Does the political and economic context influence the success of a transport project? An analysis of transport public-private partnerships

Patricia Galilea a,*, Francesca Medda b,1

a Department of Transport Engineering and Logistics, Pontificia Universidad Católica de Chile, Casilla 306, Cod. 105, Santiago 22, Chile
b UCL QASER Lab, University College London, Gower Street, London WC1E 6BT, UK

A B S T R A C T

The construction and provision of infrastructure services such as transport nowadays is often based on a partnership between three main actors: public sector, private sector and multilateral lenders, under a framework of Public–Private Partnerships (PPPs). This type of partnership has been employed in a wide range of projects in the transport sector and in various contexts in developing and developed countries. Given this observation, the objective of this paper is to examine how countries’ economic and political characteristics contribute to the success of PPPs in transport investments. Special focus in the analysis is given to how the perception of corruption and democratic accountability may influence the success of a PPP project in different transport sectors. We examine a database with 856 transport PPP projects using a generalized linear model in the form of a logit model in order to evaluate the transport database covering data from 72 countries, classified in six regions. The study highlights the importance of national experience. Not only does national macroeconomic experience appear to have a relevant role, but so also does its past experience (either positive or negative) of transport PPP projects. An interesting finding from the analysis is the importance of the rest of the world’s perception of a country’s level of corruption and democratic accountability for the final outcome of a PPP project.

1. Introduction

National governments around the world differ substantially in their social and economic structures and in particular in their infrastructure endowments. State governments are characterized by diverse administrative cultures and capabilities and distinct legal and planning traditions. For instance, institutional diversity in the transport sector is considerable, with countries adopting different approaches with respect to user charges and ownership structures, and thereby implementing various approaches to infrastructure investment strategy and financing. Despite these differences, a framework for what are now referred to as PPPs (Private–Public Partnerships) has emerged to provide transport services through partnerships between three main actors: public sector, private sector and multilateral lenders. The main potential benefit of the PPP approach in transport is its flexibility in adapting the structure of incentives and risk-sharing to the features of the project and to the economic and institutional environment. But because of this flexibility, it is perhaps unwise to seek a unique model of PPP that can be replicated across transport sectors and across countries. The choice context is indeed a multi-objective decision, and in practice, the three actors have to reach a judgment about the trade-offs between the various, sometimes conflicting, objectives.

The literature devotes special attention to the difficulties in PPP agreements between the public and private sector (Grout, 1997; Hart, 2003; Laffont, 2000; Laffont & Martimort, 2002). Private banks are seen as the party that always wins (Estache, 2004) even if a project fails, or if the government and the private company have to renegotiate the PPP. Within this framework, multilateral lenders such as the European Union and the World Bank have openly supported public projects involving PPP agreements between private investors and governments, especially from developing countries (Independent Evaluation Group World Bank, 2007). A number of papers analyze the behaviour of the private investor, in particular by focusing on the maximization of private benefit under incentives schemes (Laffont, 2000; Laffont & Martimort, 2002; Laffont & Tirole, 1993; Martimort & Pouyet, 2006).

When examining PPP agreements, several authors observe the necessity for a shift in the public sector role: that is, from being merely a provider to increasingly becoming a regulator (Independent Evaluation Group World Bank, 2007). This implies the need for a legislative and administrative framework in order to facilitate PPP
investments (Medda & Carbonaro, 2007). Although many countries use PPP arrangements, we observe different ways of adopting this approach due to different cultural influences and traditions in planning and management of public works, deficiencies in legal and institutional structures, and different degrees of political awareness and acceptance of the PPP concept. Hammami, Ruhhashyanik, and Yehoue (2006) highlight the potential significance of a country’s past experience in PPPs in attracting further PPP projects to that country. However, we observe that there is as yet no empirical evidence showing how this experience may (or may not) affect later PPP outcomes. Also, the connection between a country’s level of corruption has not been studied in the light of its influence in the success of a transport PPP project. Several studies have been made about corruption and its influence on economic growth (Gould & Amaro-Reyes, 1983; Huntington, 1968; Klitgaard, 1991; Leff, 1964; Mauro, 1995; Schleifer & Vishny, 1993; United Nations, 1989), but none has been conducted using a stringent microeconomic methodology.

The objective of the present paper is to examine how the three actors, public sector, private sector and multilateral lenders, each contributes to the success of PPPs in transport investments, by considering different political and socioeconomic contexts. We will also focus our analysis on the effect of a country’s level of corruption and democratic accountability in the success of a PPP project.

The paper is organized as follows: Section 2 presents our hypotheses with their theoretical backgrounds. In Section 3, we describe the dataset used to test the hypotheses previously described, outline the dependent and independent variables employed in our analysis, and explain the modelling procedure. Section 4 describes and analyzes our results on the variables that may affect a PPP outcome and thus concludes the paper.

2. Hypotheses formulation

In order to address the impact of the three actors on the success of PPPs, in this section we discuss the hypotheses that represent the backbone of our analysis. Although there are many elements which influence the success of PPP agreements, we consider in this analysis three main building blocks: country experience, investors and multilateral lenders.

The first block represents the country’s past experience in transport PPP projects as well as its macroeconomic performance when the project started and the way a country is perceived in terms of corruption and democratic accountability. This block will be the foundation for the success of the project and will (or will not) reinforce the subsequent arguments. We assume that a country with “bad” past experience in PPP projects and/or deficient macroeconomic performance will not attract as many private investors for its PPP projects, as would another country with better experience. The second block is the link between the private investors involved and the PPP project. The private investor might have several characteristics, and in this paper we focus on the number of private investors forming the consortium in charge of the PPP project. The final block represents the multilateral lenders supporting the PPP project. Although some of the literature discusses their role as agents of policy change and focuses on how they might add a degree of external coercive pressure to the PPP project’s national government (Henisz, Holburn, & Zelner, 2005), we concentrate on their presence as a means of success for the PPP project.

2.1. Country experience

2.1.1. Country’s past experience with transport PPPs

Past experience in running infrastructure projects related to transport projects may be a good forecaster of future PPP outcomes related to transport. It reflects not only the government’s reputation in its capacity to honour agreements with the private sector, but also the capability of the private sector to accomplish projects with the private sector. This experience has proven to be a critical predictor of successful future PPP arrangements (Hammami et al., 2006). Positive outcomes and thus country experiences on previous transport PPPs are associated with positive outcomes of future PPPs in that country.

**Hypothesis 1a.** Successful country experience on previous transport PPP projects is positively associated with the outcome of the next PPP in that country.

Past experience sometimes also implies the existence of unsuccessful PPP projects. This experience, although “bad”, might enhance the future chances for successful PPP projects due to lessons learned from a negative experience. However, we assume here that having unsuccessful PPP projects means having a black spot on a country’s record of PPP projects, and can therefore potentially discourage future private investments, attract fewer investors, and may also signal to the government or the public sector that they are not coping successfully with PPP projects.

**Hypothesis 1b.** Unsuccessful country experience on previous transport PPP projects is negatively associated with the outcome of the next PPP in that country.

2.1.2. Country’s macroeconomic performance

The stability of a country, based on its macroeconomic conditions, is important in order to attract private and foreign investors (especially in emerging markets, as shown in Dailami & Klein, 1998), and has also proved to be important in limiting the number of PPPs in a country (Hammami et al., 2006). We will analyze its effects on the positive outcome of a PPP. Poor macroeconomic conditions may hinder the success of a PPP project, whereas a good macroeconomic performance may foster better outcomes.

**Hypothesis 1c.** Satisfactory country macroeconomic conditions are positively related to the chances of successful PPP projects in that country.

2.1.3. Country’s corruption index

Most of the economic literature agrees that corruption would tend to lower economic growth (Gould & Amaro-Reyes, 1983; Klitgaard, 1991; Mauro, 1995; Schleifer & Vishny, 1993; United Nations, 1989). As pointed out by Mauro (1995), corruption may reduce economic growth as it lowers the incentive for entrepreneurs to invest. Corruption can also distort the composition of government expenditure, shifting the expenditure of public resources from socially desirable projects to projects where it is easier to extract large bribes. When a country is perceived as corrupt, there might be fewer private investors willing to support projects in that particular country, constraining the set of potential investors (and thus restraining the “optimal” investor for the project). There is also a higher probability that the chosen provider may not be the most capable, but rather the one with the best bribe, thus limiting the likelihood for a successful outcome.

**Hypothesis 1d.** The more a country is perceived as corrupted, the less likely it is that the PPP has a positive outcome.

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2 Some authors have pointed out that some level of corruption is desirable (Huntington, 1968; Leff, 1964).
In order to test if the perception of corruption may be more relevant in some regions rather than in others, the interaction between them will also be analyzed.

**Hypothesis 1e.** The effect of the perception of corruption on the success of a PPP varies within projects in different regions.

### 2.1.4. Country’s democratic accountability index

When a developing country is perceived as having low democratic accountability (DA), it means that that country's government is less responsive to its people. For instance, an autarchy would be perceived as having the lowest DA, whereas an alternating democracy would be perceived with the highest. Although it might be the case that a lower number of investors would like to invest in a country with a low DA, once a willing private investor is selected for a PPP project, government support (with all its authority) will follow, and so it is less likely that this PPP will fail. Conversely, a PPP agreement in a country with a high DA will have government support, but it might be subjected to a shift in support due to change unforeseen by means of a democratic vote.

**Hypothesis 1f.** The more a country is perceived as having low democratic accountability, the more it is likely that the PPP has a positive outcome.

The influence of the perception of DA may differ among the different types of projects. Projects such as airports, seaports and railroads are more capital-intensive than toll roads, thus they have a higher level of risk. Governments with lower DA will have more authority to assist these types of projects if needed, whereas governments with higher DA will generally not be able to do it.

**Hypothesis 1g.** The effect of the perception of democratic accountability varies within different types of projects, thus affecting the final outcome of a PPP project.

### 2.1.5. Country’s region

Countries belonging to certain regions usually share cultural, socioeconomic and political characteristics. They might have a similar rule of law, or they might react the same way to certain situations or problems. There are also regions with more experience in PPP projects than others, as shown in Sirtaine, Pinglo, Guasch, and Foster (2005): Latin America and the Caribbean region have received 50 percent (US$345 billion) of worldwide private capital flows to the infrastructure sectors during the 1990s. The implication here is that the region where the project is located can possibly affect the success of a PPP transport project.

**Hypothesis 1h.** The region where the project is located affects the outcome of a PPP project.

Different types of projects may have diverse results among the regions, as proven by Sirtaine et al. (2005), who evaluated the profitability of infrastructure concessions in Latin America and found differences among sectors. The experience that a region has in toll roads versus seaports can be dissimilar, and the ways different societies might welcome certain projects can vary. The interaction between types of projects and interaction among the regions will be analyzed.

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3. By alternative democracy we refer to a country's democracy, where besides having fair and free elections to the executive and legislative powers, and an active presence of more than one political party, there is a viable opposition and the executive power has not served more than two successive terms. In other words, it is a democracy where the same party or coalition has not been continuously in power.

4. The private investor's ownership may be a percentage of the project contract or project company but this does not necessarily indicate the ownership of the project's assets.
the private investor, and to its final development and completion. If a PPP project is sponsored by a multilateral lender, it will be invigilated, thus the PPP’s failure should be increasingly unlikely.

**Hypothesis 3.** Existence of multilateral lenders in a PPP project will enhance the positive outcome of that PPP.

In the next section we will describe the dataset used to test the six hypotheses described, and we will explain the modelling procedure and the dependent and independent variables employed in our analysis.

3. **Methods**

3.1. **Data description**

To test the previous hypotheses, a database with 856 transport PPP projects was used. The database is part of the Private Participation in Infrastructure Projects Database, which has projects from four sectors: energy, telecommunications, transport, and water. The original database is a joint product between the World Bank and the Public-Private Infrastructure Advisory Facility (PPIAF). In order to be included in the database, the project must involve the ownership or operation of physical assets required to provide the infrastructure services, and must have a private investor who bears a share of the project’s operational risk. Only 856 projects related with the transport sector are analyzed in this paper. Transport sector projects are divided into four subsectors: toll roads (47%), seaports (29%), airports (13%), and railroads (11%).

The database provides information for transport projects that have reached their financial closure between 1984 and 2005. Fig. 1 illustrates that almost one-third of the projects reported reached their financial closure between 1996 and 1998. The increase in the number of projects reflected in 1990 is due mainly to the toll roads subsector, whereas the increase until 1998, and the decline since 1999, is reflected in all subsectors.

![Number of transport projects by year.](Source: Private Participation in Infrastructure Projects Database, World Bank)

### Table 1
Status of the projects in the database.

<table>
<thead>
<tr>
<th>Project status</th>
<th>Dependent variable</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational</td>
<td>–</td>
<td>694</td>
</tr>
<tr>
<td>Construction</td>
<td>–</td>
<td>67</td>
</tr>
<tr>
<td>Cancelled</td>
<td>46</td>
<td>–</td>
</tr>
<tr>
<td>Concluded</td>
<td>43</td>
<td>–</td>
</tr>
<tr>
<td>Distressed</td>
<td>6</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>804</td>
</tr>
</tbody>
</table>

Source: private participation in infrastructure projects database, World Bank.

The database only includes projects awarded in low- and middle-income countries as classified by the World Bank (2005). The transport database covers data from 72 countries, classified in six regions: East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, South Asia, and Sub-Saharan Africa. Almost half of the projects (44%) are from Latin America and the Caribbean, and dispersed mostly among Brazil, Mexico, Argentina, and Chile. The projects from East Asia and the Pacific are highly concentrated in China, while the projects from South Asia are concentrated in India.

3.2. **Modelling procedure**

Our dependent variable (Success) is a binary variable, taking the value zero, if the project’s status was either cancelled or distressed, and one, if the project’s status was under construction, operational or concluded. In order to estimate the regressions, we use a generalized linear model in the form of a logit model (Greene, 2003)

\[
Pr(Y = 1|x) = \frac{e^{\beta}}{1 + e^{\beta}}
\]

where \(Y\) is the dependent variable, \(x\) is the vector of independent variables, and \(\beta\) is the vector of parameters.

3.3. **Dependent variable**

Each project of the database may be in one of the following five states: i) under construction (projects for which assets are being built); ii) operational (projects that have begun providing services to the public); iii) concluded (projects for which the contract period has expired and the project was neither renewed nor extended by either the government or the operator); iv) cancelled (projects from which the private sector has exited before the end stipulated in the contract); and v) distressed (projects where the government or the operator has either requested contract termination or are in international arbitration).

The status of the project was grouped into a dichotomous measure, entitled Success, equal to one if the project’s status was under construction, operational or concluded. In our sample of 856 projects, 804 were in this status (94%). If the project’s status was either cancelled or distressed, the dependent variable was set equal to zero. Table 1 illustrates the total status of the projects in the database and their relation to the dependent variable.

3.4. **Explanatory variables**

3.4.1. **Past experience with PPPs**

Two variables measuring the past experience of a country in transport PPPs were created, entitled Yes PPP Experience and No PPP Experience, respectively. For a PPP, Yes PPP Experience counts the
number of successful\(^8\) transport PPP projects done in the country of
the PPP at the moment of the PPP's financial closure; whereas No
PPP Experience counts the number of unsuccessful\(^9\) transport PPP
projects done in the country of the PPP at the time of the PPP's
financial closure. Both variables are set to zero for countries with no
prior experience in transport PPPs. PPP projects undertaken in the
same country do not necessarily have the same values in Yes PPP
Experience or No PPP Experience, since it depends on the year that
each country has its financial closure.

3.4.2. Variables that characterize a PPP

A variable representing the total investment (investment in
facilities and in government assets) for each project was included
(Total Investment). Its values are in 2005 constant US million dollars.
It is expected that a project needing more investment will have
greater difficulty achieving a positive outcome. Another variable
(Percentage Private) was set to show the percentage of the project
company or project contract owned by private investors. The
database projects may belong to one of the following transport
sectors: toll roads, seaports, airports, and railroads. One dummy
variable was created in order to report the type of sector in which
the project belonged: Toll Roads became 1 if the project was a toll
road project, 0 otherwise.

3.4.3. Number of investors

The variable (Investors) was built in order to capture the effect of
the number of private investors in a PPP project. Table 2 illustrates
the frequency of the consortiums comprised of more than one
private investor across the different regions. In general, 41% of the
total of PPP projects of the database involves more than one private
investor, but these consortiums are primarily in Latin America and
the Caribbean (61%).

3.4.4. Multilateral lenders

The variable Number of Agencies was constructed to reflect the
number of multilateral lenders in certain projects. As shown in
Table 3, a multilateral lender supported only 12% of the projects in
the database, and 57% of these are projects realized in Latin America
and the Caribbean.

3.4.5. Country's corruption index

A 6-point scale variable Corruption was included for each
country for the project's year of financial closure. The value 6 was
given to the most corrupted country as perceived during that year.
The types of corruption that the variable takes into account are
actual or potential corruption (excessive patronage, nepotism, job
reservations, loose ties between politics and business, etc).

3.4.6. Country's democratic accountability

A 6-point scale variable Democratic Accountability was included
for each country for the project's year of financial closure. The
higher number of points is assigned if a country is closer to an
alternating democracy governance, while the lowest score is
assigned to an autarchy.

3.4.7. Country's region

Three dummy variables were created to classify the region in
which the project was executed. Africa becomes 1 if the project is in
the Sub-Saharan Africa region or in the Middle East and North Africa
region, 0 otherwise. Asia becomes 1 if the project is in the South
Asia region or in the East Asia and Pacific region, 0 otherwise. Latin
America becomes 1 if the project is in the Latin America and the
Caribbean region, 0 otherwise. Projects executed in the Europe and
Central Asia region were taken as the base case and represented
when the three dummy variables became 0.

3.4.8. Country's income

One dummy variable was created to classify whether by the
project's financial closure the country of the project was a low- or
lower middle-income country or an upper middle-income country.
Low- and Lower Middle-Income variable became 1 if the country of
the project was a low- or lower middle-income country, 0 otherwise.

3.4.9. Other explanatory variables

A dummy variable to include GDP growth was added (GDP
growth). If, during the year of financial closure GDP growth of the
project's country is negative, then the value of this dummy is zero.
If GDP growth is between 0% and less than 3%, it takes the value
one; if it is between 3% and less than 6%, it takes the value two; and
it takes the value three if GDP growth is more than or equal to 6%.
Another variable was included to measure the country's develop-
ment: the current account balance as the percentage of GDP for
each project in its year of financial closure (Account). Finally, in
order to capture exogenous macroeconomic trends that might be
affecting the results, the variable Trend was created, starting at 0 in
year 1984, and adding one for each year until 2005.

4. Results and discussion

Four models were estimated as shown in Table 4. Model 1 was
our first approach in modelling the hypotheses, where we focused
on the effect of the variables representing countries' past experience
with PPPs (Hypotheses 1a and 1b), macroeconomic performance
(Hypothesis 1c), corruption (Hypothesis 1d), democratic account-
bility (Hypothesis 1f), number of investors (Hypothesis 2a), and
multilateral lenders (Hypothesis 3). As not all the variables were
statistically significant at a 95% of confidence, Model 2 was

\[ \text{Table 2} \]

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of private investors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>152</td>
<td>215</td>
</tr>
<tr>
<td>East Asia and the Pacific</td>
<td>220</td>
<td>51</td>
</tr>
<tr>
<td>South Asia</td>
<td>53</td>
<td>25</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>36</td>
<td>28</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>504</td>
<td>352</td>
</tr>
</tbody>
</table>

Source: Private participation in infrastructure projects database, World Bank.

\[ \text{Table 3} \]

<table>
<thead>
<tr>
<th>Region</th>
<th>Multilateral support</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>309</td>
</tr>
<tr>
<td>East Asia and the Pacific</td>
<td>255</td>
</tr>
<tr>
<td>South Asia</td>
<td>74</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>52</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>44</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>754</td>
</tr>
</tbody>
</table>

Source: private participation in infrastructure projects database, World Bank.
parameter for the variable Yes PPP Experience is statistically significant and positive. This reflects the significance that past experience in transport PPP projects plays in the success of future transport PPP projects. Past experience is not only a learning process, but also highlights a government’s reputation in honouring this type of agreement. In a similar way, Hypothesis 1b is strongly supported by the models, denoting a distinction between “good” and “bad” experience (successful and unsuccessful projects), and sanctioning failed past experience in transport PPP projects.

As expected, we also find a positive correlation between a country’s macroeconomic performance, reflected in the variables Account and GDP Growth, and the positive outcome of a PPP project (Hypothesis 1c). Both models acknowledge the importance of the variable Account. On the other hand, Models 1 and 3 indicate a positive impact of the variable GDP growth in the success of a PPP, but they also show a low significance. The variable Account only proved to be significant in Model 3. The macroeconomic conditions on the models suggest the relevance of these indicators in predicting the outcome of a PPP project. While good macroeconomic conditions may enhance the positive outcome of a PPP project, poor macroeconomic conditions may inhibit it.

In the case of the variables related with corruption, there is a negative association between countries perceived as more corrupted and successful PPP projects (Hypothesis 1d). This highlights the difficulties that PPP projects may face in more corrupted countries, where fewer investors are willing to undertake a PPP project, thus constraining the outcome of a PPP. Moreover, we can observe that, even if there are private investors willing to participate in a PPP project, it could be possible that the selected private partners are the most inclined towards bribery or collusion with the political establishment rather than the most capable partners. The influence of corruption appears more prevalent in a project’s success if it is executed in Latin America and the Caribbean and Africa (Hypothesis 1e). These regions seem to be more sensitive to the perception of corruption, although the average of the country’s perception of corruption in Latin America is not the highest. This situation might reflect a market threat in countries perceived as corrupted.

Regarding Hypothesis 1f, both models show a strong positive relationship between developing countries perceived with low democratic accountability and PPP outcomes. Considering the countries in our dataset, this relationship highlights that a country with a low democratic accountability score, perhaps an autarchy government, may potentially have more authority to support the PPP project than a more democratic government. Infrastructure projects (highways, ports, airports, etc.), which require large sunk investments and a very long recouping period, if not fulfilled, may be seen as a major government failure. And this is particularly important in developing countries, where infrastructure investment may greatly improve quality of life. Governments with lower democratic accountability are more successful in PPP projects because they seem more willing to fulfill the long-term requirements, possibly in order to adhere to a populist approach. However, the perception of democratic accountability seems to be more relevant in all transport projects except toll roads, which is in line with the previous justification about the necessity for large capital investments in these types of transport investments.

In order to use the dummy variables for regions (Hypothesis 1h), all the projects in Europe (and Central Asia) were regarded as the benchmark. As shown in Model 4, Asian (South Asia or East Asia and the Pacific), African (and Middle Eastern) and European countries bear the same risk in terms of transport PPP success. Conversely, Latin American (and Caribbean) countries show a lower risk of failure. This could be due to the longer PPP experience that estimated in order to fulfil this requirement. In Model 3 we wanted to upgrade the estimation by including the dummy variables representing the different regions of the world where projects are located (Hypothesis 1h), and the interactions between the former variables used and the regions (Hypothesis 1e), types of projects (Hypotheses 1g and 1i), and the income level of the country (Hypothesis 1f). Model 4 resumes all of the hypotheses and shows those that proved to be statistically significant.

We find strong support for almost all of our hypotheses. In all specifications the variable representing the total investment (in facilities and government assets) proves to be significant. We find statistically-robust support for a negative association between the total investment and the success of a PPP project. This seems likely, as a higher total investment means a riskier project, which in turn makes it increasingly difficult to achieve a successful outcome.

Consistent with Hypothesis 1a, we observe a positive association between a country’s past experience with transport PPP projects and the success of later PPPs. All the models show that the
most Latin American countries in the database have compared with other countries in other regions. Although projects from European countries have been more successful (in percentage) than Latin America’s, they are fewer in number and thus their PPP experience is lower.

Turning to the hypotheses regarding investors (Hypotheses 2a and 2b), we find enough evidence to support Hypothesis 2a. Variable Investors proved to be significant to assert the importance of the number of investors in a transport PPP project. As the number of investors increases, the chance of a successful PPP decreases. Larger numbers of private investors that form big conglomerates may have increased difficulty in communication and a higher chance of dispute among them. On the other hand, countries with low- or lower middle-income appear to offset this result as the parameter representing this interaction appears to be positive and significant (Hypothesis 2b). These countries usually have lower expertise in large infrastructure projects (and less in PPP projects), so greater investor expertise might prove to be more relevant than a communication problem. A project in a riskier country represented by a low income status could, moreover, compel private investors to remain alert and involved in this particular investment. Hypotheses 2c and 3 are not statistically validated by the models presented in Table 4. The variable representing the existence of multilateral lenders proves to be statistically insignificant, but its positive sign confirmed at least that the suppositions described previously were in the right direction. To understand these results, a correlation analysis was made and no indication of a correlation arose between these variables and the other ones modelled. Previous results (Galilea & Medda, 2007) have shown that before introducing such variables as corruption, democratic accountability and regions, these two variables were statistically significant, but their importance lessened and thus lowered their significance. As shown in Table 3, only 12% of the database projects had at least one multilateral lender, so we will continue to analyze their importance as more projects (with more information) become available.

In relation to the models, only Models 1 and 2 focus on the variables describing project and country, whereas Models 3 and 4 use the information provided by the first two models and add the interaction between variables and the region constants. As the log likelihood increases, this information proves to be relevant for the estimation. The best model is Model 4, since it includes more information about the variables and the interactions between them; it is statistically superior than Model 3 (all its parameters are significantly different than zero); and, because a log likelihood-ratio test does not reject the null hypothesis that both models are equivalent, for parsimony, Model 4 is better.

5. Conclusions

PPP projects have gained relevance as a way to finance transport infrastructure and services. PPPs have been supported by governments, sponsored by the private sector, and have also been favoured by multilateral agencies. Although there are numerous successful PPP projects, notwithstanding, there have also been a large number of “divorces” (Estache, 2004). In this paper we have presented empirical evidence on the role that country experience in PPPs, private investors, and multilateral lenders may play in the positive outcome of a PPP in transport. A country’s past experience in PPP agreements in transport is important, not only in attracting new investment projects, but also in instilling greater confidence in the success of present projects. This also means that countries with poor past experience, or no past at all, will find it more problematical to complete successful PPP projects. However, if multilateral lenders want to promote PPP investments, they should support projects in countries with limited or no experience and help them set up a regulatory and/or legislative framework for PPP projects.

It is not surprising that GDP growth and the current account balance as a percentage of the GDP may impact on the success of a PPP project. Unfortunately, countries that require successful PPPs often have very low (or even negative) GDP growth and a negative account balance. As Hammami et al. (2006) also highlight, development agencies should assist these countries to pull them out of the underdevelopment trap.

The perception of a country’s level of corruption and democratic accountability appears to be relevant in the final outcome of a PPP project. Countries with governments perceived as corrupted will hardly find international investors (often those with the most experience in this type of project). Projects developed in countries with governments perceived as having low democratic accountability can achieve better performance than projects in countries perceived as having higher democratic accountability. In this case it seems that autarchies may have a better capacity to assist PPP projects, if needed, than in the case of alternating democracies.

The importance of the region where the project is located has proven to be relevant, making Latin American projects more attractive for success, and thus for future investors. Although European and African projects in the developing world do not have a poor record in terms of their success, they do have less experience in PPP agreements in transport, and this situation could be damaging their score (in relation to Latin American projects). Development agencies should focus on these regions, not only to allow them to grow in terms of experience, but also to help them define a regulatory framework for PPP projects.

A critical point in our research is certainly the definition used for the success of a PPP, since we consider a variable linked with economic performance, rather than use a variable related to the status of a project. Our further research will be directed towards obtaining more precise investment information in order to broaden our results. We will compare the results with a similar analysis of transport PPP projects in the developed world, since certain conclusions, such as the effect of corruption, may be different in this scenario. Also, it would be interesting to study the success of PPPs focusing within one transport subsector in order to add more specific characteristics and some efficiency indicators into the analysis.

References


