative data sets, content analysis, and qualitative expert analysis — is triangulated and subjected to critical review to obtain final scores for the Index.” (Fund for Peace, 2019)