

DOCUMENTOS DE INVESTIGACIÓN

Facultad de Administración

No. 150, ISSN: 2463-1892
Agosto de 2016

Healing Wounds Institutional Strength, Peacebuilding, and Productive Entrepreneurship – Exploratory Analysis on 23 Departments of Colombia

Julián David Cortés Sánchez



Universidad del
Rosario

Healing Wounds
Institutional Strength, Peacebuilding,
and Productive Entrepreneurship – Exploratory
Analysis on 23 Departments of Colombia

Documento de investigación No. 150

Julián David Cortés Sánchez

Universidad del Rosario
Escuela de Administración
Editorial Universidad del Rosario
Bogotá D.C.
2016

Healing wounds institutional strength, peacebuilding, and productive entrepreneurship – exploratory analysis on 23 departments of Colombia / Julián David Cortés Sánchez. - Bogotá: Editorial Universidad del Rosario, Escuela de Administración, 2016.

53 páginas -- (Documento de investigación, No. 150)

Incluye referencias bibliográficas.

ISSNe: 2463-1892

Emprendimiento - Colombia / Solución de conflictos - Colombia / Proceso de paz - Colombia / I. Universidad del Rosario. Escuela de Administración / II. Título / III. Serie.

658.4 SCDD 20

Catalogación en la fuente – Universidad del Rosario. Biblioteca

JDA

agosto 12 de 2016

Julián David Cortés Sánchez

Corrección de estilo
Claudia Ríos

Diagramación
Fredy Johan Espitia Ballesteros

Editorial Universidad del Rosario
<http://editorial.urosario.edu.co>

ISSNe: 2463-1892

* Las opiniones de los artículos sólo comprometen a los autores y en ningún caso a la Universidad del Rosario. No se permite la reproducción total ni parcial sin la autorización de los autores.
Todos los derechos reservados.

Primera edición: Agosto de 2016
Hecho en Colombia
Made in Colombia

Contenido

1. Introduction	7
2. Institutions	10
3. Peace	12
4. Entrepreneurship	13
5. Methodology	15
5.1. Index construction	16
5.1.1. Institutional Strength Index.....	16
5.1.2. Building the Peace Index	24
5.1.3. Productive Entrepreneurship Index.....	36
5.2. Correlations.....	40
6. Conclusions	44
7. References.....	46
Annexes	50

Healing Wounds Institutional Strength, Peacebuilding, and Productive Entrepreneurship – Exploratory Analysis on 23 Departments of Colombia

Julián David Cortés Sánchez*

Abstract

This study presents an exploratory analysis on the correlation among institutional strength, peacefulness, and entrepreneurship on a sample of 23 departments in Colombia using data of 2014. To achieve this purpose, three indexes were proposed and constructed based on seminal-conceptual definitions or international assessment standards, namely: 1) Institutional Strength Index, 2) Building Peace Index (based on Negative Peace Index and Positive Peace Index), and 3) Productive Entrepreneurship Index. The results do not show a significant correlation among all three indexes. On the one hand, there is a significant correlation ($p < 0.05$) between the Institutional Strength Index and the Productive Entrepreneurship Index. On the other hand, there are non-significant negative correlations between Positive Peace Index and Institutional Strength Index, Productive Entrepreneurship Index and Positive Peace Index, and Productive Entrepreneurship Index and Building Peace Index. In a second look, department's population was the measure with the higher number of significant correlations ($p < 0.01$) among variables related to productive entrepreneurship, employment, Gross Domestic Product, industrial sophistication, innovation (patents), and crime. Finally, conclusions and future research are discussed.

Keywords

Institutions, Peacebuilding, Entrepreneurship.

* Assistant Professor - Management School, Universidad del Rosario (Colombia). M.Sc. Interdisciplinary Development Studies, Universidad de los Andes (Colombia). B.A. International Business Management, Universidad del Rosario.

Resumen

Este estudio presenta un análisis exploratorio sobre la correlación entre la fortaleza institucional, las condiciones de paz, y el emprendimiento en una muestra de 23 departamentos en Colombia usando datos de 2014. Para llevar a cabo este objetivo se propusieron y construyeron tres índices siguiendo definiciones conceptuales seminales o estándares de evaluación internacional, a saber: 1) El Índice de Fortaleza Institucional, 2) El Índice de Construcción de Paz (construido a partir del índice de paz negativa y el índice de paz positiva) y 3) El Índice de Emprendimiento Productivo. Los resultados no muestran una correlación significativa entre todos los tres índices. Por un lado, existe una correlación significativa ($p < 0.05$) entre los índices de fortaleza institucional y emprendimiento productivo. Por otro lado, existen correlaciones negativas no significativas entre los índices de paz positiva y fortaleza institucional, emprendimiento productivo y paz positiva y emprendimiento productivo y construcción de paz. En un segundo acercamiento, la población de los departamentos fue la variable con mayor número de correlaciones significativas ($p < 0.01$) entre variables relacionadas con emprendimiento productivo, empleo, producto interno bruto, sofisticación industrial, innovación (patentes) y crimen. Finalmente, se discuten las conclusiones y las futuras investigaciones.

Palabras clave

Instituciones, construcción de paz, emprendimiento.

1. Introduction

The history of a nation is not a blank-slate, what has been written on that slate remains indefinitely (Easterly, 2013). The differences on development and long-run growth among nations are determined by the institutions that have been conducted throughout its history (Acemoglu *et al.* 2005; Acemoglu & Robinson, 2008). In Colombia, institutions have been historically extractive, and its negative effects remain until today (Acemoglu & Robinson, 2012). In that case, can the slate of Colombian history not be rewritten?

Institutions can be understood as inclusive or extractive¹ rules/norms which shape social, political, and economic interactions; these rules are sustained by three pillars: regulative pillar (*e.g.* constitutions, laws), normative pillar (*e.g.* regional development plans, community social-capital), and cognitive-cultural pillar (*e.g.* morals, customs) (Acemoglu & Robinson, 2012; Hall & Taylor, 1996; North, 1991; Ostrom, 1986; Scott, 2004; Williamson, 1985) The extractive institutions embedded into Colombian history have produced, among others, two structural problems: 1) destructive entrepreneurship, and 2) armed conflict.

Firstly, Baumol (1996) argued that inclusive institutions would generate productive entrepreneurship, although, extractive institutions would generate unproductive and destructive entrepreneurship. During the 17th and 18th centuries in Colombia, an extractive institution such as slavery was a legitimate mean to create enterprises for gold mining. Increased poverty, reduced school enrollment, vaccination coverage, and public goods provision, are negative effects of these both extractive institutions and destructive entrepreneurship which remain until today on regions where slavery was intensively used, such as the basin of the Cauca river, the upper Magdalena river valley, and the Pacific coast (Acemoglu *et al.*, 2012).

Secondly, Collier and Hoeffler (2004) and Koubi *et al.* (2014) sustain that the availability of renewal and non-renewal resources on a territory has more explanatory power for the causes of civil wars than severe grievances

1 Inclusive institutions examples: the monopoly of the legitimate use of physical force, political pluralism, the decentralization of powers, the private property rights, the incentives to start processes of *creative destruction*, and the judicial system impartiality. Extractive institutions examples: the missing monopoly of the legitimate use of physical force, the concentration of power, restricted political participation, uncertainty over property rights, and absence of incentives for entrepreneurial activity (Acemoglu & Robinson, 2012).

(i.e. high inequality, lack of political rights, or ethnic and religious divisions). Nevertheless, in Colombia, the emergence of illegal-armed groups in the 60's such as the *Fuerzas Armadas Revolucionarias de Colombia* (FARC), the *Ejército de Liberación Nacional* (ELN), and the *Movimiento 19 de abril* (M-19), was due grievances caused by extractive institutions such as the concentration of power and restricted political participation (Nasi, 2012). Until today, the effects of the armed-conflict on Colombian people have been devastating. As a matter of fact, according to the United Nations High Commissioner for Refugees (UNHCR), the total number of internally displaced persons in Colombia rose to 6.9 million at the end of 2015 (15% of the country's population), therefore, it is the country with the largest internally displaced population in the world before Syria which has 6.6 million (34% of the country's population) (UNHCR, 2016).

In despite of these historical events that have shaped Colombian history, the days to come may hold a brighter, though complex, future. On June 22th 2016, the Colombian government and the FARC announced the bilateral cease-fire and the areas of temporary location for its demobilization and arms rendering (El Espectador, 2016). Few days after, on July 6th, the first armed front "Armando Ríos" located in the Guaviare department, announced that they will not deliver their arms and will keep fighting against the Colombian State. They conceived themselves as an undefeated front (El Espectador, 2016). Outside the discussion on these internal fissures in the FARC's chain of command, the public opinion is discussing about the pertinence of a *plebiscite for peace* where Colombian citizens must endorse the peace agreements between the government and the FARC by voting "yes". The *plebiscite for peace* is a colossal first step to begin with the journey towards peace, nevertheless, as noted, it is not an agreement among elites—the national negotiating team and the FARC's spokesmen—, it is a Colombian democratic decision. In sum, peace-making, peace-keeping, and peace-building processes are complex: peace is an everlasting collective work in progress towards a desired future (Boutros-Ghali, 1992; Lederach, 1997).

In light of the foregoing, inclusive institutions and productive entrepreneurship are crucial conditions to strengthen peacebuilding (Lederach, 1997; International Alert, 2006) and national and regional economic development (Mehlum *et al.*, 2006; Rettberg *et al.*, 2011). As it was mentioned at the beginning of this study, the history of a nation is not a blank-slate. Past events

shape today's reality, and today's events will shape the future in unknown magnitudes. With this in mind, the objective of the following section is to take a recent snapshot —not to show a historical film— of an international diagnosis conducted for Colombia in three areas: institutional strength, peace, and entrepreneurship.

2. Institutions

In this study two assessments related to Colombian institutional strength were considered: 1) World Bank’s Worldwide Governance Indicators, and 2) the Transparency International’s Corruption Perception Index. In the following and successive sections, each index is briefly presented along with the Colombian diagnosis.

2.1. Worldwide Governance Indicators

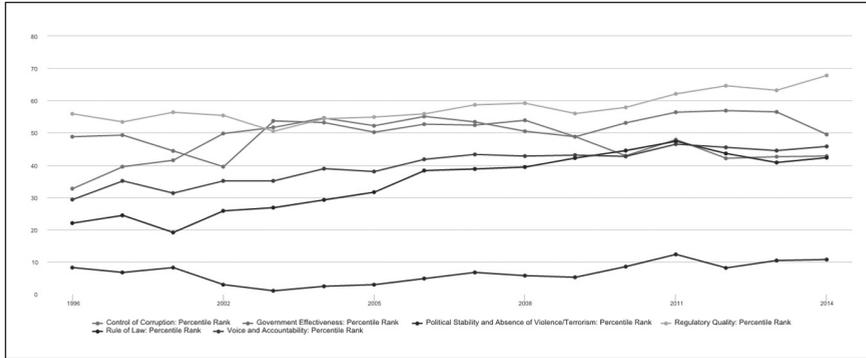
The World Bank’s Worldwide Governance Indicators assess individual governance indicators for 215 countries over the period 1996-2014 (World Bank, 2002; Langbein & Knack, 2010). Table 1 presents the six dimensions of the Worldwide Governance Indicators and its definitions. The World Bank uses more than 30 data sources to elaborate six indexes, one for each dimension (annex 1) (World Bank, 2002). As shown in Figure 1, Colombia has had a remarkable performance on the Regulatory Quality Indicator: in 2014, Colombia outperformed almost 70 % of the countries assessed. However, in relation to the indicator of political stability and absence of violence/terrorism, Colombia barely outperformed 10 % of the countries assessed.

Table 1. Worldwide Governance Indicators and Definitions

Dimensions	Definition
Voice and Accountability Index	It captures perceptions of the extent to which citizens are able to participate in choosing their government, as well as freedom of expression, freedom of association, and independent media.
Government Effectiveness Index	It captures perceptions of the quality of public services, the quality of civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies.
Control of Corruption Index	It captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the State “capture” by elites and private interests.
Rule of Law Index	It captures perceptions of the extent to which agents have confidence in and are abide by the rules of society, and in particular the quality of contract enforcement, property rights, police, and the courts, as well as the probability of crime and violence.
Political Stability and Absence of Violence/ Terrorism Index	It capturing perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism.
Regulatory Quality Index	It captures perceptions of a government’s ability to formulate and implement sound policies and regulations that permit and promote private sector development.

Source: World Bank, 2002.

Figure 1. Worldwide Governance Indicators – Assessment for Colombia 1996-2014

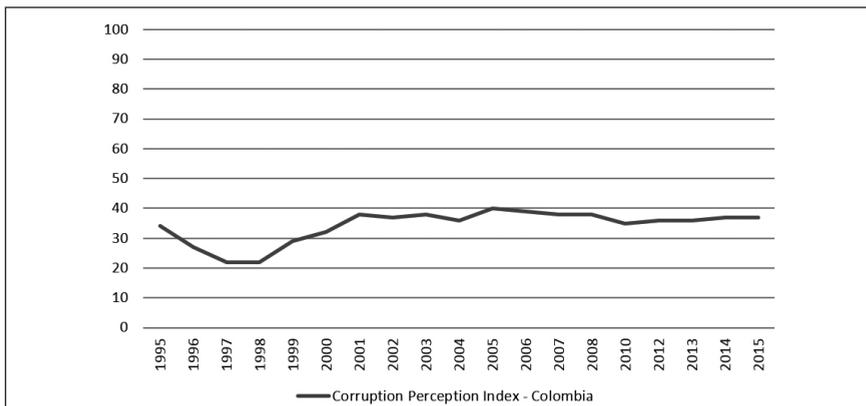


Source: The World Bank, 2016.

2.2. Corruption Perception Index

The Transparency International’s Corruption Perception Index assesses how corrupt a public sector of a country is seen to be, over the period 1995-2015 (Transparency International, 2015). The index is based on informed views of analysts, businesspeople, and experts around the world. In 2015, Transparency International assessed 167 countries based on twelve data sources (annex 2). This index is configured in a scale of 0 to 100, where 100 is the highest transparency (lowest corruption perception) score. As shown in Figure 2, Colombia has not performed well in the Corruption Perception Index. Virtually, there is no significant improvement since 1999-2001.

Figure 2. Corruption Perception Index – Assessment for Colombia 1995-2015

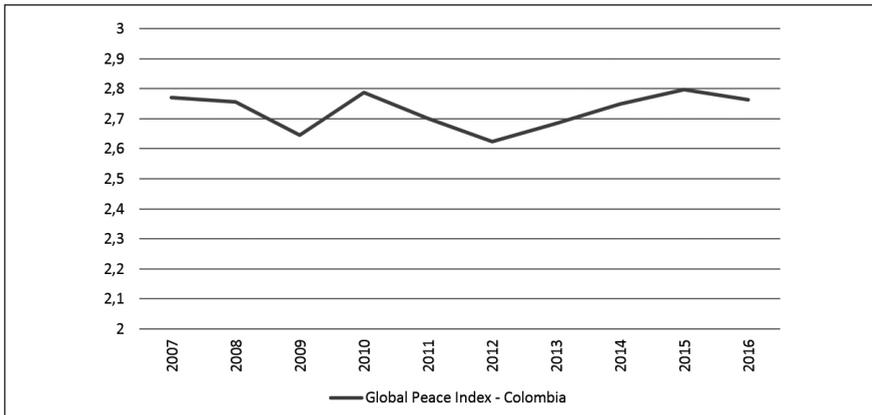


Source: Prepared by the author based on data of Transparency International, 2015.

3. Peace

The Global Peace Index published by the Institute for Economics and Peace, is the first study dedicated to rank the world nations by their peacefulness, over the period 2007-2016. This index is based on the international panel of peace experts from peace institutes and think-tanks with data collected and analyzed by the Economist Intelligence Unit (Institute for Economics and Peace, 2015). In 2015, the Institute for Economics and Peace assessed 162 countries based on 23 quantitative indicators (annex 3). In the same year, the most peaceful country was Iceland with a 1.14 score, and the least peaceful was Syria, with a 3.64 score. As shown in Figure 3, Colombia has fluctuated between 2.6 to 2.8. The period 2013-2015 was one of the most peaceful periods of the decade.

Figure 3. Global Peace Index – Assessment for Colombia 2007-2016



Source: Prepared by the author based on data of the Institute for Economics and Peace, 2015.

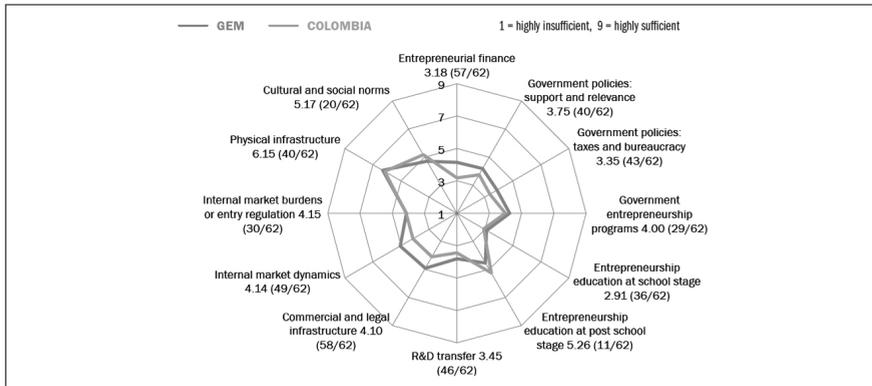
4. Entrepreneurship

The Global Entrepreneurship Monitor is the world's foremost study of entrepreneurship. It provides high quality information in order to increase the understanding on entrepreneurial phenomena (Global Entrepreneurship Monitor, 2016). Over 100 countries are assessed by this consortium. In each country, it looks for two elements: entrepreneurial behavior and attitudes of individuals, and the national context and how it impacts entrepreneurship. Its two main sources of data are the adult population survey (which measures the level and nature of entrepreneurial activity around the world; it is administered to a representative national sample of at least 2000 respondents), and the national expert survey (it monitors the factors that are believed to have a significant impact on entrepreneurship, known as the Entrepreneurial Framework Conditions; it is administered to a minimum of 36 carefully chosen experts in each country).

Recent reports on the Colombian entrepreneurship environment conducted by the Global Entrepreneurship Monitor, reached mixed conclusions. According to the Global Report (2015) Colombia was placed on the *efficiency-driven* economic development level.² Among 62 countries assessed on 12 factors (figure 4) on average, Colombia was placed in the position 38 (To see the variables on detail, see annex 4). On the other hand, the *Leveraging Entrepreneurial Ambition and Innovation* report (2015), conducted by the Global Entrepreneurship Monitor and the World Economic Forum on a sample of 44 countries, claimed that Colombia and Chile were the only two economies that showed an outstanding performance on the three metrics used: 1) entrepreneurial activity (percentage of the working-age population), 2) the proportion of *ambitious* entrepreneurs (who expect to create 20-plus jobs in five years), and 3) the proportion of *innovative* entrepreneurs (who offer new products or services). The other economies analyzed fall within the average on at least one of these three dimensions.

2 "Classification of economies by economic development level is adapted from the World Economic Forum (WEF). According to WEF's classification, the factor-driven phase is dominated by subsistence agriculture and extraction businesses, with a heavy reliance on (unskilled) labor and natural resources. In the efficiency-driven phase, an economy has become more competitive with further development accompanied by industrialization and an increased reliance on economies of scale, with capital-intensive large organizations more dominant. As development advances into the innovation-driven phase, businesses are more knowledge-intensive, and the service sector expands" (Kelley et. al., 2015, p. 11)

Figure 4. Expert Ratings of the Colombian Entrepreneurial Eco-System



Source: Kelley, Singer, & Herrington, 2015, p. 68.

In sum, diagnoses of Colombia are inconclusive: 1) an outstanding performance in areas related to regulatory quality and entrepreneurship activity, ambitious entrepreneurs, and innovative entrepreneurs; 2) a stagnated-low performance in areas related to perception of corruption and an entrepreneurship ecosystem rating expressed by experts; and 3) a poor performance in areas related to political stability and absence of violence/terrorism and peacefulness. Furthermore, several diagnoses along similar topics have been conducted at regional and departmental level.³ However, there is insufficient interdisciplinary research on institutional strength, peace, and entrepreneurship.

Considering this, the objective of this manuscript is to conduct an exploratory study on the correlations among institutional strength, peacebuilding, and entrepreneurship on a sample of 23 Colombian departments based on data of 2014. This study continues as follows: after this introduction, the methodological aspects considered to construct three indexes are presented: 1) Institutional Strength Index, 2) Peace Building Index, and 3) Productive Entrepreneurship Index. Later on, the correlations among the three indexes are presented. Finally, the conclusions of the study are discussed.

3 For data on institutional strength by *Transparencia por Colombia* (national chapter for Transparency International): National Transparency Index (2004-2005, 2007-2008, 2008-2009, 2008-2009), Public Entities Integrity Index (2002, 2003, 2003-2004), Departmental Transparency Index (2004-2005, 2005-2006, 2008-2009, 20013-2014), and Municipality Transparency Index (2004, 2005-2006, 2008-2009).
 For data on peace by National Planning Department: Territorial Vulnerability Index (2008-2012).
 For data on peace by the National Police Department: Colombian Crime Index (1994-2007).
 For data on entrepreneurship by the Global Entrepreneurship Monitor: Colombia's National Report (2014, 2006-2013, 2013, 2012, 2011, 2010, 2009, 2008, 2006), Caribbean region (2012, 2010), Bogotá (2013, 2012, 2011, 2010, 2009), Cali city (2012, 2010), department of Antioquia (2012), city of Medellín (2010), Coffee Growing Axis Region (2010), and the city of Bucaramanga (2010).

5. Methodology

This section presents an exploratory study on the correlation of three aspects, namely: institutional strength, peacebuilding, and entrepreneurship. To conduct this exploratory study three indexes were constructed: 1) the Institutional Strength Index, 2) the Peace Building Index, and 3) the Productive Entrepreneurship Index.⁴ To begin with, each index was supported by seminal conceptual foundations or international assessment standards. Secondly, the methodology used to construct each index is presented. Finally, the correlation analysis is discussed. Each index was constructed for a sample of 23 departments in 2014 because of data availability. Table 2 presents the department's sample along with its population, Gross Domestic Product (GDP) and per capita GDP.

Table 2. Department's Sample, Population, GDP and Per Capita GDP

#	Department	Population (2014)	GDP US\$ (2014)	pc GDP US \$
1	Antioquia	6.378.129	\$ 92.714.000.000	\$ 14.536
2	Atlantico	2.431.994	\$ 27.177.000.000	\$ 11.175
3	Bolivar	2.073.009	\$ 30.875.000.000	\$ 14.894
4	Boyaca	1.274.619	\$ 20.118.000.000	\$ 15.784
5	Caldas	986.044	\$ 10.111.000.000	\$ 10.254
6	Caqueta	471.541	\$ 3.203.000.000	\$ 6.793
7	Cesar	1.016.527	\$ 12.924.000.000	\$ 12.714
8	Choco	495.158	\$ 2.988.000.000	\$ 6.034
9	Cordoba	1.709.603	\$ 12.135.000.000	\$ 7.098
10	Cundinamarca and Bogota	10.415.887	\$ 210.228.000.000	\$ 20.183
11	Huila	1.188.314	\$ 12.976.000.000	\$ 10.920
12	Guajira	1.140.542	\$ 7.749.000.000	\$ 6.794
13	Magdalena	1.247.529	\$ 9.237.000.000	\$ 7.404
14	Meta	943.073	\$ 40.899.000.000	\$ 43.368
15	Nariño	1.722.947	\$ 10.743.000.000	\$ 6.235
16	Norte de Santander	1.344.040	\$ 11.447.000.000	\$ 8.517

Continue

4 All data used in this study is available in the permanent link (SPSS format): <https://goo.gl/uAN7sW>

#	Department	Population (2014)	GDP US\$ (2014)	pc GDP US \$
17	Putumayo	345.204	\$ 4.284.000.000	\$ 12.410
18	Quindio	562.118	\$ 5.303.000.000	\$ 9.434
19	Risaralda	946.630	\$ 10.123.000.000	\$ 10.694
20	Santander	2.051.022	\$ 53.024.000.000	\$ 25.852
21	Sucre	843.203	\$ 5.610.000.000	\$ 6.653
22	Tolima	1.404.255	\$ 15.370.000.000	\$ 10.945
23	Valle del Cauca	4.566.894	\$ 65.630.000.000	\$ 14.371
	Mean	1.980.795	\$ 29.342.086.957	\$ 12.742
	Max.	10.415.887	\$ 210.228.000.000	\$ 43.368
	Min.	345.204	\$ 2.988.000.000	\$ 6.034

Source: Prepared by the author based on Datlas-Colombia, 2014.

5.1. Index construction

In *The General Theory of Employment, Interest and Money*, John Maynard Keynes wrote: “the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood”. This boarded debate on the importance of good concepts and definitions about ideas for the advance of the economics and philosophy understanding far exceeds the scope of this study. Albeit, data-linked definitions to develop the indexes previously mentioned were adopted.

5.1.1. Institutional Strength Index

In this section, the Institutional Strength Index for the Colombian department’s sample is elaborated. As it was mentioned in the introduction, in this study institutions can be understood as inclusive or extractive rules/norms that shape social, political, and economical interactions. These rules are sustained by three pillars: the regulative, the normative, and the cognitive-cultural pillar. This underlining definition of institutions has several similarities with the governance concept and the World Bank’s Worldwide Governance Indicators. United Nations understands governance as:

“[...] the degree in which a country’s institutions and processes are transparent. Its institutions refer to such bodies as parliament and its various ministries. Its processes include such key activities as elections and legal procedures, which

must be seen to be free of corruption and accountable to the people. A country's success in achieving this standard has become a key measure of its credibility and respect in the world" (United Nations, n.d.).

The World Bank has identified three aspects of governance: "1) the form of political regime; 2) the process by which authority is exercised in the management of a country's economic and social resources for development; and 3) the capacity of governments to design, formulate, and implement policies and discharge functions" (World Bank, 1994, p. xiv; Weiss, 2000). Furthermore, the World Bank developed the Worldwide Governance Indicators (Langbein & Knack, 2010). These assess individual governance indicators for 215 economies over the period 1996-2014 (World Bank, 2002). Table 1 presents the six dimensions of the WGI and its definitions. The World Bank uses more than 30 data sources to elaborate six indexes, one for each dimension. Neither of these data sources provide information at department level in Colombia. For that reason, two main data sources for each dimension that allow constructing the Institutional Strength Index were considered, namely: 1) the Departmental Transparency Index elaborated by *Transparencia por Colombia* and 2) the Departmental Competitiveness Index elaborated by the *Centro de Pensamiento en Estrategias Competitivas –CEPEC–* and the *Consejo Privado de Competitividad –CPC–*. In the following section, these two indexes are briefly described.

5.1.1.1. Departmental Transparency Index

The Departmental Transparency Index was considered to achieve a reflection of three of six Worldwide Governance Indicators: 1) voice and accountability, 2) government effectiveness, and 3) control of corruption. The Departmental Transparency Index aims to increase corruption prevention in the public administration (Transparencia por Colombia, 2015). In the Departmental Transparency Index, corruption is understood as the abuse of power or trust by an actor in order to procure individual benefits or benefits of the own group at the expense of the collective interest (Transparencia por Colombia, 2015). Corruption risks increase in contexts of 1) weak capacity to produce and deliver public information related to establishment decision-making process, 2) underdevelopment in decision-making and execution processes, and 3) inoperability in the public administration controls at social and institutional levels (Transparencia por Colombia, 2015).

Table 3 presents the three factors (i.e. visibility, institutional strength, and control and sanction), and the related indicators intended to evaluate transparency. The three Worldwide Governance Indicators dimensions related to each factor were also added.

Table 3. Departmental Transparency Index Factors, related indicators, and Worldwide Governance Indicators

Factor	Indicator	Weight	wgi Dimensions
Visibility	Public information dissemination	30 %	Voice and accountability
	Public administration dissemination		
	Budget and financial information dissemination		
	Citizenship procedures and public services dissemination		
Institutional strength	Anticorruption policies	40 %	Government effectiveness
	Planning management		
	Ethical behaviors policies		
	Hiring management		
	Human talent management		
	Fiscal control management		
Control and sanction	System of requests, complaints, claims and suggestions	30 %	Control of corruption
	Accountability		
	Social control		
	Institutional control		
	Internal control		

Source: Presentation of the author based on information of Transparencia por Colombia, 2015; and the World Bank, 2002.

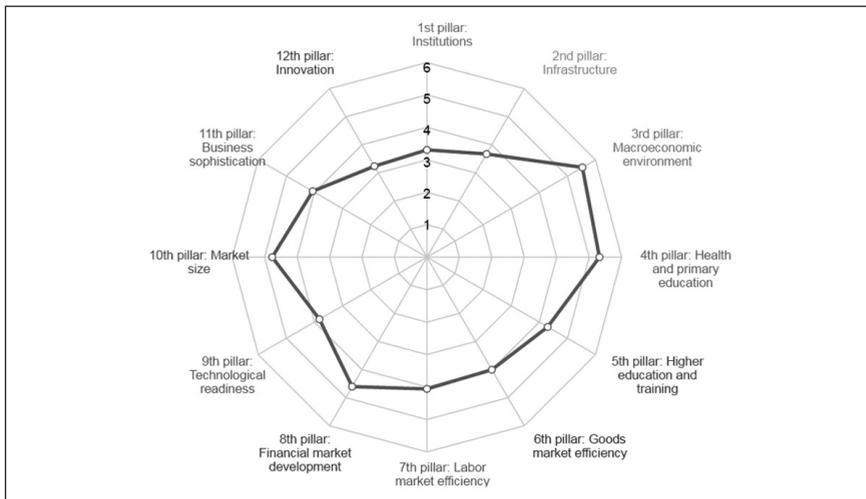
5.1.1.2. Departmental Competitiveness Index

The Departmental Competitiveness Index is considered to reflect the last three Worldwide Governance Indicators dimensions: 1) rule of law, 2) political stability and absence of violence/terrorism, and 3) regulatory quality. The Departmental Competitiveness Index aims to facilitate prioritization and formulation of productivity and development policies, also, to deliver pertinent information for decision-making process in the public and private sectors (CEPEC & CPC, 2014). The Departmental Competitiveness Index uses the same methodology appraisal as the World Economic

Forum’s Global Competitiveness Index. The Global Competitiveness Index presents a framework and a corresponding set of indicators in three policy domains (basic requirements, efficiency enhancers, and innovation and sophistication factors), twelve sub-domains, and over 150 measures for 140 countries (See Figure 5 for Colombia’s twelve sub-domains assessment) (WEF, 2015).

The WEF understands competitiveness as “[T]he set of institutions, policies, and factors that determine the level of productivity of a country” (Global Competitiveness Report, 2010, chapter 1.1, p. 4). Moreover, productivity can be understood as the efficient production process of sophisticated products/ services required by local and foreign markets.

Figure 5. Global Competitiveness Index’s Twelve Sub-Domains Assessment for Colombia



Source: World Economic Forum, 2015.

Nevertheless, there are three main differences between the World Competitiveness Index and the Departmental Competitiveness Index: 1) instead of twelve sub-domains, the Departmental Competitiveness Index considers ten; 2) instead of 150 measures, the Departmental Competitiveness Index uses 90; and 3) instead of 140 countries, the Departmental Competitiveness Index considers 25 of the 32 departments in Colombia. Table 4 presents the sub-domains, its indicators, and measurements, considered to reflect the last three Worldwide Governance Index factors.

Table 4. Departmental Competitiveness Index's Sub-domains: Indicators, Measures, and Worldwide Governance Indicators

Sub-Domain	Indicator	Measures	Weight (IDC overall)	wgi dimensions
Institutions	Security and justice	Homicides rate	20 %	Rule of law Political stability and absence of violence/terrorism
		Kidnapping rate		
		Extortion rate		
		Judges/100,000 p.		
		Justice efficiency		
		Judges productivity		
		Access to alternative justice mechanism		
		Contract enforcement facility		
Market efficiency	Goods market efficiency	Commercial openness	50 %	Regulatory quality
		Establishment taxes		
		Establishment startup facility		
		Number of yearly taxes payment		
		Property registration facility		
		Construction licenses facility		
		Online licenses facility		
	Labor market efficiency	Labor formality		
		Labor participation overall rate		
		Unemployment		
		Labor gender gap		
		Underemployment		
	Financial market development	Financial market coverage		
		Banking index		
Insurance coverage				
Saving accounts balance				

Source: Prepared by the author based on data of CEPEC & CPC, 2014; World Bank, 2002.

Table 5 summarizes the Worldwide Governance Index, the Departmental Transparency Index, and Departmental Competitiveness Index indicators used to construct the Institutional Strength Index.

Table 5. Worldwide Governance Index: Dimensions, Data Sources, and Indicators Considered for the Institutional Strength Index

wgi Dimensions	Data Sources	Indicator
Voice and accountability	Departmental Transparency Index	The entire index
Government effectiveness		
Control of corruption		
Rule of law	Departmental Competitiveness Index	Security and justice
Political stability and absence of violence/terrorism		Markets efficiency
Regulatory quality		

Sources: Presentation of the author based on information of World Bank, 2002, Transparencia por Colombia, 2015, CEPEC & CPC,, 2014.

The following process was conducted for the Institutional Strength Index calculation:

- **Departmental Transparency Index:** This index is configured on a scale of 0 to 100, 100 being the highest transparency score. It is divided into ten in order to homogenize the score with the Departmental Competitiveness Index scale, which is also configured in a scale of 0 to 10.
- **Departmental Competitiveness Index:** As mentioned above, this index, and its indicators and measures, are configured on a scale of 0 to 10, where 10 is the highest competitiveness score.
- **Weight:** The Worldwide Governance Indicators are six. Equal weight is assigned to each dimension (i.e. 1/6 of each dimension):
 - As the Departmental Transparency Index, it reflects three of six dimensions, thus having 50% weight.
 - As the security and justice indicator, it reflects two dimensions, and has 33% weight.
 - As the market efficiency, it reflects one dimension and has 17% weight.
- **Variables standardization:** Max-min standardization was implemented. This standardization allows keeping relative distance from each department. It is configured in a scale of 0 to 10, being 10 the highest institutional strength. Formally, the max-min standardization is calculated as follows:

$$\text{Institutional Strength Index} = 10 * \left(\frac{\text{department indicator score} - \text{minimum sample score}}{\text{maximum sample score} - \text{minimum sample score}} \right)$$

Table 6 presents the Institutional Strength Index.

Table 6. Institutional Strength Index

#	Departments	VA-GE-CC* (50%)	RL & PS-AV** (33%)	RQ*** (17%)	Scores Weighted	ISI
1	Antioquia	8.24	5.19	5.01	6.69	9.49
2	Atlantico	5.73	4.69	3.84	5.07	5.60
3	Bolivar	5.86	4.16	3.54	4.91	5.21
4	Boyaca	7.11	5.35	4.22	6.04	7.94
5	Caldas	7.57	7.00	4.67	6.90	10.00
6	Caqueta	3.70	3.81	2.79	3.59	2.03
7	Cesar	5.78	5.88	3.54	5.44	6.49
8	Choco	3.10	2.87	1.42	2.74	0.00
9	Cordoba	6.11	5.06	3.39	5.31	6.17
10	Cundinamarca/Bogota	7.20	4.91	6.30	6.28	8.52
11	Huila	6.55	5.05	353	5.55	6.75
12	Guajira	3.98	3.72	414	3.92	2.83
13	Magdalena	5.32	4.91	3.79	4.93	5.26
14	Meta	7.48	4.87	3.96	6.02	7.90
15	Nariño	6.40	6.58	3.16	5.92	7.65
16	Norte de Santander	6.95	4.51	2.99	5.48	6.58
17	Putumayo	4.27	3.41	2.91	3.76	2.44
18	Quindio	7.35	5.70	4.04	6.25	8.44
19	Risaralda	7.34	6.30	4.68	6.55	9.16
20	Santander	8.12	5.64	5.11	6.79	9.75
21	Sucre	4.97	5.76	2.70	4.86	5.08
22	Tolima	7.35	5.75	4.40	6.33	8,62
23	Valle del Cauca	7.44	3.87	3.60	5.61	6.90
					Min: 2.7	
					Max: 6.9	

* Voice and accountability, government effectiveness, control of corruption.

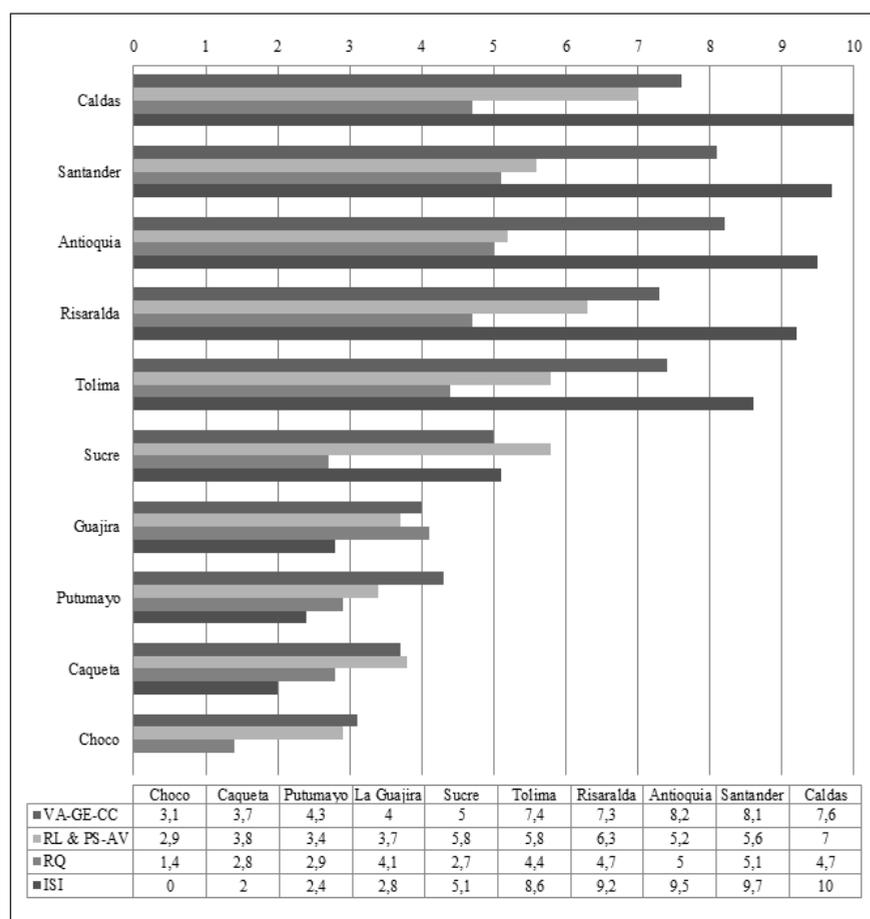
** Rule of law, political stability and absence of violence/terrorism.

*** Regulatory quality

Source: Prepared by the author based on information of the World Bank, 2002; Transparencia por Colombia, 2015; CEPEC & CPC, 2014.

The results show that Caldas (10), Santander (9.75), Antioquia (9.49), Risaralda (9.16), and Tolima (8.62), are the top five departments with the highest Institutional Strength Index score (black colored). The bottom five departments are Choco (0), Caqueta (2.03), Putumayo (2.44), Guajira (2.83), and Sucre (5.08) (grey colored). The average score is 6.47, thus, nine departments of the sample (39%) are below this score. Figure 6 shows the top-five and bottom-five results.

Figure 6. Top Five and Bottom Five Departments in the Institutional Strength Index



* VA-GE-CC: Voice and accountability, government effectiveness, control of corruption. **RL & PS-AV: Rule of law, political stability and absence of violence/terrorism.

*** RQ: Regulatory quality.

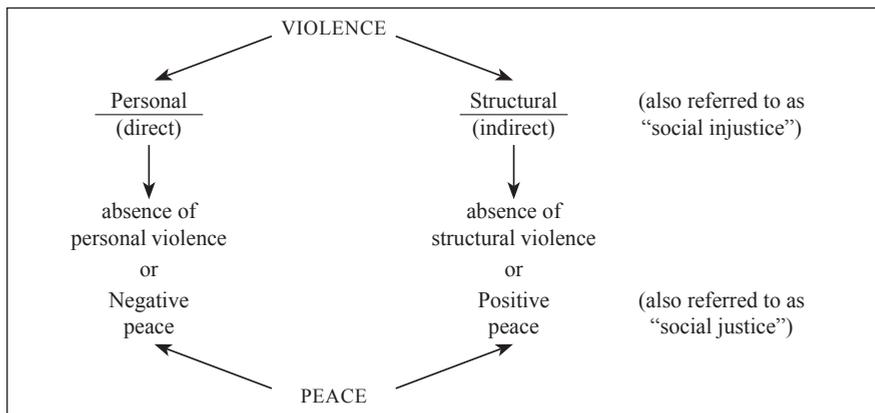
**** ISI: Institutional Strength Index.

Source: Prepared by the author based on information of the World Bank, 2002; Transparencia por Colombia, 2015; CEPEC & CPC, 2014.

5.1.2. Building the Peace Index

Peacebuilding processes are understood in this study as the “supportive foundation for sustaining the transformation from the existing reality to redefined relationships in a commonly defined future” (Lederach, 1997, p. 117). A simple but restricted definition of peace would define it as the absence of war (Institute for Economics and Peace, 2015) or, as data-filmmaker Neil Halloran would claim, “we can measure and understand peace as the people that did not died in wars that never happened” (Halloran, 2015). Even though, peace-studies pioneer Johan Galtung (1969) distinguishes two extended concepts of peace: negative peace and positive peace (figure 7). Negative peace refers to the absence of personal violence (Ho, 2007). Positive peace refers to the absence of structural and cultural violence, understood as the structural disparities among the individuals’ potential to fulfill the own basic needs and their actual fulfillment (*e.g.* inequality, poverty, access to basic public services) (Ho, 2007).

Figure 7. Extended Concepts of Violence and Peace



Source: Galtung, 1969, p. 183.

With that in mind, it is feasible to understand the negative peace as the absence of organized violence. According to Wallensteen (2009) and Collier and Hoeffler (2004) there are four types of organized violence:

- Civil war (state-based): An internal conflict with at least 1,000 combat-related deaths per year. Both government forces and an identifiable rebel organization must suffer at least 5% of these fatalities.

- **Armed conflict (state-based):** It is the “contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a State, results in at least 25 battle-related deaths in one calendar year.” (Department of Peace and Conflict Research, 2014). In Colombia, the former and the latter organized violence definitions would be the cases of the conflict between the State and the FARC and ELN guerrillas.
- **Non-state conflict (non-state):** “The use of armed force between two organized armed groups, neither of which is the government of a State, which results in at least 25 battle-related deaths in a year” (Department of Peace and Conflict Research, 2014). *The war between cartels: Medellin vs. Cali* in the 90’s could be the example for this case in Colombia.
- **One-sided conflict (one-sided):** “The use of armed force by the government of a State or by a formally organized group against civilians which results in at least 25 deaths in a year”. (Department of Peace and Conflict Research, 2014). In Colombia, the *Falsos positivos* case (extrajudicial killings outside government’s facilities) would correspond to this type of organized violence.

Regarding to these definitions of organized violence, five measurements for the Peace Building Index were considered. Table 7 presents the events and the corresponding definitions based on the Colombian context or international standards.

Table 7. Peace Building Index – Events and Definitions - I

Events	Definition
Terrorist attacks	Random attacks using explosives against public spaces with a high devastation or lethality potential.
Internally displaced by violence	“All people forced to migrate within the national territory, abandoning their place of residence or habitual [...] economic activities because their lives, physical integrity, security, or personal freedom have been made vulnerable or were directly threatened due to any of the following situations: internal armed conflict, internal disturbances and tensions, generalized violence, massive human rights violations, infractions of international humanitarian law, or other circumstances emanating from the abovementioned situations that cause potential or actual drastic alterations in public order”(Congress of the Republic of Colombia, 1997).
Deaths in conflict-related events	Civilians and combatants killed in conflict actions caused by the violation of the principle of proportionality in the use of force, the use of illicit means and methodologies, and the prevalence of <i>military necessity</i> over the humanitarian principle.

Continue

Events	Definition
Selected homicides	Intended homicide of three individuals or fewer in defenseless conditions by actors of the armed conflict occurred at the same time, in the same place, and following the same procedures
Massacres	Intended homicide of at least four individuals in defenseless conditions by actors of the armed conflict occurred at the same time, in the same place, and following the same procedures. These homicides are executed in the presence of others as a terror act.

Source: Prepared by the author based on data of Centro Nacional de Memoria Histórica, 2013; Congress of the Republic of Colombia, 1997.

The majority of these organized violence events take place in the rural areas, though, other types of personal violence and insecurity effects caused by (non)organized crime, sexual abuse, and domestic violence should be considered for urban, and rural areas as well. Table 8 shows additional events considered for the Building Peace Index.

Table 8. Peace Building Index – Events II

Events
Bank robbery
Automobile robbery
Cell-phone robbery
Theft to commercial establishments
Assaults
Residential burglary
Sexual assault
Domestic violence

Source: Prepared by the author based on information of the national Dirección de Investigación Criminal and Interpol, Colombian Ministry of Defense and National Police, 2014.

At first glance, it would be feasible to associate the events and definitions on table 7 with a negative peace index. Additionally, the events on table 8 would be related to a positive peace index, as the Ching-Chi and Pugh (1993) meta-analysis shows, there is a strong association between poverty and income inequality (i.e. forms of structural violence) and violent crime (e.g. homicide, assault, rape, and robbery). Bearing this in mind, events and measures of table 7 will be used to construct the Negative Peace Index, while the events and measures on table 8 will be used to construct the Positive Peace Index. The Peace Building Index is the sum of both indexes with a 50% equivalent weight percentage each.

For calculating the Negative Peace Index the following process was conducted:

- Measures related to number of terrorist attacks, people displaced by violence, deaths in conflict-related events, selected homicides, and massacres for each department were consulted. The sources for this information for the year 2012 were provided by data-base of the *Centro Nacional de Memoria Historica* (as to terrorist attacks, deaths in conflict-related events, selected homicides, and massacres), and the data-base of the *Unidad de Víctimas* for 2014 (as to people displaced by violence).
- Variables standardization: Each measure was standardized into a 100,000/habitants scale according to the following formula:

$$\text{Negative Peace Measure (NPM)} \frac{100.000}{\text{habs}} \text{ scale} = \left(\frac{\text{NPM}}{\text{department's population (2014)}} \right) * 100.000$$

Source: Crime and violence indicators of the Organization of American States, 2011.

- Variables standardization: Inversed max-min standardization was implemented. This standardization allows keeping relative distance from each department. It is configured in a scale of 0 to 10, where 10 is the highest peacefulness State. Formally the inversed max-min standardization is calculated as follows:

$$\text{NPM} \frac{100.000}{\text{habs}} \text{ inversed max_min standardization} = 10 - \left(\frac{\text{NPM} / 100.000 \text{habs} - \text{minimum sample score}}{\text{maximum sample score} - \text{minimum sample score}} \right) * 10$$

- Weight: Five events were considered. Equal weight is assigned to each dimension (i.e. 1/5 each).
- Variables standardization: Max-min standardization was implemented once again.

$$\text{Negative Peace Index} = 10 * \left(\frac{\text{NPM} \frac{100.000}{\text{habs}} \text{ max_min standardized} - \text{minimum sample score}}{\text{maximum sample score} - \text{minimum sample score}} \right)$$

Table 9 presents the Negative Peace Index.

Table 9. Calculation of the Negative Peace Index

#	Departments	Total						100000/p.						Inversed Max-Min Standardized (1/5 each)					Weighted	NPI
		T*	D**	Dth***	H****	M*****	T	D	Dth	H	M	T	D	Dth	H	M				
1	Antioquia	85	30967	2	15	15	85	4855	0	0.2	0.2	0	8.6	9.8	9.1	5.5	6.6	4.9		
2	Atlantico	2	819	0	1	0	2	33.7	0	0	0	9.8	10	9.8	10	9.9	10	8.6		
3	Bolivar	8	8248	1	14	0	8	397.9	0	0.7	0	9.1	8.9	9.6	7.5	9	9	8.6		
4	Boyaca	3	635	0	2	0	3	49.8	0	0.2	0	9.6	9.9	10	9.4	10	9.8	9.8		
5	Caldas	4	1258	0	1	0	4	127.6	0	0.1	0	9.5	9.7	10	9.6	10	9.8	9.8		
6	Caqueta	28	13756	6	2	0	28	2917.20	1.3	0.4	0	6.7	1.3	0	8.4	10	5.3	2.9		
7	Cesar	9	3949	0	1	0	9	388.5	0	0.1	0	8.9	8.9	10	9.6	10	9.5	9.4		
8	Choco	18	16633	0	10	0	18	3359.10	0	2	0	7.9	0	10	2.5	10	6.1	4.1		
9	Cordoba	0	10059	0	5	0	0	588.4	0	0.3	0	10	8.3	10	8.9	10	9.4	9.3		
10	Cundinamarca-Bogota	9	1842	0	3	0	9	17.7	0	0	0	8.9	10	10	9.9	10	9.8	9.8		
11	Huila	4	8622	0	3	0	4	725.6	0	0.3	0	9.5	7.9	10	9.1	10	9.3	9		
12	La Guajira	45	4079	0	3	0	45	357.6	0	0.3	0	4.7	9	10	9	10	8.5	7.9		
13	Magdalena	3	7334	0	1	0	3	587.9	0	0.1	0	9.6	8.3	10	9.7	10	9.5	9.4		
14	Meta	62	4548	0	25	4	62	482.3	0	2.7	0.4	2.7	8.6	10	0.1	1.9	4.7	1.9		
15	Nariño	70	32181	3	36	9	70	1867.80	0.2	2.1	0.5	1.8	4.5	8.6	2.2	0	3.4	0		
16	Norte de Santander	55	8743	1	36	0	55	650.5	0.1	2.7	0	3.5	8.1	9.4	0	10	6.2	4.3		
17	Putumayo	76	7924	0	0	0	76	2295.50	0	0	0	1.1	3.2	10	10	10	6.8	5.3		
18	Quindio	1	807	0	3	0	1	143.6	0	0.5	0	9.9	9.6	10	8	10	9.5	9.4		
19	Risaralda	0	1838	0	3	0	0	194.2	0	0.3	0	10	9.5	10	8.8	10	9.7	9.6		
20	Santander	3	2030	0	14	0	3	99	0	0.7	0	9.6	9.8	10	7.5	10	9.4	9.2		
21	Sucre	0	2611	0	1	0	0	309.7	0	0.1	0	10	9.1	10	9.6	10	9.7	9.7		
22	Tolima	13	10923	0	1	0	13	777.9	0	0.1	0	8.5	7.7	10	9.7	10	9.2	8.9		
23	Valle del Cauca	16	59074	0	4	8	16	1293.50	0	0.1	0.2	8.1	6.2	10	9.7	6.6	8.1	7.2		
							Min	0	17.7	0	0					Min	3.4			
							Max	85	3359.1	1.3	2.7	0.5				Max	9.9			

*T: Terrorist attacks.

**D: Displaced by violence.

***Dth: Deaths in conflict-related events.

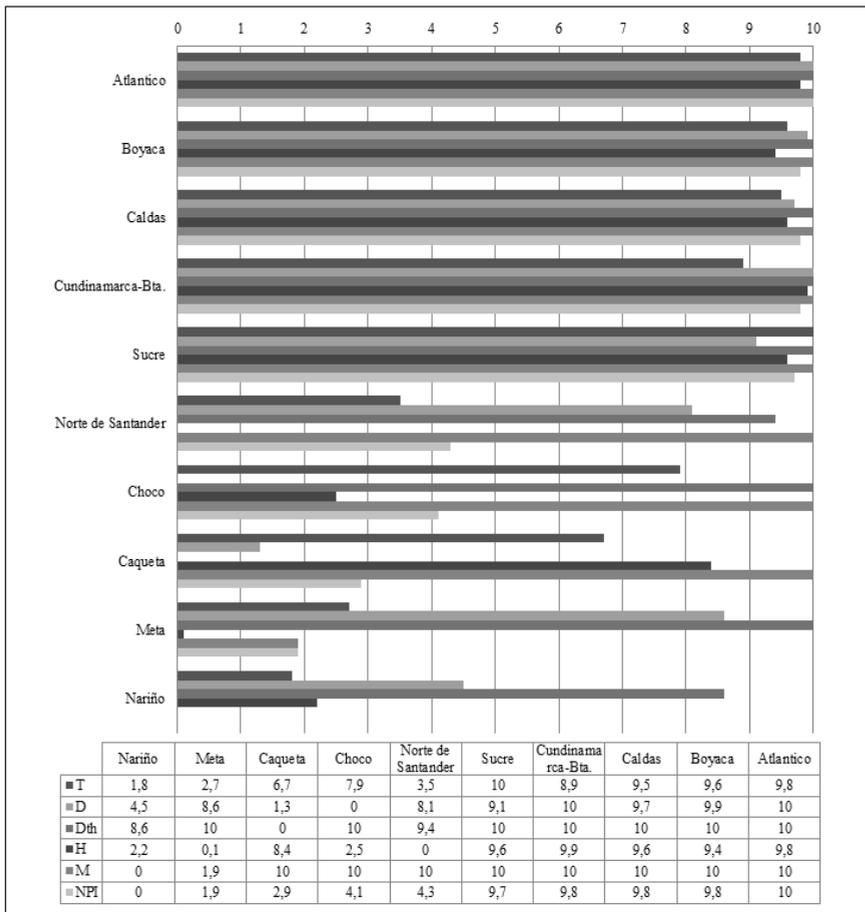
****H: Selected homicides (#victims).

*****M: Massacres (#victims).

Source: Prepared by the author based on data of Centro Nacional de Memoria Histórica, 2013; Unidad de Víctimas, 2014; Departamento Administrativo Nacional de Estadística, 2014.

The results show that Atlántico (10), Boyacá (9.8), Caldas (9.8), Cundinamarca-Bogotá (9.8), and Sucre (9.7) are the top five departments with the highest Negative Peace Index score (black colored). The bottom five departments are Nariño (0), Meta (1.9), Caquetá (2.9), Chocó (4.1), and Norte de Santander (4.3) (grey colored). The average score is 7.4, thus, eight departments of the sample (34%) fall below this score. Figure 8 shows the top-five and bottom-five results.

Figure 8. Top Five and Bottom Five Departments in the Negative Peace Index



*T: Terrorist attacks.

**D: Displaced by violence.

***Dth: Deaths in conflict-related events.

**** H: Selected homicides (#victims).

***** M: Massacres (#victims).

Source: Prepared by the author based on information of Centro Nacional de Memoria Histórica, 2013; Unidad de Víctimas, 2014; Departamento Administrativo Nacional de Estadística, 2014.

The following process was conducted for calculating the Positive Peace Index:

- Measures related to bank robbery, automobile robbery, cell-phone robbery, theft to commercial establishments, assaults, residential burglary and theft, sexual assault, and domestic violence were consulted for each department. The main source was the data-base for 2014 of the *Dirección de Investigación Criminal e Interpol – Ministry of Defense and National Police*.
- Each measure was standardized into 100,000/p scale.
- Variables standardization: Inversed max-min standardization was implemented. It is configured in a scale of 0 to 10, where 10 rates the highest peacefulness.
- Weight: Eight events were considered. Equal weight was assigned to each dimension (i.e. 1/8 each).
- Variables standardization: After the weighted sum of each inversed max-min positive peace measure was performed, max-min standardization was implemented once again.

Tables 10 and 11 present the Positive Peace Index.

Table 10. Calculation of the Positive Peace Index

#	Departments	Total										100,000/p.					
		BR*	AR**	TCE***	CER****	A ^	RB^^	SA^^^	DV^^^^	BR*	AR**	TCE***	CER****	A ^	RB^^	SA^^^	DV^^^^
1	Antioquia	8	1629	4231	2297	7213	1221	884	5240	0.13	25.54	66.34	36.01	113.09	19.14	13.86	82.16
2	Atlantico	15	342	3848	705	5432	693	858	2009	0.62	14.06	158.22	28.99	223.36	28.5	35.28	82.61
3	Bolivar	5	30	1170	395	1447	343	381	1011	0.24	1.45	56.44	19.05	69.8	16.55	18.38	48.77
4	Boyaca	2	27	879	553	2013	780	381	2200	0.16	2.12	68.96	43.39	157.93	61.19	29.89	172.6
5	Caldas	0	34	1122	136	2399	348	304	579	0	3.45	113.79	13.79	243.3	35.29	30.83	58.72
6	Caqueta	0	12	550	298	853	412	128	413	0	2.54	116.64	63.2	180.9	87.37	27.15	87.59
7	Cesar	2	135	775	271	1878	305	136	244	0.2	13.28	76.24	26.66	184.75	30	13.38	24
8	Choco	0	0	326	12	516	411	166	202	0	0	65.84	2.42	104.21	83	33.52	40.8
9	Cordoba	3	20	971	480	1599	508	359	667	0.18	1.17	56.8	28.08	93.53	29.71	21	39.01
10	Cundinamarca-Bogota	43	2409	10516	6703	29.195	5121	1448	10021	0.41	23.13	100.96	64.35	280.29	49.17	13.9	96.21
11	Huila	0	0	17	15	39	18	60	51	0	0	15.31	13.51	35.12	16.21	54.02	45.92
12	La Guajira	3	41	1590	611	2619	959	655	1857	0.26	3.59	139.41	53.57	229.63	84.08	57.43	162.82
13	Magdalena	2	25	1342	610	1374	410	335	931	0.16	2	107.57	48.9	110.14	32.86	26.85	74.63
14	Meta	6	65	1920	900	3124	1217	542	1675	0.64	6.89	203.59	95.43	331.26	129.05	57.47	177.61
15	Nariño	1	227	1155	227	2141	401	348	905	0.06	13.18	67.04	13.18	124.26	23.27	20.2	52.53
16	Norte de Santander	0	143	871	513	1748	432	515	2620	0	10.64	64.8	38.17	130.06	32.14	38.32	194.93
17	Putumayo	0	7	249	111	226	150	125	190	0	2.03	72.13	32.15	65.47	43.45	36.21	55.04

Continue

18	Quindío	1	43	1128	549	1852	685	210	241	0.18	7.65	200.67	97.67	329.47	121.86	37.36	42.87
19	Risaralda	2	107	1101	1119	2510	635	545	2056	0.21	11.3	116.31	118.21	265.15	67.08	57.57	217.19
20	Santander	2	47	2564	1118	6060	1108	1121	4862	0.1	2.29	125.01	54.51	295.46	54.02	54.66	237.05
21	Sucre	1	8	1307	126	1907	375	329	593	0.12	0.95	155	14.94	226.16	44.47	39.02	70.33
22	Tolima	1	68	1703	877	2864	1154	336	1414	0.07	4.84	121.27	62.45	203.95	82.18	23.93	100.69
23	Valle del Cauca	6	1.861	5376	1855	12849	1572	1780	5923	0.13	40.75	117.72	40.62	281.35	34.42	38.98	129.69
									Min	0	0	15.31	2.42	35.12	16.21	13.38	24
									Max	0.64	40.75	203.59	118.21	331.26	129.05	57.57	237.05

*BR: Bank robbery.
 **AR: Automobile robbery.
 ***CR: Cell-phone robbery.
 ****TCE: Theft to commercial establishments.
 A^: assaults.
 RB^^: Residential burglary.
 SA^^^: Sexual assault.
 DV^^^: Domestic violence.

Sources: Prepared by the author based on data of Ministry of Defense – National Police, 2014; Departamento Administrativo Nacional de Estadística, 2014.

Table 11. Positive Peace Index – Calculation

#	Departments	Inversed min-max standardized (1/8 each)										Weighted	PPI
		BR*	AR**	RB***	TCE****	A ^	HR^^	SA^^^	DV^^^				
1	Antioquia	8.03	3.73	7.29	7.1	7.37	9.74	9.89	7.27	7.55	8.49		
2	Atlantico	0.31	6.55	2.41	7.71	3.64	8.91	5.04	7.25	5.23	5.16		
3	Bolivar	6.21	9.64	7.82	8.56	8.83	9.97	8.87	8.84	8.59	9.99		
4	Boyaca	7.53	9.48	7.15	6.46	5.85	6.01	6.26	3.03	6.47	6.94		
5	Caldas	10	9.15	4.77	9.02	2.97	8.31	6.05	8.37	7.33	8.17		
6	Caqueta	10	9.38	4.62	4.75	5.08	3.69	6.89	7.02	6.43	6.88		
7	Cesar	6.91	6.74	6.76	7.91	4.95	8.78	10	10	7.76	8.78		

Continue

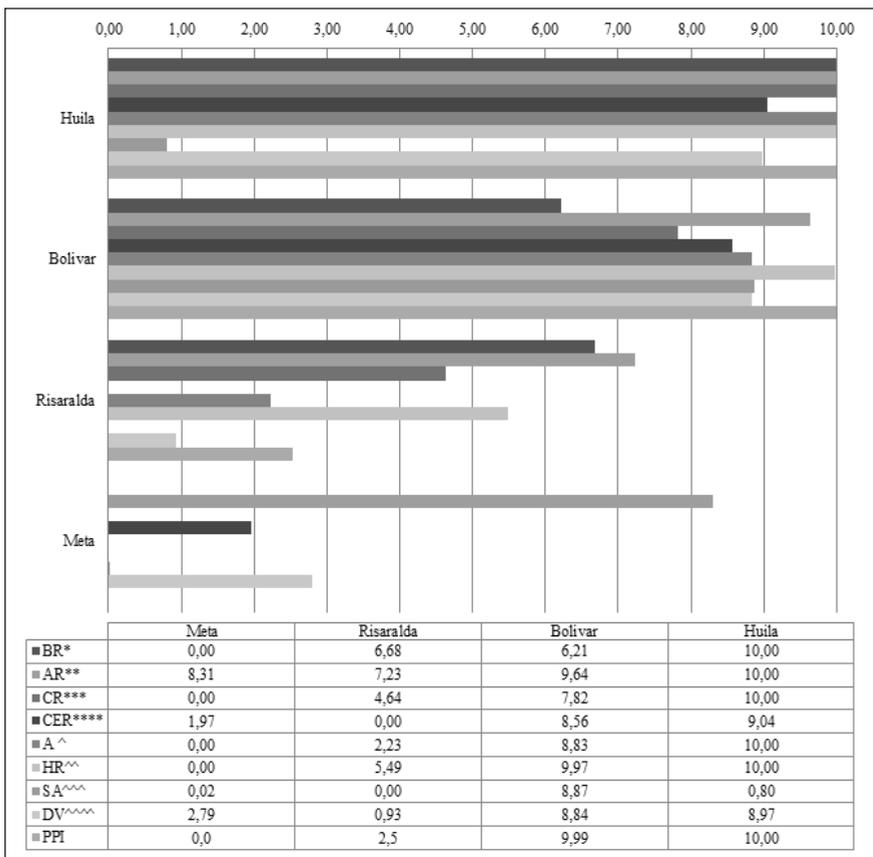
8	Choco	10	10	10	7.32	10	7.67	4.08	5.44	9.21	7.96	9.08
9	Cordoba	7.24	9.71	7.8	7.8	7.78	8.03	8.8	8.28	9.3	8.37	9.66
10	Cundinamarca-Bta.	3.51	4.32	5.45	5.45	4.65	1.72	7.08	9.88	6.61	5.4	5.41
11	Huila	10	10	10	10	9.04	10	10	0.8	8.97	8.6	10
12	La Guajira	5.87	9.12	3.41	3.41	5.58	3.43	3.98	0.03	3.48	4.36	3.92
13	Magdalena	7.48	9.51	5.1	5.1	5.99	7.47	8.52	6.95	7.62	7.33	8.17
14	Meta	0	8.31	0	0	1.97	0	0	0.02	2.79	1.64	0
15	Nariño	9.09	6.77	7.25	7.25	9.07	6.99	9.37	8.46	8.66	8.21	9.43
16	Norte de Santander	10	7.39	7.37	7.37	6.91	6.79	8.59	4.36	1.98	6.67	7.23
17	Putumayo	10	9.5	6.98	6.98	7.43	8.98	7.59	4.83	8.54	7.98	9.11
18	Quindio	7.2	8.12	0.16	0.16	1.77	0.06	0.64	4.57	9.11	3.96	3.33
19	Risaralda	6.68	7.23	4.64	4.64	0	2.23	5.49	0	0.93	3.4	2.53
20	Santander	8.47	9.44	4.17	4.17	5.5	1.21	6.65	0.66	0	4.51	4.13
21	Sucre	8.14	9.77	2.58	2.58	8.92	3.55	7.5	4.2	7.83	6.56	7.07
22	Tolima	8.88	8.81	4.37	4.37	4.82	4.3	4.15	7.61	6.4	6.17	6.51
23	Valle del Cauca	7.93	0	4.56	4.56	6.7	1.69	8.39	4.21	5.04	4.81	4.56
										Min	1.64	
										Max	8.6	

*BR: Bank robbery.
 **AR: automobile robbery.
 ***CR: Cell-phone robbery.
 ****TCE: Theft to commercial establishments
 A^: assaults.
 RT:^^: Residential burglary.
 SAAAA: Sexual assault.
 DV^^^: Domestic violence.

Sources: Prepared by the author based on information of the Ministry of Defense – National Policia, 2014; Departamento Administrativo Nacional de Estadística, 2014.

The results show that Huila (10), Bolivar (9.99), Cordoba (9.66), Nariño (9.43) and Putumayo (9.11), are the top five departments with the highest Positive Peace Index score (black colored). The bottom five departments are Meta (0), Risaralda (2.53), Quindio (3.33), and La Guajira (3.92) (grey colored). The average score is 6.72, thus, nine departments of the sample (39%) are below this score. Figure 9 shows the results in the top-two and bottom-two departments.

Figure 9. Top Two and Bottom Two Departments in the Positive Peace Index



*BR: Bank robbery.
 **AR: Automobile robbery.
 ***CR: Cell-phone robbery.
 ****TCE: Theft to commercial establishments.
 A^: assaults.
 RB^^: Residential Burglary.
 SA^^^: Sexual assault.
 DV^^^^: Domestic violence.

Table 12 presents the Building Peace Index. The following process was conducted for this calculation:

- **Weighting:** The Building Peace Index is the weighted sum of the Negative Peace Index and the Positive Peace Index. Both were weighted as 50%.
- **Variables standardization:** After the weighted calculation, max-min standardization was implemented.

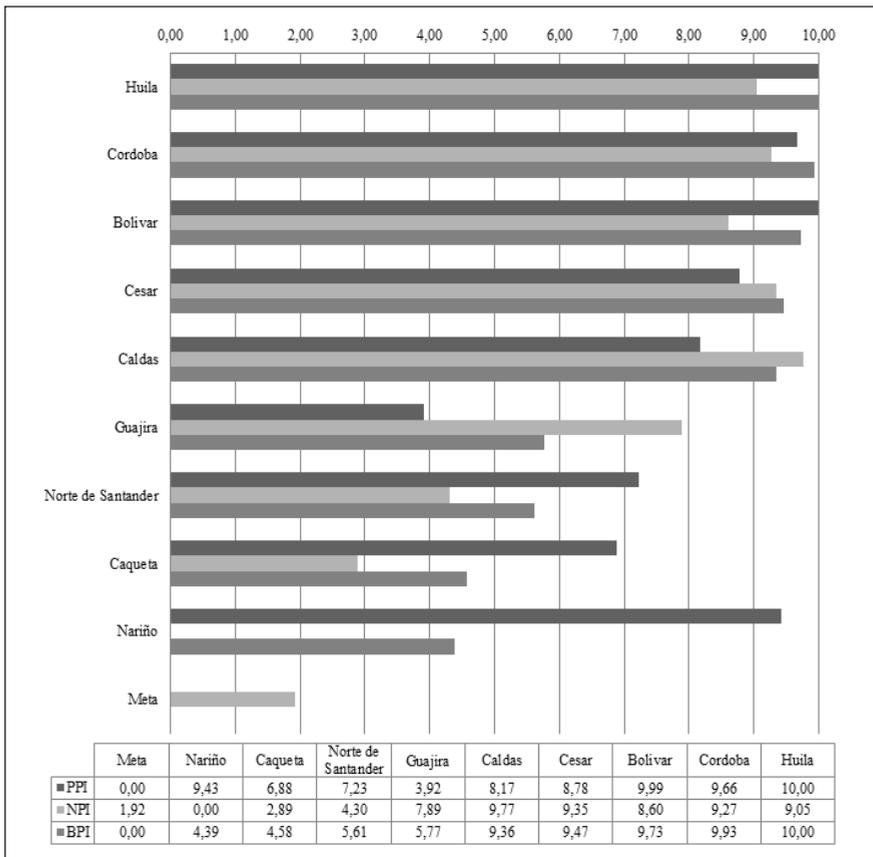
Table 12. Building Peace Index

#	Departments	PPI	NPI	Weighted (50% each)	BPI
1	Antioquia	8.49	4.90	6.69	6.70
2	Atlantico	5.16	10	7.58	7.73
3	Bolivar	9.99	8.60	9.29	9.73
4	Boyaca	6.94	9.82	8.38	8.66
5	Caldas	8.17	9.77	8.97	9.36
6	Caqueta	6.88	2.89	4.88	4.58
7	Cesar	8.78	9.35	9.07	9.47
8	Choco	9.08	4.09	6.59	6.57
9	Cordoba	9.66	9.27	9.47	9.93
10	Cundinamarca	5.41	9.78	7.59	7.74
11	Huila	10	9.05	9.52	10
12	La Guajira	3.92	7.89	5.90	5.77
13	Magdalena	8.17	9.41	8.79	9.14
14	Meta	0.00	1.92	0.96	0
15	Nariño	9.43	0	4.72	4.39
16	Norte de Santander	7.23	4.30	5.77	5.61
17	Putumayo	9.11	5.29	7.20	7.28
18	Quindio	3.33	9.37	6.35	6.29
19	Risaralda	2.53	9.61	6.07	5.97
20	Santander	4.13	9.17	6.65	6.64
21	Sucre	7.07	9.73	8.40	8.69
22	Tolima	6.51	8.88	7.69	7.86
23	Valle del Cauca	4.56	7.25	5.91	5.77
			Min	0.96	
			Max	9.52	

Source: Prepared by the author based on the Negative Peace Index (table 9) and the Positive Peace Index (tables 10, 11).

The results show that Huila (10), Cordoba (9.93), Bolivar (9.73), Cesar (9.47), and Caldas (9.36), are the top five departments with the highest Peace Building Index score (black colored). The bottom five departments are Meta (0), Nariño (4.39), Caqueta (4.58), Norte de Santander (5.61), and La Guajira (5.77) (grey colored). The average score is 7.13, thus, eleven departments of the sample (47%) are below this score. Figure 10 presents the results the top-five and bottom-five results.

Figure 10. Top Five and Bottom Five Departments in the Building Peace Index



Source: Prepared by the author based on the Negative Peace Index (Table 9) and the Positive Peace Index (Tables 10, 11).

5.1.3. Productive Entrepreneurship Index

In this section, the Productive Entrepreneurship Index for the Colombian department’s sample is elaborated. For this study, the concept of productive

entrepreneurship is based on Schumpeter’s ideas, The Key mechanism for economic development is the radical innovation (1942), this process is both continuously disturbed and boosted by the entrepreneurs’ action through *new combinations*, such as 1) the introduction of new products/services, or its improvement in terms of quality, 2) a new production method, 3) new markets, 4) new sources of suppliers, and 5) the (re)organization of industries. When this happens as a *cascading* process, it is called *creative destruction* (Klimek et al., 2012). Accordingly, table 13 shows the three measures considered to construct the Productive Entrepreneurship Index.

Table 13. Productive Entrepreneurship Index: Measures and Definitions

Employments/ Number of establishments	The number of legal establishments registered on the chambers of commerce is not a good proxy of productive entrepreneurship. Among other aspects, these establishments should generate legal employment. Albeit, in several departments a higher number of registered establishments generate less employment than expected. For example: Cundinamarca and Bogota have 232.226 establishments while Valle del Cauca has 65.000 (3.5 less establishments). The employment generated by these establishments is 2’7 million in Cundinamarca and Bogotá and 0.8 million in Valle del Cauca. Consequently, the relation employment/number of establishments in Valle del Cauca is 12.27, while in Cundinamarca and Bogotá it is 11.73. In sum, with 1/4 of the establishments registered in Cundinamarca and Bogotá, Valle del Cauca shows a superior performance on the employment/establishment relation.
Sector Complexity Index	This index calculates the amount of capabilities required by a specific sector to operate. This measure considers all productive sectors generating employment, included the service and public sectors. A sector is <i>complex</i> if it requires a high level of <i>productive know-how</i> , where many individuals with highly specialized knowledge work in large companies, such as the financial sector or pharmaceuticals. See Annex 5 for a detailed explanation on the methodology used for its calculation.

Source: Prepared by the author based on data of Datlas-Colombia, 2014.

The following process was conducted for the Productive Entrepreneurship Index calculation:

- Measures related with employment/number of establishments and sector complexity were consulted for each department. The main source for information of 2014 was Datlas-Colombia.
- Variables standardization: Max-min standardization was implemented. It is configured in a scale of 0 to 10, where 10 is the highest positive peace condition.
- Weight: There were two measures considered. Equal weight is assigned to each measure (i.e. 1/2 each).
- Variables standardization: After the weighted sum of each standardized max-min productive entrepreneurship measure was performed, max-min standardization was implemented once again.

Table 14 presents the Productive Entrepreneurship Index.

Table 14. Productive Entrepreneurship Index

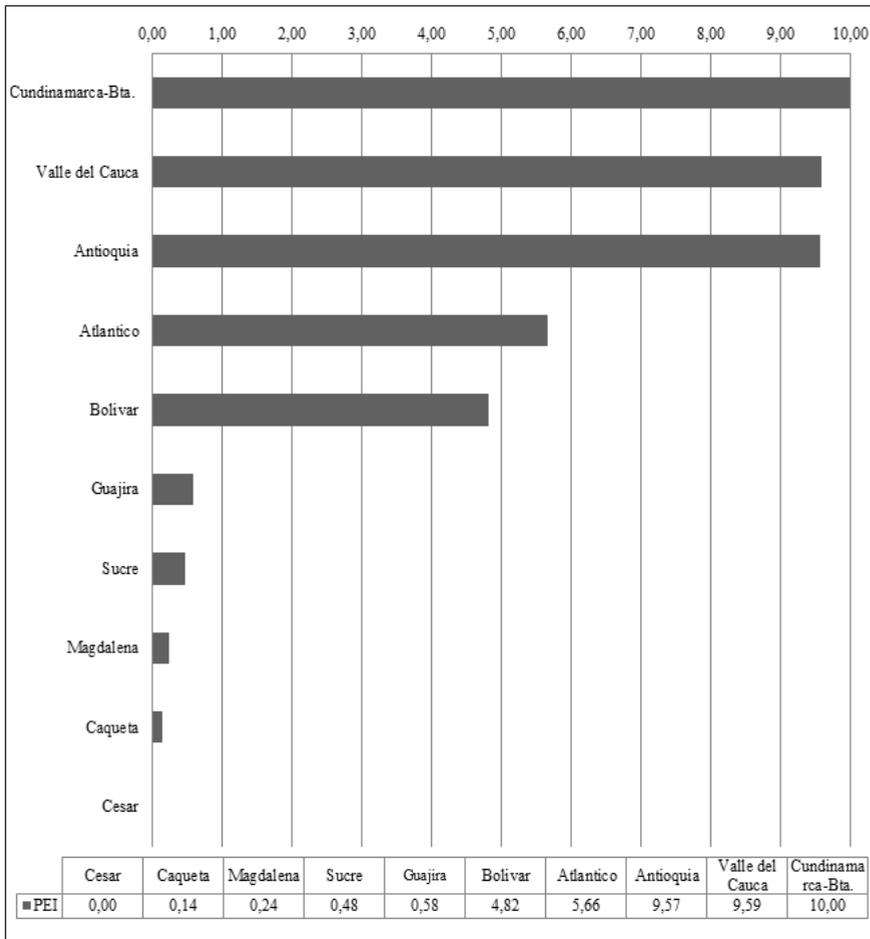
#	Departments	Employment Establishments	Industry Complexity	Max-Min Standardized		Weighted	PEI
				Emp/ Estab	Industrial Complexity		
1	Antioquia	11.58	0.81	8.81	9.57	14.48	9.57
2	Atlantico	10.22	0.54	6.44	5.71	9.43	5.66
3	Bolivar	9.95	0.48	5.97	4.86	8.34	4.82
4	Boyaca	6.63	0.45	0.20	4.43	5.03	2.25
5	Caldas	8.19	0.56	2.91	6.00	7.95	4.52
6	Caqueta	7.60	0.2	1.88	0.86	2.30	0.14
7	Cesar	7.72	0.18	2.09	0.57	2.12	0
8	Choco	10.66	0.14	7.21	0.00	4.10	1.54
9	Cordoba	7.56	0.25	1.83	1.57	2.98	0.67
10	Cundinamarca-Bta.	11.73	0.84	9.06	10	15.03	10
11	Huila	7.76	0.28	2.16	2.00	3.58	1.13
12	Guajira	8.58	0.18	3.59	0.57	2.87	0.58
13	Magdalena	7.26	0.23	1.29	1.29	2.43	0.24
14	Meta	9.98	0.25	6.02	1.57	5.08	2.30
15	Nariño	8.10	0.25	2.75	1.57	3.45	1.03
16	Norte de Santander	6.51	0.36	0.00	3.14	3.64	1.18
17	Putumayo	9.52	0.19	5.22	0.71	3.82	1.32
18	Quindio	8.13	0.37	2.81	3.29	5.19	2.38
19	Risaralda	8.05	0.57	2.67	6.14	7.98	4.54
20	Santander	7.65	0.45	1.97	4.43	5.92	2.94
21	Sucre	6.62	0.29	0.18	2.14	2.73	0.48
22	Tolima	6.66	0.31	0.26	2.43	3.06	0.73
23	Valle del Cauca	12.27	0.77	10	9	14.50	9.59
	Max.	12.27	0.84		Max.	15.03	
	Min.	6.51	0.14		Min.	2.12	

Source: Prepared by the author based on data of Datlas-Colombia, 2014.

The results show that Cundinamarca and Bogota (10), Valle del Cauca (9.59), Antioquia (9.57), Atlantico, (5.66), and Bolívar (4.82) are the

top five departments with the highest Productive Entrepreneurship Index (black colored). The bottom five departments are Cesar (0), Caqueta (0.14), Magdalena (0.24), Sucre (0.48), and La Guajira (0.58) (grey colored). The average score is 2.94, thus, 15 departments of the sample (65%) fall below this score. Figure 11 shows the top-five and bottom-five results.

Figure 11. Top Five and Bottom Five Departments in the Productive Entrepreneurship Index



Source: Prepared by the author based on information of Datlas-Colombia, 2014.

In synthesis, Table 15 shows the three indexes constructed in the previous sections.

Table 15. Institutional Strength Index (ISI), Building Peace Index (BPI) and Productive Entrepreneurship Index (PEI)

#	Department	ISI	BPI	PEI
1	Antioquia	9.49	6.7	9.57
2	Atlantico	5.6	7.73	5.66
3	Bolivar	5.21	9.73	4.82
4	Boyacá	7.94	8.66	2.25
5	Caldas	10	9.36	4.52
6	Caqueta	2.03	4.58	0.14
7	Cesar	6.49	9.47	0
8	Choco	0	6.57	1.54
9	Cordoba	6.17	9.93	0.67
10	Cundinamarca-Bta.	8.52	7.74	10
11	Huila	6.75	10	1.13
12	La Guajira	2.83	5.77	0.58
13	Magdalena	5.26	9.14	0.24
14	Meta	7.9	0	2.30
15	Nariño	7.65	4.39	1.03
16	Norte de Santander	6.58	5.61	1.18
17	Putumayo	2.44	7.28	1.32
18	Quindio	8.44	6.29	2.38
19	Risaralda	9.16	5.97	4.54
20	Santander	9.75	6.64	2.94
21	Sucre	5.08	8.69	0.48
22	Tolima	8.62	7.86	0.73
23	Valle del Cauca	6.9	5.77	9.59

Source: Tables 6, 12, and 14.

5.2. Correlations

This section presents the results on the correlation of Institutional Strength Index, Building Peace Index, and Productive Entrepreneurship Index (for an extended statistical exploratory analysis see Annex 6). Table 16 presents these results.

Table 16. Correlations of the Institutional Strength Index (ISI) and the Building Peace Index (BPI) (Considering the Negative Peace Index –NPI– and the Positive Peace Index –PPI–), and the Productive Entrepreneurship Index –PEI–.

Indexes	Pearson correlation	ISI	NPI	PPI	BPI	PEI
ISI	Pearson correlation	1				
	Significance (bilateral)					
NPI	Pearson correlation	.286	1			
	Significance (bilateral)	.186				
PPI	Pearson correlation	-.296	-.030	1		
	Significance (bilateral)	.170	.891			
BPI	Pearson correlation	.015	.734**	.657**	1	
	Significance (bilateral)	.947	0	.001		
PEI	Pearson correlation	.414*	.138	-.208	-.037	1
	Significance (bilateral)	.049	.530	.341	.866	

* Includes: Negative Peace Index –NPI– and Positive Peace Index –PPI– and Productive Entrepreneurship Index –PEI–.

Source: Prepared by the author using SPSS based on tables 6, 12, and 14.

On the one hand, the results show that there is a significant correlation ($p < 0.05$) between the Institutional Strength Index and the Productive Entrepreneurship Index. The significant correlation ($p < 0.01$) between the Building Peace Index and its components were excluded. On the other hand, there is a negative correlation, although non-significant, between: 1) the Positive Peace Index and the Institutional Strength Index, 2) the Productive Entrepreneurship Index and the Positive Peace Index; as well as between 3) the Productive Entrepreneurship Index and Building Peace Index.

In a second look, it was found that the population was the variable with the highest number of significant correlations with the indexes, indicators and measures considered in this study. Table 17 presents these results.

Table 17. Correlation of Population and Indexes, Indicators and Measures Considered for this Study

Indexes, Indicators and Measures	Pearson Correlation	Population
Productive Entrepreneurship Index	Pearson correlation	.823**
	(Bilateral) Significance	.000
Formal employment/number of establishments	Pearson correlation	.639**
	(Bilateral) Significance	.001

Continue

Indexes, Indicators and Measures	Pearson Correlation	Population
Gross Domestic Product	Pearson correlation	.965**
	(Bilateral) Significance	.000
Industrial Complexity Index	Pearson correlation	.788**
	(Bilateral) Significance	.000
Market Efficiency, wgi: Regulatory Quality.	Pearson correlation	.634**
	(Bilateral) Significance	.001
Bank robbery/100.000 p.	Pearson correlation	.877**
	(Bilateral) Significance	.000
Automobile robbery/100.000 p.	Pearson correlation	.942**
	(Bilateral) Significance	.000
Cell-phone robbery/100.000 p.	Pearson correlation	.944**
	(Bilateral) Significance	.000
Commerce establishment robbery/100.000 p.	Pearson correlation	.938**
	(Bilateral) Significance	.000
Assaults/100.000 p.	Pearson correlation	.930**
	(Bilateral) Significance	.000
Houses robbery/100.000 p.	Pearson correlation	.878**
	(Bilateral) Significance	.000
Sexual assaults/100.000 p	Pearson correlation	.750**
	(Bilateral) Significance	.000
Domestic violence/100.000 p.	Pearson correlation	.913**
	(Bilateral) Significance	.000

Source: Author's calculation using SPSS based on Tables 1, 6, 12, and 14.

Population has a significant correlation ($p < 0.01$) with: 1) the productive entrepreneurship variables (the overall index, the Industrial Complexity Index, and the formal employment/number of establishments); 2) the Gross Domestic Product; 3) the institutional strength indicators, specifically, regulatory quality; and 4) the standardized measures normalized into 100.000/habitants scale considered for the Positive Peace Index (bank robbery, automobile robbery, cell-phone robbery, theft to commercial establishments, assaults, residential burglary, sexual assaults, and domestic violence).

These results are consistent with others studies found in the scientific literature. Firstly, the correlation between inclusive institutions and productive entrepreneurship is discussed. As it was mentioned in the introduction, Baumol (1996), Acemoglu and Robinson (2012) argue that inclusive institutions such as the intellectual property protection boost productive entrepreneurship. The steam machine, for instance, produced a chain of technological advances, initiated by Denis Papin and Thomas Savery, and continued by Thomas Newcomen and James Watt. This disruptive innovation changed the coal extraction sector, and with it the energy, transport, steel and textile sectors. Incentives for invention through patents were essential to consolidate entrepreneurial initiatives of this kind in the Industrial Revolution.

Secondly, the correlation of population, innovation and economic growth is discussed (*i.e.* industrial complexity, formal employment, and Gross Domestic Product). According to Jones and Romer (2009), innovation is the result of coming up with new ideas, additionally, the number of new ideas is proportional to population. Consequently, an increasing stock of ideas makes larger production possible. An example can be seen in the metropolitan areas in the United States during the period 1980-2001. Bettencourt *et al.* (2007) found a supralinear effect whereby new patents are granted in larger urban areas that show increasing returns due to the creative thinking activity contrasted with the population size. Additionally, the presence of inventors, R&D establishments, and general employment of the creative professions take place mostly in larger metropolitan areas. Furthermore, there is additional evidence of this in Colombian context. The top five departments of the sample with the highest population in 2014 are Cundinamarca-Bogota, Antioquia, Valle del Cauca, Atlantico, and Bolivar (in sum: 25.8 million). These five departments produced 84% of all the patents registered between 2005-2014 (Observatorio Colombiano de Ciencia y Tecnologia, 2015).

Finally, the correlation between population and crime is discussed. According to Bettencourt *et al.* (2010), the cities are disproportionally the centers of innovation and wealth, but also, at the same time, they are the centers of crime, all approximately at the same degree. This correlation has been proven in previous studies (Goldstone, 2002; Nolan, 2004). Another appraisal suggested by Buonanno *et al.* (2014) sustains that since the 1970's in the United States there is a Crime Kuznets Curve: as income levels have risen, crime has followed an inverted U-shaped pattern, first increasing and then dropping.

6. Conclusions

To conceive a desired future for the Colombian society it is necessary to deeply understand its past. The colonial destructive legacies, whose effects remain until today, are the extractive institutions. The intensive use of slavery for gold-mining enterprises and the monopoly of political participation have caused longitudinal poverty in several regions and the ignition of the oldest armed conflict in America. In recent years, this has been changing. The Colombian society, more than ever, has the historical opportunity to end the armed conflict. For this to endure, it needs a real change on the institutions. Now institutions should be inclusive: State entities should increase their accountability, transparency, and effectiveness; they have to guarantee political pluralism, enlarge their presence in the territory in order to legitimate the use of physical force when needed, and create incentives to boost processes of *creative destruction* through entrepreneurship.

When considering into international assessments related to institutional strength, peace, and entrepreneurship, Colombia's performance is divergent. The country has an outstanding performance in areas related to regulatory quality, entrepreneurship activity, ambitious entrepreneurs, and innovative entrepreneurs; at the same time, it shows a stagnated-low performance in areas related to perception of corruption, and entrepreneurship ecosystem rating expressed by experts; and a poor performance in areas related to political stability and absence of violence/terrorism, and peacefulness. Now, what is the situation of the Colombian departments in these three *so-called* development pillars?

At first glance, there is not a significant correlation of all three aspects. Albeit, there is a significant correlation between institutional strength and productive entrepreneurship. It means that departments with favorable assessment on voice and accountability, government effectiveness, control of corruption, rule of law, political stability and absence of violence/terrorism, and regulatory quality. They also have presence of productive entrepreneurship in terms of formal employment and sophisticated and innovative industrial sectors. However, there are departments showing simultaneously medium-low levels of peacefulness (negative and positive) and high levels of productive entrepreneurship (*i.e.* Atlantico, Antioquia, Cundinamarca and

Bogota, and Valle del Cauca); other departments evidencing high levels of peacefulness and, at the same time, low levels of productive entrepreneurship (*i.e.* Huila, Cordoba, and Cesar); and other departments with high levels of institutional strength together with medium-low levels of peacefulness (*i.e.* Risaralda, Santander, and Tolima). It seems that these the conditions can coexist independently. At a second glance, the measure that showed the highest number of significant correlations among the variables considered for this study was population. These preliminary conclusions were supported by literature.

Nevertheless, there are limitations for this study. Firstly, future research on these topics should have a deepen analysis on historical background for each regions. Secondly, this study covers 23 of the 32 departments (71 %) in Colombia; depending on data availability, all Colombian departments should be analyzed. In the third place, this is a study on the correlations established by institutions, peace, and entrepreneurship; hence, these results should not be taken as cause-effect conclusions. Correlation does not imply causation. Three further steps are required to demonstrate cause: 1) solving problems related to *reverse causality*, 2) *omitted variable*; and 3) gathering further data produced by different disciplines and methodologies for a comparative analysis.⁵

As a final consideration, interdisciplinary, or better said, anti-disciplinary studies should present new and diverse appraisals to complex problems, such as peacebuilding and development. Additionally, the results of these studies should be deployed to the society, beyond papers, conferences, and lectures. Big data visualization platforms are good examples of these deployment strategies.⁶ Open data should be available to society in order to increase its knowledge, its power to decide and to construct a collective desired future, ultimately, its capabilities to construct peace.

5 For a brief explanation on these three steps, see: Diamond & Robinson, 2011, p. 266-267.

6 International commerce: <http://atlas.media.mit.edu/en/>; Cultural exportation: <http://pantheon.media.mit.edu/>; Syria's humanitarian crisis <http://www.syria-visualized.com/>; USA Public Open Data <http://datausa.io/>; Colombian Economic Complexity Observatory <http://datlacolombia.com/>

7. References

- Acemoglu, D., & Robinson, J. (2008). *The role of institutions in growth and development*. Washington: The World Bank.
- Acemoglu, D., & Robinson, J. (2012). *Por qué fracasan los países*. Bogotá: Deusto.
- Acemoglu, D., García, C., & Robinson, J. (2012). Finding Eldorado: Slavery and long-run development in Colombia. *Journal of Comparative Economics*, 40(4), 534-564.
- Acemoglu, D., Johnson, S., & Robinson, J. (2005). Institutions as the fundamental causa of long-run growth. In P. Aghion, & S. Durlauf, *Handbook of Economic Growth* (pp. 385-472). North Holland: Elsevier.
- Baumol, W. (1996). Entrepreneurship: Productive, unproductive, and destructive. *Journal of Business Venturing*, 11, 3-22.
- Bettencourt, L., Lobo, J., & Strumskyc, D. (2007). Invention in the city: Increasing returns to patenting as a scaling function of metropolitan size. *Research Policy*, 36(1), 107-120.
- Bettencourt, L., Lobo, J., Strumsky, D., & West, G. (2010). Urban scaling and its deviations: Revealing the structure of wealth, innovation and crime across cities. *PlosOne*, 5(11), e13541.
- Boutros-Ghali, B. (1992). *An agenda for peace: Preventive diplomacy, peacemaking and peace-keeping*. New York: Report of the Secretary-General pursuant to the statement adopted by the Summit Meeting of the Security Council on 31 January 1992.
- Buonanno, P., Fergusson, L., & Vargas, J. (2014). *The crime Kuznets curve*. Bogotá: Universidad de los Andes.
- Centro Nacional de Memoria Histórica (2013). *Date-base from the report: ¡Basta ya!* Retrieved from <http://goo.gl/1RJz7W>. [Last visit: 07/07/2016]
- Ching-Chi, H., & Pugh, M. (1993). Poverty, Income Inequality, and Violent Crime: A Meta-Analysis of Recent Aggregate Data Studies. *Criminal Justice Review*, 18(2), 182-202.
- Collier, P., & Hoeffler, A. (2004). Greed and grievance in civil war. *Oxford Economic Papers*, 56(2004), 563-595.
- Congress of the Republic of Colombia (1997). *Ley 387 - 1997*. Retrieved from: <http://goo.gl/5JjKK0>. [Last visit: 07/07/2016]

- Consejo Privado de Competitividad –CEPEC– (2014). *Índice departamental de competitividad*. Bogotá: Zetta Comunicadores.
- Crime and Violence Indicators-Organization of American States (2011). *Indicadores sobre crimen y violencia*. Retrieved from <http://goo.gl/YQ0ubl>. [Last visit: 07/07/2016]
- Datlas-Colombia (2014). *Datlas*. Retrieved from <http://goo.gl/cFpPZw>. [Last visit: 07/07/2016]
- Departamento Administrativo Nacional de Estadística (2014). *Encuesta continua de hogares*. Retrieved from <http://goo.gl/tuoGmH>. [Last visit: 07/07/2016]
- Department of Peace and Conflict Research (2014). *Definitions*. Retrieved from <http://goo.gl/6B0oqG>. [Last visit: 07/07/2016]
- Diamond, J., & Robinson, J. (2011). *Natural experiments of history*. Boston: Harvard University Press.
- Easterly, W. (2013). *The tyranny of experts*. New York: Basic Books.
- El Espectador (06/07/2016). *Frente de las FARC dice que no entregará las armas*. Retrieved from <http://goo.gl/QAeXe9>. [Last visit: 07/07/2016]
- El Espectador. (22/06/2016). *Histórico: Gobierno y FARC logran acuerdo sobre cese bilateral*. Retrieved from <http://goo.gl/719oNf>. [Last visit: 07/07/2016]
- Galtung, J. (1969). Violence, peace, and peace research. *Journal of Peace Research*, 6(3), 167-191.
- Global Entrepreneurship Monitor - World Economic Forum (2015). *Leveraging Entrepreneurship Ambition and Innovation*. Retrieved from <http://goo.gl/c1P2I8>. [Last visit: 07/07/2016]
- Global Entrepreneurship Monitor. (2016). *Global Entrepreneurship Monitor*. Retrieved from <http://www.gemconsortium.org/>. [Last visit: 07/07/2016]
- Goldstone, J. (2002). How demographic change can lead to violent conflict. *Journal of International Affairs*, 56(1), 3-22.
- Hall, P., & Taylor, R. (1996). Political science and the three new institutionalism. Köln: Max-Planck-Institut für Gesellschaftsforschung.
- Halloran, N. (2015). *Fallen*. Retrieved from <http://www.fallen.io/ww2/>. [Last visit: 07/07/2016]
- Ho, K. (2007). Structural violence as a human rights violation. *Essex Human Rights Review*, 4(2), 1-17.
- Institute for Economics and Peace. (2015) *Global Peace Index*. Sydney: Institute for Economics and Peace. Retrieved from <http://goo.gl/Ysg7qe>. [Last visit: 07/07/2016]

- Institute for Economics and Peace (2015). *Positive peace report*. Sydney: Institute for Economics and Peace.
- International Alert (2006). *Local business. local peace: The peacebuilding potential of the domestic private sector*. London: International Alert.
- Jones, C., & Romer, P. (2009). *The new Kaldor facts: Ideas, institutions, population, and human capital*. Massachusetts: National Bureau of Economic Research.
- Kelley, D., Singer, S., & Herrington, M. (2015). *Global report*. Babson Park: Global Entrepreneurship Monitor.
- Klimek, P., Hausmann, R., & Thurner, S. (2012). Empirical confirmation of creative destruction from world trade data. *PlosOne*, 7(6), e38924.
- Koubi, V., Spilker, G., Böhmelt, T., & Bernauer, T. (2014). Do natural resources matter for interstate and intrastate armed conflict? *Journal of Peace Research*, 51(2), 227-243.
- Langbein, L., & Knack, S. (2010). The worldwide governance indicators: Six, one, or none? *Journal of Development Studies*, 46(2), 350-370.
- Lederach, J. (1997). *Building peace*. Washington: United States Institute of Peace Press.
- Mehlum, H., Moene, K., & Torvik, R. (2006). Institutions and the resource curse. *The Economic Journal*, 116, 1-20.
- Ministerio de Defensa - Policía Nacional (2014). *Cifras*. Retrieved from <http://goo.gl/d0vx8R>. [Last visit: 07/07/2016]
- Nasi, C. (2012). Instituciones políticas para el posconflicto. In A. Rettberg. *Construcción de paz en Colombia* (pp. 51-88). Bogotá: Universidad de los Andes
- Nolan, J. (2004). Establishing the statistical relationship between population size and UCR crime rate: Its impact and implications. *Journal of Criminal Justice*, 32(6), 547-555.
- North, D. (1991). Institutions. *Journal of Economic Perspectives*, 5(1), 97-112.
- Observatorio Colombiano de Ciencia y Tecnología (2015). *Informe anual de indicadores*. Bogotá: Observatorio Colombiano de Ciencia y Tecnología.
- Ostrom, E. (1986). An agenda for study of institutions. *Public Choice*, 48(1), 3-25.
- Red Cross. (2009). Interview with Peter Wallensteen. *International Review of the Red Cross*, 91(873), 7-19.

- Rettberg, A., Leiteritz, R., & Nasi, C. (2011). Private sector and entrepreneurial activity in the context of armed conflict: Exploring the mutual determinants between business and organized violence in Colombia. *Journal of Small Business and Entrepreneurship*, 24(2), 179-196.
- Schumpeter, J. (1942). *Capitalism, socialism and democracy* (Vol. 7). New York: Harper.
- Scott, W. (2004). Institutional theory: Contributing to a theoretical research program. In K. Smith, & M. Hitt, *Great minds in management: The process of theory development* (Available on-line). Oxford: Oxford University Press.
- The World Bank (1994). *The World Bank's experience - Governance*. Washington, D.C.: The World Bank.
- The World Bank (2002). *Worldwide governance indicators*. Retrieved from <http://goo.gl/vtnBJ6>. [Last visit: 07/07/2016]
- The World Bank (2016). *Worldwide governance indicators*. Retrieved from <http://goo.gl/h8MTeg>. [Last visit: 07/07/2016]
- Transparencia por Colombia (2015). *Índice de transparencia departamental*. Retrieved from <http://indicedetransparencia.org.co/QueEs>. [Last visit: 07/07/2016]
- Transparency International (2015). *Corruption Perception Index*. Retrieved from <http://goo.gl/Zy2zh5>. [Last visit: 07/07/2016]
- UNHCR (2016). *Global trends: Forced displacement in 2015*. Geneva: UNHCR.
- Unidad de Víctimas (2014). *Registro único de víctimas*. Retrieved from <http://goo.gl/uztKnL>. [Last visit: 07/07/2016]
- United Nations (n.d.). *Global issues*. Retrieved from <http://goo.gl/32vxNm>. [Last visit: 07/07/2016]
- World Economic Forum (2015). *The global competitiveness report 2015-2016*. Retrieved from <http://goo.gl/Tq3vZm>. [Last visit: 07/07/2016]
- Weiss, T. (2000). Governance, good governance and global governance: conceptual and actual challenges. *Third World Quarterly*, 21(5), 795-814.
- Williamson, O. (1985). *The economic institutions of capitalism: Firms, markets, relational contracting* (1 ed.). New York: The Free Press.

Annexes

Annex 1: Worldwide Governance Bank Data Source

1. African Development Bank -Country Policy and Institutional Assessments (ADB)
2. African Electoral Index (IRP)
3. Afrobarometer (AFR)
4. Asian Development Bank -Country Policy and Institutional Assessments (ASD)
5. Business Enterprise Environment Survey (BPS)
6. Bertelsmann Transformation Index (BTI)
7. Cingranelli Richards Human Rights Database (HUM)
8. European Bank for Reconstruction and Development Transition Report (EBR)
9. Economist Intelligence Unit (EIU)
10. Freedom House (FRH)
11. Freedom House -- Countries at the Crossroads (CCR)
12. Global Corruption Barometer Survey (GCB)
13. Global Competitiveness Report (GCS)
14. Global Insight Business Condition and Risk Indicators (WMO)
15. Global Integrity Index (GII)
16. Gallup World Poll (GWP)
17. Heritage Foundation Index of Economic Freedom (HER)
18. IFAD Rural Sector Performance Assessments (IFD)
19. iJET Country Security Risk Ratings (IJT)
20. Institute for Management & Development World Competitiveness Yearbook (WCY)
21. Institutional Profiles Database (IPD)
22. International Research & Exchanges Board Media Sustainability Index (MSI)
23. International Budget Project Open Budget Index (OBI)
24. Latinobarometro (LBO)
25. Political Economic Risk Consultancy (PRC)
26. Political Risk Services International Country Risk Guide (PRS)
27. Political Terror Scale (PTS)

28. Reporters Without Borders Press Freedom Index (RSF)
29. US State Department Trafficking in People Report (TPR)
30. Vanderbilt University's Americas Barometer (VAB)
31. World Bank Country Policy and Institutional Assessments (PIA)
32. World Justice Project Rule of Law Index (WJP)

Annex 2: Corruption Perception Index Data Sources

1. African Development Bank Governance Ratings 2014
2. Bertelsmann Foundation Sustainable Governance Indicators 2015
3. Bertelsmann Foundation Transformation Index 2016
4. Economist Intelligence Unit Country Risk Ratings 2015
5. Freedom House Nations in Transit 2015
6. Global Insight Country Risk Ratings 2014
7. IMD World Competitiveness Yearbook 2015
8. Political and Economic Risk Consultancy Asian Intelligence 2015
9. Political Risk Services International Country Risk Guide 2015
10. World Bank - Country Policy and Institutional Assessment 2014
11. World Economic Forum Executive Opinion Survey (EOS) 2015
12. World Justice Project Rule of Law Index 2015

Annex 3: Global Peace Index

1. Variables of ongoing domestic and international conflict
 - a. Number of external and internal conflicts fought: 2004-09
 - b. Estimated number of deaths from organized conflict (external)
 - c. Number of deaths from organized conflict (internal)
 - d. Level of organized conflict (internal)
 - e. Relations with neighbouring countries
2. Measures of societal safety and security
 - a. Perceptions of criminality in society
 - b. Number of displaced people as a percentage of the population
 - c. Political instability
 - d. Level of disrespect for human rights (Political Terror Scale)
 - e. Potential for terrorist acts
 - f. Number of homicides per 100,000 people

- g. Level of violent crime
 - h. Likelihood of violent demonstrations
 - i. Number of jailed population per 100,000 people
 - j. Number of internal security officers and police per 100,000 people
3. Measures of militarization
- a. Military expenditure as a percentage of GDP
 - b. Number of armed services personnel per 100,000 people
 - c. Volume of transfers (imports) of major conventional weapons per 100,000 people
 - d. Volume of transfers (exports) of major conventional weapons per 100,000 people
 - e. Funding for UN peacekeeping missions: outstanding contributions versus annual assessment to the budget of the current peacekeeping missions
 - f. Aggregate number of heavy weapons per 100,000 people
 - g. Ease of access to small arms and light weapons
 - h. Military capability/sophistication

Annex 4: Global Entrepreneurship Report

- 1. Perception of Societal Values Related to Entrepreneurship
 - a. Entrepreneurship as a good career choice
 - b. High status for successful entrepreneurs
 - c. Media attention for entrepreneurship
- 2. Individual Self-Perceptions about Entrepreneurship
 - a. Perceived opportunities
 - b. Perceived capabilities
 - c. Entrepreneurial intentions
 - d. Fear of failure rate
- 3. Entrepreneurial Activity Indicators
 - a. Total Early-stage Entrepreneurial
 - b. Activity – TEA

- c. Motivational index (ratio of TEA improvement driven opportunity to TEA necessity)
 - d. Established business ownership rate
 - e. Business discontinuation rate
 - f. Entrepreneurial Employee
 - g. Activity – EEA
4. Perceived Quality of the Entrepreneurship Ecosystem
- a. Entrepreneurial finance
 - b. Government policies: support and relevance; government policies: taxes and bureaucracy
 - c. Government entrepreneurship programs
 - d. Entrepreneurship education at school age; entrepreneurship education at post school stage
 - e. R&D transfer
 - f. Commercial and legal infrastructure
 - g. Internal market dynamics; internal market burdens or entry regulation
 - h. Physical infrastructure
 - i. Cultural and social norms

Annex 5: Industry Complexity Index Calculation:

See permanent link: <https://goo.gl/EDCqQi>

Annex 6: Extended Exploratory Analysis

See permanent link: <https://goo.gl/gaAz0b>

