Political Risk and Success Factors in Public-Private Partnerships at the Subnational

**Level: The Case of Road Infrastructure Concessions**

By

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Dedicatory

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Abstract

Public-Private Partnerships (PPP) are contractual figures through which the public and private

sectors participate together in the provision of public goods and services, with multiple

degrees of involvement and allocation of responsibilities, and multiple types of arrangements

such as concessions (PPP in Infrastructure Resource Center [PPPIRC], 2015). Thus, an

adequate risk distribution among the parties is required to ensure the success of a project.

Although there is extensive research to understand risk in PPP at the national level, it has

been found that there is a lack of research on the role of political risk and critical success

factors coming from subnational spheres, on PPP success.

Therefore, the current study related perceptions on political risk, and critical success factors

with the probability of success or failure of an infrastructure project performed under

concessions at the subnational level. The types of political risk included were: (a) currency

inconvertibility, (b) breach of contract, (c) expropriation, (d) political violence, (e) legal and

bureaucratic risk, and (f) non-governmental actions. Meanwhile, the critical success factors

involved were: (a) favourable economic conditions, (b) available financial markets, (c)

effective procurement and (d) government guarantee (Hardcastle et al., 2005). These factors

were related through structural equation modelling (SEM).

Results showed that both critical success factors and political risk factors were found to have

a significant relationship with the success or failure of PPP in infrastructure projects at the

subnational levels. There was a statistically significant, positive relationship, between critical

success factors and success of public-private partnership infrastructure projects. Furthermore,

there was a statistically significant, positive, indirect effect of political risk factors on success,

following the idea that properly identified critical success factors and political success factors

influence the final outcome of a project at the subnational level. In turn, political risk factors

had a statistically significant effect on critical success factors, thus proving the relationship

between both constructs found in the literature. These results confirmed the importance of

both political risk and critical success factors on PPP success or failure, as well as remarking

the need of taking subnational factors into account when dealing with such projects.

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Chapter 1: Introduction

A growing presence of the Public-Private Partnerships (PPP), associations between public and private parties for the partial involvement of the latter on the provision of public goods or services, has been registered around the world in the last three decades. While the number of infrastructure projects developed through PPPs around the world was 57 in 1990, this number ascended to 242 in 2016 for developing and emerging countries (World Bank, 2017a). More precisely, the total number of PPPs in infrastructure projects was 6,981 between 1990 and 2016, which meant a total investment equivalent to 2'589,812 million dollars (Private Participation in Infrastructure Database [PPID], 2017).

So, PPPs were seen as a preferred way or an intermediate option in the private sector in their participation in the provision of public goods, as compared to the option of privatizations (Evenhuis & Vickerman, 2010; Hodge & Greve, 2007; Navarro & Hernández, 2009). More accurately, "PPPs are hailed as the main alternative to contracting out and privatization, and thus they are seen as a qualitative jump ahead in the effort to combine the strong sides of the public sector and the private sector" (Hodge & Greve, 2007, p. 545). In this regard, PPPs have turned into a relevant tool for the development of sectors such as health, infrastructure, education, environment, finance, government and agriculture around the world (Bennett, Grohmann, & Gentry, 1999; Buse & Walt, 2000; Fiszbein & Lowden, 1999). For that reason, it is possible to promote research and development (R&D) through these alliances, which is important for accelerating economic growth (Faulkner & Senker, 1994; Spielman & Von Grebmer 2004). So, Moszoro (2010) mentioned that:

The provision of public goods provides a strong rationale for public-private hybrids that can efficiently carry out public investment projects. PPPs are gaining momentum,

both for governments seeking efficient solutions to public services and for investors as an asset class. (p. 1)

Empirical data shows proof of this phenomenon. According to Blanc, Goldsmith, and Välilä (2007), an increase in the number of PPPs in Europe was seen during the last three decades. While two PPP projects were signed in Europe during 1990, this number ascended to 152 in 2006.

According to the European Investment Bank (2017), 1,765 PPP projects were developed in Europe between 1990 and 2016, for a total amount of 355.9 billion euros. Of these PPP projects, 88.95% were conducted in the following countries: United Kingdom (58.19%), France (9.92%), Spain (9.07%), Germany (6.91%), Portugal (2.49%) and the Netherlands (2.38%). Compared to the information until 2006, the share of projects developed in the United Kingdom decreased, showing a greater adoption of PPPs in continental Europe.

In global terms, Latin America was found to be the region with the highest number of PPPs between 1990 and 2016, with a total of 2270 projects, with an investment amounting for 1,017,459 million US dollars (PPID, 2017). In fact, these projects have become key for infrastructure deployment in the region, representing 76% of total private investment on infrastructure between 2006 and 2015, amounting for 1% of regional GDP. Conversely, Southern Asia and Sub-Saharan Africa invested 1.6% and 0.8% of their GDP on PPP infrastructure projects, respectively (Michelitsch, et al.; 2017).

This greater presence of infrastructure PPPs in Latin America (PPID, 2017) is an indicator of the use of PPPs in developing countries. On that subject, Akitoby, Hemming, and Schwartz (2007) stated that "infrastructure needs and financing constraints are more severe in developing countries" (p. 1) because of which "it is mandatory to maintain fiscal discipline and respect the limits on taxes and debt, which represent the usual sources of funding for

public investment" (p. 1; free translation from the original in Spanish. Meanwhile, Sachs, Tiong, and Wang (2007) recognised that the private sector has positioned as an important source of funding for innovative PPP projects in emerging economies.

Meanwhile, and according to PPID (2017), Colombia is shown in global terms to be the ninth country in the total number of infrastructure PPP projects (184 projects), and the twelfth country regarding the total value of such investments (64,053 million US dollars). Regionally, Colombia is placed in fourth place on the number of PPP projects and fifth place on the total investment level (PPID, 2017). On the other hand, from all PPPs developed between 1990 and 2016, 58 of these projects, 31.52 % of total, were road projects (PPID, 2017), of which 10.34% were allocated under build, operate and transfer (BOT), 72.41% were allocated through build, rehabilitate, operate and transfer (BROT), 1.72% were allocated through a management contract, and 15.52% were contracted through rehabilitate, operate and transfer (ROT).

Regarding the situation of road infrastructure in Colombia, Zamora and Barrera (2012) concluded that "Colombia presents a backlog in road infrastructure, there are deficiencies or shortages in bridges, viaducts, tunnels, embankments and roads which subtract productivity and competitiveness at the moment of facing a market open to big conglomerates" (p. 16; free translation from the original Spanish languaje). In turn, Colombia is ranked 110th out of 137 countries on infrastructure quality (World Economic Forum, 2017). Given this situation, investment in road infrastructure becomes imperative nevertheless public resources are limited, thus requiring private investment (FEDESARROLLO, 2012).

This popularity increase has occurred on both developed and developing countries. Behind this surge, there are motivations related to budget constraints faced by governments, which hinder traditional public hiring and promote the presence of private participation (Akitoby et al., 2007). Also, its capability to combine long-term public planning and social

responsibility with private financing and experience; there is also political backlash against privatisations, especially among developing countries, which leads PPPs to look like an alternative (Engel, Fischer & Galetovic, 2009a; Moszoro, 2010; Shediac, Abouchakra, Hammami & Najjar, 2008).

The aforementioned allocation task leads to a distribution of risks between the private and public sectors (Kappeler & Nemozm, 2010), as proper identification of risks (Nocco & Stulz, 2006) in these projects is key to ensure their success. According to Sachs and Tiong (2009), political risk becomes more important for developing countries, as these are more exposed to contract breaches, corruption, currency inconvertibility, non-governmental actions and political violence. The latter is especially in transition economies, such as Colombia, where the study took place, given the general political situation of the country.

For a project carried out through a PPP to be successful, it is important to conduct a proper identification of these risks, for which multiple risk analysis and techniques are employed (PRS Group, 2013; Moody's, 2007 [as cited in Demirag, Khadaroo, Stapleton, & Stevenson, 2012]; Ye & Tiong, 2000; Soennen & Johnson, 2008; Sachs & Tiong, 2009). However, these techniques only take into account the national dimension, ignoring subnational differences. In Colombia, such differences in risk are marked enough to requiere special analysis, especially on political violence levels (Vargas, 2011). Given the recent formal adoption of PPPs in the country, and the similarities between Colombia´s political and economic situation with that in numerous countries around the world, it is important to perform a proper identification of the subnational perceptions on political risk, encompassing six different types of risk and critical success factors, with the probability of success or failure of a infrastructure project performed under the figure of concessions in the form of a PPP.

Therefore, the current research was related to the perceptions of subnational authorities on political risk, including currency inconvertibility, breach of contract, expropriation, political violence, legal and bureaucratic risk, and non-governmental actions, as well as

critical success factors, such as financing access, economic environment, adequate procurement and government guarantees, to assess the probability of failure and success for a project. These relationships were found by using structural equation modelling (SEM). Concessions were used as a proxy for PPP projects, given the novel implementation of the latter and the lengthy experience of the country on the former.

Background of the Problem

Regarding the provision of public goods, such as those managed by PPP, Navarro and Hernández (2009) pointed that "models of delivery of public goods and services can be understood as a continuum of formulas which has its two polar ways in the direct provision by governments and the full privatization of that" (p. 1).

According to Holcombe (1997), public goods are defined as:

A good that, once produced, can be consumed by an additional consumer at no additional cost. A second characteristic is sometimes added, specifying that consumers cannot be excluded from consuming the public good once it is produced. Goods with these characteristics will be underproduced in the private sector, or may not be produced at all, following the conventional wisdom, so economic efficiency requires that the government force people to contribute to the production of public goods, and then allow all citizens to consume them. (p. 1)

The infrastructure goods and services delivered through PPPs, according to PPID (2017), can be divided into: (a) energy (electricity and natural gas), (b) telecommunications, (c) transport (airports, railroads, roads and seaports), (d) and water and sewerage (treatment plants and utility). The current research was focused on road infrastructure.

Among the benefits associated to PPPs, Jamali (2004) indicated that the importance of these partnerships lies on finding the point where the comparative advantages of both sectors

are fully exploited; for example, the private sector would have: (a) dynamism, (b) access to financing, (c) technological knowledge, (d) managerial efficiency, and (e) entrepreneurial spirit. In contrast, the public sector possesses: (a) social responsibility, (b) environmental awareness, and (c) a concern for job creation. In this sense, the surge in the design and execution of PPPs has been increasing, which has sparked interest in investigating this kind of investments. Girard, Mohr, Deller, and Halstead (2009) indicated that studies on PPPs flourished in the last 20 years.

According to Sachs et al. (2007) PPP-based projects require risk management mechanisms both in the moment of investment and for carrying its execution, even more so in developing countries, which present the highest incidence and exposure to risks, especially, the associated with political risk. This consideration gains relevance given the fact that developing countries are those who have made greater use of such agreements (PPID, 2017).

Regarding the risks associated to a PPP investment, Figure 1 shows risk allocations for multiple models of public-private partnerships, as defined by Roehrich, Lewis and George (2014):
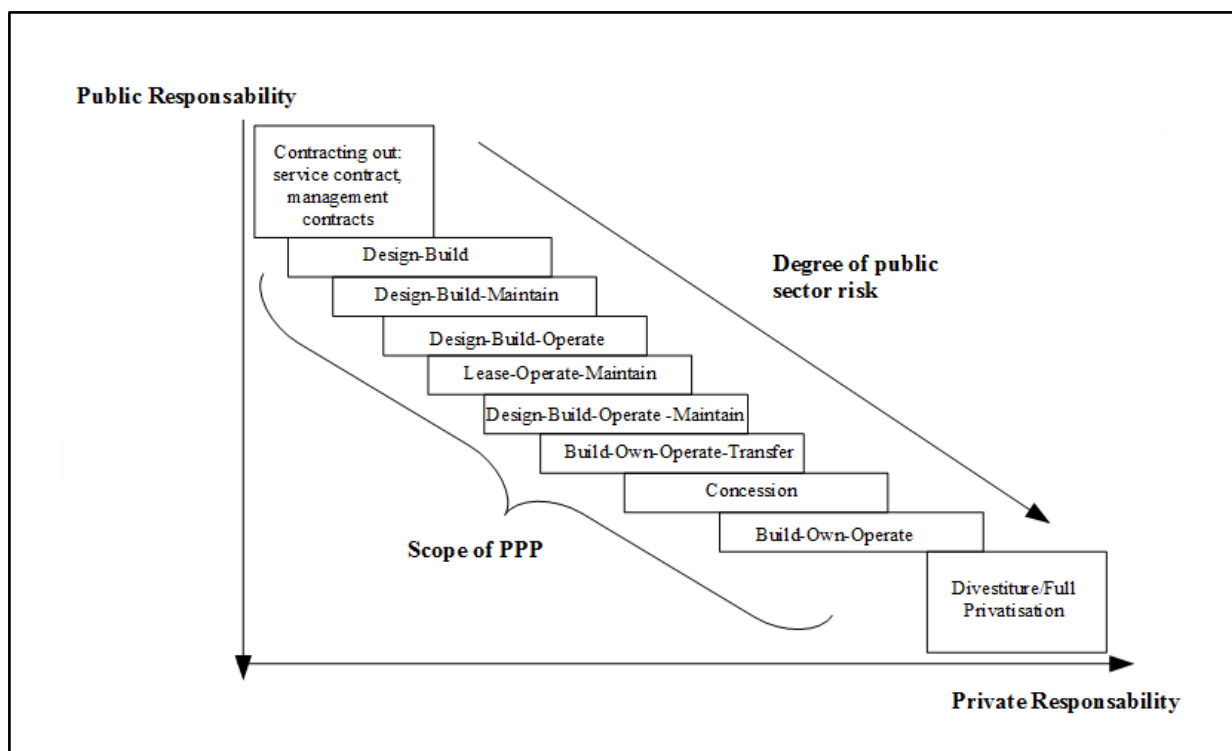
Figure 1. Risk allocation in the provision of public goods between the public and private sectors. Adapted from "Are Public-Private Partnerships a Healthy Option? A Systematic Literature Review," by J. K. Roehrich, M. A. Lewis and G. George, 2014, *Social Science & Medicine*, 113, p. 111.

Also, it is important to point out that a fundamental difference between the traditional procurement model, privatisation and PPPs lies on the risk allocation that occurs between the public and private sectors:

> Along with the integration of multiple tasks, there is a substantial transfer of risks to the private party […] this distinguishes PPP from more traditional forms of procurement, in which most of the risks are usually borne by the public party. In the PPP-contract risks are allocated between the public and private party, and this will also determine e.g. ownership of the asset, liability, restrictions in operation for the private party, etc. (Evenhuis & Vickerman, 2010, p. 6)

Given the above, Grimsey and Lewis (2000) created a taxonomy for PPP risks, for infrastructure projects. These authors identified: (a) technical risk, related to design and engineering flaws; (b) construction risk, i.e. problems by faulty construction, cost overruns

and expiration of terms; (c) operative risk, meaning higher maintenance and operation costs; (d) income risk, lower benefits caused by a revenue deficit; (e) financial risk, which emerges by inadequate coverage for cash flows and financing costs; (f) force majeure risk, related to war and other calamities; (g) regulatory and political risk, created by legal changes and low support in governmental policies; (h) environmental risk, negative externalities of meteorological character; and (i) project default risk, i.e., the project failure after a combination of the mentioned factors. In turn, Sachs et al. (2007) highlighted the importance of knowing the risks involved in decision making for investments and PPP. However, these authors centred their study in the political risk impact, as defined by the Multilateral Investment Guarantee Agency (MIGA, 1985), who defined six political risk factors: (a) restrictions to convertibility, (b) expropriation, (c) breach of contract, (d) political violence, (e) legal and bureaucratic risk, and (f) non-governmental actions.

Political risk can alter international investment treaties and agreements. For that reason, Sachs et al. (2007) studied this category of risk for investments through PPPs in China and other Asian countries, among these Indonesia and Vietnam, where they were able to prove that, indeed, political risk is a variable that influences on leverage decisions and on the implementation of PPP projects by investors. The authors found that perceptions of political risk in those countries are high, with countries with higher political risk perceptions offering fewer PPP opportunities. Based on the research of Sachs and Tiong (2009), developing countries are those that, globally, report higher levels of investment risk, which makes it necessary to conduct studies on the management of these for this country group. As pointed out by Nobre, Carraro, Menezes Balbinotto, and Tillmann (2014) regarding Brazil:

> A caveat that must be made when comparing Brazil to other countries that have succeeded in the adoption of PPPs, such as Germany, Spain, Portugal and the UK, is that they have a stronger institutional backing to such partnerships. That is,

institutions and government are more consolidated, making it easier to achieve economic efficiency, and there is also a wider range of instruments available in order to induce transparency to the actions performed. (p. 2)

Finally, when PPP comes to Colombia, Vieira (2011) noted that the country is well-positioned, it comes to economic forecasts "but it is not in aspects such as violence from armed groups and corruption, which lead to bad notes in security and transparency on public expenditures at international indicators" (p. 8, free translation from the original Spanish languaje).

Additionally, as mentioned by Vargas (2011) in Colombia:

...in the same national space, there is the coexistence of territories with ample official regulation and «empty territories», in the sense of lack of a regulatory entity representing the general interest. In these spaces the order starts being regulated by private entities with coercive capacity (guerrillas, neo-paramilitaries, criminal bands, and militia). (p.119, free translation from the original in Spanish

Complementing, the legal and administrative processes through which investors must go through in order to carry on their projects, political concessions that might appear due to corruption and clientelism, translate into additional time before obtaining authorisations and licences "...the legal system ends up being slow, which greatly complicates conflict resolution with other companies, for both co-investment agreements and non-payment situations" (Oficina Económica y Comercial de la Embajada de España en Bogotá, 2012, p. 18, free translation from the original in Spanish.

When adopting the political risk characterization of Sachs et al. (2007) it becomes relevant to measure the incidence of it on a subnational and disaggregated manner, for investments performed through PPPs in Colombia. The former, is justified as the tool internationally used for risk measurement is the country risk measure; however, at least for

the Colombian case, risk levels show differences depending on the region or municipality where the investment is going to be performed. An example of this was mentioned by Vargas (2011) who stated that violence in Colombia is different and its intensity level varies according to the region, since the State presence is greater in some urban centres than in other areas of the territory that have remained ignored for decades

For this reason, the country risk indicator would not be sufficient to guide investors in a nation as contrasted as Colombia. This way, it must be noted that the current research aims to analyse deeply the subnational levels in relation to political risk and its effects on the success or failure of a PPP.

Statement of the Problem

At a global scale, PPPs have become an opportunity to increase efficiency, and reduce the burden for the public sector budget, targeting to increase development levels in countries. Ergo, such alliances have been especially adopted in developing countries (Jamali, 2004; Ménard, 2012; Moszoro, 2010, 2011). Complementing, Nijkamp, Van der Burch, and Vindigni (2002) and Spackman (2002) stated that the attractiveness of PPP can be explained in terms of expected benefits, better access to private banking, obtaining clear goals, innovative ideas, flexibility, proper planning, and a substantial increase in value creation from projects to be undertaken. For these reasons, PPPs are constituted as projects in which private investment plays an important role.

Given their limitations in available funding and their need for infrastructure (Akitoby et al., 2007), developing countries and transition economies are prime candidates for PPPs. This not only means an increase in economic growth and the influx of capital into these countries, but also the responsibility and the need to learn about the levels of political risk (for the sake of this research) private parties are exposed to when investing in these nations.

In addition to the above, the importance of applying a methodology, in such a way, it is possible to measure the political risk on a subnational, disaggregated way must be considered, since this risk does not appear uniformly in a national territory.

It must be added that corruption and inefficiency rates on service delivery to the civilian society by the bureaucratic apparatus are presented on a different manner in Colombia (Transparencia por Colombia, 2009). While the risk is high in overall terms, the most affected regions by these administrative issues are the peripheral ones; in contrast, the most developed ones in the country are the regions with lower levels of corruption and administrative inefficiency. This does not mean it is low, just less than in the most alarming cases as the Pacific and Orinoquia regions (Transparencia por Colombia, 2009).

The previous discussion shows that the levels of political risk in the country may vary depending on the region and the municipality or a subnational part of a country. The main problem that this research addressed was the existing methodological gap for measuring investment risk in developing countries and in subregions within countries, where not possessing accurate information might lead investors to bet on investments with high rates of risk, which might end up affecting the profitability of investors.

Given the above, it must be mentioned that despite the existence, contribution, and utility coming from multiple studies and methodologies to measure the mentioned risks, these indicators do not allow the obtention of disaggregate risk estimations in the regions or municipalities of a country. This way, it is difficult to determine the proportion of real risk for a specific investment or PPP. Therefore, it is necessary to complement the methodologies measuring risk in a general way, by proposing a disaggregate measure of the political risk.

Purpose of the Study

The current study sought to associate subnational perceptions from the selected

sample of public officers and private related to projects on political risk, encompassing six different types of risk and four different critical success factors, with the probability of success or failure of a particular type of PPPs, road infrastructure concessions. The types of political risk included in the study, following the study of Sachs et al. (2007), were: (a) currency inconvertibility, (b) breach of contract, (c) expropriation, (d) political violence, (e) legal and bureaucratic risk, and (f) non-governmental actions. For the purposes of the current study, four of the five critical success factors found by Hardcastle et al. (2005) were employed. These are: (a) effective procurement, which encompasses transparency, competitive processes, good governance and strong public institutions; (b) government guarantee, (c) favourable economic conditions and (d) available financial markets.

The importance of knowing if there is any influence of political risk on the success or failure of a PPP at the subnational level comes from an increasing presence of PPPs in developing countries, whose political situations are not the same as in developed countries (AON, 2014; Marsh & McLennan Companies, 2013). From the data used in this research we seek to prove, that developing countries needs to work with those PRF and CSF in PPP projects. Based on the results related to the influence that the factors associated with political risk and critical success factors have on the success of a concession in infrastructure, this research intended to conclude on the influence these factors have on PPPs.

The research measured subnational political risk on a disaggregated basis, as political risk is not presented uniformly in the territory within a country, while variables such as country risk factors do not employ subnational offsets. Because of this, the incidence of this type of risk in a municipality, department or region can be overlooked when assessing the viability and profitability of road infrastructure PPP projects, thus leading to the improper decision-making process for the completion and implementation of PPP projects.

Significance of the Problem

It has been found that private funding for infrastructure projects enables the successful realization of these investments while boosting the development of countries (Jamali, 2004). In turn, the viability and profitability of PPPs may be affected negatively if investors have no real information on the risks of these projects (Engel, Fischer, & Galetovic, 2009b). Thus, proper assessment of risks becomes paramount in these projects, especially political risk.

An example of the above was displayed by Sachs et al. (2007), who focused on variables such as political risk and its six components, which allowed these authors to measure the investment risk on PPPs that emanates from political risk in China and other 13 Asian countries. In turn, there are guidelines on political risk for infrastructure projects, with a special emphasis on the definition laid out by the Multilateral Investment Guarantee Agency (MIGA, 1985).

However, the study of Sachs et al. (2007) did not allow for a disaggregated measurement of risk at a subnational level in these nations. This generates a methodological gap that may have important implications for the government and private investors interested in embarking on PPP alliances since the levels of political risk might experience great variations within a given country. This flaw can also be seen in other studies, thus leading to potential underestimation of political risk originating from subnational factors. This can be directly translated into a condition affecting both the benefits of private investors, as well as the effectiveness of the State when it comes to PPPs (Akitoby et al., 2007).

Therefore, the current research contributed to knowledge dealing with the incidence of political risk at the subnational level on the success or failure of PPP infrastructure projects, by closing key theoretical gaps that otherwise kept investors believing that all the risks that faced were at the national level; specifically, the assumption that political risk held a constant incidence throughout the subnational divisions of a given country, despite differences in culture, size, population, State presence, and economic situation. This is a

contribution of importance to academia and for public and private investors interested in conducting this kind of projects around the world.

Finally, the academic contribution of the study arises from the need to consider the realities of developing countries and economies in transition where political risk is higher when compared to developed countries (Oxford Economics, 2017). These results will help researchers in other parts of the world to carry out similar research to validate these findings and to broaden the understanding of the incidence of political risks at the subnational level in the success or failure of PPPs. Furthermore, it was intended to enrich the possibilities for PPP projects in developing countries to understand and manage the factors associated to political risk on their success. With this, it is expected to obtain a contribution for both the academy and investors interested in the execution of PPP projects in developing countries, through a better identification of the variables affecting infrastructure projects in Colombia. It is believed that this will lead to better decision-making processes that guarantee the success of these projects.

Nature of the Study

The current research had a quantitative approach, as it sought to obtain information about the most relevant factors to analyse the political risk on a PPP concession project at a subnational level, and their impact on the success or failure of such projects. Likewise, it was intended to analyse the role of these risk factors on a PPP project, seeking to confirm whether these factors should be taken into account by the parties in PPP infrastructure projects under this restriction. For this, structural equation modelling involving political risk factors, critical success factors and the existence of infrastructure projects as a success proxy was applied, backed by data collection from both primary and secondary sources.

This research adopted an objectivist philosophical approach, which states that "things

exist as meaningful entities independently of consciousness and experience" (Crotty, 1998, p. 5). According to Crotty (1998), objectivism is associated with positivism, and thus with quantifiable data and the application of statistical analysis in research in the real world. In turn, the current study used an explanatory approach, and a non-experimental design, in which the current conditions of a phenomenon (political risk-success factors) were detailed by using primary and secondary data, from multiple sources and subjects (Carroll, 2013).

The explanatory scope originates from the need to prove the impact of political risk at a subnational level on the success or failure of a PPP on infrastructure projects, measured from its critical success and political risk factors, seeking significant relationships. In turn, the non-experimental design was selected as the data used for the analysis was gathered from primary and secondary sources without the need for any manipulation, to match the situations and results found in practice for infrastructure projects through public-private partnerships. This is accompanied by the use of quantitative methods to analyse the relationship, such as structural equation modelling.

Parting from the epistemology, a set of rules known as the alpha-beta method (Figueroa, 2016) was adopted to defined the propositions obtained from the theory, from which the research questions were obtained. Such set was originally created for analysing economic theory, but its foundations and steps serve to develop the current study as well.

Alpha proposition is defined as those unobservable variables that form the assumptions forming the foundations of a theory (Figueroa, 2016). As the current study adopted the agency theory, and public policy and risk theories, expanded upon in the theoretical framework, it could be said that an alpha proposition would originate from these. Namely, that agents involved in public-private partnerships seek to minimise and mitigate the risks originating from the actions of other agents, these being the State, civilians, special groups or illegal parties, among others when developing their PPP infrastructure projects, as

they are looking for success and profits from these. For this, identifying the dangers and the factors that lead to success is key. Also, another assumption lies in that agents perceive some regions as more riskier for business than others, due to factors such as violence, corruption and civil protests.

Beta propositions, defined as those observable propositions employed to empirically prove a theory (Figueroa, 2016), serve to link said assumptions to reality, as well as measuring them. From the aforementioned assumptions and theories serving as alpha, the research questions would serve as their respective betas, designed to measure and test if the aforementioned assumptions hold after performing a study on the subject. The relationship between these is laid out in Figure 2.
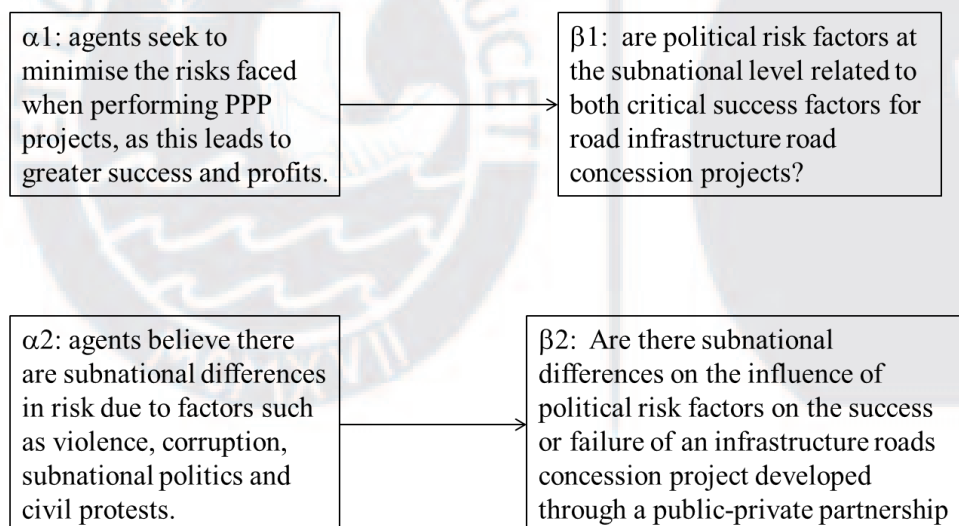
Figure 2. Alpha-beta relationships between assumptions and research questions

Research Questions

The research questions used for this study went as follows:

1. Are political risk factors at the subnational level related to both critical success factors for road infrastructure concession projects and the success of these?

2. Are there subnational differences on the influence of political risk factors on the
   success or failure of a road infrastructure concession project developed through a
   public-private partnership?

Hypotheses

Based on these questions and supported by the literature it is possible to establish the
hypotheses of this research. The hypotheses studied throughout the current research were:

H1a. PRF at the subnational level have a direct, significant relationship with CSF for
road infrastructure concession projects.

H1b. CSF for road infrastructure road concession projects have a direct, significant
relationship with the success of these projects.

H1c. PRF at the subnational level have an indirect, significant relationship with the
success of road infrastructure concession projects.

H2. There are significant subnational differences in the influence of PRF on the
success or failure of a road infrastructure concession project developed through a
PPP.

Theoretical Framework

The theoretical framework employed for the current research made use of three
theories: public policy theory (Laswell, 1996, as cited in Valencia & Álvarez, 2008; Ejea,
2006; Jann & Wegrich, 2007; John, 2013), agency theory (Jensen & Meckling, 1976;
Castaño, 1999; Braendle, 2008), and risk theory (Kaplan & Garrick, 1981; MIGA, 1985;
Miller, 1992; Hardcastle, Edwards, Akintoye, & Li, 2005). All these theories were defined as
crucial for the development of the study.

Public policy theory comes first. Studies on public policy (also known as policy

science) were initially developed in the post-war United States and were pioneered by the work of Lasswell (1996, as cited in Valencia & Álvarez, 2008). Through the establishment of a policy science, Lasswell sought "to improve organisational performance and State government action" (Valencia & Álvarez, 2008, p. 95, free translation from the original in Spanish. Particularly, studies on public policies take the results and changes in public policies as dependent variables. That means that these variables seek to explain why a government chooses to implement a particular policy and why it chooses to modify existing policies (John, 2013). According to Ejea (2006), "the focus of Public Policies shows a technical-scientific and political rationality that aims to determine public character problems and find them the best feasible solutions" (p. 3, free translation from the original in Spanish.

The most important model on the study of public policy is called the theory of the policy cycle (Jann & Wegrich, 2007). As indicated by Jann and Wegrich (2007), "from its origins in the 1950s, the field of policy analysis has been tightly connected with a perspective that considers the policy process as evolving through a sequence of discrete stages or phases" (p. 43). Based on this, the following stages can be identified in the process of implementing a public policy: agenda setting, policy formulation, decision making, implementation and evaluation (Jann & Wegrich, 2007). The association between the decision-making processes in public policies as a multi-staged one does not seek to assume a chronological order in these:

> The cycle perspective emphasizes feedback (loop) processes between outputs and inputs of policy-making, leading to the continual perpetuation of the policy processes. Outputs of policy processes at t1 have an impact on the wider society and will be transformed into an input (demands and support) to a succeeding policy process at t2. (Jann & Wegrich, 2007, p. 44)

> John (2013) identified two periods in the study of public policies: classical and

synthetic. In the classical period, the key terms were defined and the following models for the decision making processes were developed: (a) incrementalist, (b) rationalist, (c) elitist, (d) interactionist, (e) systemic, and (e) institutionalist (Valencia & Álvarez, 2008). In the synthetic period, more complex models were developed among which it is possible to find: policy advocacy coalition framework, policy streams and windows, punctuated equilibrium and comparative political economy (John, 2013).

The current work took the incrementalist model, which understands that the definition of new public policies is conditioned by the existing ones and takes into account that changes are delivered gradually and not in at once. This means that "new policies (only) modify, change or supplement older policies, or – more likely – compete with them or contradict each other" (Fischer & Miller, 2006, p. 45).

A second model that was taken into account was that of policy advocacy coalition framework (John, 2013), which takes the idea developed by the school of political networks when considering that relationships between political sectors are relevant at the moment of studying the decision- making process (John, 2013). This, in turn, identifies the decision-making process as a continuum, that is, it is not possible to accurately identify a beginning and an end (John, 2013).

Meanwhile, Ejea (2006) pointed out that an additional public policy model is the new public management model that surged from the 80s with the dominance of the neoclassical current advocating a lower State presence.

The new public management consists of two elements:

One is the elimination of the dichotomy between administration and politics, or rather, the review from multiple angles that politics does matter in government performance. The other is the recognition of the participation of non-state actors in the delivery of public goods and services. (Ejea, 2006, p. 14, free translation from the original in

Spanish

New public management follows these values: "productivity, merchandising, service attitude, decentralization, public policy orientation and accountability; and the key factors for its development include: non-state provision means, decentralization and new forms of coordination" (Ejea, 2006, p 14, free translation from the original in Spanish. This was the third theory of public policy used in this study.

Next, agency theory gained relevance in the 20th century (Jensen & Meckling, 1976). According to Jensen and Meckling (1976), an agency relationship is defined as:

...a contract under which one or more persons (the principal[s]) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. If both parties to the relationship are utility maximizers, there is a good reason to believe that the agent will not always act in the best interests of the principal. (p. 5)

Similarly, Castaño (1999) stated that the agency relationship is created when a principal delegates rights on an agent, the above under a contract that requires the agent to protect the interests of the former. Therefore, such theory is a contribution for the analysis of levels of hierarchy and exchange situations, seeking to understand the behaviours of agents and the conflicting relationship between these and the principal (Peris-Ortiz, Rueda, De Souza, & Pérez, 2012).

The aforementioned leads to what is known as agency costs, which according to Jensen and Meckling (1976) are classified into three types:

1. The monitoring expenditures by the principal.

2. The bonding expenditures by the agent.

3. The residual loss. (p. 308).

Two additional problems considered to be transversal to agency relationships appear from

said costs. Jensen and Meckling (1976) mentioned adverse selection and moral hazard as negative variables within organisations. The first one is created because of information asymmetries. Braendle (2008) said that:

> Adverse selection describes an agency problem where asymmetric information exists before the transaction occurs, leading to an inefficient allocation of resources. Originally the term adverse selection came from the insurance industry. It describes a situation of private information where the insured are more likely to suffer a loss than the uninsured. (p. 10)

Meanwhile, according to Braendle (2008), "Compared to adverse selection, moral hazard describes an agency problem which exists after a transaction is made, leading to an inefficient allocation of resources. The term moral hazard, as well, has its origin in the insurance industry" (p. 10).

So, the correction of these problems is proposed from the standpoint of agency theory, by employing incentive policies, improving institutions and designing the organization in a way information asymmetries between departments, in the market and between the principal agent relationships are avoided. Therefore, agency theory allows an understanding of the organisation and the exchanges between the stakeholders around it, taking the idea of individual rationality and the different interests of stakeholders as a starting point.

The aforementioned gains relevance when studying PPPs, as these are formed as contracts in which both the private and public sectors have specific goals for the project to be developed, however, these goals are asymmetrical most of the times. Private participants seek to obtain a return on their investment, while in addition to the economic sustainability of the project, the public sector considers political and social implications that led to the development of these works (Akitoby et al., 2007). Thus the institutional correction proposed by the agency theory helps in controlling the parties and their selfish interests at the moment

of conducting a PPP.

Finally, it is important to review risk theory, as when it comes to risk, "…we are not able in life to avoid risk but only to choose between risks" (Kaplan & Garrick, 1981, p. 11). Risk has multiple definitions in the literature. From the quantitative point of view, and analysing the case of investment portfolios, Huang (2008) mentioned the existence of three widely used definitions: (a) the variance of the portfolio; (b) the semi-variance of the portfolio, which only takes into account the values under the mean for calculating the variance; and (c) the probability of an adverse outcome.

Given the inevitability of these, an adequate risk management has gained major importance in recent times, preceded by the proper identification of these (Nocco & Stulz, 2006). Through the above, it is possible for a company to perform a better design in their strategic plans, by enabling to decide in an adequate fashion which risks are worth taking for the development of these projects, and how to cover them.

Miller (1992) proposed an integral framework for risk management and identification, mentioning how this approach appears to be more convenient for companies compared with an individual risk analysis, given the possibility to design integral strategies for handling them. Furthermore, the author mentioned two types of risk constantly considered by companies, and around which these design their mitigation strategies: (a) financial risk, associated to the likelihood of negative financial performance; and (b) strategic risk, associated to decision making processes.

On infrastructure projects, and more specifically PPPs, Li (2003) stated the existence of a set of associated risk variables. On the one hand, he said that macro risks can be found, which are associated with the general environment in which the project is carried out. It is possible to observe within this type of risk: (a) political risk, generated by unstable governments, expropriation and nationalization, and corruption; (b) macroeconomic risk,

linked to poor financial markets, changes in inflation, interest rates and exchange rates, and economic events; (c) legal risk associated with changes in law, currency, tax and industry regulation; (d) social risk, defined by public opposition, social corruption and lack of order in society; and (e) natural hazard, determined by events of force majeure, geographical conditions, climate and environment.

In turn, Li (2003) also stated that meso risks could also be found, which affect a particular project. Among these, it is possible to find: (a) project selection, (b) project financing, (c) residual risk, (d) design, (e) construction and operation. Finally, micro risk can be found, associated with the interaction between the parties involved in the project. These may appear in the following ways: (a) relationship, associated with the coordination and cooperation between the involved parties, (b) third parties, risks associated with actions of third parties not involved in the project.

Finally, on the more specific case of political risk, the risk classification created by MIGA (1985) can be found, comprising six types of political risk: (a) governmental restrictions for convertibility and money transfer overseas, (b) expropriation, (c) breach of contract, (d) political violence, (e) legal and bureaucratic risk, and (f) non-governmental action risk. This classification gains a special relevance for the current work given the focus placed on political risk throughout the current study. Depending on this identification, it is possible to design mitigation strategies that help to ensure the success of these projects. Therefore, risk theory is relevant to the two research questions, thus making it the main theory for the current study.

With respect to PPPs, it should be noted there are several types, which depend on their purposes, and their legal and administrative environment (Jamali, 2004). Some of the identified PPP types, named after the tasks delegated to the private sector under each arrangement, are: (a) Build-Own-Operate (BOO), (b) Build-Operate-Transfer (BOT), (c)

Design-Build-Finance-Operate (DBFO), and (d) Design-Construct-Manage-Finance (DCMF) (Alshawi, 2009). For example, in a PPP of the BOO type, the private party is in charge of building, owning and operating the asset throughout the duration of the agreement.

Now, from the Colombian legislation, PPPs can be understood as:

Public Private Partnerships are an instrument to involve private capital, materialised in a contract between a governmental entity and a natural or judicial person from the private law, in order to supply public goods and its related services, involving risk retention and transfer between the parts and payment methods, related to the availability and service level of the infrastructure and/or service. (Ley 1508, 2012, p. 1, free translation from the original in Spanish)

The distinction between PPPs and traditional procurement is given by the fact that the multiple stages (design, construction, maintenance, operation) are defined by separate contracts where a single contract exists in PPPs. In turn, the public sector bears the risks in traditional procurement, while the risks are shared in PPPs (Evenhuis & Vickerman, 2010). Meanwhile, the distinction between PPPs and privatisation is given by the fact that public responsibilities and liability on risks are transferred to the private sector in a privatisation. While public accountability remains in hands of the public sector in PPPs (Evenhuis & Vickerman, 2010). Also, a PPP is temporary (Sarmento & Renneboog, 2014).

As Kwak, Chih, and Ibbs (2009) showed, multiple studies around the world were conducted in order to characterise the critical success factors behind a PPP project. For the purposes of the current study, four of the five critical success factors found by Hardcastle et al. (2005) were employed. These are: (a) effective procurement, which encompasses transparency, competitive processes, good governance and strong public institutions; (b) government guarantee, (c) favourable economic conditions and (d) available financial markets. The fifth factor, project implementability, which encompassed legal framework,

technical feasibility, risk allocations, commitment by the parties and a strong private partner, was excluded.

In turn, the definition of political risk exposed by Sachs et al. (2007), originating from the one delivered by MIGA (1985), leads to six categories of political risk, as follows:

1. Risk associated with governmental restrictions for convertibility and money transfer overseas.

2. Expropriation risk, which impedes private investment.

3. Breach of contract risk, where the private agent does not have an adequate and competent legal instance to defend itself in front of a breach of contract by the State.

4. Political violence, associated to acts of war, civil war, insurrection or civil disobedience, terrorism, sabotage or disturbances caused by indigenous people and landlords.

5. Legal and bureaucratic risk, which is associated to governmental administrative processes, including law execution and enforcement, conflicts of authority, corruption, transparency, problems to obtain approvals and consents, alterations because of government changes, and obstruction during arbitration.

6. Non-governmental action risk, involving the ones over which the government has no direct influence, and do not belong to the former categories, such as union and environmental activism, religious fundamentalism, ethnic tension, foreign intervention and risks at the currency market.

On the selection of these factors, MIGA currently offers political risk insurance based on a narrow definition laid out throughout the insurance industry, involving (a) currency inconvertibility and transfer, (b) expropriation, (c), political violence, (d) breach of contract, and (e) non-honoring of sovereign financial obligations (MIGA, 2013).

However, such definition is known to be limited by MIGA itself: a survey they deployed together with The Economist Intelligence Unit (EIU) showed how corruption and

adverse regulatory changes, factors associated to legal and bureaucratic risk, ranked highly among the worries of investors in developing countries (MIGA, 2013). The former, combined with the use in literature of the definition laid out in the current study (Sachs, 2007; Sachs & Tiong, 2007), led to adopting the definition laid out by MIGA (1985) instead of the political risk insurance categories offered by MIGA (2013) at present.

Definition of Terms

Public-private partnerships (PPP): "a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance" (World Bank, 2017b, p.1).

Concession: according to OECD (2014), a concession is put in place when "a private entity takes over the management of a state-owned enterprise for a given period during which it also assumes significant investment risk" (p. 12). Following on the above, the PPPIRC (2016a) mentioned that the State remains the owner of the assets, and that asset reversion occurs at the end of the concession period. Finally, it shows concessions as a particular type of PPP arrangement (PPPIRC, 2016b), among many others.

According to the World Bank (2017b), concessions within the context of PPPs are defined as a type of contract for new or existing infrastructure, usually delegating design, rehabilitation, extension or building, financing, maintenance and operation of services offered to users, in which these users pay for the cost of these services directly. However, this definition varies according to the national legislation, as well as its delimitation.

Critical success factors: for the current study, the classification of Hardcastle et al. (2005) was used, according to which the main critical success factors for infrastructure projects were (a) favourable economic conditions, (b) available financial markets, (c)

effective procurement, (d) government guarantee and (e) project implementability. Regarding the meaning of critical success factors, Rockart (1982) defined as "those few key areas of activity in which favourable results are absolutely necessary for a particular manager to reach his or her own goals" (p. 4). This definition has seen widespread adoption in management, with Hardcastle et al. (2005) mentioning how it has been implemented in management studies on financial services, information systems and manufacturing.

Risk: it was defined by Vlek and Stallen (as cited in Li, 2003) as "the complete description of undesired consequences of a course of action, together with an indication of their likelihood and seriousness" (p. 83). Likewise, Edwards and Bowen (as cited in Li, 2003) associated it to "probability that an adverse event occurs during a stated period time" (p. 84).

Region: formal national subdivisions, as well as informal national subdivisions based on factors such as culture and geographic features.

Subnational income per capita: incomes corresponding to each formal national subdivision, in this case the departments.

"Subnational": this term refers to subnational entities, which are levels of government created for administrative purposes within a country. In the Colombian case, it involves the levels of government created by the political-administrative division of the Colombian territory, for administrative and political representation purposes: (a) departments, (b) districts, (c) municipalities and (d) indigenous territories (DANE, 2007). Each of these levels has its own, limited set of subnational legislative acts that complement or contradict national dispositions on infrastructure PPP projects, such as ordinances issued by departments, council agreements in municipalities and districts, and previous consultations with indigenous territories and municipalities.

Assumptions

The idea on which this study is based is that PPPs have become important as a means to complement national government investments in achieving national development, and in promoting large-scale, high-investment projects with high social impact. As exposed by Spackman (2002) PPPs can provide benefits for the realization of a particular public investment project, since the fusion between private administrative experience and funding and the support and delegation of responsibility from the part of the public sector becomes a large value generator for society in general.

Likewise, it is worth mentioning that another assumption taken as a starting point, is that developing countries and transition economies have become attractive economies for the global private investment of government projects (Vieira, 2011), which has multiple effects: (a) an increase in the number of PPP projects at these countries, (b) an increase in foreign capital inflows to these countries, and (c) a greater need for verification of the risk factors associated to the execution of investment projects. Therefore, the assumptions forming the foundations of a theory (Figueroa, 2016). As the current study adopted the agency theory, and public policy and risk theories, expanded upon in the theoretical framework. Those studies aiming to deepen the subject are relevant, with these taking into account the real characteristics of the contexts to which they apply.

On the other hand, and for the purposes of this research, political risk was understood as that included in the characterization created by Sachs et al. (2007), which was explained earlier. Also, that characterization starts from the idea that political risk has negative effects on investment projects through PPPs. Therefore, it departs from the idea that the different factors affecting the measurement of political risk - as defined by Sachs et al. (2007) - do not occur uniformly throughout a nation. As proof of this, it is possible to observe the rates of political violence and legal – bureaucratic risk in Colombia, and in other large countries, such as Bolivia, Ecuador, Mexico, and Perú, for which it is relevant that the risk is measured on a

disaggregated basis, so as to reflect that reality in the assessment of political risks in the success or failure of a PPP project.

It must be mentioned that a set of variables that also matter when executing an investment were omitted, such as economic stability of the country, labour regime, taxation stability, the level of project information or data, among others. The risks associated to these variables were also excluded, due to the focus being put on political risk factors, despite their relevance at the moment of evaluating infrastructure projects.

The last assumption that was made is that political risk factors at the subnational and national levels may vary, and these subnational risk factors are as important as national ones when it comes to defining the success or failure of a PPP in an infrastructure concession project. Now, information delivered by those Colombian public agencies, responsible for national statistics, was used on the factors affecting the measurement of political risk, as well as that of other research centres possessing relevant information.

Limitations

Throughout the development of the current research, there were issues related to availability and response rates from mayoral and gubernatorial offices in the country, despite using the "right to petition" legal figure to obtain a response regarding political risk perceptions. Thus, despite sending surveys and contacting all Colombian municipalities and governorships, response rates were much lower, from less than 10% of these.

Also, there were concerns regarding the response quality, as it was not possible to control the effects that factors such as political bias, knowledge of the subject or time could have on these answers, even though the questionnaire included some guidelines on expected response times and the basic concepts underlying the survey. In turn, lack of more specific project-level information meant that project implementability, one of the five critical success

factors laid out by Hardcastle et al. (2005), could not be included in the current study. I read about that subject in mention but the information on that topic was limited.

In turn, there were issues on the availability of secondary data; specifically, outstanding credit portfolio information was obtained for overall per capita credit instead of focusing on business credit, due to data limitations. Finally, there was uncertainty on the distribution of the data to be gathered from the surveys, as well as on the data coming from secondary databases, due to lack of knowledge on the structure of the population.

Delimitations

This research centred on the analysis of political risk factors, on the implementation of PPPs for roads infrastructure in Colombia through concessions. Thus, the study aimed to determine the role of political risk factors on the success or failure of investments made through PPP in such projects. However, said variable was measured at the subnational level because, from a general perspective, there is a risk of not exposing errors at the time of assessing the feasibility of a PPP. So, this study argued that the political risk factors possess a fragmented logic in the subnational level, which shape flashpoints regions where the risk is higher than in cities or other regions with greater control by the government.

The classification used for the Colombian regions followed a classification through which departments, the largest national administrative subdivisions, are grouped into socioeconomic   regions, as follows (Colombia.com, 2017): Andean, Caribbean, Pacific, Orinoquia, and Amazon. The number of municipalities per region was calculated by adding the municipalities of each department, obtained from DANE (2013). In turn, these regions are shown in Figure 3, and their departments are mentioned in Table 1:
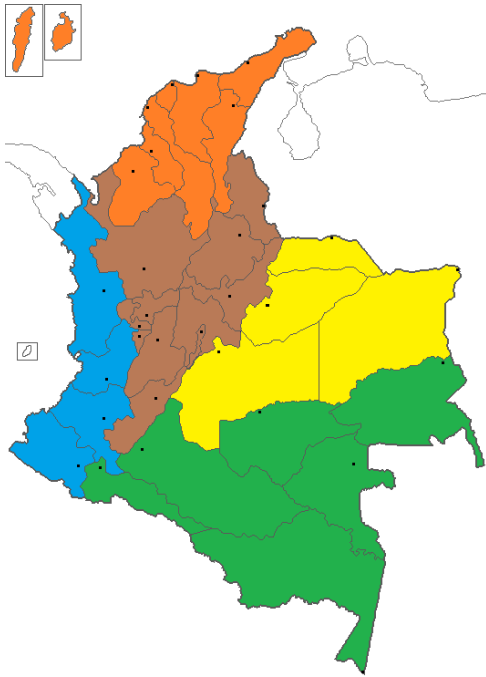
Figure 3. Colombian administrative regions. Adapted from Colombia.com (2017)

Table 1 *Departments per Region*

Departments per Region

Region	Municipalities	Departments	Colour in Figure 2
Andean	629	Antioquia, Boyacá, Caldas, Cundinamarca, Huila, Norte de Santander, Quindío, Risaralda, Santander, and Tolima, in addition to Distrito Capital (the capital district).	Brown
Caribbean	197	Atlántico, Bolívar, Cesar, Córdoba, La Guajira, Magdalena, San Andrés y Providencia, and Sucre	Orange
Pacific	178	Cauca, Chocó, Nariño, and Valle del Cauca	Blue
Orinoquia	59	Arauca, Casanare, Meta, and Vichada	Yellow
Amazon	59	Amazonas, Caquetá, Guainía, Guaviare, Putumayo and Vaupés	Green

Only road infrastructure projects were taken for the current study. This is due to the importance of said projects in the developing country that was selected for the study, as there is currently a large-scale road infrastructure development program based around concessions and public-private partnerships. Thus, other types of infrastructure projects conducted

through PPP in the country were excluded from the study; such as PPP projects in electricity,

airports, natural gas, ports, railways, treatment plants, information and communication

technologies (ICT) and water utilities (PPID, 2017). These are shown in Table 2.

Table 2

Public-Private Partnerships per Sector in Colombia

Sector	Type of public-private partnership	Count
Airports	Build, operate, and transfer	1
	Build, rehabilitate, operate, and transfer	5
	Lease contract	2
	Rehabilitate, operate, and transfer	1
Electricity	Build, lease, and transfer	1
	Build, operate, and transfer	5
	Build, own, and operate	7
	Build, rehabilitate, operate, and transfer	1
	Full	4
	Merchant	4
	Partial	8
	Build, own, and operate	1
	Merchant	6
	Partial	2
Information and communication technologies	Build, own, and operate	1
	Merchant	6
	Partial	2
Natural gas	Build, operate, and transfer	4
	Build, own, and operate	4
	Full	2
	Partial	1
	(continued)	

Sector	Type of public-private partnership	Count
Ports	Build, operate, and transfer	5
	Build, rehabilitate, operate, and transfer	1
	Merchant	1
	Rehabilitate, lease or rent, and transfer	1
	Rehabilitate, operate, and transfer	5
Railways	Rehabilitate, operate, and transfer	2
Roads	Build, operate, and transfer	6
	Build, rehabilitate, operate, and transfer	42
	Management contract	1
	Rehabilitate, operate, and transfer	9
Treatment plants	Build, operate, and transfer	1
	Build, own, and operate	1
	Rehabilitate, operate, and transfer	1
Water utilities	Build, rehabilitate, operate, and transfer	15
	Lease contract	15
	Management contract	7
	Rehabilitate, lease or rent, and transfer	3
	Rehabilitate, operate, and transfer	9
Total		193

Source: custom query at the PPID (2017) website.

Likewise, only road infrastructure projects given in concession, as shown in Table 2, were included. For the purposes of the current study, that meant that only projects supervised or allocated by Agencia Nacional de Infraestructura (ANI) were taken into account, thus excluding those roads managed directly by the State, through Instituto Nacional de Vías (INVÍAS). In turn, only the municipalities where tolls were located counted as municipalities with road concessions, due to data constraints.

Finally, the current study was bounded by the rationality and knowledge of survey respondents. The former must be mentioned since, as questionnaires were sent to all municipalities, there was no way to ensure the person in charge of responding these was the one responsible for infrastructure projects or at least knowledgeable on these. This result could lead to unexpected outcomes when applying quantitative analysis techniques on these results.

Summary

PPPs have become one of the main methods for the development of infrastructure projects around the world, since they allow obtaining lower borrowing costs, adequate levels of security, and the ability to combine the public sector planning capabilities with the private sector efficiency, availability of capital, and experience. These associations have been utilised for different investment projects ranging from roads to hospitals, in both developed and emerging nations (Akitoby et al., 2007).

However, PPPs are facing a number of risks associated with political, operational, social, financial, and market factors. It is worth mentioning, that the political risk is particularly relevant in developing countries (Sachs et al., 2007). However, private capital is looking at these as an important attraction, which in turn requires an analysis on the risks faced by investors by their desire to participate on PPPs in these nations.

In the specific case of Colombia, the political risk is still pretty high. This is caused by the national reality, which is permeated by war, corruption and retardant processes of an old-fashioned bureaucracy, among others (Ortiz, 2012; Transparencia por Colombia, 2009; Vargas, 2011), therefore, the need to determine the contrasts on political risk among the various regions and municipalities of the country.

The former can be justified by putting in evidence that none of the methodologies for

risk analysis on investment perform a subnational adjustment of the problem, which can provide mismatched information at the time of project valuation. Ergo, it is important to know the real situation of the aforementioned phenomena, which leads to analyse the impact of these variables on PPP projects in a subnational and disaggregated setting.

This way, the current study analyses quantitative variables at different levels, in order to obtain a wider comprehension of the political risk, in Colombia. Thereby, a literature review was carried out throughout the next chapter, seeking to widen the horizons for the subject to be treated from a theoretical point of view, as well as identifying the theoretical gaps to be closed.
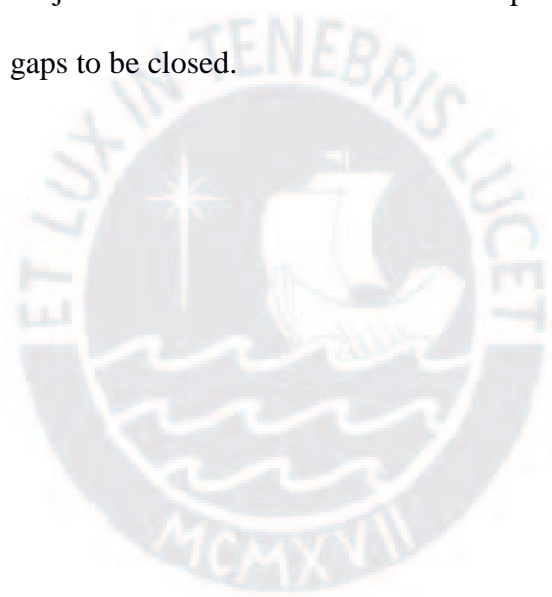
Chapter 2: Review of the Literature

Historically, the State has been responsible for promoting the development of the countries, especially, regarding to: (a) civil works, (b) infrastructure, and (c) goods and services for the enjoyment of society as a whole (Akitoby et al., 2007). However, economic changes and the current context of globalization have created a fluctuating world where many economies, generally, those of developing countries and transition economies are struggling at the moment of financing high investment and social impact projects "for example, in India public investment slowed down as part of fiscal adjustment measures taken in response to the crisis suffered in the early nineties" (Akitoby et al., 2007, p. 2, free translation from the original in Spanish.

In response to this situation, governments have found in PPPs an alternative for the crystallization of such projects, without having to contend with significant fiscal imbalances.

> …all the economies, rich and poor alike, must dedicate limited resources to satisfy opposing needs, procuring to strike a balance between the investment in physical and human capital -education, health and other social sectors- and guaranteeing there is enough income to cover current expenses at the same time. (Akitoby et al., 2007, p. 1, free translation from the original in Spanish

In this sense, and considering that PPPs are positioned as partnerships between the public and private sectors, through which investment projects of high impact are carried out, it is worth mentioning the relevance of assessing the feasibility and profitability of any investment project, as well as the risks to be assumed by investors when deciding to invest, under the figure of PPP. Specially analysing and measuring the political risk and subnational levels and the factor for their success in a PPP.

Therefore, a review on a set of documents viewed as contributions for the current study was conducted, and the gaps on these documents were identified in accordance to the

aforementioned purposes. Initially, the works conceptualising PPPs and showing the development of these in some countries were observed; later, the relevance of the public policy theory was reviewed, followed by one on risk methodologies, to finalise with a look on the Colombian political risk and the influence of security problems in the regions of the country. The structure of this section is displayed in Figure 4.
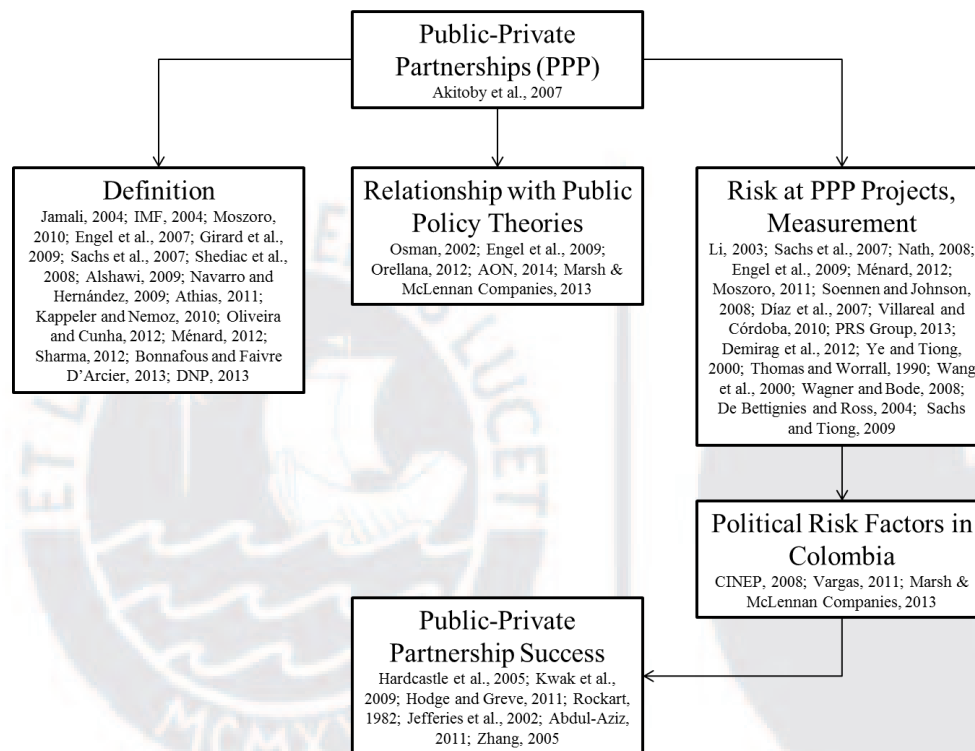
Figure 4. Structure of the review of the literature

Documentation

Regarding the process to find the authors mentioned throughout the review of the literature, these were found through Internet searches, using specialized search engines such as Google Scholar and Scopus, followed by using institutional access to databases such as Science Direct, JStor, Wiley, Emerald, Taylor & Francis and SciELO. Articles were considered regardless of the journal where these were originally published. Also, general search engine queries were conducted on the subjects treated during the review. A special mention must be made to institutional websites and databases, which were useful for both

theoretical definitions and data throughout the research.

PPP Definitions

It is possible to find multiple definitions for a PPP in the literature. Jamali (2004) mentioned PPPs are relations between actors of public and private character, performed in order to jointly provide some kind of service type. It must be noted, there is no unique PPP model, since these vary according to the legal status, the government, the management, the policy adjusting capabilities, the contributions and the operational roles.

According to the International Monetary Fund (IMF, 2004) PPPs are a type of agreement or arrangement between the public and private sectors, in which the latter plays a role similar to that of the State; i.e., private capital becomes a supplier of public assets and services, especially, regarding economic and social infrastructure. Thus, based on what was mentioned by Moszoro (2010) this type of alliance has experienced a boom in recent decades because, from the point of view of governments, these agreements represent an efficient solution to meet the demand for public services. Meanwhile, conducting these projects may represent a multiplication of assets for private investors.

Regarding financing, the IMF (2004) mentioned that the private sector owns greater potential to acquire funding than the public sector, as investors can easily borrow through the use of future income from the investment as collateral. It must be highlighted, that expected revenue in a PPP can come from two sources. The first one mentions the collection that originates from the users in general. The second, meanwhile, refers to amounts paid by the State, when it is the sole user of the works.

Also, an important point emphasized by the IMF (2004) is the management of risk, even though it is distributed among the parties, mitigation of it must be real, the above in order to have an objective estimate of the benefits brought by the project. Therefore, it must

be mentioned that PPPs are projects with the ability to create value as a whole; however, should there not be proper coordination and measurement of all variables that affect the project, it is likely to fail.

Later, Engel, Fischer, and Galetovic (2007) conceptualised PPPs as:

There are several definitions for "Public-Private Partnership". In this paper we take it to mean an infrastructure project such that (i) assets are controlled by a private firm for a (possibly infinite) term; (ii) during the duration of the contract, the firm is the residual claimant, while the government is the residual claimant at the end of the concession. However, these claims are ambiguous due to contract incompleteness; and (iii) there is considerable amount of public planning in the design of the project. We use the term "concession" as synonymous to PPP. (p. 1)

In addition to the above, these same authors complemented the definition of PPP by identifying the projects on which these are generally focused.

Public-private partnerships (PPPs) increasingly substitute public provision, for a wide array of services and infrastructures that require large up-front investments, such as highways, water and sewerage, bridges, trains, sea and airports, jails, hospitals and schools. A typical PPP bundles investment and service provision into a single contract. (Engel et al., 2007, p. 1)

The rise of these alliances has led to restructuring traditional public institutions dedicated to managing this kind of projects, hence the staff management and organization of departments is a role taken by the private management counterpart. Thus, public managers have been reduced to the supervision of contracts only (Girard et al., 2009).

It must be remembered that the success in PPPs depends on the existence of "...stable legal and political environments" (Sachs et al., 2007, p. 127). This way, structuring a suitable framework in which both sectors integrate will result in the generation of value for all

stakeholders (Shediac, Abouchakra, Hammami, & Najjar, 2008).

This way, PPPs are configured as a type of investment which allows (a) dividing, managing, and allocating risks in a better way; (b) obtaining lower implementation costs; (c) achieving higher levels of quality and efficiency; (d) gaining access to a lower cost of capital; (e) easing the transfer of administrative and management expertise from the private sector to the public sector; (f) obtaining greater industry-specific knowledge for the public sector to use; and (g) avoiding mistakes committed in the privatization process, for which these alliances became a third 'way' to leverage the strengths of both sectors (Engel et al., 2009a; Moszoro, 2010; Shediac et al., 2008).

It is worth mentioning that PPPs differ from the traditional public provision of infrastructure services, in that the private firm managing traditional construction projects is not responsible for the performance in the long term since it is only concerned with complying during the warranty period to the construction, which is usually quite short. In contrast, PPPs define service provision and investment under a single long-term contract (Engel et al., 2009a).

Likewise, it must be mentioned these alliances differentiate themselves from privatizations since public planning participation is observed through the process as a fundamental component: "...public planning is an important aspect of PPPs, plus the fact that contracts are periodically reassigned." (Engel et al., 2009a, p. 3).

Meanwhile, Alshawi (2009) stated there are multiple PPP types, the first of which is known as "build", "own" and "operate" (BOO) PPPs, or classic PPP; in turn there are "build", "own" and "transfer" (BOT) PPPs; "design", "build", "finance" and "operate" (DBFO) PPPs; and "design", "build", "manage", and "finance" (DBMF) PPPs. In relation to the former, Engel et al. (2009a) stated that:

There also exists a rich set of acronyms to describe specific PPP arrangements,

including BLT, BLTM, BOT, DBOT, DBFO, DBFO/M, JV and ROT. The B usually

stands for build, the L for lease, the R for rehabilitate, the T for transfer, the O for

operate, the D for design, the F for finance, and the M for manage. JV stands for

"joint venture". (p. 4)

Therefore, these authors complemented the concept by stating that in the framework

of these relationships, PPPs constitute a tool to build, manage and control projects. However,

it is necessary for the contract to be clear and convenient for both parts since there might

appear incongruences in the same otherwise (Engel et al., 2009a).

On the other hand, Navarro and Hernández (2009) argued that PPPs are alliances

between the State and the private business capital, originating from the budget constraints on

the governments when delivering public services and goods. "Through PPP the government

enters into a long-term contract with a private partner to deliver a good or service. The

private partner is responsible for building, operating and maintaining assets that are necessary

for delivering the good or service" (p. 1). Also, Athias (2011) conceptualised PPPs as

contracts performed between the public and private sectors, through which projects are

executed, especially in infrastructure, for which these are positioned as an alternative to the

traditional models, in which financing and responsibility are assigned to the public sector.

Kappeler and Nemoz (2010) characterised PPPs stating that:

The relatively long duration of the relationship, involving cooperation between the

public partner and the private partner on different aspects of a planned project […];

The method of funding the project, in part from the private sector, sometimes by

means of complex arrangements between the various players […]; The important role

of the economic operator, who participates at different stages in the project (design,

completion, implementation, funding) (…); The distribution of risks between the

public partner and the private partner, to whom the risks generally borne by the public

sector are transferred […]. (p. 4)

In turn, Oliveira and Cunha (2012) understood PPPs as arrangements or agreements between the government and private parties, created in order to provide infrastructure and public services, in areas such as: "Light rails, water systems, waste management, schools, sport centres, social housing, are just a few examples of sectors where the private sector is becoming more actively involved with local authorities" (p. 1). Also, according to Ménard (2012):

Public-Private Partnership has been high on the agenda of public decision makers since the 1990's. Primarily a contractual approach to the delivery of infrastructures, goods and services traditionally provided by the public sector or by private operators submitted to tight regulation, PPP is also a very special contractual practice as it seeks to introduce market-type relationships in a context in which non-market forces play a major role. (p. 2)

Sharma (2012) mentioned that there's been a rapid increase in the PPP project numbers around the world since the 90s. Meanwhile, Bonnafous and Faivre D'Arcier (2013) noted that the World Bank has been fomenting and observing an increase in the use of PPPs as a tool for infrastructure developments since 1990. Therefore, it is possible to mention that PPPs have been positioned as instruments for institutional and financial management, which hold the potential to close the development gap between countries.

Even more so if taking into account that:

PPPs may help governments provide infrastructure more efficiently. A common claim is that PPPs relieve budgetary restrictions and release public funds. A second argument is that because financing of the project is private, it is subject to the discipline of the financial market, which leads to important efficiency gains. A third argument is that PPPs can mimic a competitive market, since they are often

adjudicated in competitive auctions. Fourth, even though user fees can be charged under public provision and under PPPs, the fact that there is at least one interested party in setting profitable tolls under PPPs balances the political pressures to lower fees. Fifth, PPPs should help filter 'white elephants'. Sixth, various arguments have been given to justify PPPs on distributional grounds. (Engel, Fischer, & Galetovic, 2011, pp. 7-8)

Now, the Departamento Nacional de Planeación de Colombia (2013) defined this association type as an efficient collaboration scheme between the public and private sectors, which allows financing and supplying public services and related services in the long term.

Now with an understanding on the concept of PPP, it is convenient to look at this type of project from the contribution of the public policy theory, in order to evidence some representative cases in the execution of these contracts.

Public Policy Theories and PPP

As indicated by Orellana regarding PPPs (2012):

The structure adopted by these forms of work between the public and private sectors during the 80s can be explained in part, by the changes suffered in the practice of public management, after incorporating elements of the new public management, mainly the figure of outsourcing for certain public functions. (p. 2, free translation from the original Spanish language)

The new public management school had a great influence on the evolution and development of private participation in the provision of public goods through PPPs, given the conceptualizations of the relations between State and private sector developed. But the policies that were implemented based on the guidelines of the new public management relied on national contexts and outcomes. The latter was relevant to understand the origin of the

PPPs (Orellana, 2012).

In Latin America, the guidelines of the new public management were reflected on the privatisation wave of the 90s. The latter did not deliver the expected results, which led this policy to gradually lose support from Latin American societies (Engel et al., 2003, 2009a). Given the need for private sector participation in the provision of public goods derived from the financial limits of the States, PPPs were seen as a "third way, promising the advantages of privatization while avoiding its pitfalls" (Engel et al. 2009a, p. 1).

Although public policy models provide relevant instruments for the study of these, in general, and in terms of PPPs, in particular, these approaches look restrictive when applied on Latin American reality, since these belong to theories created for developed countries (Osman, 2002). As stated by Osman (2002) "public policies in the developing countries possess certain peculiarities of their own by virtue of being influenced by an unstable socio-political environment, and face various problems and challenges" (p. 37).

The above is explained by the fact that Latin American countries, as developing countries, generally have higher levels of political risk than developed countries (AON, 2014; Marsh & McLennan Companies, 2013). Therefore, it is necessary to consider Latin American realities when applying theoretical models originating from the latter. Then, by studying the relationship between political risk and the success of road infrastructure concessions in Colombia, the current study sought to deliver elements that evidence the existing gap in public policy studies on developing countries in general. Evidence on the relationship that political risk has with the outcome of a particular policy was obtained, helping to select which factors should be taken into account for the definition and implementation of other public measures and, hence, for the theoretical public policy models.

Risk at PPP Projects and its Measurement

Recognising the importance of having a full knowledge of the risks associated with an investment in a PPP, Li (2003) made a classification (that included political risk) disaggregated by level of analysis. At the macro level, the author identified those risks associated with the overall environment of a PPP project. At the meso level, the risks associated with the PPP project in particular. Finally, at the micro level, the author focused on the risks associated with the relationships between the parties involved in a PPP project.

Also, Engel et al. (2009a) enumerated the risks to which these investment types are exposed, namely: (a) demand risk, caused by unreliable forecasts, which are exposed to alterations in micro and macroeconomic indicators, as well as uncertainty on the price-elasticity of demand; (b) operation and construction risk, which is provoked because projected operation and maintenance risks tend to differ from the real ones; and (c) political risk, which is linked to specific and non-specific governmental actions, altering the obtained results. Such, it is pertinent for companies making these association types to make previous analysis regarding risk management and mitigation.

For that reason, these authors argued that PPPs do not always get the desired results. In this way, they described the experience in road concessions assigned to private operators during the nineties in four Latin American countries, in which a common pattern of overruns caused by flaws in the design of contracts, and unrealistic projections and deadlines, was observed, resulting in higher imposition of costs to the end-users of the roads (Engel et al., 2009a). On this basis, it is possible to argue the importance of proper management and risk analysis prior to the authorization of a PPP, for this all factors that may adversely affect the results of the investment must be taken into account.

According to Ménard (2012), one of the most important variables to be taken into account before making of an investment of this type lies in the risks these projects might possess. Facing this, Moszoro (2011) stated that "The efficiency of co-financing investments

by both public and private capital is not the decisive factor in establishing public-private partnerships. Behavioural factors which influence the way the risk is perceived are of much greater importance" (p. 1).

Also, Soennen and Johnson (2008) deduced that political risk is an important factor for investment decisions in developing countries, and therefore it must be quantified. Likewise, AON (2014) mentioned that: "in the shifting economic and geopolitical environment of today, it is essential for organisations to have an integral, high level outlook of their corporate exposure to political risk for each of their portfolios" (p. 5).

In addition, Díaz et al. (2007) stated that one of the tools to quantify and assess the investment risk is the country risk which, according to Villarreal and Córdoba (2010) is understood as:

...country risk corresponds to a non-diversifiable risk which translates in the fact that capital suppliers, either via debt or equity, demand an additional profitability (cost) based on the greater managed risk they must assume, simply because the project is developed in a country with a sovereign risk perception. (p. 1)

According to Shapiro (as cited in Nath, 2008) country risk is defined as: "...the risk associated with those factors which determine or affect the ability and willingness of a sovereign State or a borrower from a particular country 'to fulfil their obligations towards one or more foreign lenders and/or investors'" (p. 2).

This is associated with the likelihood of default to foreign creditors by a nation. One of the most popular indicators to measure this risk is the Emerging Markets Bonds Index (EMBI), designed by JPMorgan Chase & Co. The risks taken in count for this indicator are: (a) political risk, (b) sovereign risk, (c) liquidity risk, and (d) macroeconomic risk (Nath, 2008). Now, it must be noted that this risk measurement methodology does not analyse it on a disaggregated basis by subnational divisions of the country, which makes it difficult to

determine the contrasts between subnational divisions of the countries to be studied.

So, risk analysis is focused, mainly, on the credit risk of government debt, for which the evolution in the prices of emerging market bonds issued in dollars is measured, and the spread between yields on such bonds and U.S. Treasuries is calculated. Thus, the higher the difference, the greater the credit risk for the country in question (Nath, 2008). However, as told by The Economist (2007, February 22), it has been observed a decrease in the importance of this indicator due to the increase in the share of the debt issued in local currency, which is not measured by the EMBI. Additionally, it limits the price of the bonds as risk factor measurement, which may give an incomplete picture of the political situation of the analysed country.

Now, there are more specialized and wider country risk indicators, such as the International Country Risk Guide (ICRG) which was published in 1980. This indicator analyses a series of political, economic, and financial risk variables to provide an overall picture of the level of risk for investment projects in a given country, which gives prominence to political risk in the estimation as this represents the 50 % of the final indicator of country risk (PRS Group, 2013).

Meanwhile, Moody's, a credit rating agency, provided a methodology that separates the construction and operation phases on investment projects (Moody's, 2007 [as cited in Demirag et al., 2012]). Usually, these measurements are made for civil engineering projects, where elements as the possibility of cost overruns, the value of the main backups for the construction contractors, and the yields of financial support, including bonds and credit notes, are estimated. However, this methodology does not specifically take into account variables such as political risk (Moody's, 2007 [as cited in Demirag et al., 2012]).

Also, Ye and Tiong (2000) highlighted the importance of the Net Present Value (NPV) method to measure the profitability of an investment project through the calculation of

its profit over time. Up to this point, this tool can be considered to deliver a specific assessment for each project, however, if there is no clear information on the level of political risk affecting the place where investment will be developed, it is highly likely that earnings estimates will be incorrect because events associated to violence, corruption and bureaucratic inefficiencies, among others composing the political risk variable that may generate a decrease in the profit and even the failure of the project.

likewise, Ye and Tiong (2000) mentioned that a tool to avoid gaps in the NPV analysis is applying probability analysis, through which it is possible to examine the relationship between the base rates and the risk fee or rate for the project. Similarly, it is possible to determine the viability of the project in the context of investor confidence. However, if some risk variables are taken in an aggregate or generalized way, it is possible to not have an estimate of the actual risk level displayed by the locality where the investment project or PPPs will be executed.

In this regard, Soennen and Johnson (2008) based their analysis on the capital asset pricing model (CAPM) methodology, which uses five components to measure investment risk, each variable containing other minor variables, for which a formula is used in order to rank the allocation of risk in banks. This methodology is copied from the U.S. model that failed in the 2009 crisis. As such, the CAPM is an asset pricing model to which the authors added the political risk variable to measure the viability of investment projects in emerging countries. Then, the equation proposed by the authors goes as follows:

$$Cost\ of\ capital = R_f + p_r + \left(\beta_{project} * \beta_{FMUS}\right) * MRP$$

Where R_f is the U.S. risk-free rate; p_r is the political risk prime; $\beta_{project}$ is the Beta coefficient between the project and a similar one in the U.S.; β_{FMUS} is the Beta coefficient between the developing country's stock markets and the U.S. ones; and MRP is the market risk premium, obtained through observation of the historic values in the bond and capital

markets for the country in question (Soennen & Johnson, 2008).

Then, it is possible to see the importance authors give to the perception of political risk which is associated to political violence in the country, since this is a factor that must be taken in count when assessing an investment in this kind of countries. However, the CAPM is based on risk estimates from a national perspective without taking into account subnational differences in an unbundled way, thus hindering its application to attain the goals of the current study.

Additionally, Sachs et al. (2007), based on the definition of MIGA (1985), focused on evaluating political risk for investment through PPPs. In this manner, these authors divided the political risk into: (a) risks on convertibility and money transfer overseas; (b) risk of expropriation; (c) breach of contract risk; (d) the risk of political violence, the latter associated to acts of war, civil war, insurrection or civil disorder, terrorism, sabotage or riots caused by indigenous people and landlords; (e) legal - bureaucratic risk, and (f) non-governmental actions.

According to Thomas and Worrall (1990), expropriation risk is associated with the existence of short-term incentives for states to take ownership of private assets, aided by the lack of enforceability for international contracts, partially balanced against the need to create good relationships with investors to attract more in the future. Meanwhile, convertibility and money transfer risks are related to governmental decisions that might affect the conversion of earnings to foreign currency and remitting these abroad. An example can be found in China, where the yuan can only be converted into dollars to be sent abroad under government authorisation and only for current accounts (Wang, Tiong, Ting, & Ashley, 2000).

Regarding these indicators, the existence of legal, regulatory and bureaucratic risk has been documented in multiple sectors. While analysing risks in supply chain management, Wagner and Bode (2008) stated that:

In many countries, authorities (administrative, legislative, regulatory agencies) are an

important factor of uncertainty in the setup and operation of supply chains.

Regulatory, legal and bureaucratic risks refer to the legal enforceability and execution

of supply chain-relevant laws and policies (e.g., trade and transportation laws) as well

as the degree and frequency of changes in these laws and policies. This includes the

ability to obtain approvals necessary for supply chain design activities and supply

chain. (p. 311)

In turn, non-governmental actions refer to the interest of power groups in the

performance of PPPs, often seeing them as part of a larger political struggle. One example of

the above can be found in public sector unions who are usually opposed to PPPs as they see

them as a way to weaken their grasp by moving their duties to the private sector (De

Bettignies & Ross, 2004). Other parties relevant for this type of political risk in Colombia are

NGOs and local communities with previous consultation rights according to Colombian

legislation. Finally, political violence was analysed in the next section.

Associated to the former, the document of Sachs and Tiong (2009) stated that the

most relevant and reliable for estimating political risk and its components is provided by

qualitative empirical sources. Given this, these authors designed a methodology to convert

qualitative information into quantitative, with the purpose of analysing it with the application

of statistical tools. Therefore, this methodology is called Quantifying Qualitative Information

on Risks (QQIR), through which the authors measured and classified political risk in China

and other Asian countries.

Then, the application of the QQIR follows the stages listed below:

1. Identification of the cash positions at risk.

2. Identification of the risk factors associated to each position and its subsequent

structuring via influence diagrams. This way, for each factor the causes and consequences are

obtained from expert opinions, which are then coded using the Trapezoidal Fuzzy Numbers (TrFN). These ones refer to fuzzy numbers show characterized by measuring uncertain values, associated to a membership function, inside which an indicator between zero and one is assigned. Binding several of these creates a fuzzy set, which is used to develop the QQIR methodology.

For the specific case of infrastructure projects, the QQIR method eases "...assessing political risk in build-operate-transfer infrastructure projects or allow for the valuation of guarantees, contractual options, insurances, contingent claims, contingency budgets, or determining the impact of risks on the credit quality" (Sachs & Tiong, 2009, p. 64).

However, this methodology requires rigorous mechanisms for information gathering. For this, Sachs and Tiong (2009) highlighted the importance of categorizing the different levels of incidence, probability, and impact for each of the various risk types. However, the measurement is performed in a combined fashion on a national level. This in turn obstructs the decrease of the information asymmetry on decision making for a PPP project in a specific national region.

Political Risk Factors in Colombia

According to the map created by Marsh & McLennan Companies (2013) and despite the reduction Colombia has had on its levels of political risk, the country is still catalogued as a high risk country in that topic displaying higher levels of risk than those of other developing countries such as: Argentina, Brazil, Chile, Costa Rica, Mexico, Dominican Republic, Panama, Peru, Uruguay; Burkina Faso, Gabon, Ghana, Morocco, Namibia, Sierra Leone, South Africa, Tanzania, Zambia, Saudi Arabia, Israel, Jordan, Oman, Turkey, Bulgaria, Greece, Romania, Ukraine, Malaysia, Mongolia and South Korea. This proves it is necessary to analyse the risks in the country, as it allows to decrease asymmetric information for PPP

investments in Colombia.

Additionally, the study found that the main indicator increasing political risk in the country is the risk of terrorism associated with the indicator of political violence as one component of political risk itself (Marsh & McLennan Companies, 2013). In this regard, although each of the factors affecting political risk were followed, as per the MIGA categorization, it is important to highlight the work of Vargas (2011) as it allows to glimpse a logic of violence and war in Colombia, which is persistent and occurs in a differentiated manner among the different natural regions of the country.

Thus, Vargas (2011) stated that political violence has persisted throughout the history of the country, becoming a phenomenon that has defined other aspects of the Colombian society.

> ...the persistence of the political violence has not locked economic growth substantially. On the contrary, there were periods of great political violence combined with high macroeconomic growth rates, as the second post-war era, which coincided with the bipartisan violence. The same thing happened during the late 80s. This has led some analysts to raise the need to study the likely relationship between violence and growth, and even to speak of a certain functionality of violence to the economy. (p. 121, free translation from the original in Spanish

This is the result and also the consequence of a political culture that systemically limited political and social divergences, thus increasing social asymmetry and exclusion. Based on this, it can be said that the persistent conflict in Colombia is the consolidation of multiple interests and actors fighting against a precarious State that fails to meet all the demands of its population (Vargas, 2011).

Facing the issue, the Centro de Investigación y Educación Popular (CINEP) (2008) concluded that the armed conflict and violence in Colombia are still in place since the

problems have not been permanently solved, and have led war logics to mutate into new scenarios, strategies, and motivations. In this sense, this think tank presented a set of elements that must be taken into account to lower the levels of violence in the country.

Therefore, it is convenient for investors interested in performing PPPs in Colombia to take political risk into account from a subnational logic, since the factors increasing that risk, might appear in a differentiated and asymmetric way among the regions of the country.

Public-Private Partnership Success

Multiple studies have been carried out on defining success at PPPs. Hodge and Greve (2011) found that PPPs tend to be considered as successful, unless there are extreme cases of corruption or incompetence. Following up, the authors conducted a study on multiple success definitions employed when studying PPPs, and how these definitions were related to multiple definitions of PPP and partnership.

One of these definitions saw five types of success in partnerships. Namely, "(a) achieving outcomes, (b) getting the process to work, (c) reaching emergent milestones, (d) gaining recognition from others, and (e) acknowledging personal pride in championing a partnership" (Huxham & Hubbert, 2009 [as cited in Hodge & Greve, 2011, p. 8]). Another definition laid out by Jeffares, Sullivan and Bovaird (2009, as cited in Hodge & Greve, 2011), emphasised on the definition of performance at partnerships, viewed from the domains of democracy, policy goal achievement, transformation, connectivity, coordination and coalition/sustainability. From these domains, Jeffares et al. (2009, as cited in Hodge & Greve, 2011) reached a broad definition for partnership performance, as follows:

> Partnership performance may be more broadly conceived and include consideration of
> the longer term relationship that might exist beyond the delivery of a particular
> project or programme, the wider benefits to particular individuals or partner

organisations or indeed to citizens and service users (p. 9).

Meanwhile, McConnell (2010, as cited in Hodge & Greve, 2011) saw how policy success was seen from either the plain execution of the project or subjective interpretations, while stating that a policy can be judged as a failure despite having met its original goals, as there are detractors who do not support these original goals. From the above, three dimensions for policy success were defined: (a) process, defined as examining options and issues; (b) programmes, directed towards implementing tools aimed to solve these problems; and (c) politics, seen from political position and policy agenda. In turn, success could come from any of these three dimensions.

Following the above and other authors, Hodge and Greve (2011) concluded that, unless an extreme case of corruption or incompetence arose, governments judged PPPs as successful no matter what, as success could come from different outcomes and interpretations. The former is compounded by the fact PPPs embed multiple goals, while success can be a rather subjective term depending on the values and visions of critics and proponents alike, leading to predefined results.

Usually, when defining PPP success, multiple authors have boarded the subject from the general framework given by critical success factors, as defined by Rockart (1982). This has led to the implementation of this managerial concept on PPPs in multiple countries, using different approaches. Kwak et al. (2009) summed up the results of multiple studies, showing the critical success factors identified by these. Summing up, these authors found that, based on these existing studies, "the success or failure of a PPP project is dependent on: the competence of the government; the selection of an appropriate concessionaire; an appropriate risk allocation between the public and private sectors; and a sound financial package" (p. 59).

One of the aforementioned studies was the one conducted by Jefferies, Gameson, and Rowlinson (2002), parting from a case study on the Stadium Australia BOOT project,

identified three critical success factors for ensuring a sustainable project: (a) consortium experience and reputation, (b) efficient approval processes and (c) innovation in financing and equity raising methods as ways to show the existence of a winning strategy. Meanwhile, Agrawal (2010) conducted a study to analyse the main factors behind successful public-private partnerships in India under the BOT modality, making use of surveys conducted on experts. By making use of the analytical hierarchy process (AHP) techniques, the author found six critical success factors for these projects: (a) prevailing environment, (b) financial validity, (c) concessionaire consortium, (d) financial package, (e) risk allocation and (f) technical solution.

On the other hand, Abdul-Aziz (2011) took a different approach when analysing the critical factors on housing PPPs in Malaysia. Instead of limiting itself to examine the presence of critical success and failure factors, the author also study how the absence of these affected the results of PPPs, in a positive or negative way, parting from the assumption that an absent factor did not necessarily lead to an impact on these projects. Following the above, and supported by descriptive statistics, the author found a set of critical factors, while also stating how the presence or absence of the same affected the outcome of these PPPs.

In turn, Zhang (2005) highlighted the exposure of PPPs to multiple risk types, as well as the importance of proper risk allocation in these projects to ensure their success. For this, Zhang (2005) mentioned how proper identification of critical success factors could enhance resource and risk allocation, increasing the success of PPP projects. Thus, five critical success factors were identified: (a) favourable investment environment, (b) economic viability, (c) reliable concessionaire consortium with strong technical expertise, (d) sound financial package and (e) appropriate risk allocation via reliable contractual arrangements (Zhang, 2005). However, no mention was made to subnational administrative divisions while creating this set of critical success factors.

Finally, Hardcastle et al. (2005) studied the critical success factors behind PPP projects in the United Kingdom. For this, they designed a questionnaire incorporating 18 factors extracted from existing literature, obtaining 61 responses. By making use of the principal component analysis technique to reduce dimensions on these factors, they extracted five main factors behind PPP success: (a) favourable economic conditions, (b) available financial markets, (c) effective procurement, (d) government guarantee and (e) project implementability.

As shown by the above, there are multiple definitions of success in PPPs, even though the critical success factor approach has been adopted by multiple researchers. Defining these factors in the Colombian case was important, as a counterpart for political risk perceptions had to be found. It was also needed to observe the relationship between these, aiming to obtain a greater understanding of the impact of political risk on infrastructure projects.

Agency Theory and Public-private Partnerships

Agency theory, as known today, originated from the study carried out by Jensen and Meckling (1976). Throughout their research, the authors defined an agency contract as "a contract under which one or more persons (the principal[s]) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen & Meckling, 1976, p. 5). The nature of the agents in the contract leads to the appearance of agency costs, classified as (a) monitoring expenditures, (b) bonding expenditure and (c) residual loss (Jensen & Meckling, 1976).

Such costs are incurred as to avoid two different problems: adverse selection, where asymmetric information before the transaction leads to inefficient resource allocation (Braendle, 2008), and moral hazard, where behaviors after the transaction lead to such allocation inefficiencies (Braendle, 2008).

So far, studies relating agency theory to public-private partnerships have dealt with the behaviours of both public and private parties under such agreements. Vining, Boardman and Poschmann (2005) mentioned how it was often assumed that a common assumption behind PPPs was that private parties always had lower agency costs than their public counterparts, due to their greater incentives to minimise costs.

However, according to Vining et al. (2005), PPPs were also prone to conflict between the parties, high contracting costs due to the complexity, uncertainty and specificity of these projects, opportunistic behaviour by a private party trying to exploit the desire the public contractor might have in ending the project as soon as possible, and failure, after reviewing six PPP projects in the United States and Canada. From the study, the authors concluded that contracts must be designed in a way that guarantees that private parties actually assume the risks they chose to bear in exchange for their participation and payment from these contracts.

In turn, Rui, De Jong and Ten Heuvelhof (2010) sought to identify strategic behaviours on PPP projects carried out in China, for which they took agency theory as a starting point. Those authors found that behaviours such as collusion, often deriving from information advantages held by the agents, as well as procedures to minimise adverse selection issues. Also, fixed periodical payments were proposed for dealing with moral hazard.

As a conclusion, agency theory has been used in order to study the efficiency of public-private partnerships, as well as serving as one key theoretical piece for their adoption. Due to the prevalence of adverse selection, it is required that the relationship between the parties is outlined by well-defined contracts. Thus, proper identification of risks at all levels is necessary, as incorrect risk allocations and uncertainty on these lead to increased transaction costs and a greater likelihood for future disputes between the parties.

Public Policy Theory and Public-Private Partnerships

Studies on public policy theory were established to improve the public sector's organizational performance and actions (Lasswell, 1996, as cited in Valencia & Álvarez, 2008), by analyzing the results and changes in public policies, as to explain why governments choose to implement a particular policy (John, 2013), all under a technical, scientific and rationality intended to find the best solutions for public sector problems (Ejea, 2006).

One of these approaches to public policy was the new public management model (Ejea, 2006). Two core elements for this model were adopting the notion that politics do affect government performance, as well as accepting that public goods provision could be carried out in cooperation with non-state parties. Such postulates seemed to fit public-private partnerships, as these were seen as an intermediate option to allow the participation of private parties in providing public goods (Evenhuis & Vickerman, 2010; Hodge & Greve, 2007; Navarro & Hernández, 2009), being seen as a "third way, promising the advantages of privatization while avoiding its pitfalls" (Engel et al. 2009a, p. 1).

However, studies on the efficiency of the adoption of the new public management model led to mixed results. Dunleavy, Margetts, Bastow, and Tinkler (2005) found how this public policy theory, widely adopted on the principles of disaggregation, competition and incentivisation has not delivered the intended results on citizens' welfare, partly due to the increased institutional and policy complexity associated to these contractual agreements. An example of these issues was found in public-private partnerships in the UK, mentioning how these were criticised due to high exit costs and inadequate risk management, which led to the UK government limiting or banning their use for certain public sector services (Dunleavy et al., 2005).

From the above, it could be concluded that, while certain public policy theories have favoured the adoption of public-private partnerships as a way to improve public service delivery, by promoting competition and incentives, these initiatives have not always had the

expected outcomes in cost-cutting and improved services. Once again, agency theory issues appear to be at the center of such problems, thus reinforcing the importance of proper risk identification at all levels for these to reach their full potential in service delivery.

Summary

A review of literature considered as relevant for the current research was conducted in this chapter, outlining each of the focuses for the same and identifying major research gaps on the research considered to be contributions for the current work. Initially, the boom that PPPs have experienced worldwide was evidenced, despite the exposure of these partnerships to a number of significant risks during implementation. Therefore, an extensive exposure of the various types of risk to which such projects are vulnerable was performed, as well as an exposure on the measurement methodologies of the same, through which the absence of a means to determine the level of political risk in a disaggregated manner for the subnational divisions in each country was identified.

Finally, a characterization of the Colombian conflict was performed (as this is the country from which the sample is taken), which is marked by changes in the parties and motives for war. These are facts that justify the detailed analysis of these phenomena and their effects on the measurement of country risk for investments through PPPs in Colombia.

Conclusion

So far, an exhaustive analysis of the current status of PPPs in the national and international context has been conducted, alongside an analysis of the risks associated to this type of projects and an introduction to the Colombian context. As a result, it was found that political risk ranks highly among the risks faced by these projects, while in turn encompassing different types of risk, at different levels and related to multiple parties involved in these projects, such as contractors, governments and civil society.

Thus, it must be noted, as a gap in the existing literature on the subject, that the current methodologies of political risk assessment ignore the differences between the subnational divisions inside a country since these tools do not employ a subnational correction for any of the variables. With this, the purpose of analysing the impact of political risk at a subnational level on the probability of success of an infrastructure project executed through a PPP is justified, intending to give investors a better identification of the probability of success for a PPP project.

Such disregard for the subnational level in the analysis of public-private partnerships could also be found when reviewing critical success factors for infrastructure projects, as the existing studies focused on national factors. Thus, the review of the available literature showed the need to analyse the influence on the success of public-private partnerships of political risk factors and critical success factors at the subnational level, as well as reviewing whether the classifications created for the national level held.

Chapter 3: Methodology

In order to answer the questions proposed in the current research, the method to be employed is described next, consisting of structural equation modelling (SEM), designed to identify the relationship between political risk factors, critical success factors and region on infrastructure projects implemented under the figure of concessions. As complementary procedures, the collection of primary and secondary data required for conducting the research was performed first, followed by identifying the variables to be studied and its subsequent validation in a qualitative manner, through surveys on experts.

Research Design

The current study had a quantitative approach, an explanatory scope, and a non-experimental design, employing structural equation modelling (SEM) to analyse how political risk factors influenced critical success factors for PPP infrastructure projects at the subnational level. In the model used for the research, six variables were selected for the political risk factors, specifically those defined by MIGA (1985): (a) currency inconvertibility, (b) breach of contract, (c) expropriation, (d) political violence, (e) legal and bureaucratic factors, and (f) non-governmental actions. In turn, there were three proxy variables selected to represent critical success factors for PPPs, namely four of the five factors mentioned by Hardcastle et al. (2005): (a) favourable economic conditions, (b) available financial markets, (c) effective procurement and (d) government guarantee.

Finally, the probability of success or failure of the project was incorporated to the model as the dependent variable. A project was considered to be successful if finished, was still under construction or it was operational, while a project was considered to be a failure if it was cancelled, suspended or if it was distressed, that is, bordering any of those situations (Galilea & Medda, 2009).

In order to run the structural equation modelling, a set of preliminary stages were executed. Information on critical success factors for infrastructure projects in Colombia was obtained during the first complementary stage. This was performed through database enquiries for secondary data, seeking to obtain information on road infrastructure projects implemented in Colombia under the figure of concession until now. It must be mentioned that this information was collected only once, although the projects feature different dates during their implementation. The statistics on success factors were obtained from the Colombian National Police, the Colombian Public Prosecutor's Office and the Financial Superintendence of Colombia. Finally, information on population projections for each department was obtained from DANE (2013).

Meanwhile, the second stage involved the performance of questionnaires on experts (see Appendix A), in order to obtain information on the most relevant risk factors for the implementation of infrastructure projects in Colombia, take an initial look at the importance of political risk on this kind of project in the country, and analyse the applicability of these factors on PPP projects to be executed in the future. A final questionnaire was deployed on subnational public functionaries and on other local stakeholders (see Appendix B), such as construction firms, financiers and professionals surrounding infrastructure projects, to gather information on the significance of political risk factors on infrastructure projects.

Using the data gathered from the surveys, as well as that data obtained from secondary databases, a set of analyses of variance was performed in order to review the relationship between categorical variables, and risk and success factors. Specifically, it took political risk factors and the proxies for critical success factors as independent variables, while taking the region and the sector this person belongs to (either private or public) as the categorical variables. Also, to test the existence of a significant relationship between political risk and critical success factors, a bivariate Pearson correlation matrix was obtained.

Now, it is important to define the statistical techniques that were employed. Structural equation modelling (SEM) is defined as:

…multivariate technique combining aspects of factor analysis and multiple regression that enables the researcher to simultaneously examine a series of interrelated *dependence relationships* among the *measured variables* and *latent constructs (variates)* as well as between several latent constructs. (Hair, Black, Babin, & Anderson, 2009, p. 634)

A SEM involves two types of variables: latent variables, and measured variables. Latent variables are defined as variables that cannot be measured directly, but that can be measured or represented through one or more measured variables. The latter are known as measured variables which, as a group, give an adequate representation of the latent variable (Hair et al., 2009). This technique has proved to be a useful tool for both the academic field and everyday applications, due to its ability to evaluate multiple dependence relationships at the same time. Such a feature allows answering questions and analysing theories that require reviewing multiple relationships simultaneously using latent variables (Hair et al., 2009).

An example of the application of SEM for studying risk at infrastructure projects is found in the study developed by Eybpoosh, Dikmen, and Birgonul (2011), who employed said technique for analysing the relationship between risk factors during the development of 166 international construction projects carried out by Turkish contractors. These authors focused on risk paths, connecting individual risk factors in multiple ways, using data gathered from international construction projects developed by Turkish contractors. Using SEM allowed the researchers to analyse not only the relationships between individual risk factors, and other factors in more advanced stages of the project.

It must be stated, though, that there was uncertainty on the distribution of the data to be gathered from the surveys, as well as on the data coming from secondary databases, due to

lack of knowledge on the structure of the population. This problem is exacerbated by the fact that SEM relies on the assumption of a multivariate normal distribution (Hu, 2010). This led to the adoption of nonparametric bootstrapping simulation for estimating mediation effects, following Hu (2004).

Bootstrapping is defined as a sampling and inference technique, seen as the construction of a subset of small samples from a larger sample, instead of using the population directly, always keeping replacement at the time of taking the values for the creation of the samples (Fox, 2002; Singh & Xie, 2008). It is deployed to obtain confidence intervals for the descriptive statistics of a sample, optimise and correct biases in the results of a regression, or approximating the sampling error (Singh & Xie, 2008).

So far, no examples have been found on the application of bootstrapping to validate an analysis of public-private partnerships. However, said technique has been utilised for the analysis of infrastructure projects, to validate the results obtained from a regression model intended to calculate the costs for these projects, through the definition of confidence intervals for the values obtained from a linear regression (Fragkakis, Lambropoulos, & Pantouvakis, 2010).

Appropriateness of Design

It is necessary to approach the ontological and epistemological dimension of the current research, as these were required to decide on the research approach to be used in order to test the proposed research hypotheses. It must be mentioned that, according to Crotty (1998), epistemology is defined as "the theory of knowledge embedded in the theoretical perspective and thereby in the methodology" (p. 3), while defining ontology as "the study of being. It is concerned with 'what is', with the nature of existence, with the structure of reality as such" (p. 10).

Crotty (1998) also mentioned how ontology and epistemology are usually intertwined in research, as both form the basis for creating the theoretical perspective from which the research methods are selected. Also, Crotty (1998) mentioned the complex nature of the relationship between ontology and epistemology, exemplified on how realism, an "ontological notion asserting that meaning exists in objects independently of any consciousness" (Crotty, 1998, p. 10) was compatible with opposite epistemological approaches such as objectivism and constructionism.

That being said, as the adoption of an epistemological approach based on objectivism was decided for the current research, due to its association with positivism and the application of statistical analysis. It could be said that the current research also adopted realism as its ontological approach. In turn, a quantitative scope was adopted, following a non-experimental design, in which the current conditions of phenomenon were detailed through data from different sources. The explanatory approach originated from the need to prove the impact of political risk measure from its critical success and risk factors. The ontological and epistemological assumptions of the study are laid out in Figure 5.
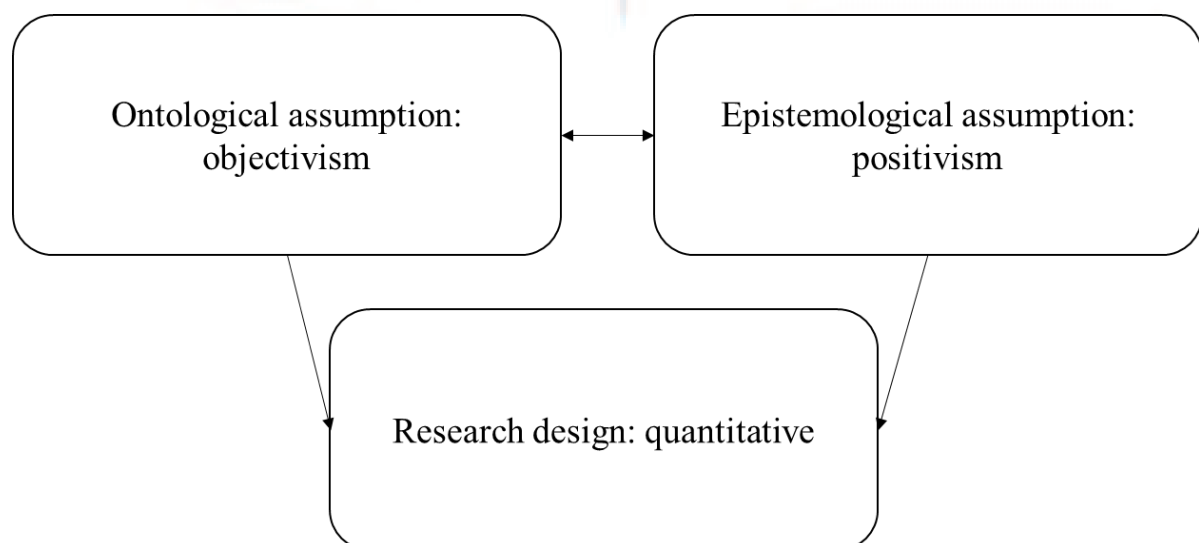
Figure 5. Epistemological and ontological dimensions of the current study. Adapted from "Demystifying Ontology and Epistemology in Research Methods", by Al-Saadi, 2014

Regarding the selection of a quantitative scope, Creswell (2003) mentioned how the research problem directly determined the research approach, between quantitative, qualitative and mixed methods. In this case, a cause-effect analysis had to be conducted in order to assess how political risk and critical success factors at the subnational have affected the success of a public-private partnership infrastructure project, following studies on both political risk factors (Li, 2003; Engel et al., 2009a, Sachs et al., 2007) and critical success factors (Hodge & Greve, 2011; Zhang, 2005; Hardcastle et al., 2005). As the research sought to identify how significant the relationship was between these factors and project success, and there was extensive literature on the concepts underlying both the latent and measured variables, a quantitative approach was deemed as the most appropriate.

After deciding to use a quantitative approach, selecting a statistical approach was the next step. It must be reminded that the study intended to measure the impact of political risk factors at subnational levels such as governorships and municipalities, as well as that of critical success factors, on the success or failure of infrastructure roads projects in developing countries. Facing this, the use of structural equation modelling was adequate due to the need of analysing both the impact of political risk factors on critical success factors, and how these critical success factors affected the existence of infrastructure projects.

The existence of critical success factors as an intermediate variable was influenced by both political risk factors and project success, which meant an interaction in a logistic regression model would not have been enough to capture the research questions. In turn, incorporating political risk and critical success factors as latent variables allowed to simplify both the interpretation and the separation between factors. Finally, as there was no guarantee that data from surveys would follow a normal distribution, a linear discriminant analysis model was discarded. Given the above and its applications on multiple studies related to PPPs (Eybpoosh et al., 2011; Ng et al., 2010), SEM was deemed as appropriate.

In turn, there was uncertainty on both the nature of the data obtained from the sample and the final sample size, leading to potential bias on the SEM. For this, the bootstrapping technique permits to verify and correct biases in the estimators obtained from the SEM, as well as constituting an internal validation technique proven to deliver the best results given limited sample sizes (Steyerberg, Harrell, Borsboom, Eijkemans, Vergouwe, & Habbema, 2001). Also, the nonparametric nature of this technique is an important asset for this function, as well as its easy implementation (Singh & Xie, 2008).

Similarly, surveys on experts were employed to identify properly the relevance of political risk factors on the implementation of public-private partnerships. This choice is due to the current state of public-private partnerships in the country selected to carry out the study, Colombia, where the figure was officially implemented through the Ley 1508 of 2012 after a long experience with concessions. This in turn, hindered the implementation of a quantitative study on this subject in the country, given the absence of sufficient observations. The Said shortage led to use experience in road concessions as a proxy for the analysis of PPPs in the country, while the panel of experts allowed verifying the suitability of this approach.

Finally, the analysis of variance (ANOVA) technique allowed to determine whether there are significant differences in the means of a variable, between multiple categories of a dependent variable (Hair et al., 2009). It has seen multiple applications in different fields, including the analysis of Public Private Partnerships throughout the world (Grossman, 2008; Lo Storto, 2013; Famakin, Kuma-Agbenyo, Akinola, & Onatunji, 2014; Williams, 2014).

Research Questions

The research questions proposed for the current study go as follows:

1. Are political risk factors at the subnational level related to both critical success factors for road infrastructure concession projects and the success of these?

2. Are there subnational differences on the influence of political risk factors on the success or failure of a road infrastructure concession project developed through a public-private partnership?

Population

For the current study, the target population is formed by public officials in each of the municipalities located in the departments included in the study, the private investors investing in PPPs and selected stakeholders with interests in association with PPP. Thus, the offices of the mayors represented the main body of public administration at the municipal level. It must be noted, there were no exclusions of regions or municipalities, as this would have limited the scope of the research. Also, local information was not limited to the offices of the mayors, as potential local private stakeholders had to be taken into account as well. The departments from which respondents came from are shown in Table 3.

Table 3

Participants per Department

Department	Count	Share of respondents (%)
Antioquia	13	17,81%

(continued)

Department	Count	Share of respondents (%)
Atlántico	2	2,74%
Bolívar	1	1,37%
Boyacá	2	2,74%
Caldas	1	1,37%
Caquetá	1	1,37%
Córdoba	1	1,37%

Cundinamarca	20	27,40%
Distrito Capital	21	28,77%
Meta	2	2,74%
Norte de Santander	1	1,37%
Santander	2	2,74%
Tolima	1	1,37%
Valle de Cauca	5	6,85%

On the experts selected for the survey sent to experts to review the questionnaire of Sachs (2007), these were chosen based on the institutions they worked for, given the need to review the survey from the point of view held by multiple stakeholders. Thus, these were selected from construction companies, banks, and government institutions, based on accessibility to their observations by the researcher due to both professional contacts and the "right to petition" requests.

Finally, regarding the included projects, information on the existing toll stations was taken from ANI (2014), and then processed in Excel. It must be mentioned that the selection of 2014 as the base year for the information on tolls, despite the existence of more recent data, was caused by the need to synchronise the said year with those years for which data on the other secondary data variables were available. 104 municipalities were thus deemed as having toll roads, thus benefitting from infrastructure road concession projects. In turn, the distribution of said municipalities among subnational regions was laid out in Table 4.

Table 4

Tolls per Region

Region	Count	Share of total (%)
Andean	53	50.48%
Caribbean	34	32.38%

Pacific	11	10.48%
Orinoquia	7	6.67%
Amazon	0	0.00%

Source: Adapted from data by Agencia Nacional de Infraestructura (ANI), 2014.

Informed Consent

At the beginning of the instruments employed for both the survey to experts and the political risk questionnaire, a letter indicated the purpose of the study was included in both physical and digital versions of these, asking for their consent. These can be found as parts of Appendices A and B. In the aforementioned letter, all of the participants were informed of the research goals, procedures and a confidentiality guarantee on the responses and the published results. It should be mentioned that no kind of incentive for the performance of the survey was offered, other than knowledge and the promise of a copy of the final research work, should they wish to obtain one, while guaranteeing their confidentiality and that of other participants.

Sampling Frame

Regarding the sample size for structural equation modelling, Hair et al. (2009) mentioned how sensitive SEM was to sample size, compared to other multivariate approaches, due to the type of statistical techniques used for estimating its parameters. Hair et al. (2009) also gave a minimum sample size of 100 observations for models with a maximum of five latent variables and at least three measured variables per latent variable. However, Hair et al. (2009) also mentioned how there are multiple criteria for sample sizes in SEM models, with different opinions depending on the existence of multivariate normality, the estimation technique, model complexity, missing data, and the average error variance of measured variables.

The above is reinforced by the existence of multiple existing rules of thumb to determine ideal sample sizes, including absolute total numbers and relative numbers according to the number of variables, as mentioned by Wolf, Harrington, Clark, and Miller (2013). After analysing required sample sizes for models with different factors using Monte Carlo simulation, Wolf et al. (2013) found that "one size fits all" approaches for SEM sample size were not the best option for estimating these models, while also finding that the number of observations required per measured variable actually decreased as the number of measured variables per latent variable increased, calling for researchers to evaluate sample size requirements based on the type of model they want to estimate.

For the purposes of the current study, the criterion laid out by Iacobucci (2010) was adopted, which states that a researcher must aim for a sample size of at least 50. Also, on missing data, observations that either had incomplete responses to political risk factors or worked in fields deemed as unrelated to public-private partnerships by the researcher were deleted. This led to the final sample size of 73 observations. A study carried out by Ng, Wong, and Wong (2010), in which SEM was employed to analyse the relationship between political, technical, financial, economic and social factors with project feasibility, and the relationship between the latter and stakeholders' satisfaction, employed 181 observations for a model with 21 measured variables and seven latent variables. Given that the model proposed for the current research was less complex, involving two latent variables and 10 measured variables, sample size requirements were lower.

For the stage to be performed at the subnational levels, the capture of information for the entire population of the target group was proposed, for which it was not necessary to use a sampling method. However, it was likely that not all municipalities would cooperate with the development of the survey, either for reasons of confidentiality, lack of interest or neglect. Also, it was expected for the interviews with other stakeholders to be heavily concentrated in

Bogota, due to the economic and political importance this city holds.

Thus, closed questionnaires were conducted on eight representatives of the involved parties in infrastructure projects: construction firms, financiers, regulators and local authorities. The survey designed from the opinions of these experts was originally implemented on the 32 governorships and 1,122 mayor offices existing in Colombia (DANE, 2013). It was also sent to a convenience sample of other stakeholders, in order to complement municipal authorities. This additional sample mostly included stakeholders established in Bogotá, but whose economic activities were developed mainly in Colombian regions other than the Andean one. These stakeholders were chosen based on accessibility and their working fields.

Confidentiality

The confidentiality of respondents is guaranteed since no personal data was required from the mayors and businessmen, however it is important to provide information about the municipality department and region to which it belongs, in order to allow the realization of the mapping. It is worth noting that anonymity can ensure the collection and quality of the responses delivered by the participants. Participants were told about confidentiality and how their names would not be published in the introduction letter of both the survey to experts and the questionnaire on political risk factors, as shown in Appendices A and B.

Geographic Location

The sample on which the surveys were deployed covered representatives for all of the Colombian municipalities. There were no plans to involve personal foreign to the regions, in order to obtain a local view of the risks and opportunities associated to infrastructure projects in the country. In the final sample, stakeholders from 14 departments were present. Figure 6 shows the Colombian map, with the corresponding departments from which responses were

obtained highlighted in black.
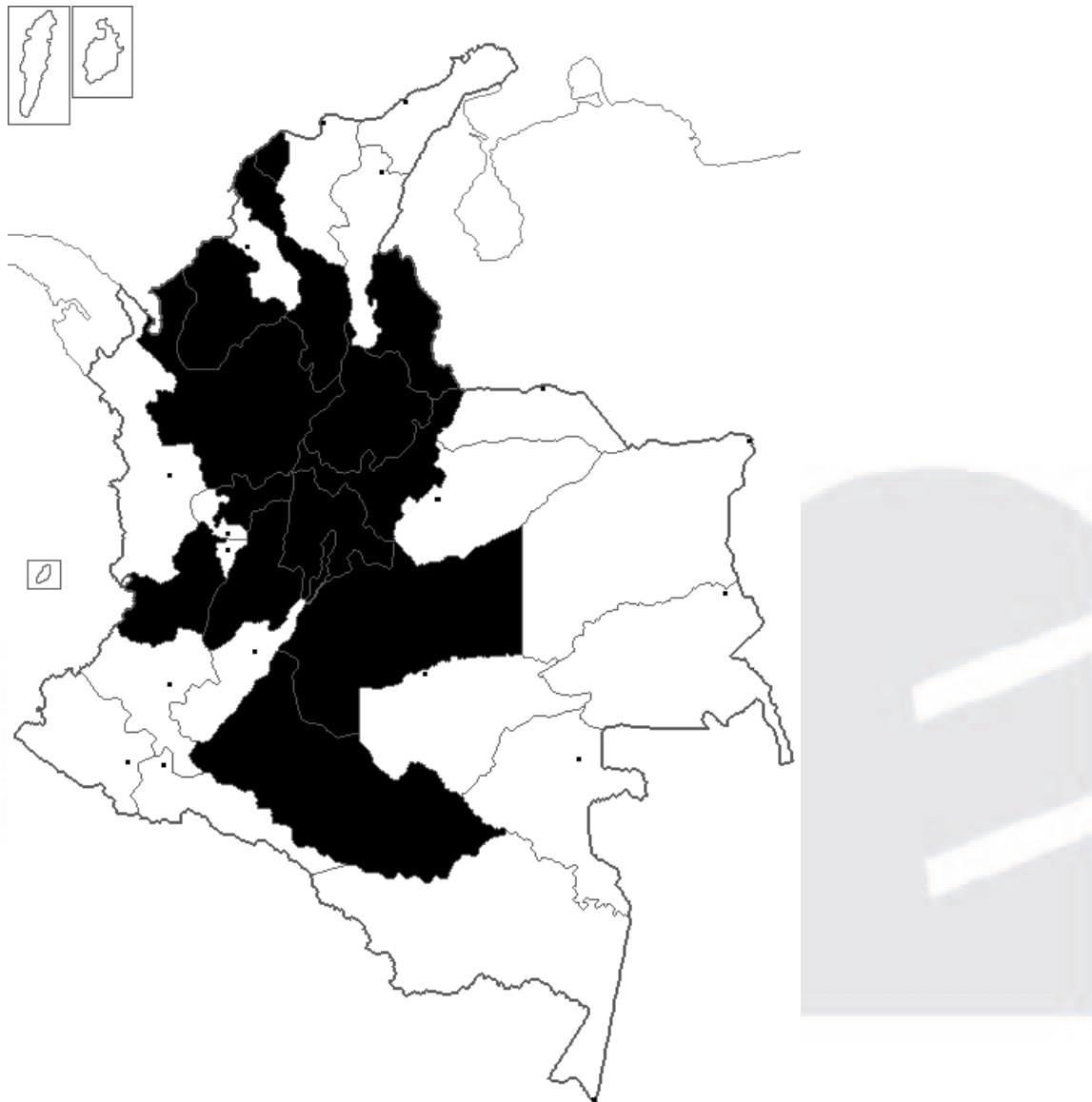
Figure 6. Colombian departments of survey participants

Instrumentation

The instrument employed by Sachs (2007) was selected for the development of the current study, on which a series of modifications aimed towards using concrete values instead of Likert scales were conducted, as well as questionnaires on experts served to analyse the possibility to perform adjustments on the instrument for the Colombian environment.

For the development of the SEM, a latent variable labelled as *political risk factors* was included. In turn, a set of measured variables shown in Table 2 followed the definition of

MIGA (1985). For all factors, perceptions of political risk at the municipal level were taken through the final survey instrument shown in Appendix B, which was corrected after the survey on experts during the previous stages, using a percentage scale ranging between 0 and 100 to indicate the perceived degree of importance for a given political risk factor, seeking to obtain these perceptions at the municipal level.

Another latent variable was added as well, *critical success factors*, for which a set of measured variables was chosen. In order to measure effective procurement, the *Índice de Gobierno Abierto* (Open Government Index) by the Colombian Public Prosecutor's office was selected as a measure for transparency and effectiveness of municipal authorities. Also, government guarantees were measured from personal security, leading to the choice of theft rates per 100 thousand inhabitants at the municipality as the proxy variable.

In turn, access financial markets and overall economic environment were approached by using outstanding credit portfolio per capita at the municipalities, crafted from data published by the Financial Superintendence of Colombia. Finally, a dummy variable indicating whether there is a concession infrastructure project in the municipality was selected as the final dependent variable. Its values were obtained from a database of road tolls on concessions under ANI and their respective municipalities, taking a value of one (1) if there was at least one toll inside the municipality, or a value of zero (0) otherwise.

The employed variables are listed in Table 5.

Table 5

Variables in the SEM Model

Variable	Type of variable	Description
CSF	Latent	Critical success factors
PRF	Latent	Political risk factors
Project	Measured	Existence of a concession infrastructure project

<div align="right">(continued)</div>

Variable	Type of variable	Description
RIX	Measured	Currency inconvertibility risk
EXP	Measured	Expropriation risk
RBC	Measured	Contract breach
RVP	Measured	Political violence
RLB	Measured	Legal and bureaucratic risk
ANG	Measured	Non-governmental actions
IGA	Measured	Open Government Index
CAR	Measured	Credit portfolio per capita
HUR	Measured	Theft rates per 100.000 inhabitants

The overall scheme for the SEM model goes as shown in Figure 7:
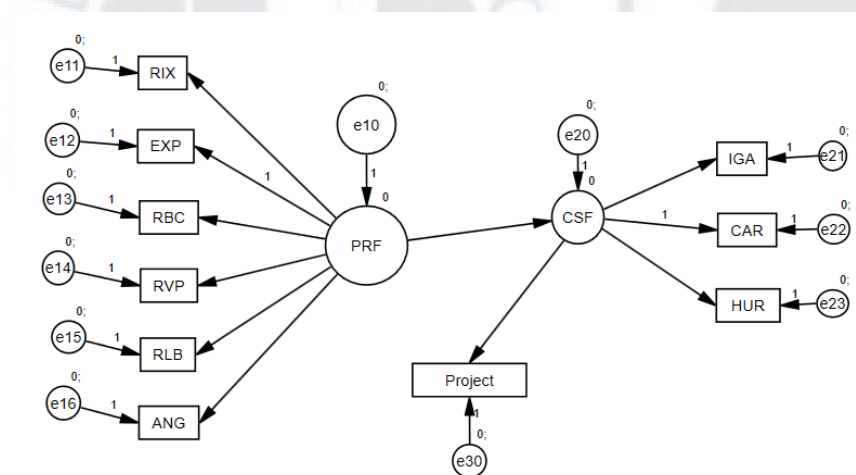
Figure 7. SEM specification for latent and measured research variables included in this study. where Project was a dummy indicating whether there were infrastructure concessions in the municipality, *CSF* represented the latent variable "critical success factors", and PRF comprised the latent variable "political risk factors".

The equations for the SEM model go as follows:

$$PRF = RIX + EXP + RBC + RVP + RLB + ANG + ePRF,$$

$$CSF = IGA + CAR + HUR + PRF + eCSF,$$

$$Project = CSF + eProject$$

Data Collection

In order to collect this information, the questionnaires were administered electronically, through an online questionnaire created with Google Forms, or physically if required. This in order to ensure maximum convenience for respondents, seeking to increase the number of valid responses obtained. Consent notifications and full disclosure on the objectives of the survey were delivered to the respondents in parallel to the questionnaire. Furthermore, the survey was sent in physical form to all governorships, intending to maximise responses from municipalities. Finally, enquiries on public access electronic databases were performed to obtain the remaining data.

As a first step for the execution of the doctoral dissertation, a survey was designed to ask experts over the perspectives they hold on public-private partnerships in Colombia. For this, the instrument employed by Sachs (2007) was selected as a starting point, on which a series of modifications aimed towards using concrete values instead of fuzzy logic were conducted, as well as the possibility to perform adjustments for the Colombian environment. Thus, interviews with people involved at the structuring and management of infrastructure projects in the country were arranged, making use of professional contacts. An initial convenience sample of 20 people to be interviewed personally was chosen at first, but it was not possible to arrange personal meetings to deal with these subjects due to time constraints.

Given these difficulties, and facing the need to capture the opinions of these experts, an alternative was found in using formularies with open questions, sent through mail and following an initial contact with the selected experts. Said survey asked them about their professional experience, opportunities, their perceptions on multiple risk types, and information on the contingency plans designed for hedging said risks and uncertainties.

Once these surveys were delivered, constant follow-up was conducted on the receivers of the same, seeking to ensure the highest possible number of responses and paying attention

to any question or doubt that could arise when filling the contents of the same. In the end, after a period of three months awaiting answers and a permanent follow up process on the selected experts, eight responses were obtained from experts contacted at the following entities:

- Inversiones Gabra S.A., a construction firm based in Cúcuta, Norte de Santander.

- Consultores del Desarrollo S.A. - CONDESA, a consulting and construction firm based in Barranquilla, Atlántico.

- Banco de Occidente, a financial institution based in Bogotá, D.C.

- Departamento Nacional de Planeación, the government administrative department in charge of planning, headquartered in Bogotá, D.C.

- Ministerio de Hacienda, the Colombian Ministry of Public Finance, headquartered in Bogotá, D.C.

- Agencia Nacional de Infraestructura - ANI, the regulating agency behind infrastructure projects in Colombia. Located in Bogotá, D.C.

- Integrar Constructores S.A., a construction firm based in Cali, Valle del Cauca.

- Construcciones El Cóndor, an engineering firm based in Medellín, Antioquia.

Besides delivering the questionnaires to experts from these institutions, a pilot of the instrument to be sent to municipalities and other stakeholders on infrastructure was sent. After checking its length and conventions, modifications were performed on the latter, related to the length of the questionnaire, as well as on a greater clarification for the conventions. Next, contact was made with Fondo Financiero de Proyectos de Desarrollo (FONADE), and with the Federación Colombiana de Municipios (FCM), in order to obtain contact information for data collection from municipal authorities.

Once these contact databases were obtained, these were analysed and filtered, seeking to correct typos in these. After that, the instrument was sent to the municipalities inside the

database, making use of a mail address specifically created for attending the needs of the current data collection process. The instrument was sent to the governors of the respective departments as well, in order to gather their perceptions and forward the document to the municipalities of their respective departments, in order to ensure a better response rate. For this, the "derecho de petición" (right to petition) was employed, since it is a Colombian legal concept used to obtain information from public entities and private companies, which are compelled to deliver a response to those under current legislation.

Besides mayors and governors, contact was established with professionals in other sectors related to infrastructure projects, belonging to the fields of law finance and construction, aimed towards collecting the perceptions of other participants in infrastructure projects, as a complement to the vision of elected officials from a different point of view.

Once the questionnaires were sent to the municipalities and other stakeholders on infrastructure via e-mail, using the right to petition figure, via physical mail to governors while requesting them to forward the instrument to municipalities, 269 responses were obtained. After discarding incomplete responses, as well as those responses coming from Bogotá but whose main economic interest lied in the Andean region, a final sample size of 73 responses was obtained.

On the data corresponding to theft in municipalities, a database was requested to the Colombian National Police, with data for the year 2014, by making use of a right to petition. This data was crossed with population projections created by the Departamento Administrativo Nacional de Estadística (DANE) for that same year, in order to calculate the rates for these crimes per 100 thousand inhabitants, and thus allowing comparisons between municipalities regardless of their populations.

Data Analysis

Following the collection and obtention of data, from surveys and databases, the software known as SPSS, more specifically its associated tool AMOS, was selected for estimating the SEM, and thus performing the required analyses on the obtained results. AMOS was selected due to its versatility, ease of use and constant employment on social sciences by multiple actors in the academy and business, as well as due to availability to the researcher.

For the databases to be employed, the results were organised in Excel spreadsheets, given their ease of use and the categorisation for the variables to employ. Thus, data obtained from the questionnaires on political risk factors sent to municipalities and stakeholders was entered into an Excel spreadsheet and organized there. In turn, additional variables were entered such as dummy variables for regions and projects, as well as secondary data for variables such as Open Government Index, outstanding credit portfolio per capita, theft and the existence of projects in the municipality, using the latter as a reference. Finally, the data for theft was normalized to a rate per 100 thousand inhabitants, using population numbers to calculate that rate.

Once data was prepared, the spreadsheets were imported to SPSS. There, the type of variable was set for each variable using the "Variable View" tab. Thus, the nine variables that acted as measured variables were set to be continuous, while other variables such as region and dummy variables, including the existence of PPP projects in the municipality, were set as discrete, nominal variables. This selection was done following at the researcher's discretion, by looking at data and analysing both its behaviour and scale.

Validity and Reliability

In order to test the reliability of the instrument, a Cronbach's alpha was used to

confirm internal consistency (Hair et al., 2009). It was deployed on the scores associated to the six questions where respondents were asked to enter their perceptions on political risk factors through a continuous scale, in order to verify its reliability and internal consistency. The obtained score was 0.801, which is considered as a good result. This leads to conclude that these questions were internally consistent. Also, and due to the small sample size, the use of bootstrapping was decided as its use has been recommended when the sample size is lower than 200 (Porritt, Sufi, Barlow, & Baker, 2014).

On the validation of the model, global model fit had to be assessed before reviewing individual paths between variables (Urbano, 2013), to assess whether the model obtained from data is an accurate representation of the theory behind it (Hooper, Coughlan, & Mullen, 2008). Unlike regressions, multiple goodness-of-fit indicators must be employed for SEM, in order to gather information on both absolute and relative fit indicators. Specifically, the selected indicators were: (a) chi-square test, (b) root mean square error of approximation (RMSEA), (c) comparative fit index (CFI), and (d) normed chi-square (CMIN/DF) (Hair et al., 2009; Hooper, Coughlan, & Mullen, 2008). The results for said indicators showed proper results, following the rules of thumb laid out by Hooper et al. (2008) and Iacobucci (2010), meaning an acceptable model fit. These are show in Table 6:

Table 6

Fit Indicators for the SEM Model

Fit indicator	Rule of thumb	Result
Chi-square test	>0.05 (Iacobucci, 2010)	0.108
RMSEA	<=0.07 (Hooper et al., 2008)	0.065
CFI	>=0.95 (Iacobucci, 2010)	0.955
CMIN/DF	<=2 (Hooper et al., 2008)	1.308

Summary

In order to test the research hypotheses and respond the research questions, the application of a quantitative method is proposed, dominated by structural equation modelling, to analyse the relationship between political risk, critical success factors and the probability of success for an infrastructure project. A qualitative stage preceded the above, in which surveys were applied on experts from relevant institutions, seeking to obtain information on the most relevant factors for the success or failure of infrastructure projects in Colombia, the relevance of political risk and the applicability of these factors to PPPs.

Next, structural equation modelling was employed in order to analyse the role played by political risk factors on the critical success factors of an infrastructure project, as well as the effect of the latter on the success of the project, taking information from concession projects. To this end, a combination of surveys using continuous scales and secondary data was used. At this stage, information for all Colombian municipalities was taken into account, as well as information from other relevant stakeholders. Given the sample size, the SEM was supported by bootstrapping in order to correct estimator bias.

Finally, analyses of variance were performed to analyse the relationship between critical success and political risk factors, and categorical variables associated to the respondents. With all of the above, it is intended to obtain a clear vision of the role and effect of the political risk on infrastructure projects in Colombia, and how this type of risk, as well as these critical success factors, affect the performance or success of the projects to be carried out under the figure of public-private partnerships.

Chapter 4: Results

Throughout the current chapter, the results of the data collection performed for the current dissertation are shown, in order to study the importance of political risk perceptions and critical success factors on the development of infrastructure projects via public-private partnerships. Initially, an extended description of the final sample to be used on the study was carried out, followed by a description of the collected data and the descriptive statistics associated to the same. Finally, a data summary was put forward, before continuing to chapter 5 for analysis and conclusions.

Respondents' Profile

Seventeen of survey respondents work, on infrastructure projects in the public sector, representing 23.3% of respondents, while 56 of these worked in the private sector, equivalent to 76.7% of respondents. That reflects the greater emphasis on municipalities and other subnational authorities during sample selection. These results can be seen in Table 7.

Table 7 *Sector in which Respondents Participate on Infrastructure Projects*

Sector in which Respondents Participate on Infrastructure Projects

Sector	Count	Share of respondents (%)
Private	17	23.3
Public	56	76.7

On the gender of participants, a question on the subject was not included in the questionnaire, so there is no final information on the subject. However, inferences on gender were made using the e-mail addresses of respondents, to determine whether the survey was responded by a male or a female. For cases where no gender could be determined from the e-mail address, the category "genderless" was created. Results are shown in Table 8:

Table 8

Gender of Respondents

Gender	Count	Share of respondents (%)
Male	28	38.36%
Female	19	26.03%
Did not specify	26	35.61%

Regarding the work field of the respondents, an option was opened for multiple responses, thus leading to multiple combinations as a respondent might perform multiple roles on an infrastructure project, as well as on their daily lives. Thus, the number of times respondents stated their role in any of the categories was counted, as shown in Table 9, regardless of their main activity. Due to the aforementioned multiple responses, the sum of frequencies is greater than the sample size, and the sum of shares exceeds 100%:

Table 9 *Frequencies for Work Fields*

Frequencies for Work Fields

Work field	Count	Share of respondents (%)
Public servant	36	49.32%
Private sector	48	65.76%
Project structuring	14	19.18%
Professional consultant	13	17.81%
Contractor/construction	12	16.44%
Contractual department for infrastructure projects	5	6.85%
Investor	3	4.11%
Financial system	1	1.37%
Student	5	6.85%

As shown in Table 9, it was found that the most common activity among respondents was the role of public servants, with nearly half of respondents involved in such activity. The second most frequent work field was that of project structurer, with 14 participants involved in such role, followed by professional consultants and contractors or constructers. This also reflects the nature of the sample, and its focus on municipalities and public entities. However, it also reflects that respondents are involved in infrastructure projects, one way or another.

Table 10

Region Considered as the Most Relevant for Professional Activities

Region	Count	Share of respondents (%)
Andean region	41	56.16%
Caribbean region	17	23.29%
Pacific region	9	12.33%
Orinoquia region	5	6.85%
Amazon region	1	1.37%
Total	73	100%

Table 10 shows the number of times respondents mentioned a geographical region as the most relevant for their professional activities. Despite discarding those respondents located in Bogota whose main activity focus lied on the Andean region, the latter concentrated most respondents: 41 respondents, equivalent to 56.2% of the total, mentioned that region as the most important one for their activities. It was followed by the Caribbean region with 17 (23.3%), the Pacific region with 9 (12.3%), the Orinoquia region with 5 (6.8%), and finally the Amazon region with 1 respondent (1.4%).

The dominance of the Andean region among respondents shows the population and economic preponderance of that region. On the one hand, the Andean region is the most

populated in Colombia. According to population projections created by DANE (2013), there are 26,853,141 people living in that region, thus representing 55.7% of the Colombian population. On the other, economic activity is more pronounced in that region, reaching 63.3% of Colombian GDP in 2014 (DANE, 2015).

Findings and Discussion

Results from Surveys on Experts

After collecting the information retrieved through the surveys, it was analysed and compared. Following that, a set of trends was found on the answers, which shall be displayed below. The respondents are mentioned using the name of the company or State entity, but it must be stated that these surveys were filed by people working at internal departments dealing with risk, and that these do not necessarily reflect an official position of said entities.

When it came to PPP opportunities at the country in the future, Gabra stated there were plenty of opportunities for projects to be conducted as PPPs in the country, provided there is adequate planning, as well as sound prefeasibility and feasibility studies. Meanwhile, Banco de Occidente mentioned the peace process and government support for national and foreign investors as factors at the offering of more PPPs in the future.

On the other hand, both the DNP and the ANI mentioned the importance of the Ley 1508 and its reforms on the role of delivering new opportunities for PPPs in the country. More specifically, the DNP sees the Act as a way to create a contractual structure designed for the provision of public services by an alliance of both public and private sectors, opening opportunities for long-term private investors, access to financing and better managerial skills, better project structuring leading to adequate risk management, and State resources optimisation and alignments of interest between the parties, due to a proper legal framework. At Ministerio de Hacienda, the importance of said legal framework reform and the existence

of a risk allocation meant to attract private parties was mentioned as well.

When it comes to the sectors with the most potential for attracting PPPs in Colombia, all participants agree on the potential of roads and other transport infrastructure projects in fields such as airports maritime ports and railroads as those with the most potential to attract investors. Other sectors where they identified PPP opportunities were social services, schools, universities, hospitals and healthcare services, parking lots, agriculture, public and private offices, entertainment centres and the military. As potential locations: the Andean, Pacific and Orinoquia regions were identified as those with the most potential.

On the risk factors, those experts saw as the most relevant for the success of the projects, multiple interviewees highlighted the importance of legal and bureaucratic risk, specifically referring to instability due to changes in legislation and elected officials. One of the facets behind this risk was detailed by Condesa, referring to the fact that as the electoral season closes in, and also that newly elected officials disregard those plans laid out by their predecessors, thus affecting continuity and those parties involved in the execution of the plans.

Other factors mentioned as risk factors were communities, financing, environment, government capabilities and traffic (Cóndor); security, minorities and ethnicities, improvisation during project structuring, and on its terms and slow expropriations (Integrar); approval from the National Government to compromises from State entities, and risks specific to foreign investors (Occidente); the fact these are high investments with long-term profits (Gabra); and some related to construction, operation, commercial, financial, regulatory, land, environmental, *force majeure* and political risk (ANI).

The responses from the DNP, however, pointed out to a completely different direction. Specifically, they pointed to a set of risk factors associated to PPP projects proposed by the private sector. Namely, potential misalignment between the expectations of

private and public sectors, a flurry of initiatives just to become a pioneer or the first in the row, a discouragement of public structuring, pressure on public functionaries, and limitations due to time, resources and effort constraints at the public sector. Meanwhile, Hacienda dismissed political risk as a very minor risk on the execution of these projects.

When it came to the incidence of subnational factors on risk perceptions, there were mixed perceptions. While the person in Hacienda stated that the terms established in the Ley 1508 lead to low exposure to subnational risk factors, Condesa sees them as the main source of uncertainty on their infrastructure projects, especially from local politicians. The dynamics of corruption and local politics were seen as a relevant factor by Gabra, while getting mentioned as well by Integrar. Meanwhile, DNP mentioned the importance of compliance to budget rules and concordance with development plans in public parties, while Integrar and Condor saw communities as local risk factors. Finally, public order was mentioned by Integrar and Banco de Occidente.

Finally, when asked on the measures taken to mitigate these risks on infrastructure projects, Condesa stated there were no plans to be created around these risks, thus acting in a reactive manner. Meanwhile, Hacienda mentioned the existence of insurance for multiple types of risk, either through private insurance for private actors or through a contingency fund for public parties. Also, Integrar mentioned the importance of project continuity and long-term planning as a way to mitigate political risk coming from changes in administration. Gabra, Banco de Occidente and Condor highlighted the importance of central government support, as well as a mention to the current peace process, to help against these issues.

Summing up, the surveys on experts showed risk perceptions from respondents, as well as their opinions on the political risk categories laid out by MIGA (1985). From these, it was found that said classification was adequate for the Colombian case, thus enabling its use for the questionnaire that was deployed throughout Colombian municipalities. In turn,

additional information on other relevant risks and risk mitigation techniques was obtained.

Descriptive Results from the Political Risk Factors Questionnaire

When it comes to scores on the political risk factors captured via surveys on municipalities and other stakeholders, Table 11 shows some descriptive statistics obtained from the data gathered through said surveys:

Table 11

Mean and Median of Political Risk Factors

Political risk factor	Mean	Median
Currency inconvertibility	47.05	50
Expropriation	38.25	50
Breach of contract	54.63	55
Political violence	50.86	50
Legal and bureaucratic risk	63.18	70
Non-governmental actions	40.59	40

As seen in Table 11, the political risk factor with the highest risk perception among respondents was legal and bureaucratic risk, which showed both the highest mean and the highest median. This result is consistent with the results obtained from the surveys applied on experts since this type of political risk was the most mentioned one by these. In turn, the lowest mean was found at expropriation risk, while the lowest median was found in "non-governmental actions". Results also match those of the survey on experts, as they did not mention risk factors associated to these categories.

Finally, on the results of the descriptive statistics, Table 12 shows the number of times a political risk factor was found to be the most relevant for a respondent, that is, the number

of times respondents gave the highest risk perception score to each political risk factor. It must be noted that respondents could give the same score to more than one political risk factor at the time, which meant there was a chance for two or more political risk factors being rated the highest. Therefore, the sum of frequencies is greater than the total of respondents.

Table 12

Number of Times a Political Risk Factor was the Most Relevant

Political risk factor	Count	Share of respondents (%)
Currency inconvertibility	22	30.14%
Expropriation	23	31.51%
Breach of contract	12	16.44%
Political violence	21	28.77%
Legal and bureaucratic risk	43	58.90%
Non-governmental actions	18	24.66%

As shown above, the legal and bureaucratic risk was found to be the political risk factor that most often received the highest risk perception score from survey respondents, with more than half of participants listing it as the most relevant one. In turn, breach of contract risk was the one who got the lowest number of respondents listing it as the most important political risk factor. It must be noted that, other than legal and bureaucratic risk, the differences on frequencies between political risk factors are not too marked, which further highlights the importance of legal and bureaucratic risk in Colombia, after taking the responses from the surveys on experts into account.

From the results of these two tables, it could be stated that legal and bureaucratic risk is the most relevant risk among the respondents of the survey on political risk perceptions at the subnational level, well above the perceptions held on other political risk factors. This

could be associated to the selected country itself, as there are well-known issues with corruption and legal insecurity. It must also be noted the relatively mediocre scores obtained by political violence, which might be an indicator that, while said factor remains relevant to Colombian infrastructure projects, it is no longer the main hurdle for these, thus signalling the effects of the recent internal conflict de-escalation in the country.

Political Risk and Critical Success Factors at Road Infrastructure Concession Projects

Before running the SEM model, a bivariate Pearson correlation test was run in order to verify the existence of relationships between the proposed measured variables. A matrix with the results of said test is displayed in Table 13.

Table 13 *Bivariate Pearson Correlation Matrix for Measured Variables*

Bivariate Pearson Correlation Matrix for Measured Variables

		RIX	EXP	RBC	RVP	RLB	ANG	CAR	IGA	HUR
RIX	Pearson correlation	1	,301**	,196	,408**	,223	,112	,137	-,062	,179
	Significance		,010	,096	,000	,058	,346	,249	,601	,130
EXP	Pearson correlation	,301**	1	,554**	,507**	,401**	,402**	,158	-,133	,115
	Significance	,010		,000	,000	,000	,000	,181	,262	,331
RBC	Pearson correlation	,196	,554**	1	,458**	,670**	,477**	,170	-,187	,121
	Significance	,096	,000		,000	,000	,000	,149	,112	,310
RVP	Pearson correlation	,408**	,507**	,458**	1	,583**	,398**	,262*	-,256*	,226
	Significance	,000	,000	,000		,000	,000	,025	,029	,054

(continued)

		RIX	EXP	RBC	RVP	RLB	ANG	CAR	IGA	HUR
RLB	Pearson correlation	,223	,401**	,670**	,583**	1	,483**	,335**	-,219	,304**
	Significance	,058	,000	,000	,000		,000	,004	,063	,009
ANG	Pearson correlation	,112	,402**	,477**	,398**	,483**	1	,119	,002	,120
	Significance	,346	,000	,000	,000	,000		,316	,984	,313
CAR	Pearson correlation	,137	,158	,170	,262*	,335**	,119	1	-,226	,788**
	Significance	,249	,181	,149	,025	,004	,316		,055	,000
IGA	Pearson correlation	-,062	-,133	-,187	-,256*	-,219	,002	-,226	1	-,262*
	Significance	,601	,262	,112	,029	,063	,984	,055		,025
HUR	Pearson correlation	,179	,115	,121	,226	,304**	,120	,788**	-,262*	1
	Significance	,130	,331	,310	,054	,009	,313	,000	,025	

Note: the abbreviations for measured variables follow the conventions laid out in Table 5.

As shown above, high correlation coefficients were obtained among measured variables belonging to the same latent variable, that is, there were significant correlations within political risk factors, as well as within critical success factors. In turn, there were significant correlations among some of the relationships between political risk and critical success factors; however, these correlations were not significant as often as those for measured variables associated to the same latent variable.

As a reminder, both "political risk factors" and "critical success factors" were defined as latent variables. As measured variables for "political risk factors", the six political risk factors defined by MIGA were selected: (a) currency inconvertibility, (b) breach of contract, (c) expropriation, (d) political violence, (e) legal and bureaucratic factors, and (f) non-governmental actions. In turn, for the measured variables associated to the latent variable

known as "critical success factors", three proxy variables were selected to represent critical success factors for PPPs. Namely (a) Public Prosecutor's Open Government Index, (b) outstanding credit portfolio per capita, and (c) theft rates per 100 thousand inhabitants.

In turn, the dependent variable represents the existence of successful infrastructure projects. For the latter, a database created from information supplied by the ANI, for municipalities with tolls for existing concession projects, as employed to create the dependent variable. If there was a toll inside the municipality, it was assumed there was a successful infrastructure project. If not, it was assumed there were no projects or failed projects, thus taking a zero.

Hypothesis Testing – Research Question 1

In order to solve the first research question, *are political risk factors at the subnational level related to both critical success factors for road infrastructure road concession projects and the success of these?*, a SEM model was created, through which the relationships between political risk factors, critical success factors and the success of infrastructure concession projects were analysed.

A statistical significance of 5% was chosen for the coefficients. Also, for the bootstrapping, a random seed number was selected when defining regression parameters in AMOS, to ensure consistent results. Specifically, seed number 1 was chosen. Finally, for legibility purposes, outstanding credit portfolio per capita was converted to represent millions, dividing the original observations by one million. Finally, it must be stated that eX represents the error term for an estimate on the variable X.

Table 14

SEM Results – Regression Weights

Parameter			Estimate	P-value	Standard error
CSF	<---	PRF	0,253	0,02	7,935
Projects	<---	CSF	0,028	0,002	0,007
EXP	<---	PRF	1,601	0,002	55,688
RBC	<---	PRF	2,145	0,002	89,185
RVP	<---	PRF	1,854	0,002	55,835
RIX	<---	PRF	1	0	0
RLB	<---	PRF	2,075	0,002	82,139
ANG	<---	PRF	1,435	0,002	61,416
IGA	<---	CSF	-0,294	0,061	0,164
CAR	<---	CSF	1	0	0
HUR	<---	CSF	17,336	0,002	3,522

Note: the abbreviations for measured variables follow the conventions laid out in Table 5.

Table 14 shows the regression weights for the model, after running a SEM with
bootstrapping under maximum likelihood, using 1.000 iterations. To ensure that a solution
was found, regression weights of 1 were set beforehand for two relationships, one per latent
variable: (a) the one between the latent variable PRF and the measured variable RIX, and (b)
the one between the latent variable CSF and the measured variable CAR. The estimates show
the magnitude of the paths in the SEM model, while the p-value shows the statistical
significance of these paths.

Table 15

SEM Results - Intercepts

Parameter	Estimate	P-value	Standard error
CSF	0,247	0,003	0,051
Projects	47,055	0,002	3,73
EXP	38,247	0,002	3,288
RBC	54,63	0,002	3,834
RVP	50,856	0,003	3,496
RIX	63,178	0,002	3,461
RLB	40,589	0,002	3,202
ANG	69,299	0,002	1,093
IGA	8,808	0,004	1,096
CAR	174,972	0,003	19,609
HUR	0,247	0,003	0,051

Note: the abbreviations for measured variables follow the conventions laid out in Table 5.

Table 15 shows the intercepts for the SEM model. The estimate shows the intercepts, defined as the initial value for each latent or measured variable, assuming all other variables equal zero. In turn, the p-value states the statistical significance of said value.

Table 16

SEM Results - Variances

Parameter	Estimate	P-value	Standard error
ePRF	120,817	0,002	103,716
eCSF	64,426	0,002	14,223
eRIX	919,92	0,001	140,816

<div align="right">(continued)</div>

Parameter	Estimate	P-value	Standard error
eEXP	472,108	0,001	80,769
eRVP	429,273	0,001	111,765
eRLB	272,275	0,001	78,144
eANG	463,53	0,001	78,19
eHUR	6157,911	0,175	4957,538
eCAR	17,532	0,095	12,114
eIGA	87,765	0,001	17,082
eRBC	363,904	0,001	108,481
eProject	0,13	0,001	0,023

Note: the abbreviations for measured variables follow the conventions laid out in Table 5.

Finally, Table 16 shows the variance estimates for every latent and measured variable, with the p-value indicating the significance of said variance estimates. The SEM model results laid out in these three tables can be found in Appendix C. The final model can be also seen in Figure 8:
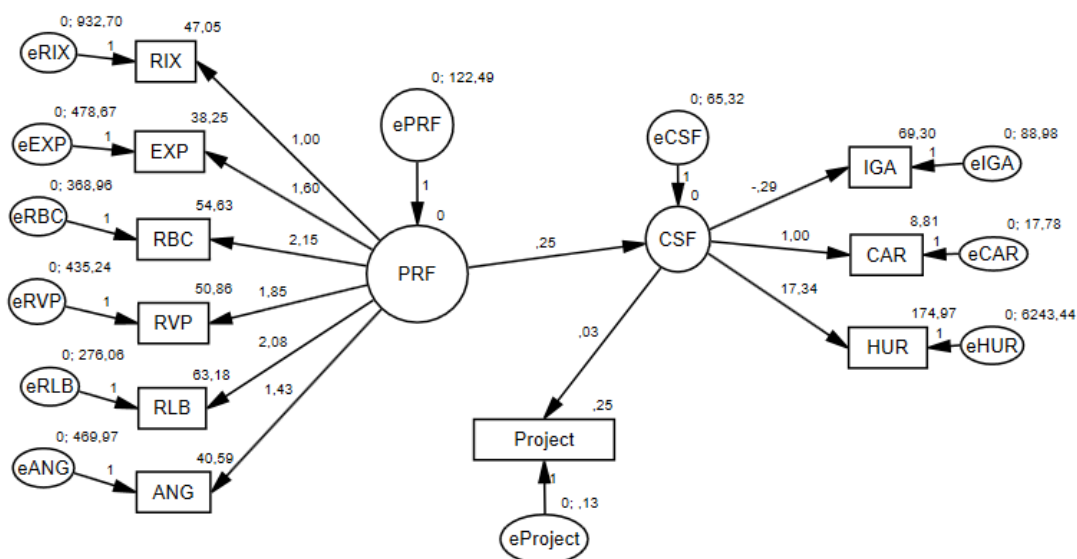
Figure 8. Estimated SEM model

For interpretation purposes, Table 14 was taken. Its results showed that all regression weights but one are significant at a 5% confidence, with the other one still being significant at a 10% confidence. On the coefficients themselves, most of them show expected behaviours: outstanding credit portfolio per capita is positively related with critical success factors, and the latter is positively related with success of a project. In turn, all measured variables for the latent variable PRF show the expected positive relationship with it.

However, there were three outcomes that defied expected results: theft rates delivered a positive weight on critical success factors, and the open government index displayed a negative one. In order to explain the former, a prevalence of economic and planning factors could be mentioned: despite the inherent risk of operating in municipalities with fewer safety guarantees and lower government transparency, as shown by the results of these two factors, these factors are ignored by planners when drawing road courses, if found to be the most efficient from an economic point of view

Most importantly, there was a relationship that defied the expected results: the one between the latent variables. That is, political risk factors had a positive regression weight on critical success factors, thus suggesting that the higher the political risk factors are, the higher the critical success factors for a project are.

Table 17 shows the total effects for each latent variable as estimated under maximum likelihood, as well as their respective significances, estimated through bootstrapping:

Table 17

SEM Results – Total Effects per Latent Variable

	PRF	P-value	CSF	P-value	SE-PRF	SE-CSF
CSF	0,253	0,02	0	0	7,935	0
HUR	4,386	0,013	17,336	0,002	120,641	3,522
CAR	0,253	0,02	1	0	7,935	0
IGA	-0,074	0,061	-0,294	0,061	1,421	0,164
ANG	1,435	0,002	0	0	61,416	0
					(continued)	

	PRF	P-value	CSF	P-value	SE-PRF	SE-CSF
RLB	2,075	0,002	0	0	82,139	0
RIX	1	0	0	0	0	0
RVP	1,854	0,002	0	0	55,835	0
RBC	2,145	0,002	0	0	89,185	0
EXP	1,601	0,002	0	0	55,688	0
Project	0,007	0,017	0,028	0,002	0,207	0,007

Note: the abbreviations for measured variables follow the conventions laid out in Table 5.

The effects replicated the results obtained from the regression weights: most total effects were significant at a 5% confidence level, while the total effects for IGA were significant at a 10% confidence level. Most importantly, it was found that both latent variables displayed a significant total effect on Project, thus leading to conclude that both have a significant impact on the success of concession infrastructure projects. However, the problem of results on the effects of PRF on CSF going against the expected outcome remains. This finding merits special discussion in chapter 5.

Hypothesis Testing – Research Question 2

For the hypotheses associated to the second research question, *are there subnational differences on the influence of political risk factors on the success or failure of an infrastructure concession project developed through a public-private partnership?*, an analysis of variance (ANOVA) was performed. Table 18 shows the ANOVA between the most relevant region for professional activities, as defined by respondents, and political risk factors. These results can be found in Appendix D.

Table 18

ANOVA Table for Political Risk Factors and Most Relevant Region For Professional

Activities

Political risk factor	Category	Sum of squares	Degrees of freedom	Mean square	F	Significance
RIX	Between groups	3691.225	4	922.806	.868	.488
	Within groups	72282.556	68	1062.979		
	Total	75973.781	72			
EXP	Between groups	1975.840	4	493.960	.610	.657
	Within groups	55091.722	68	810.172		
	Total	57067.562	72			
RBC	Between groups	1565.326	4	391.332	.406	.804
	Within groups	65583.687	68	964.466		
	Total	67149.014	72			
RVP	Between groups	5294.647	4	1323.662	1.597	.185
	Within groups	56346.093	68	828.619		
	Total	61640.740	72			
RLB	Between groups	4295.324	4	1073.831	1.363	.256
	Within groups	53567.361	68	787.755		
	Total	57862.685	72			
ANG	Between groups	1503.241	4	375.810	.506	.731
	Within groups	50490.430	68	742.506		
	Total	51993.671	72			

Note: the abbreviations for measured variables follow the conventions laid out in Table 5.

As seen in Table 18, it was found that for none of the political risk factors, there were significant differences in means between the categories of the dependent variable. Therefore, there seem to be no significant subnational differences on political risk perceptions Thus, the hypothesis associated to this question must be rejected.

Discussion

Throughout this chapter, the results for the surveys on experts, the questionnaire of political risk perceptions and the statistical techniques associated to the proposed research hypotheses (structural equation modelling and one-way analysis of variance) were displayed. From these, a greater understanding of political risk and critical success factors for public-private partnerships at the subnational level was attained

The current research was based on the existence of an intermediate level of political risk between the national-level risk analysed in the studies of Sachs and Tiong (2007), Zhang (2005) and Engel et al. (2009a), and project-specific risks as mentioned by Li (2003). Figure 9 displays the incidence levels of political risk, as studied throughout the research.
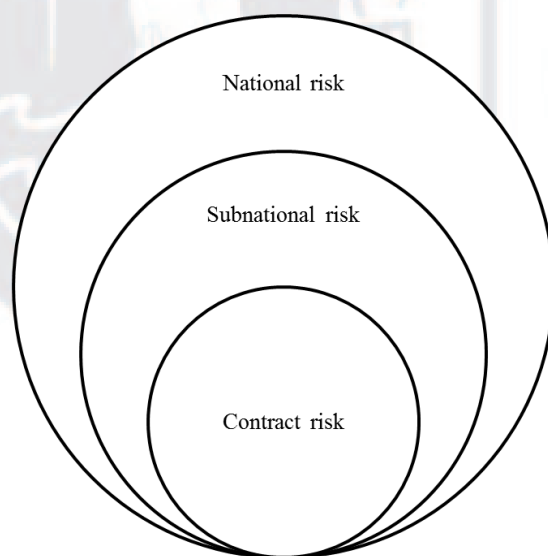
Figure 9. Incidence levels of political risk within an infrastructure PPP project

The need to analyse these risks comes from studies on public private partnership, in which their effectiveness is being evaluated when compared to public procurement projects, concluding that PPP projects are only suitable for certain types of project (Iossa & Martimort, 2008), with mixed results depending on the sector and the adopted contractual models (Barlow, Roehrich, & Wright, 2013).

When analysing such contract designs, proper risk identification and allocation have become key to ensure success. Thus, while some authors have focused on the shape of the contracts themselves, by allowing a certain flexibility for contractors to deal with unexpected issues (Oliveira & Cunha, 2013), others have reinforced the importance of proper risk identification and allocation between the parties, even stating that, under an optimal risk allocation scheme, a PPP contract resembles public procurement more than privatisation (Engel, Fischer, & Galetovic, 2013).

Finally, the study was carried out in the years after the implementation of the Ley 1508 of 2012, which regulated PPPs in Colombia. González, Rojas, Arboleda, and Botero (2014) identified future research lines on the financing of such projects. One of these research lines involved evaluating the risk methodologies employed by credit rating agencies on these projects.

Given the above, analysing political risk and critical success factors at the subnational level gained importance as a way to complement both risk assessment and risk allocation between the parties, as proper identification and allocation are required for the success of a PPP project. Also, as the current study focused on political risk above all other risk factors, a more specific analysis was required. Thus, it was important to analyse such relationship and its significance at the subnational level.

First, it was possible to create a profile for the respondents to the survey on political risk factors at the subnational level. Most of these belonged to the public sector while working extensively with the private sector. The former shows the importance of cooperation between both parties at the time of structuring and performing PPP projects. Also, the importance of the Andean region in Colombia was confirmed, which affected the results obtained from the current study.

Regarding the surveys sent to experts and stakeholders in Colombian PPP infrastructure projects, which included law firms construction companies and State institutions, these delivered additional information on the risks and opportunities perceived at the sector in the country. In their responses, it was seen that political risk was mentioned as one key factor, besides others beyond the scope of this study, with a special emphasis on the effects of corruption legal instability and elections. These are a match for the classification laid out by MIGA (1985), thus confirming its relevance and adequacy for the Colombian context.

In turn, the descriptive statistics associated to the responses of the survey on political risk perceptions at the subnational level confirmed the importance of legal and bureaucratic risk, which showed the highest mean score, the highest median and the highest frequency as the most relevant factor among respondents. These results match those obtained from the surveys on experts, as some of the issues associated to this factor include corruption and legal or regulation changes. From the above, it could be stated that such political risk factor should be addressed by infrastructure sector authorities, in order to increase confidence and investment.

From the hypothesis testing, the results were mixed. On the one hand, the relationship between political risk factors, critical success factors and the success or failure of infrastructure PPP projects was proved by the SEM at the national level, expanding on the results of the survey deployed by Sachs and Tiong (2007). However, no subnational differences on political risk and critical success factors were found using the one-way ANOVA technique. The former could be explained by national features such as a centralised government, or the quantitative approach selected for the problem. Further discussion on the subject was carried out in Chapter 5.

Summary

The current research was based on the proposition that critical success factors for road infrastructure public-private partnerships were influenced by political risk factors at the subnational level, located between national and contract-specific risk factors. The former was done due to a gap on the existing literature and measurement regarding the relationship between political risk at these subnational entities and the success of road infrastructure concession projects, the latter serving as proxies for public-private partnerships.

In order to test the hypotheses associated to this proposition, a SEM model and an ANOVA were introduced. The SEM model analysed the relationship between critical success and political risk factors, as well as the relationship between these and the success of infrastructure projects. The ANOVA assessed the existence of differences in political risk perceptions between subnational divisions (regions).

Throughout this section, a description of the data obtained was delivered, and the research hypotheses were tested using SEM for hypotheses 1a, 1b and 1c, and ANOVA for hypothesis 2. It was found that hypotheses 1a, 1b and 1c were accepted, while hypothesis 2 was rejected. More specifically, the outcomes were as follows:

- There was a significant indirect relationship between PRF and project success, confirming the idea that agents seek to minimise risk by identifying them.

- Political risk at the national level is perceived as a key factor on the development of PPP projects, with a special emphasis on the effects of corruption, legal instability and elections.

- Political risk and critical success factors did not display significant differences between subnational divisions; however, the importance given to political risk at the subnational level by survey respondents, as well as their perceptions on subnational differences, means that those variables could not be ignored.

- Analysing PRF and CSF at the subnational level gains importance as a means to complement risk assessment and allocation between the parties involved in the development of infrastructure projects.

Using the results displayed so far, Chapter 5 deals with the interpretations for these results. Hypotheses were checked there, in order to expand on these rejections or acceptances, as well as potential reasons behind these results. Finally, closing remarks on the subject and discussion were disclosed in the said chapter as well.

Chapter 5: Conclusions and Recommendations

The current research intends to study the impact of subnational political risk on the success of PPP infrastructure projects. This, in order to understand the relationship between those political risk perceptions, a set of critical success factors, and the existence of concession projects serving as a proxy for public-private partnerships, due to the recent implementation of PPPs in the country from which the sample was taken (Colombia). Now, there were limitations on the number of variables that were considered, as the focus was meant to be kept on political risk factors and critical success factors, ignoring factors such as the overall political system, specific legislation, and project implement ability. In addition, only infrastructure projects carried out through concessions were considered, excluding projects in other sectors as well as projects under other contractual figures.

From the above, the conclusions for the current doctoral dissertation shall be put forward, by carrying out an analysis on the research questions and on hypothesis testing, either leading to partial or full rejection of a hypothesis. The information deployed in chapter 4 shall be used for this purpose. Next, both academic and practical implications will be laid out. Finally, recommendations targeted to parties interested in PPP projects shall be delivered, as well as suggestions for further research.

Conclusions

By making use of structural equation modelling and analysis of variance, the research sought to answer the proposed research questions. From the outcomes of these quantitative analysis techniques, the following hypotheses were accepted:

H1a. Political risk factors at the subnational level have a direct, significant relationship with critical success factors for road infrastructure concession projects.

H1b. Critical success factors for road infrastructure road concession projects have a direct, significant relationship with the success of these projects.

H1c. Political risk factors at the subnational level have an indirect, significant relationship with the success of road infrastructure concession projects. However, one hypothesis was rejected. Namely:

H2. There are significant subnational differences in the influence of political risk factors on the success or failure of a road infrastructure concession project developed through a public-private partnership.

On the first question, *are political risk factors at the subnational level related to both critical success factors for road infrastructure road concession projects and the success of these?*, it was found that political risk factors were relevant in explaining the success of concession infrastructure projects, as there were significant regression weights on both the relationship between political risk factors and critical success factors, and the relationship between the latter and the success of a project. Moreover, there was also a significant indirect effect between political risk factors and success. These relationships seemed to confirm the idea that agents seek to minimise their risks by properly identifying them, in turn ensuring higher success rates for projects. The former led to accepting the three hypotheses related to this question, these being hypotheses 1a, 1b and 1c.

However, it must be noted that the relationship showed an opposite direction to the one that would be expected from literature (Zhang, 2005; Sachs et al., 2007; Engel et al., 2009b). That is, it was found that political risk factors exerted a positive effect on both the critical success factors and the success of infrastructure projects. On the former, an explanation could be found on knowledge and information quality. That is, people from locations with infrastructure projects might tend to be from locations where doubts on political risk factors could be expressed more freely, due to better knowledge or less political

pressures. However, this remains highly speculative. Another study, with more participants, would be required to confirm these results, as well as finding out whether this relationship holds.

The second research question, *are there subnational differences on the influence of political risk factors on the success or failure of an infrastructure roads concession project developed through a public-private partnership?*, was responded through the use of a one-way analysis of variance, taking the region most important for the professional activities of respondents as the categorical variable and the political risk perception scores obtained from the surveys as the continuous variable to be analysed, disaggregating between political risk factors. For this section, all factors were taken. The proposed hypothesis mentioned the possibility of a gap in political risk incidence due to subnational factors.

Here, it was found there were no significant differences on the means for political risk perceptions between regions, and therefore the null hypothesis must be accepted. This result might have been caused by the bias towards the Andean region that was observed in the sample, which limited the data available to contrast between regions. Also, such homogeneity on risk perceptions might have been caused by centralisation on decision-making processes, country size, and the scope of these projects, as well as potential lack of knowledge or willingness to mention or discuss political risk factors associated to the subnational division in particular, and the possibility of significant variations on the incidence of political risk within regions. Due to the above, further research is recommended to confirm or reject the existence of said risk gap.

Practical Implications

From the results, it was noted that political risk is a factor that influences the success or failure of infrastructure roads projects, either through non-performance or cancellations. It

was also noted that subnational differences on risk perceptions were not statistically significant. According to the former, however, it could be stated that political risk at the subnational level can affect the success of a concession infrastructure project, thus meaning it must not be ignored. Properly assessing these variations could mean the difference between success and failure, thus meaning these must be watched closely. In recommendation section I will propose a model for future research about this topic.

Recent events in Latin America highlighted the importance of proper political risk identification and its impact on PPP infrastructure projects in the region. Namely, the Odebrecht scandal, involving bribes during infrastructure procurement in countries such as Brazil, Colombia, Panama, Peru and Venezuela, among others in Latin America. In turn, a greater focus on the nature of legal and bureaucratic risks within the region could help policy-makers to deliver better transparency policies aimed towards mitigating such risks, both at the national and subnational levels of government, through changes in the approach to public procurement on infrastructure as a whole.

Following the results of the current research, the creation of a permanent observatory on political risk factors at infrastructure PPP projects is suggested, meant to keep track on the importance of these political risk factors and its perception throughout the national territory, as well as analysing the continued impact these factors hold on the development of infrastructure projects in the country. This arises from the cross-sectional nature of the data, with the probability of perceptions changing in time, especially due to the current peace process. Negotiations have lasted for seven years, but there seem to be signs that political risk factors would mutate even if there are successful negotiations, thus creating a new set of risks for infrastructure projects to be taken into account.

Also, the study could be improved by replicating it in other Colombian regions, or in

other developing countries. So far, the sample had to deal with a notorious bias towards the Andean region. Including more respondents from the Colombian Caribbean region, for example, could show a significant impact on the results regarding the importance of the various political risk factors.

Multiple countries show marked disparities between subnational entities within them, on indicators such as productivity, governance, infrastructure quality and corruption. A famous example lies in Italy and its North-South divide, but such dynamics also appear in developing countries. Exploring the role of such divisions in other developing countries, using multiple development indicators, would allow obtaining better information on political risk at the subnational level and the role of such disparities on this.

Finally, throughout the current research, it was assumed and stressed that companies and the State consider political risks on the subnational levels at the moment of planning. As it has been shown, the political risk seems to bring significant uncertainties, especially at the subnational levels. Therefore, suggestions such as more stable regulation, and better project stability between multiple political administrations, would help lower risks, thus leading to both better profits to the private parties and better final products to the public sector.

Theoretical Implications

From the results, it could be concluded that agency theory serves as a theoretical framework adequate for studying PPP infrastructure projects, as the current study focused on potentially opportunistic behaviours by the State in these projects, represented in political risk factors. The former complements existing literature analysing public-private partnerships from agency theory (Vining et al., 2005; Rui et al., 2010), which focused on opportunistic behaviour by private parties in these projects.

In turn, the study reinforced the importance of clear risk allocation and identification

for the success of private participation in the delivery of public services and goods, by showing the relationship between political risk factors and critical success factors for a project. Such clear risk allocation and analysis of its relationship with project success could help mitigate the negative effects of greater complexity derived from PPPs promoted by the new public management theory, as mentioned by Dunleavy et al. (2005).

Finally, another theoretical conclusion comes from the importance of analysing PPP projects from the public policy theory, to complement agency theory given its focus on public procurement frameworks and political dynamics, and the importance of proper structuring processes following both the incrementalist framework (John, 2013) and the new public management (Ejea, 2006). Adopting the principles behind these theories at the subnational level could lead to better mitigation of political risk and, therefore, higher success rates.

Recommendations

Attending to the limitations the current study had to deal with, as well as on the possibility of new research works starting from the current one, the following recommendations are delivered for future research.

First, there were limitations due to the recent nature of PPPs in the country selected to conduct the study, Colombia. A proper study on the latest generation of public-private partnerships in Colombia could be conducted as data on these projects becomes available and they are allocated. So far, concession projects were used as a proxy, but these represent one type of PPP only, ignoring other risk and task distributions between public and private sectors. This research cannot be conducted yet, as many PPP projects designed under the Ley1508 of 2012 are still under construction or procurement: up to October 2016, of 490 registered PPP proposals, over 90% were private but fewer less than 2% of them had been approved. Public initiatives represent less than 10% of the total, but 54% of them have been

approved. It must be mentioned that Ley 1508 of 2012 allows PPP proposals to originate

from public or private initiatives (unsolicited proposals).

Second, additional factors that might influence the success or failure of infrastructure

projects could be added, such as the political system, compromise with public-private

partnerships, project-implement ability, and economic development of the country as a

whole. It could serve as a way to analyse both whether political risk still holds relevant after

including these variables, and on potential relationships between these variables.

A third recommendation could be the creation of an expanded statistical model that

helps to take the decision of developing an infrastructure model or not. That future model

could include variables as : respondent profile with specific level of experience in PPP and

level of education, percentage of surveys by region and amount of population, percentage in

public and private surveys, other kind of PPP projects different than roads, and a study that

include at least the last the three years, This would be a comprehensive model, including the

subnational political risk factors mentioned at the current study, which might provide both

public and private sectors with a quantitative tool to support their decision-making processes.

Finally, a fourth recommendation consists of continuing the construction of some

critical success factors for PPP projects mentioned by Michelitsch, et al. (2017), namely: (i) a

clear and focused PPP strategy; (ii) a critical mass of PPP skills and expertise; (iii) a

framework that promotes coordinated and collaborative relationships between all parties in a

PPP project; and (iv) a set of instruments such as PPP knowledge, policies and financing. The

analysed country, Colombia, has advanced on such factors after the introduction of Ley 1508

in 2012; and other regulations that develop it law; however, time projects should help the

analysis of political success and critical success factors.

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Appendix A: survey sent to experts

Impacto del riesgo político sobre alianzas público-privadas (APP) en Colombia

Cuestionario

Estimado(a) señor(a).

El riesgo político afecta los costos y el éxito o fracaso de las alianzas público-privadas (APP). Por medio de las APP, el sector privado participa en la provisión de infraestructura pública. Me gustaría invitarlo a participar en una encuesta corta sobre su percepción del impacto del riesgo político sobre los resultados de las APP. Por favor envíe también esta encuesta a sus colegas que puedan estar interesados en participar.

Esta encuesta permitirá ejecutar un estudio comparativo entre regiones, departamentos y municipios para proyectos de infraestructura vial. Me gustaría invitarlo a que comente sobre tantos casos como sea posible en la sección final para obtener conclusiones significativas, así como observaciones y comentarios sobre el diseño general de la presente encuesta.

Será un gusto compartir los resultados de esta encuesta con usted. Por favor comparta los siguientes datos para referencia interna y efectuar el envío de estos resultados:

- Nombre
- Correo electrónico
- Cargo
- Compañía
- Departamento y municipio

Esta encuesta es parte de una investigación doctoral en riesgo político regional y local, y su influencia sobre las alianzas público-privadas y concesiones para el caso colombiano.

La misma ha sido adaptada a partir de aquella utilizada por Tilmann Sachs y Robert L. Tiong, a quienes agradecemos por autorizar la adaptación dicho instrumento. Igualmente, agradecemos al Doctor Rubén Guevara por validarla y analizar su aplicabilidad al caso colombiano.

Las respuestas suministradas serán consideradas confidenciales, mas su participación en esta encuesta le dará acceso a los resultados de la misma, guardando su nombre y el nombre de los encuestados.

En caso de tener alguna duda o inquietud acerca de la encuesta, siéntase libre de comunicarse conmigo al teléfono 3144603267, o con Andrés García al teléfono 3222188989, o envíe un correo electrónico a la dirección a20118744@pucp.pe. Igualmente, por favor envíe la encuesta diligenciada antes del 31 de Mayo a dicho correo electrónico, o a la siguiente dirección física:

Transversal 25 # 59-43, Código Postal 111311, envío contraentrega.

Su aporte a esta encuesta será muy apreciado.

Saludos,

Rubén Darío Mestizo Reyes

Investigador, Candidato a DBA CENTRUM Pontificia Universidad Católica del Perú

SUPUESTO CRÍTICO DE LA ENCUESTA

La encuesta es sobre riesgo político. Se asume que los otros riesgos (técnicos, operacionales, de construcción, etc.) son cubiertos de manera exitosa. Además se asume que no se encuentran vigentes productos de cobertura crediticia, seguros de riesgo político, garantías u otros productos de mitigación de riesgo político, dado que estos cambian la percepción de riesgo.

Se asume que todos los proyectos son proyectos públicos de infraestructura con participación privada en diferentes niveles. Estas alianzas público-privadas (APP) pueden incluir múltiples tipos de participación privada como DBFO (diseñar, construir, financiar, operar), DBOT (diseñar, construir, operar, transferir), BOT (construir, operar, transferir), BLT (construir, arrendar, transferir), DBOT (diseñar, construir, operar, transferir), BOO (diseñar, poseer, operar) y DCMF (diseñar, construir, administrar, financiar), entre otras.

Para el caso colombiano destaca el caso de las concesiones, de las cuales se han ejecutado múltiples en el sector de infraestructura vial en las últimas décadas, siendo la forma predilecta de contratación antes de la Ley 1508/12, la cual reglamentó las APP en el país e instituyó el uso de esta figura para proyectos por encima de un monto establecido.

Escala de la encuesta

Se le pedirá a los entrevistados que escriban sus respuestas utilizando un porcentaje de relevancia que indique su percepción. A modo de guía, los siguientes rangos indican el nivel de importancia para cada uno de los factores de riesgo político. Siéntase libre de usar cualquier valor entre estos rangos, el que mejor considere que capture sus percepciones.

Escala	Grado de relevancia
0-20%	Muy bajo
20%-40%	Bajo
40%-60%	Medio
60%-80%	Alto
80%-100%	Muy alto

DEFINICIONES DE LA ENCUESTA PARA EL RIESGO POLÍTICO
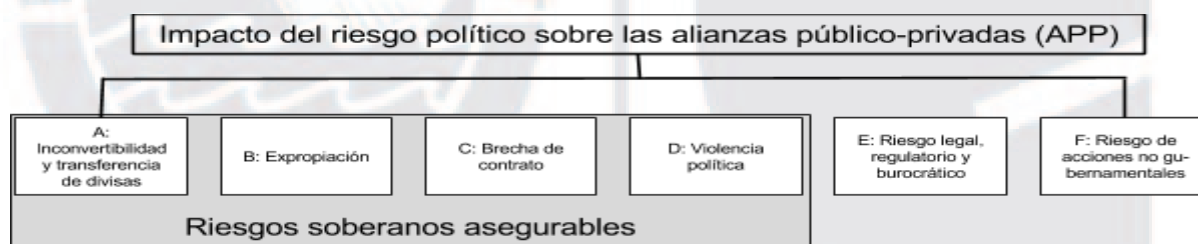
A: Inconvertibilidad y transferencia de divisas

"Inconvertibilidad y transferencia de divisas" se refiere a la introducción por parte del gobierno anfitrión de restricciones en la transferencia de moneda afuera del país y su conversión a una divisa, incluyendo el fracaso del gobierno anfitrión en responder a una solicitud de este tipo de transferencia en un tiempo razonable.

B: Expropiación

"Expropiación" se refiere a cualquier acto administrativo o legislativo del gobierno anfitrión con el efecto de quitarle al inversionista del control o de un beneficio importante de su

inversión, con la excepción de medidas no discriminatorias de aplicación general.

C: Brecha de contrato

"Brecha de contrato" es cualquier repudio o brecha por parte del gobierno anfitrión en caso que (a) no haya acceso a un foro judicial o arbitral para resolver la disputa o (b) una decisión en dicha disputa no sea entregada en un periodo razonable de tiempo o (c) dicha decisión no pueda ser cumplida.

D: Violencia política

"Violencia política" hace referencia a actos en el país como guerra, insurrección, disturbios civiles, terrorismo, sabotaje, y actos de desorden de terratenientes o indígenas.

E: Riesgo legal, regulatorio y burocrático

"Riesgo legal, regulatorio y burocrático" hace referencia a los riesgos dentro del proceso administrativo que no pueden ser atribuídos a alguno de los riesgos mencionados previamente. Algunos ejemplos son el cumplimiento y ejecución de leyes, conflictos de autoridad, corrupción, transparencia, problemas al emitir permisos y consentimientos, cambios de gobierno llevando a cambios en las leyes, políticas e impuestos, y obstrucciones durante procesos de arbitramento.

F: Riesgo por acciones no gubernamentales

"Riesgo por acciones no gubernamentales" incluye aquellos en los cuales el gobierno no tiene influencia directa y no caen en ninguna de las categorías ya mencionadas. Estos incluyen activistas sindicales y ambientales, fundamentalismo religioso y tensiones étnicas, intervenciones por Estados Unidos y/o la Unión Europea, riesgos en tasas de cambio externas.

Glosario de términos

- TIR: Tasa interna de retorno. Tasa utilizada para comparar la rentabilidad entre proyectos. Entre más alta, se espera una mayor rentabilidad para un proyecto.

- RCSD: Ratio de cobertura de servicio de deuda, indica la capacidad de la empresa para cumplir con sus obligaciones financieras. Se obtiene al dividir el flujo de caja disponible anual sobre el servicio de deuda anual.

- Riesgo marginal: indica la variación de riesgo que se observa por variaciones en los montos prestados para el desarrollo de un proyecto.

- Costo de seguros: indica el costo por una cobertura por un monto dado ante un cierto tipo de riesgo. A mayor riesgo, mayor el costo.

Preguntas generales para determinar el riesgo político en regiones

Información sobre el entrevistado (por favor marcar, múltiple respuesta)	
Sector para el cual está involucrado en proyectos de infraestructura	
Público	
Privado	
Área de trabajo	
Inversionista	
Sistema financiero	

Compañía de aseguramiento	
Consultor profesional	
Contratista/constructor	
Estructurador de proyectos	
Departamento contractual de proyectos de infraestructura	
Ubicado en	
Región Andina	
Región Caribe	
Región Pacífico	
Región Orinoquia	
Región Amazonia	
2. Oportunidades de APP en el país	Colombia
2a. ¿Cuál es el impacto negativo de estos factores de riesgo sobre las oportunidades de APP en el país? *Utilizar los porcentajes mencionados en la página 2.*	

Factores de riesgo	A. Inconvertibilidad y transferencia de divisas	
	B. Expropiación	
	C. Brecha de contrato	
	D. Violencia política	
	E. Riesgo legal, burocrático y regulatorio.	
	F. Riesgo por acciones no gubernamentales.	
	Otros factores, especificar.	

2b. ¿Cuántas oportunidades de APP ve en los próximos años? *Utilizar los porcentajes mencionados en la página 2.*

Años	2015	
	2016-2017	
	2018-2020	
	2020-2025	

3. Oportunidades de APP por sectores	Infraestructura vial				
	Andina	Caribe	Pacífico	Orinoquia	Amazonia
3a. ¿Cuál es el impacto negativo de estos factores de riesgo sobre las oportunidades de APP en el país? Utilizar los porcentajes mencionados en la página 2.					
Factores de riesgo	A. Inconvertibilidad y transferencia de divisas				
	B. Expropiación				
	C. Brecha de contrato				
	D. Violencia política				
	E. Riesgo legal, burocrático y regulatorio.				
	F. Riesgo por acciones no gubernamentales.				
	Otros factores, especificar.				

	2015					
	2016-2017					
	2018-2020					
Años	2020-2025					

3b. ¿Cuántas son las oportunidades de APP en los próximos años en estas regiones? Utilizar números estimados.

4. Riesgo y rentabilidad (por favor marcar)	Cierto	Falso
1. Si el riesgo político percibido aumenta, el monto de la inversión disminuye.		
2. Si el riesgo político percibido aumenta, la TIR esperada aumentará.		
3. Si el riesgo político percibido aumenta, el RCSD mínimo anual aumentará.		
4. Si el riesgo político percibido aumenta, el riesgo marginal de un préstamo aumentará		
5. Si el riesgo político percibido aumenta, el costo de los seguros aumentará.		
6. Hay correlación cero o negativa entre el riesgo marginal de los préstamos y el costo de los seguros.		
7. Con una menor participación de patrimonio, el riesgo marginal de		

un préstamo a un proyecto aumentará.		
8. Con una menor participación de patrimonio, el costo de los seguros aumentará.		
Comentarios:		

Por favor ingrese sus comentarios sobre:

- Oportunidades de APP en el país:
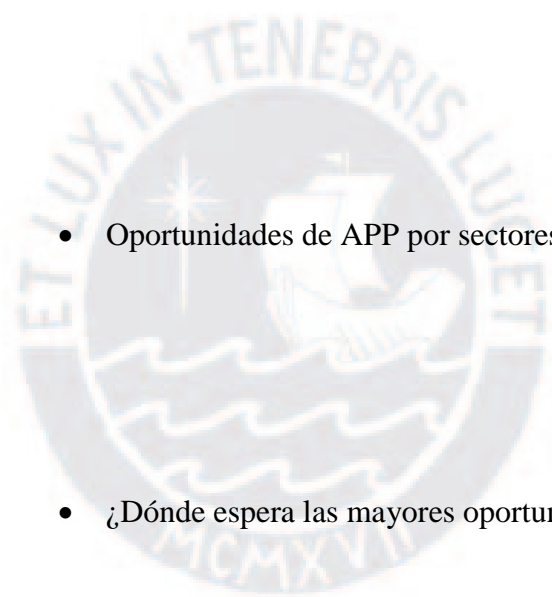
- Oportunidades de APP por sectores:

- ¿Dónde espera las mayores oportunidades de APP en 2015 y los años venideros?

- Apreciaciones personales sobre los factores de riesgo más relevantes.

- Incidencia de factores regionales y locales sobre las percepciones de riesgo.

- Coberturas empleadas para cubrir estos riesgos.

- Comentarios generales y observaciones adicionales.

Appendix B: online survey sent to municipalities and other stakeholders

Bienvenido

Buenos días. A continuación desarrollará una encuesta por medio de la cual se capturarán sus percepciones sobre el rol del riesgo político en la ejecución de asociaciones público-privadas (APP). A lo largo de la encuesta encontrará definiciones para los términos. En caso de tener alguna duda sobre la forma de responder la mima, siéntase libre de enviar un correo electrónico a encuesta.riesgo.politico.app@gmail.com.

La encuesta forma parte de una investigación doctoral sobre el impacto del riesgo político local y regional sobre las APP, y le tomará un tiempo aproximado de 15 minutos para responderla. Le aseguramos total confidencialidad, así como la garantía de compartirle los resultados del estudio, siempre respetando los datos personales de los entrevistados. Igualmente, invitamos a que reenvíe la misma a personal que considere puede estar interesado en el tema, como secretarios de desarrollo o de movilidad.

Muchas gracias, y feliz día.

Continue »

25% completed

Bienvenido

Información general del entrevistado

Correo electrónico *

Cargo *

Compañía/Entidad *

Departamento *

Municipio *

Departamento de origen *

Municipio de origen *

Sector para el cual está involucrado en proyectos de infraestructura *

○ Público

○ Privado

Área de trabajo *

☐ Inversionista

☐ Sistema financiero

☐ Compañía de aseguramiento

☐ Consultor profesional

☐ Contratista/constructor

☐ Estructurador de proyectos

☐ Departamento contractual de proyectos de infraestructura

☐ Servidor público/Miembro de la Fuerza Pública

☐ Estudiante

En su caso particular, cuál es la región más importante para su trabajo o actividad profesional? *

○ Región Andina

○ Región Caribe

○ Región Pacífico

○ Región Orinoquia

○ Región Amazonia

Cuál es su región de origen? *

○ Región Andina

○ Región Caribe

○ Región Pacífico

○ Región Orinoquia

○ Región Amazonia

« Back   Continue »
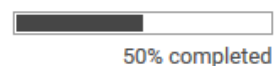
50% completed

Bienvenido

Oportunidades de APP para su región

¿Cuál es el impacto negativo de estos factores de riesgo sobre las oportunidades de APP en la región?

Para cada una de las preguntas, ingrese un número del 0 al 100, por medio del cual indicará el grado de importancia que, según sus percepciones, posee este factor de riesgo político al momento de ejecutar proyectos de infraestructura por concesiones o APP en su municipio.

Un valor de 0 indica que un factor es completamente irrelevante, y no afecta en absoluto los resultados de un proyecto de infraestructura bajo las figuras de concesiones y APP. Entre mayor sea el valor, mayor será el grado de importancia de este factor, con su máximo valor siendo 100.

Riesgo de inconvertibilidad y transferencias de dinero al exterior
Controles cambiarios excesivos que dificulten la movilidad de capitales.

Riesgo de expropiación gubernamental
Expropiación arbitraria por parte del Estado o autoridades a nivel regional y local.

Riesgo de brecha de contrato
Falta de instancias legales ante un incumplimiento de contrato, falta de sanciones efectivas ante un incumplimiento, inaplicabilidad de estas sanciones.

Riesgo de violencia política

Actos de guerra, guerra civil, insurrección o desobediencia civil, terrorismo, sabotaje o disturbios causados por indígenas y terratenientes.

Riesgo legal y burocrático

Corrupción, cambios en la legislación, cumplimiento de leyes, trámites burocráticos, conflictos de autoridad, y otros tipos de riesgo asociados con burocracia y legislación.

Riesgo por acciones no gubernamentales

Ajenos al Gobierno, no hacen parte de las otras categorías. Ejemplos: actividad sindical y ambientalista, fundamentalismo religioso, tensión étnica, intervención externa y riesgos en el mercado de divisas.

Otros factores, especificar

¿Cuántas oportunidades de APP ve en los próximos años?

Escriba números en los cuadros. Cualquier valor numérico es válido, ingrese el que usted crea conveniente.

2015

2016-2017

2018-2020

2020-2025

« Back   Continue »

75% completed

Bienvenido

Comentarios adicionales

Ingrese aquí algún comentario adicional que desee agregar.

« Back   **Submit**

Never submit passwords through Google Forms.

100%: You made it.

Appendix C: AMOS outputs

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments:	65
Number of distinct parameters to be estimated:	31
Degrees of freedom (65 - 31):	34

Result (Default model)

Minimum was achieved

Chi-square = 44,467

Degrees of freedom = 34

Probability level = ,108

Minimum was achieved

Parameter			SE	SE-SE	Mean	Bias	SE-Bias
CSF	<---	PRF	7,935	,177	1,122	,869	,251
DummyPIR	<---	CSF	,007	,000	,028	,001	,000
Riesgodeexpropiacióngubernamental	<---	PRF	55,688	1,245	8,099	6,498	1,761
Riesgodebrechadecontrato	<---	PRF	89,185	1,994	12,387	10,242	2,820
Riesgodeviolenciapolítica	<---	PRF	55,835	1,249	8,482	6,628	1,766
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	<---	PRF	,000	,000	1,000	,000	,000
Riesgolegalyburocrático	<---	PRF	82,139	1,837	11,487	9,412	2,597
Riesgoporaccionesnogubernamentales	<---	PRF	61,416	1,373	8,555	7,120	1,942
IGA_R	<---	CSF	,164	,004	-,281	,013	,005
CartPC_R	<---	CSF	,000	,000	1,000	,000	,000
Hur100R	<---	CSF	3,522	,079	17,535	,199	,111

Parameter			SE	SE-SE	Mean	Bias	SE-Bias
CSF	<---	PRF	,135	,003	,307	-,021	,004

Parameter			SE	SE-SE	Mean	Bias	SE-Bias
DummyPIR	<---	CSF	,102	,002	,552	,004	,003
Riesgodeexpropiacióngubernamental	<---	PRF	,092	,002	,631	,002	,003
Riesgodebrechadecontrato	<---	PRF	,079	,002	,774	-,004	,002
Riesgodeviolenciapolítica	<---	PRF	,095	,002	,703	,002	,003
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	<---	PRF	,145	,003	,341	,000	,005
Riesgolegalyburocrático	<---	PRF	,070	,002	,807	-,004	,002
Riesgoporaccionesnogubernamentales	<---	PRF	,098	,002	,590	-,001	,003
IGA_R	<---	CSF	,146	,003	-,250	,008	,005
CartPC_R	<---	CSF	,076	,002	,902	,005	,002
Hur100R	<---	CSF	,094	,002	,884	,002	,003

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
DummyPIR	,051	,001	,250	,004	,002
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	3,730	,083	47,090	,035	,118
Riesgodeexpropiacióngubernamental	3,288	,074	38,191	-,056	,104
Riesgodebrechadecontrato	3,834	,086	54,568	-,062	,121
Riesgodeviolenciapolítica	3,496	,078	50,948	,092	,111
Riesgolegalyburocrático	3,461	,077	63,133	-,045	,109
Riesgoporaccionesnogubernamentales	3,202	,072	40,594	,005	,101
IGA_R	1,093	,024	69,264	-,035	,035
CartPC_R	1,096	,025	8,870	,063	,035
Hur100R	19,609	,438	176,042	1,070	,620

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
ePRF	103,716	2,319	141,447	20,631	3,280
eCSF	14,223	,318	65,564	1,138	,450
eRIX	140,816	3,149	895,269	-24,651	4,453
eEXP	80,769	1,806	462,180	-9,928	2,554
eRVP	111,765	2,499	418,058	-11,215	3,534

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
eRLB	78,144	1,747	267,662	-4,613	2,471
eANG	78,190	1,748	450,806	-12,724	2,473
eHUR	4957,538	110,854	5985,252	-172,659	156,771
eCAR	12,114	,271	16,007	-1,525	,383
eIGA	17,082	,382	86,729	-1,037	,540
eRBC	108,481	2,426	360,846	-3,058	3,430
eProject	,023	,001	,127	-,003	,001

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
PRF	,000	,000	,000	,000	,000
CSF	,084	,002	,112	,005	,003
Hur100R	,169	,004	,791	,012	,005
CartPC_R	,136	,003	,819	,014	,004
IGA_R	,078	,002	,084	,017	,002
Riesgoporaccionesnogubernamentales	,112	,003	,357	,008	,004
Riesgolegalyburocrático	,109	,002	,656	-,001	,003
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,100	,002	,137	,021	,003
Riesgodeviolenciapolítica	,132	,003	,503	,011	,004
Riesgodebrechadecontrato	,117	,003	,605	,001	,004
Riesgodeexpropacióngubernamental	,112	,003	,407	,010	,004
DummyPIR	,113	,003	,315	,015	,004

	PRF	CSF
CSF	7,935	,000
Hur100R	120,641	3,522
CartPC_R	7,935	,000
IGA_R	1,421	,164
Riesgoporaccionesnogubernamentales	61,416	,000
Riesgolegalyburocrático	82,139	,000

	PRF	CSF
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,000	,000
Riesgodeviolenciapolítica	55,835	,000
Riesgodebrechadecontrato	89,185	,000
Riesgodeexpropacióngubernamental	55,688	,000
DummyPIR	,207	,007

	PRF	CSF
CSF	,135	,000
Hur100R	,118	,094
CartPC_R	,127	,076
IGA_R	,064	,146
Riesgoporaccionesnogubernamentales	,098	,000
Riesgolegalyburocrático	,070	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,145	,000
Riesgodeviolenciapolítica	,095	,000
Riesgodebrechadecontrato	,079	,000
Riesgodeexpropacióngubernamental	,092	,000
DummyPIR	,076	,102

	PRF	CSF
CSF	7,935	,000
Hur100R	,000	3,522
CartPC_R	,000	,000
IGA_R	,000	,164
Riesgoporaccionesnogubernamentales	61,416	,000
Riesgolegalyburocrático	82,139	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,000	,000
Riesgodeviolenciapolítica	55,835	,000
Riesgodebrechadecontrato	89,185	,000

	PRF	CSF
Riesgodeexpropacióngubernamental	55,688	,000
DummyPIR	,000	,007

	PRF	CSF
CSF	,135	,000
Hur100R	,000	,094
CartPC_R	,000	,076
IGA_R	,000	,146
Riesgoporaccionesnogubernamentales	,098	,000
Riesgolegalyburocrático	,070	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,145	,000
Riesgodeviolenciapolítica	,095	,000
Riesgodebrechadecontrato	,079	,000
Riesgodeexpropacióngubernamental	,092	,000
DummyPIR	,000	,102

	PRF	CSF
CSF	,000	,000
Hur100R	120,641	,000
CartPC_R	7,935	,000
IGA_R	1,421	,000
Riesgoporaccionesnogubernamentales	,000	,000
Riesgolegalyburocrático	,000	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,000	,000
Riesgodeviolenciapolítica	,000	,000
Riesgodebrechadecontrato	,000	,000
Riesgodeexpropacióngubernamental	,000	,000
DummyPIR	,207	,000

	PRF	CSF

	PRF	CSF
CSF	,000	,000
Hur100R	,118	,000
CartPC_R	,127	,000
IGA_R	,064	,000
Riesgoporaccionesnogubernamentales	,000	,000
Riesgolegalyburocrático	,000	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,000	,000
Riesgodeviolenciapolítica	,000	,000
Riesgodebrechadecontrato	,000	,000
Riesgodeexpropiacióngubernamental	,000	,000
DummyPIR	,076	,000

Parameter			Estimate	Lower	Upper	P
CSF	<---	PRF	,253	,031	3,887	,020
DummyPIR	<---	CSF	,028	,016	,043	,002
Riesgodeexpropiacióngubernamental	<---	PRF	1,601	,866	15,631	,002
Riesgodebrechadecontrato	<---	PRF	2,145	1,056	26,099	,002
Riesgodeviolenciapolítica	<---	PRF	1,854	1,100	19,473	,002
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	<---	PRF	1,000	1,000	1,000	...
Riesgolegalyburocrático	<---	PRF	2,075	1,057	22,539	,002
Riesgoporaccionesnogubernamentales	<---	PRF	1,435	,649	18,919	,002
IGA_R	<---	CSF	-,294	-,605	,010	,061
CartPC_R	<---	CSF	1,000	1,000	1,000	...
Hur100R	<---	CSF	17,336	11,727	26,042	,002

Parameter			Estimate	Lower	Upper	P
CSF	<---	PRF	,327	,059	,585	,014
DummyPIR	<---	CSF	,549	,341	,744	,003
Riesgodeexpropiacióngubernamental	<---	PRF	,629	,414	,783	,003

Parameter			Estimate	Lower	Upper	P
Riesgodebrechadecontrato	<---	PRF	,777	,554	,891	,003
Riesgodeviolenciapolítica	<---	PRF	,701	,490	,869	,003
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	<---	PRF	,341	,031	,602	,003
Riesgolegalyburocrático	<---	PRF	,810	,624	,909	,003
Riesgoporaccionesnogubernamentales	<---	PRF	,591	,354	,750	,003
IGA_R	<---	CSF	-,258	-,553	,011	,062
CartPC_R	<---	CSF	,897	,714	1,035	,004
Hur100R	<---	CSF	,883	,691	1,066	,002

Parameter	Estimate	Lower	Upper	P
DummyPIR	,247	,151	,342	,003
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	47,055	39,672	54,163	,002
Riesgodeexpropiacióngubernamental	38,247	31,767	44,509	,002
Riesgodebrechadecontrato	54,630	46,579	61,959	,002
Riesgodeviolenciapolítica	50,856	43,789	57,206	,003
Riesgolegalyburocrático	63,178	56,397	69,861	,002
Riesgoporaccionesnogubernamentales	40,589	34,589	47,211	,002
IGA_R	69,299	67,188	71,328	,002
CartPC_R	8,808	6,695	10,881	,004
Hur100R	174,972	136,788	214,244	,003

Parameter	Estimate	Lower	Upper	P
ePRF	120,817	1,026	389,918	,002
eCSF	64,426	42,299	97,817	,002
eRIX	919,920	645,880	1177,613	,001
eEXP	472,108	324,272	642,685	,001
eRVP	429,273	192,270	634,558	,001
eRLB	272,275	142,537	473,436	,001
eANG	463,530	322,351	636,242	,001

Parameter	Estimate	Lower	Upper	P
eHUR	6157,911	-3246,326	15868,305	,175
eCAR	17,532	-5,900	42,091	,095
eIGA	87,765	57,941	126,160	,001
eRBC	363,904	196,565	632,688	,001
eProject	,130	,085	,179	,001

Parameter	Estimate	Lower	Upper	P
PRF	,000	,000	,000	...
CSF	,107	,005	,343	,001
Hur100R	,779	,478	1,136	,002
CartPC_R	,805	,510	1,071	,004
IGA_R	,067	,001	,305	,002
Riesgoporaccionesnogubernamentales	,349	,125	,563	,003
Riesgolegalyburocrático	,656	,390	,827	,003
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,116	,001	,363	,003
Riesgodeviolenciapolítica	,492	,240	,755	,003
Riesgodebrechadecontrato	,604	,306	,794	,003
Riesgodeexpropiacióngubernamental	,396	,171	,613	,003
DummyPIR	,301	,117	,553	,003

	PRF	CSF
CSF	,031	,000
Hur100R	,937	11,727
CartPC_R	,031	1,000
IGA_R	-,738	-,605
Riesgoporaccionesnogubernamentales	,649	,000
Riesgolegalyburocrático	1,057	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	1,000	,000
Riesgodeviolenciapolítica	1,100	,000

	PRF	CSF
Riesgodebrechadecontrato	1,056	,000
Riesgodeexpropacióngubernamental	,866	,000
DummyPIR	,001	,016

	PRF	CSF
CSF	3,887	,000
Hur100R	328,644	26,042
CartPC_R	3,887	1,000
IGA_R	,002	,010
Riesgoporaccionesnogubernamentales	18,919	,000
Riesgolegalyburocrático	22,539	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	1,000	,000
Riesgodeviolenciapolítica	19,473	,000
Riesgodebrechadecontrato	26,099	,000
Riesgodeexpropacióngubernamental	15,631	,000
DummyPIR	,215	,043

	PRF	CSF
CSF	,020	...
Hur100R	,013	,002
CartPC_R	,020	...
IGA_R	,061	,061
Riesgoporaccionesnogubernamentales	,002	...
Riesgolegalyburocrático	,002	...
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	...	...
Riesgodeviolenciapolítica	,002	...
Riesgodebrechadecontrato	,002	...
Riesgodeexpropacióngubernamental	,002	...
DummyPIR	,017	,002

	PRF	CSF
CSF	,059	,000
Hur100R	,068	,691
CartPC_R	,036	,714
IGA_R	-,276	-,553
Riesgoporaccionesnogubernamentales	,354	,000
Riesgolegalyburocrático	,624	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,031	,000
Riesgodeviolenciapolítica	,490	,000
Riesgodebrechadecontrato	,554	,000
Riesgodeexpropiacióngubernamental	,414	,000
DummyPIR	,034	,341

	PRF	CSF
CSF	,585	,000
Hur100R	,518	1,066
CartPC_R	,534	1,035
IGA_R	-,003	,011
Riesgoporaccionesnogubernamentales	,750	,000
Riesgolegalyburocrático	,909	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,602	,000
Riesgodeviolenciapolítica	,869	,000
Riesgodebrechadecontrato	,891	,000
Riesgodeexpropiacióngubernamental	,783	,000
DummyPIR	,347	,744

	PRF	CSF
CSF	,014	...
Hur100R	,012	,002
CartPC_R	,018	,004

	PRF	CSF
IGA_R	,040	,062
Riesgoporaccionesnogubernamentales	,003	...
Riesgolegalyburocrático	,003	...
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,003	...
Riesgodeviolenciapolítica	,003	...
Riesgodebrechadecontrato	,003	...
Riesgodeexpropióngubernamental	,003	...
DummyPIR	,013	,003

	PRF	CSF
CSF	,031	,000
Hur100R	,000	11,727
CartPC_R	,000	1,000
IGA_R	,000	-,605
Riesgoporaccionesnogubernamentales	,649	,000
Riesgolegalyburocrático	1,057	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	1,000	,000
Riesgodeviolenciapolítica	1,100	,000
Riesgodebrechadecontrato	1,056	,000
Riesgodeexpropióngubernamental	,866	,000
DummyPIR	,000	,016

	PRF	CSF
CSF	3,887	,000
Hur100R	,000	26,042
CartPC_R	,000	1,000
IGA_R	,000	,010
Riesgoporaccionesnogubernamentales	18,919	,000
Riesgolegalyburocrático	22,539	,000

	PRF	CSF
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	1,000	,000
Riesgodeviolenciapolítica	19,473	,000
Riesgodebrechadecontrato	26,099	,000
Riesgodeexpropacióngubernamental	15,631	,000
DummyPIR	,000	,043

	PRF	CSF
CSF	,020	...
Hur100R	...	,002
CartPC_R	...	...
IGA_R	...	,061
Riesgoporaccionesnogubernamentales	,002	...
Riesgolegalyburocrático	,002	...
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	...	...
Riesgodeviolenciapolítica	,002	...
Riesgodebrechadecontrato	,002	...
Riesgodeexpropacióngubernamental	,002	...
DummyPIR	...	,002

	PRF	CSF
CSF	,059	,000
Hur100R	,000	,691
CartPC_R	,000	,714
IGA_R	,000	-,553
Riesgoporaccionesnogubernamentales	,354	,000
Riesgolegalyburocrático	,624	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,031	,000
Riesgodeviolenciapolítica	,490	,000
Riesgodebrechadecontrato	,554	,000

	PRF	CSF
Riesgodeexpropacióngubernamental	,414	,000
DummyPIR	,000	,341

	PRF	CSF
CSF	,585	,000
Hur100R	,000	1,066
CartPC_R	,000	1,035
IGA_R	,000	,011
Riesgoporaccionesnogubernamentales	,750	,000
Riesgolegalyburocrático	,909	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,602	,000
Riesgodeviolenciapolítica	,869	,000
Riesgodebrechadecontrato	,891	,000
Riesgodeexpropacióngubernamental	,783	,000
DummyPIR	,000	,744

	PRF	CSF
CSF	,014	...
Hur100R	...	,002
CartPC_R	...	,004
IGA_R	...	,062
Riesgoporaccionesnogubernamentales	,003	...
Riesgolegalyburocrático	,003	...
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,003	...
Riesgodeviolenciapolítica	,003	...
Riesgodebrechadecontrato	,003	...
Riesgodeexpropacióngubernamental	,003	...
DummyPIR	...	,003

	PRF	CSF

	PRF	CSF
CSF	,000	,000
Hur100R	,937	,000
CartPC_R	,031	,000
IGA_R	-,738	,000
Riesgoporaccionesnogubernamentales	,000	,000
Riesgolegalyburocrático	,000	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,000	,000
Riesgodeviolenciapolítica	,000	,000
Riesgodebrechadecontrato	,000	,000
Riesgodeexpropiacióngubernamental	,000	,000
DummyPIR	,001	,000

	PRF	CSF
CSF	,000	,000
Hur100R	328,644	,000
CartPC_R	3,887	,000
IGA_R	,002	,000
Riesgoporaccionesnogubernamentales	,000	,000
Riesgolegalyburocrático	,000	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,000	,000
Riesgodeviolenciapolítica	,000	,000
Riesgodebrechadecontrato	,000	,000
Riesgodeexpropiacióngubernamental	,000	,000
DummyPIR	,215	,000

	PRF	CSF
CSF	...	...
Hur100R	,013	...
CartPC_R	,020	...

	PRF	CSF
IGA_R	,061	...
Riesgoporaccionesnogubernamentales	...	...
Riesgolegalyburocrático	...	...
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	...	...
Riesgodeviolenciapolítica	...	...
Riesgodebrechadecontrato	...	...
Riesgodeexpropióngubernamental	...	...
DummyPIR	,017	...

	PRF	CSF
CSF	,000	,000
Hur100R	,068	,000
CartPC_R	,036	,000
IGA_R	-,276	,000
Riesgoporaccionesnogubernamentales	,000	,000
Riesgolegalyburocrático	,000	,000
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,000	,000
Riesgodeviolenciapolítica	,000	,000
Riesgodebrechadecontrato	,000	,000
Riesgodeexpropióngubernamental	,000	,000
DummyPIR	,034	,000

	PRF	CSF
CSF	,000	,000
Hur100R	,518	,000
CartPC_R	,534	,000
IGA_R	-,003	,000
Riesgoporaccionesnogubernamentales	,000	,000
Riesgolegalyburocrático	,000	,000

	PRF	CSF
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	,000	,000
Riesgodeviolenciapolítica	,000	,000
Riesgodebrechadecontrato	,000	,000
Riesgodeexpropiacióngubernamental	,000	,000
DummyPIR	,347	,000

	PRF	CSF
CSF	...	...
Hur100R	,012	...
CartPC_R	,018	...
IGA_R	,040	...
Riesgoporaccionesnogubernamentales	...	...
Riesgolegalyburocrático	...	...
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	...	...
Riesgodeviolenciapolítica	...	...
Riesgodebrechadecontrato	...	...
Riesgodeexpropiacióngubernamental	...	...
DummyPIR	,013	...

Iterations	Method 0	Method 1	Method 2
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	1
5	0	0	3
6	0	0	5
7	0	0	6
8	0	0	5
9	0	0	1

Iterations	Method 0	Method 1	Method 2
10	0	0	3
11	0	0	0
12	0	4	4
13	0	6	0
14	0	15	2
15	0	36	0
16	0	51	1
17	0	63	2
18	0	75	5
19	0	658	54
Total	0	908	92

```
                        |-------------------

            33,829      |*

            43,743      |**

            53,658      |******

            63,573      |************

            73,488      |****************

            83,402      |*****************

            93,317      |*******************

N = 1000   103,232      |************

Mean = 88,481  113,146  |*********

S. e. = ,702  123,061   |******

            132,976      |***

            142,891      |*

            152,805      |*

            162,720      |*

            172,635      |*

                        |-------------------
```

```
                                |--------------------
                  44,894        |****
                  63,236        |********************
                  81,579        |***********
                  99,921        |****
                 118,263        |**
                 136,606        |*
                 154,948        |*
N = 1000         173,290        |*
Mean = 74,787    191,633        |
S. e. = ,691     209,975        |*
                 228,317        |
                 246,660        |
                 265,002        |
                 283,344        |
                 301,687        |*
                                |--------------------
```

```
                                |--------------------
                 -88,147        |*
                 -51,358        |**
                 -14,569        |***********
                  22,220        |******************
                  59,009        |*********************
                  95,798        |*************
                 132,587        |********
N = 1000         169,376        |*****
Mean = 65,226    206,165        |**
S. e. = 2,013    242,954        |*
                 279,743        |*
```

```
316,532    |*

353,320    |*

390,109    |

426,898    |*

           |-------------------
```

```
                |-------------------

       11,539   |**

       35,186   |*********

       58,833   |******************

       82,480   |*****************

      106,126   |********

      129,773   |***

      153,420   |*

N = 1000        177,067   |*

Mean = 74,137   200,713   |*

S. e. = 1,036   224,360   |*

      248,007   |

      271,654   |

      295,301   |

      318,947   |

      342,594   |*

                |-------------------
```

```
                |-------------------

       44,894   |****

       63,236   |******************

       81,579   |***********

       99,921   |****

      118,263   |**
```

```
                    136,606    |*

                    154,948    |*

N = 1000            173,290    |*

Mean = 74,787      191,633    |

S. e. = ,691        209,975    |*

                    228,317    |

                    246,660    |

                    265,002    |

                    283,344    |

                    301,687    |*

                               |------------------
```

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	31	44,467	34	,108	1,308
Saturated model	65	,000	0		
Independence model	20	279,426	45	,000	6,209

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	,841	,789	,957	,941	,955
Saturated model	1,000		1,000		1,000
Independence model	,000	,000	,000	,000	,000

Model	PRATIO	PNFI	PCFI
Default model	,756	,635	,722
Saturated model	,000	,000	,000
Independence model	1,000	,000	,000

Model	NCP	LO 90	HI 90
Default model	10,467	,000	31,856
Saturated model	,000	,000	,000
Independence model	234,426	185,396	290,959

Model	FMIN	F0	LO 90	HI 90
Default model	,618	,145	,000	,442
Saturated model	,000	,000	,000	,000
Independence model	3,881	3,256	2,575	4,041

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	,065	,000	,114	,303
Independence model	,269	,239	,300	,000

Model	AIC	BCC	BIC	CAIC
Default model	106,467	117,648		
Saturated model	130,000	153,443		
Independence model	319,426	326,639		

Model	ECVI	LO 90	HI 90	MECVI
Default model	1,479	1,333	1,776	1,634
Saturated model	1,806	1,806	1,806	2,131
Independence model	4,436	3,756	5,222	4,537

Model	HOELTER .05	HOELTER .01
Default model	79	91
Independence model	16	19

Minimization: ,048

Miscellaneous: ,424

Bootstrap: 4,353

Total: 4,825

Appendix D: SPSS outputs

GET
  FILE='D:\Documents\BOP Consultoria\Tesis RM\R5.sav'.
DATASET NAME ConjuntoDatos1 WINDOW=FRONT.
ONEWAY Riesgodeinconvertibilidadytransferenciasdedineroalexterior Riesgodeexpropiacióngubernamental
   Riesgodebrechadecontrato Riesgodeviolenciapolítica Riesgolegalyburocrático
   Riesgoporaccionesnogubernamentales BY Región
 /MISSING ANALYSIS.

Unidireccional

ANOVA

		Suma de cuadrados	gl	Media cuadrática	F	Sig.
Riesgodeinconvertibilidadytransferenciasdedineroalexterior	Entre grupos	3691,225	4	922,806	,868	,488
	Dentro de grupos	72282,556	68	1062,979		
	Total	75973,781	72			
Riesgodeexpropiacióngubernamental	Entre grupos	1975,840	4	493,960	,610	,657
	Dentro de grupos	55091,722	68	810,172		
	Total	57067,562	72			
Riesgodebrechadecontrato	Entre grupos	1565,326	4	391,332	,406	,804
	Dentro de grupos	65583,687	68	964,466		
	Total	67149,014	72			
Riesgodeviolenciapolítica	Entre grupos	5294,647	4	1323,662	1,597	,185
	Dentro de grupos	56346,093	68	828,619		
	Total	61640,740	72			
Riesgolegalyburocrático	Entre grupos	4295,324	4	1073,831	1,363	,256
	Dentro de grupos	53567,361	68	787,755		
	Total	57862,685	72			
Riesgoporaccionesnogubernamentales	Entre grupos	1503,241	4	375,810	,506	,731
	Dentro de grupos	50490,430	68	742,506		
	Total	51993,671	72			