

Good governance, institutions and performance of public private partnerships

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Abstract

Purpose – The purpose of this paper is to explore theoretically and empirically which institutional factors (including good governance ones) help public-private partnerships (PPP) in providing better infrastructural services, which would then in their turn lead to attracting more private investment for the whole economy.

Design/methodology/approach – On the theoretical level, while a focus is put on discussing the institutions that should be responsible for PPP success, reconciliation is being attempted between institutional economics from one side and the new public management and networks management perspectives from the other. Empirically, OLS multivariate panel regressions test the suggestions of the theoretical discussion with emphasis on interaction terms between PPP and the studied institutions.

Findings – Evidence is found that good governance institutions, and specifically good regulatory quality, bureaucratic efficiency and independence, help PPP in performing well as evident from their positive effect on investment growth.

Research limitations/implications – The limitations of this paper are mainly empirical. Further results with great policy implications could have been obtained if better proxies were developed for a number of variables. Certainly this is the case for the proxies used for cronyism and public-private dialogues (PPD).

Practical implications – Tackling bureaucratic efficiency and independence and higher regulatory quality should be a top priority if the great positive externalities resulting from PPP in infrastructure are to be realized.

Originality/value – The novelty of this research is attributed to constructing a proxy for PPP, as well as testing empirically the effect of the interactions of PPP with other institutional variables on the performance of infrastructural services (as evident from attracting more investment). The synthesis between the literature on PPP, new public management, networks, good governance, and institutional economics is another aspect of this work. The obtained results suggest important policy recommendations, and, the author hopes to, add to the literature on PPP.

Keywords Networks, Governance, Institutions, Investment, New public management, Public-private partnerships

Paper type Research paper

1. Introduction

Since the sixteenth century, when the French government conceded the construction of a canal to a private company and the English government permitted private companies to administer water supply in London, infrastructure projects have presented themselves as one of the promising arenas for public-private cooperation. The interest in that cooperation in the form of public-private partnerships (PPP) has grown recently with hopes that such partnerships could provide better infrastructural services for many countries in great need for them.



As a partnership that brings together both the government and the private sector, much is expected from PPP. The collaboration between both parties is expected to address their individual deficiencies highlighted in the literature as government and business failures (e.g. Hausmann and Rodrik, 2003; Hausmann *et al.*, 2008). Adopting good governance institutions can further the gains from public-private collaboration; it should create more suitable institutional settings for attracting private investment.

This paper is investigating which institutional factors help in the success of PPP as reflected in attracting more private investment to the whole economy. This is being explored theoretically and empirically. A special focus is given on PPP in infrastructure, which constitute the majority of PPP projects worldwide (Hodge and Greve, 2007, 2009). Given the high costs encountered by private investors due to poor infrastructure (World Bank, 2004), it is perceived that successful PPP in infrastructure, by providing better infrastructural services, can provide important positive externalities to the economy. They should help in increasing business confidence in the economy, and, consequently, attracting private investment to various economic activities. In other words, successful PPP should stimulate economy-wide investment growth. But for PPP to be successful, this paper argues that good institutions should also exist. Hence, the effect of relevant institutions on the performance of PPP is also explored in order to find out whether, and which of, the considered institutions are responsible for PPP success as reflected in stimulating investment growth in the whole economy.

The paper starts with a theoretical discussion on PPP, various considered institutions, and their individual and combined (with PPP) effect on stimulating investment. This is followed by empirical testing using an OLS multivariate panel regression model. The model has investment growth as a dependent variable and a constructed proxy for PPP, institutional variables, and the interactions of PPP and these institutional variables as independent variables.

The novelty of this research is attributed to constructing a proxy for PPP, as well as testing empirically the effect of the interactions of PPP with other institutional variables. In the literature, there is hardly any empirical study on the variables responsible for the success of PPP on a meta level for the various PPP experiences worldwide. This is partially true for the evaluation trials done to individual PPP projects, using for instance Value for Money (VfM) analysis (Hodge, 2010, pp. 94-102)[1]; one of the important exceptions is Gassner *et al.* (2009). By testing the effect of PPP in infrastructure, alone and in interaction with institutional variables, on investment growth worldwide, this study is addressing this concern. Moreover, the synthesis between the literature on PPP, new public management, networks, good governance, and institutional economics is another aspect of this work. The obtained results suggest important policy recommendations, and, I hope, add to the literature on PPP.

2. Theoretical discussion

2.1 PPP and investment

PPP are defined as “cooperative institutional arrangements” between the state public sector and businessmen (Hodge and Greve, 2007, 2009). These arrangements allow for co-responsibility and co-ownership between the public and private sectors (United Nations Industrial Development Organization (UNIDO), 2000). According to Miraftab (2004), it is a “market-enabling strategy” by which the resources of the government (and others) support the role of the private sector. Considerable technical, financial, and operational risk in planning, financing, construction, and operation of the concerned projects are assumed by government institutions (Farlam, 2005). As, director head of UNIDO, Carlos Magarinos,

stated it, private sector's resources such as: access to finance, market orientation, technical expertise, business experience, and entrepreneurship, are being matched with public sector's resources such as: social responsibility, public accountability, local knowledge, regulatory and legal framework, and oversight (Magarinos, 2001).

The most common form of PPP is infrastructural contracts of long-term nature (Hodge and Greve, 2007, 2009)[2]. Infrastructural contracts of this kind include arrangements that allow the private sector to design, construct, finance, and/or maintain public infrastructure or facility[3]. Usually, a special purpose vehicle (SPV) shareholders company is being set to handle the infrastructural project. It is responsible for collecting funds either through debt or equity; and funds could be raised from financial institutions, individuals, and the state. The implementation of the project is then assigned through contracts to private companies mainly performing four activities: engineering, procurement and construction (EPC), inputs supply (for the project), output buying (from the project), and operation and maintenance. In most cases, these contractual firms are also shareholders in the SPV (OECD, 2014, pp. 8-10). Private parties involved in infrastructural PPP can thus be split into financial sponsors and contractual entities where both roles are likely to crosscut.

Infrastructural services are public goods with positive externalities; they are also natural monopolies, not subject to competitive market concerns (Gassner *et al.*, 2009, p. 1). Given these characteristics, government involvement is indispensable. The public sector either becomes an equity partner for the private shareholders company, the SPV, entitled to engage in the project (institutional PPP), or set the planning and regulatory framework for the private company (contractual PPP) (OECD, 2014, p. 11). In other words, there can be no private investment in infrastructure outside PPP.

Both sides are expected to benefit from this partnership. Pongsiri (2002), among others, argued that benefits accruing to government from PPP are: improvement in program performance and service provisions, cost efficiencies, and better allocation of responsibilities and risks. On the other hand, businessmen's benefits are: getting a reasonable profit, "better investment potential" and opportunities for spreading out business interests (Jamali, 2004). Moreover, society is expected to benefit as well. The World Development Indicators Report (World Bank, 2010), argued that private involvement in infrastructural projects contribute to efficiency improvements in infrastructural services, ease fiscal constraints, and provide the service for the poor. This was also shown empirically in many studies; for instance, Gassner *et al.* (2009) found that private investment in infrastructure led to more efficiency in operational performance. Although empirical studies on public service contracting should be regarded with caution due to "methodological flaws" as argued by Boyne (1998), additional supporting evidence can be detected in policy recommendations of international organizations. The World Bank has globally endorsed PPP by providing financial support, through the "Infrastructure Crises Facility," for partnerships facing hardships. Bad infrastructure, according to the World Development Report (World Bank, 2004), is responsible for a big share of costs encountered by private business. A better infrastructure would help firms to connect well with their suppliers and markets, as well as enable them to use modern techniques of production; and private investment in PPP is regarded as helping in fulfilling this objective. Consequently, private investment in PPP can encourage private investment in other economic activities. According to Hodge (2010), among the various objectives of PPP worldwide is improving "business confidence." Certainly, such an improvement, added to major enhancement in infrastructural services, should induce an increase in private investment for other economic activities.

Which factors are responsible for the success of PPP in infrastructural projects is debated in the literature. The new public management perspective emphasizes efficiency and competitiveness as criteria for success, with cutting costs and improving quality being major concerns (Bovaird, 2010, p. 54). Given this concern on efficiency, the government is urged to focus its efforts on formulating public policy and outsource the implementation to private partners, keeping the resulting PPP at arms' length away from political manipulation. The form of the partnership contract is believed to be the key for success (Klijn, 2010, pp. 71-73). The literature focussing on networks, however, highlights the centrality of managerial efforts, or what many works referred to as "network management." Given the complexity of service delivery and decision-making process, it is believed that "active forms of network management" fit as means for promoting public and private cooperation, knowledge sharing, and innovation. They are the key for better outcomes (Klijn, 2010, p. 73). Networks depend on trust, reputational concerns, and mutually supportive actions (Powell, 1990). By building alliances based on trust, networks can build good governance processes, and structures; these by their turn can lead to efficiency improvements, according to the strategic management approach (Bovaird, 2010, p. 59). Reinforcing this perception, Steijn *et al.* (2011) suggested that network managerial strategies of PPP projects, rather than their organizational form, have a strong effect on their outcomes.

Certainly, these networks do not operate in a vacuum and will be affected by outside factors shaping their constituent players' capacities and the solidness of the networks themselves. This opens the way to exploring the effect of institutional factors that might affect these networks and, accordingly, the performance of PPP. The following section is devoted to such a discussion bringing together the literature of new institutional economics, good governance, network management, and new public management.

2.2 Institutional factors and PPP

The success of PPP in providing better infrastructural services and attracting investment is expected to differ from one country to the other. The major factors for PPP success could be arguably institutional. Many institutions could be responsible for this; I shall group the considered institutions into those suggested by the good governance literature, and others.

2.2.1 Governance factors. In the literature, it is debated which institutions could be referred to as good governance institutions. However, variables which could be identified are: good regulatory quality, bureaucratic (or government) efficiency, voice and accountability, rule of law, control of corruption, and participatory (or collaborative) methods. Most of the mentioned variables are highlighted in the World Bank Kaufmann *et al.*, Governance Indicators; others (e.g. collaborative governance) are found in different works (e.g. Ansell and Gash, 2008).

Rule of law, including protecting property rights and contract enforcement (Kaufmann *et al.*, 2010), is one of the institutions believed to encourage investment (World Bank, 2004), and economic growth (Glaeser *et al.*, 2003). Rule of law should also help in the success of PPP. Pongsiri (2002) argued that protection from expropriation, fulfillment of contract agreements, and effective arbitration of commercial disputes all help in attracting private investment to PPP. The positive effect of rule of law on attracting private investment to PPP in infrastructure has been confirmed empirically by a survey-based study done by Allen and Overly (2009). To the extent that such stimulation of private investment in infrastructure means attracting better private service providers, rule of law would lead to more successful PPP.

Regulatory quality is another important governance variable. Similar to the rule of law, private investment in PPP is encouraged by the presence of a sound regulatory framework (Pongsiri, 2002); this was also confirmed empirically in Allen and Overy (2009) (OECD, 2014, p. 35). Generally speaking, better economic outcomes are expected when regulations tend to facilitate private investment and limit the capability of governments to engage in allocating resources as privileges to their cronies, rather than being concerned with efficiency. Such regulations should also both attract more private investments to infrastructure, and help in bringing efficient private sector service providers. For instance, regulations such as credit facilitation and lower non-tariff barriers should help in obtaining better results from PPP, thanks to easing access to credit, and providing better inputs and technology for private investors in PPP. The same should also be true for easier market entry (lower regulation of entry), since it is expected to lead to high competition and arguably to getting better service providers. Yet, although empirical evidence seems to slightly support a positive relation between competition and better service, a sharp conclusion on this issue could hardly be made as evidence is rather mixed (Boyne, 2003, p. 379). However, it could be argued that, generally speaking, a high regulatory quality (and good regulations) should help PPP in providing better infrastructural services.

Voice and accountability is a third central governance variable. Democracy and freedom of the media, as means for strengthening accountability, are expected to lead to better economic outcomes. Democracy is suggested to create better business climate (World Bank, 2004), and encouraging capital inflows (Alfaro *et al.*, 2008). Both should be expected to attract more private investment for PPP infrastructure projects. Freedom of media leads to good economic and developmental outcomes (World Bank, 2002; Djankov *et al.*, 2010). By enhancing accountability, democracy, and freedom of media could prevent politicians from allocating PPP contracts to inefficient private service providers who might be their cronies. Better infrastructural services should then be expected.

Bureaucratic efficiency is also believed to lead to better economic outcomes (Alfaro *et al.*, 2008; Doner *et al.*, 2005). One of the good bureaucratic qualities is bureaucratic independence, as indicated by meritocratic recruitment of bureaucrats. This independence should free bureaucrats from political pressures (Dahlström *et al.*, 2011), and lead to economic growth (Evans and Rauch, 1999). As long as this independence leads to better allocation of PPP contracts based on efficiency concerns rather than crony favoritism, better infrastructural services should be expected. Moreover, generally speaking, an efficient (and skilled) bureaucracy would be better equipped to deal with the private partner in PPP (Jamali, 2004). Better service output from the resulting PPP should then be expected.

Control of corruption is another good governance dimension of relevance, especially if we are speaking about cronyism. The latter can be defined as preferential treatment offered by officials to old friends, associates, or politically connected few businessmen, regardless to their qualifications, facilitating their generation of extraordinary returns (Begley *et al.*, 2010; Mazumdar, 2008). PPP contracts can be a form of privilege at the disposal of governments seeking to please their cronies (Farlam, 2005). Since such privileged allocations are likely to disregard efficiency, doubts can justifiably be raised on the infrastructural service provided by PPP operating in countries with high levels of cronyism.

A last relevant Governance variable is collaborative governance through institutions like public-private dialogues (PPD); these are forms of mutual consultation on policy

matters, but where the government takes the final decision (UNIDO, 2000). It can be defined as “a type of governance in which public and private actors work collectively in distinctive ways, using particular processes, to establish laws and rules for the provision of public goods” (Ansell and Gash, 2008, p. 4). PPD, through its private-public consultation mechanism, can match the economic, regulatory, and social foundations of PPP with national growth and infrastructural development strategies (Pinaud, 2007). The resultant PPP should then help in achieving better economic outcomes, among which should be attracting private investment to various economic sectors.

2.2.2 Institutional factors. Generally speaking, institutions that facilitate investment, prevent governments from providing crony privileges, and build trust, should lead to better performance for PPP. Attracting more private investment to the whole economy would mean bringing more private investment also to infrastructure, with a greater probability that efficient private service providers would be attracted as well. Limiting the ability of governments to provide PPP contracts as crony privileges would make it more likely that such contracts would be provided based on efficiency concerns with expected better infrastructural services. The previous two kinds of institutions are thus addressing the concerns of the new public management perspective on efficiency with regard to PPP. More trust, on the other hand, would mean that PPP can function better as a management network.

Institutions addressing the above mentioned concerns are: legal origins, resource abundance, hierarchical cultures, ethnic fractionalization, and colonial heritage. Prominent works in the institutional economics literature highlight the superiority of British common law over French civil law with regard to investment encouragement (Mahoney, 2001; La Porta *et al.*, 2008; Djankov *et al.*, 2002)[4]. High reliance on resource endowments is suggested to free the hands of the government to engage in corrupt practices (Treisman, 2007; Doner *et al.*, 2005), regardless to efficiency concerns. Hierarchical cultures, as compared to non-hierarchical, are believed to build less trust and social capital and hinder working cooperatively (La Porta *et al.*, 1997)[5]. Similar things could be said on ethnically segmented societies (Alesina *et al.*, 1999; Fosu *et al.*, 2006), and societies suffering from colonial heritages that resulted in deeply rooted social mistrust or unrest (Mamdani, 2001). In the light of the mentioned literature, one can assume that British legal system, low reliance on resource endowments, non-hierarchical cultures, more ethnically homogenous societies, and societies with less bitter colonial heritage should all help in making PPP more successful.

3. Empirical testing

3.1 The PPP proxy

The discussion in this paper has focussed on the participation of private investment in infrastructural projects as a main form of PPP. Accordingly, my proxy for PPP depends on the level of private investment in infrastructure in each country, assuming that private investment in this sector is only possible in PPP. As discussed above, whenever private investment in infrastructure exists, the public sector is also involved either directly in the implementation of a project or in the planning and regulatory process (institutional or contractual PPP). This provides some ground for choosing the proposed proxy. Although the proxy does not reflect the number of implemented projects, their performance or any of their specific characteristics, the magnitude of private investment in infrastructure can, however, give some indication on the prevalence of PPP projects in infrastructure in a country. Introducing this proxy poses itself as a trial to get over the

empirical impediments encountered while trying to assess different PPP experiences worldwide in a meta-analysis framework, something pointed out to earlier in this study. Furthermore, to facilitate comparison between countries with different sizes of their economy and strength of their private sector, private investment in infrastructure PPP is divided by the level of overall private investment in each country.

Private investment in infrastructure and total private investment are obtained from the World Bank's "World Development Indicators," where private investment in infrastructure is computed based on the average of four indicators, namely: "Investment in energy with private participation," "Investment in telecoms with private participation," "Investment in transport with private participation," and "Investment in water and sanitation with private participation." The reason why the average rather than the summation of the four indicators is being used is that data are sometimes missing in one or more of these indicators for the studied countries. Total private investment in each of the studied countries is obtained from "gross fixed capital formation, private sector as percent of GDP," also found in the data set of the World Development Indicators, and multiplied by GDP. The data are confined to the years between 1990 and 2011:

$$PPP_t = \frac{\text{Avg}(PE_t, PTL_t, PTR_t, PW_t)}{TPI_t} \quad (1)$$

where Avg is the average, PE the private investment in energy, PTL the private investment in telecoms, PTR the private investment in transport, PW the private investment in water and sanitation, TPI the total private investment, and t stands for time.

Endogeneity with the dependent variable, growth of fixed investment, is ruled out since I am using the ratio of private investment in infrastructure to total private investment in the whole economy (unlike the level of private investment in infrastructure taken alone). Moreover, I am using fixed investment growth rate as the dependent factor rather than the level of investment.

3.2 The multivariate panel regressions

Two panel multivariate regressions were conducted having PPP, the above highlighted institutional variables and the interaction terms of PPP with institutional variables. The conducted regressions have the following equation:

$$\text{Investment growth} = c + \mu(\text{PPP}) + \beta(\text{Institutional variables}) + \alpha(\text{PPP} \times \text{Institutional variables}) + \ell(\text{control variables}) \quad (2)$$

Both regressions have the growth rate of fixed investment as the dependent variable. It is calculated from the "Gross Fixed Investment" indicator obtained from the World Bank database. The considered matrices in this equation have the above mentioned variables (or factors as discussed below) and their interaction with PPP. A number of control variables were used as well, but without any interaction terms with PPP. The variables considered in the two regressions are listed in Table I.

The sources from which the data are obtained are provided in Table II. It is important to note here that all the variables covered in the theoretical discussion are used both individually and in interaction with PPP. The only two exceptions are the proxies used for PPD and the proxy used for control of corruption (or cronyism). For the latter, instead of using the Kaufmann *et al.*, Governance Indicator, this study

	Variables used alone and in interaction with PPP	Control variables (used without interaction with PPP)
Regression 1	Legal British Origins, Legal French Origins, Legal German Origins, Protestant, Catholic, Orthodox, Islam, Buddhism, Confucianism, ethnic fractionalization, colonial heritage, political freedoms factor, bureaucracy factor, economic resources factor, regulation factor	Transition economics, investment growth (<i>t</i> -1), social-political connections, PPD high government representation dummy, business association participation %, PPD proxy (the interaction of the previous two terms), economic growth leading factor, GDP per capita, GDP growth, real interest rate (%), Gini index
Regression 2	Non-tariff barriers, rule of law, regulatory quality, change in official supervision on banks, regulation of entry factor, credit facilitation factor	Legal British Origins, Legal French Origins, Legal German Origins, Protestant, Catholic, Orthodox, Islam, Buddhism, Confucianism, ethnic fractionalization, colonial heritage, political freedoms factor, bureaucracy factor, economic resources factor, transition economics, investment growth (<i>t</i> -1), social-political connections, PPD high government representation dummy, business association participation %, PPD proxy (the interaction of the previous two terms), economic growth leading factor, GDP per capita, GDP growth, real interest rate (%), Gini index

Table I.
The used variables
in the conducted
regressions

uses another proxy that addresses cronyism in arguably a better way. This is the indicator provided by Faccio (2006) for social and political connections and found empirically to be the outcome of corruption. PPP contracts provided as crony privileges will be provided mainly to socially and politically connected businessmen, making this proxy of much relevance. Unfortunately, due to data limitations, both PPD proxies and social and political connections are used only as control variables (without interaction with PPP). Doing otherwise would have considerably decreased the degrees of freedom. Another remark is that Kaufmann *et al.*, Governance Indicator of “voice and accountability” is also not used. Instead, proxies for democracy and freedom of media are used. The reason is that they address, in a better way, the discussion conducted in the theoretical part.

Given the large number of considered variables and the possible multicollinearity among many of these variables, a number of factors were constructed using the “principal component analysis” in the Oxmetrics program. These were: the regulation, political freedom, bureaucracy, reliance on economic resources, and economic growth leading (a control factor) factors. The variables used in constructing these factors are listed in Table III.

Having discussed the constructed factors, I would like to clarify the difference between the conducted two regressions. The first regression has all the constructed factors including the regulation factor (and other variables together with their interaction with PPP). The second regression analysis, on the contrary, accounts for the regulations individually and their interaction with PPP. To avoid drastically decreasing the degrees of freedom, in the second regression variables other than those from the regulation group were used as control variables, without their interaction terms with PPP.

Variables	Used sources
Regulatory quality, rule of law, and government effectiveness (used for measuring bureaucratic effectiveness) Legal origins	World Bank Kaufmann <i>et al.</i> , Governance Indicators
Regulation of entry and credit facilitation Protectionism focussing on non-tariff barriers (NTB)	The World Bank “Lost Decades Social Indicators” and is updated by La Porta <i>et al.</i> (2008) data set World Bank Doing Business The World Bank’s “Overall Trade Restrictiveness Index” (OTRI) and UNCTAD tariffs index
Change in official supervision on banks	“Bank Regulation and Supervision” data set developed by Barth <i>et al.</i> (2008)
Bureaucratic independence	Professional bureaucracy (or professional public administration), developed by Dahlström <i>et al.</i> (2010)
Religion	The percentage of religions’ adherents in each country is measured depending on the UN “Ethno-culture characteristics,” CIA Factbook, the “Association of Religion Data Archives” (ARDA) and other sources
Ethnic fractionalization	Ethno-linguistic fractionalization index present in the quality of Government dataset
Colonial extractive institutions (heritage) Democracy Freedom of media Reliance on economic resources	Acemoglu <i>et al.</i> (2001) colonizers’ mortality rate indicator “Polity IV Project” using the combined “polity” score Freedom house index on freedom of press the “Ores and Metals Exports” and “Fuel Exports” (both as % of merchandise exports) indicators found in the quality of government data set depending on the World Bank Comtrade data set
Transition economies Human capital, technology level, growth rate of real exports, inequality, real interest rates and GDP per capita, and GDP growth rate	World Bank “Lost Decades Social Indicators” The World Bank WDI, where “Expected years of schooling” is used for Human Capital, “High-Technology exports (% of manufactured exports)” for technology level, “Gini coefficient” for inequality, and GDP growth rate is calculated from GDP per capita
Cronyism (social and political connections)	“Percentage of firms connected with a parliament member, minister, or a person with a close relationship with top politicians” in Faccio (2006)
Official representation in PPD (1), business association participation percentage (2), PPD proxy (1 × 2)	Sabry (2013) depending on websites of various PPD experiences and World Bank enterprise surveys

Notes: First, the OTRI index is used which provides data for the year 2009 on both overall trade restrictiveness (tariffs and NTB) and tariffs worldwide. NTBs is obtained by:

$$NTB_m = OTRI_m - Tariffs_m. \quad (3)$$

Where subscript *m* stands for manufactured goods.

From this, the ratio of NTB to tariffs (both on manufactured goods) is calculated for each country:

$$Ratio = NTB_m / Tariff_m. \quad (4)$$

Making the assumption that this ratio could be relevant for the years from 2000-2011, I use it and multiply it to the yearly detailed tariff data provided by UNCTAD, using only manufactured products tariffs data:

$$NTB_{mt} = Ratio \times Tariff_{mt}. \quad (5)$$

Table II.

The used sources By this NTB proxy is obtained for the years 2000-2011, which is used as protectionism proxy for these years

Imputation was used to account for the missing observations. Basically this was done by taking the average of the chronologically preceding and following values of a missing variable; or, whenever this was not possible, the missing values were estimated according to the trend of a number of chronologically preceding or following values. Autocorrelation was addressed by inserting, as independent variables, lagged values of the dependent variable. Whenever this did not work well, and the lagged value of the dependent variable had not solved autocorrelation, it was dropped. Finally, the general to specific method was used in the conducted regressions in order to exclude insignificant variables and sharpen results. *F*-test at the 1 percent of significance was used to ensure that the regressions have not significantly changed due to this exclusion. The results of the test are listed in Table VI.

4. Results

Using econometric modeling, two different regressions were conducted, the results of which are listed in Tables IV and V. Focussing only on interaction terms and statistical significance rather than economic significance[6], this paper reaches the findings discussed below (Table VI).

PPP on its own has no significant effect on investment growth. That is to say, there is no evidence to support that private investment in PPP by itself leads to successful infrastructural services that would induce more investment for the economy. On the other hand, some of the interactions of PPP with other institutions are significant and affect growth of investment. The interaction of PPP with the regulatory factor had a negative effect on investment growth. This is, however, hard to interpret given how the factor was constructed from various variables with debated effects on investment[7].

The other two interactions that have significant and positive effects were the interactions of PPP with regulatory quality and the constructed bureaucratic factor. This gives evidence that government (bureaucratic) effectiveness and independence of bureaucracy, both constituting the constructed bureaucratic factor, help in the success of PPP in infrastructure as reflected in attracting more investment to the whole economy. This is also true for regulatory quality. The results, thus, provide evidence that two important aspects of good governance, regulatory quality, and bureaucratic quality (and independence), help in obtaining better outcomes from private investment in PPP.

The insignificance of the interaction terms of PPP with cultural factors, political freedoms, reliance on resources, and rule of law suggest that the performance of PPP does not significantly rely on the presence of these variables which differ worldwide

Factors	Constituting variables
Regulation factor	Regulatory quality, rule of law, regulation of entry, credit facilitation, non-tariff barriers (and not "official supervision on banks" to avoid reducing observations)
Political freedoms factor	Democracy and freedom of media
Bureaucracy factor	"Government effectiveness" and bureaucratic independence
Reliance on economic resources	"Ores and metals exports" and "fuel exports"
Economic growth leading factor	Expected years of schooling (human capital), high-technology exports, and annual growth rate of exports (in goods and services)

Table III.
The constructed
factors

Dependent variable: investment growth rate	
Investment growth ($t - 1$)	0.099 (0.08)
PPP proxy	-
PPD proxy (High Gov. rep. \times Bus. Assoc. %)	-0.057 (0.019)***
Legal British	-0.793 (0.196)***
Protestant	1.38 (0.329)***
Ethnic fractionalization	0.198 (0.047)***
Economic growth leading factor	-0.0298 (0.012)**
GDP per capita	1.089e-005 (2.87e-006)***
GDP growth	0.559 (0.208)***
Real interest rate (%)	-0.002 (0.0009)*
Regulation factor (w/o off. Super. on banks) \times PPP	-25.88 (9.083)***
Bureaucracy factor \times PPP	56.1 (22.01)**
Constant	-0.022 (0.035)
σ	0.106
R^2	0.315
n	71
Parameters	12
Wald (joint)	$\chi^2(11) = 3.1e + 005(0)**$
Wald (dummy): $\chi^2(1)$	0.379 (0.538)
AR(1) test: $n(0,1)$	0.8 (0.423)
AR(2) test: $n(0,1)$	-2.568 (0.01)*

Table IV.
General investment
growth regressions

Notes: The regression is conducted using OLS. Variables which have no significant effect in this regression were deleted from the table using general to specific method as discussed. *, **, ***Significant at 10, 5 and 1 percent, respectively

Dependent variable: investment growth rate	
Investment level or growth ($t - 1$)	0.117 (0.065)*
PPP	-
PPD High Gov. rep. \times Bus. Ass. %	0.014 (0.022)
GDP growth	0.887 (0.245)***
Change in official supervision on banks	0.058 (0.065)
Regulation of entry	0.015 (0.007)**
Regulatory quality \times PPP	58.655 (27.87)**
Constant	0.0104 (0.017)
σ	0.093
R^2	0.202
n	122
Parameters	7
Wald (joint)	$\chi^2(6) = 125.3(0)**$
Wald (dummy): $\chi^2(1)$	0.3517 (0.55)
AR(1) test: $n(0,1)$	0.5276 (0.598)
AR(2) test: $n(0,1)$	-0.467 (0.64)

Table V.
All regulation
variables included
investment growth
regressions

Notes: The regression is conducted using OLS. Variables which have no significant effect in this regressions were deleted from the table using general to specific method as discussed. *, **, ***Significant at 10, 5 and 1 percent, respectively

from one country to the other. Neither does financial credit facilitation, which should help the SPV shareholder company in accessing financial resources easily, seem to lead to better PPP performance. What counts more for PPP success is rather government regulatory capacity and efficiency.

Good governance, institutions and performance of PPPs

5. Discussion and conclusion

PPP in infrastructure are expected to yield many benefits to society, one of which is gaining business confidence which should be translated into more private investment with all the consequent positive economic gains. Yet, the intensity of private investment in infrastructure in itself is not a guarantee for these positive gains. This paper shows that the presence of good governance institutions and especially bureaucratic quality and independence and regulatory quality are the key factors to the success of PPP.

This institutional and governance dimension should not be thought of as being in conflict with the perspective of new public management; rather it is a complementary one. Picking efficient private infrastructural service providers is also important, and institutions such as bureaucratic independence could guarantee allocation of infrastructural contracts to efficient private investors rather than to those who are socially or politically connected to officials. High bureaucratic and regulatory qualities would further equip the government to implement properly the role assigned to it by the new public management perspective, which is formulating public policies. Moreover, an efficient bureaucracy is a better network partner, if we regarded PPP from the network perspective. It is a better equipped partner more able to conduct more suitable strategies. Thus, this paper suggests that the dimension provided by the literature on institutions and governance is in harmony with both the new public management and networks with regard to explaining the success of PPP in infrastructure.

Finally, I would like to discuss the limitations of this research which are mainly empirical. The chosen proxy for PPP does not reflect all the peculiarities of various PPP projects in every individual country, not to mention among different countries. It has forgone the distinctiveness of each project for the sake of a meta-analytical framework. Furthermore, better results with great policy implications could have been obtained if better proxies were developed for a number of variables. Certainly this is the case for cronyism. Most of the data sets concerned with measuring corruption either deal with overall corruption or focus on bribery, rather than accounting to individual other forms of corruption such as nepotism, state capture, and most importantly cronyism. A better indicator for cronyism could have changed the results obtained in this study, showing it to be significantly affecting PPP performance given its effect on allocating PPP contracts based on concerns other than efficiency. Another variable which proxy should be further developed is that used for PPD. In Sabry (2013), I have tried to develop this proxy from scattered data on various PPD experiences worldwide written

Regressions	Degrees of freedom	F-test result
General regression	$F(32, 27)$	0.68
All regulations included regression	$F(32, 83)$	1.82

Note: Conducted at the 1 percent of significance

Table VI.
F-tests results for conducted general regressions after excluding variables using general to specific method

in different formats. I believe that more available data on PPD would help in developing a better proxy and can also lead to reaching further findings on the topic of this paper. In these cases, better data would prove to be crucial for providing better understanding and policy recommendations.

Notes

1. Hodge (2010) pointed to many problems facing the evaluation of various PPP experiences. Other than not having a “meta-analyses or statistical overviews” to summarize various PPP experiences, the evaluation for individual studies in long-term infrastructure contracts (LTIC) statistically lack strong evidence. There are also problems in estimating costs of the project in the majority of these studies.
2. Other mentioned examples were: public policy networks; institutional cooperation for joint production and risk sharing; civil society and community development, urban renewal, and downtown economic development.
3. Other possible forms include: “build own operate transfer” (BOOT); “design build finance operate” (DBFO); joint ventures between both sectors; operations or management contracts; cooperative (informal) arrangements between the public and private sectors; and other forms (see Hodge and Greve, 2009; Grimsey and Lewis, 2004).
4. This is attributed to the emphasis of British Law on protecting property rights. Other works, such as Beck *et al.* (2003), regard German legal system positively placing it together with British legal system as being more flexible in comparison to French civil law. Flexibility should be expected to lead to better economic outcomes.
5. Hierarchical cultures are argued to include Catholicism, Eastern Orthodoxy, and Islam, while an example for non-hierarchical religions is argued to be Protestantism.
6. I relied on statistical significance rather than economic significance because of the complexity of the used model. The general to specific method was necessary for increasing the degrees of freedom; yet, it has led to omitting many constituting variables for the interaction terms of interest, making economic inferences problematic.
7. In fact this factor was only constructed to account for and isolate the effect of regulations in the first regression, to allow for a more precise testing for the effect of the interaction of other variables with PPP on investment growth.

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