

# Political determinants of Public-Private Partnerships

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Vicepresidency for Countries

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## **Abstract\***

During the last three decades, Public Private Partnerships (PPPs) have emerged as a new contractual arrangement to provide infrastructure investment and services. Examining the evolution of PPPs contracts in emerging countries, this paper analyses the role played by political institutions and partisanship showing that: (i) PPPs are more used when governmental and legislative transaction costs increase; and (ii) political partisanship does not explain the use and consolidation of PPPs as a contractual arrangement. The paper also confirms the relevance of macroeconomic and institutional quality variability variables found in previous literature and sheds new light regarding the political economy of PPPs, especially on how political governance structures shape incentives for using PPPs as a contractual mechanism.

**JEL Codes:** H54

**Keywords:** infrastructure, institutional/political determinants of PPPs, investment, public-private Partnerships.

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## 1. Introduction

Over the last three decades, public-private partnerships (PPPs) have been regarded as an alternative source of providing infrastructure services for governments in need of closing the infrastructure gap. Given fiscal austerity, budget tightening and economic downturns, public investment in infrastructure has not been as robust as is desired. Besides, public investment infrastructure has also been highly inefficient. For example, in LAC one out of every two dollars spent in infrastructure is wasted (Suárez-Alemán, et al. 2019). In a recent study, the McKinsey Global Institute estimated that the world needs to invest an average of \$3.7 trillion in infrastructure by 2035, in order to support growing economies and maintain its projected gross domestic product (GDP) growth.<sup>2</sup> About two-thirds of this spending should be carried out in developing economies, particularly China, India, Brazil, Indonesia and Mexico, the latter three which have the biggest infrastructure gaps and where demand for infrastructure is salient. Governments in Latin America and the Caribbean (LAC), for example, have invested an average of 2.8% of GDP in infrastructure, significantly lower than the recommended 5%.<sup>3</sup>

Governments have increasingly relied on PPPs as a source of financing for infrastructural developments. Worldwide, the number of PPP projects among developing economies has increased practically ten-fold over the last two decades (Figure 1). In LAC in particular, the number of PPP projects has more than tripled in the last ten years, especially in the energy, transportation, and water and sewage sectors.<sup>4</sup> When looking at individual countries, such as Brazil, it is observed that while public investment in infrastructure remains low (about 1.5% of GDP in the 2008-2013 period), investment in infrastructure through PPPs has been a dominant force. From 2006 to 2015, for example, Brazil closed about 450 PPPs in infrastructure, the largest amount in the region. In Asia, PPPs have grown fourfold since 1990. Projects in Asia account for about half of all projects in developing economies, with most transactions concentrated in East and South Asia, 90% of which are specific to China and India.<sup>5</sup> Meanwhile, in Sub-Saharan Africa, PPPs remain a very small market, with four countries accounting for about half of the projects in

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<sup>2</sup> Woetzel, Garemo, Mischke, Kamra, and Palter (2017).

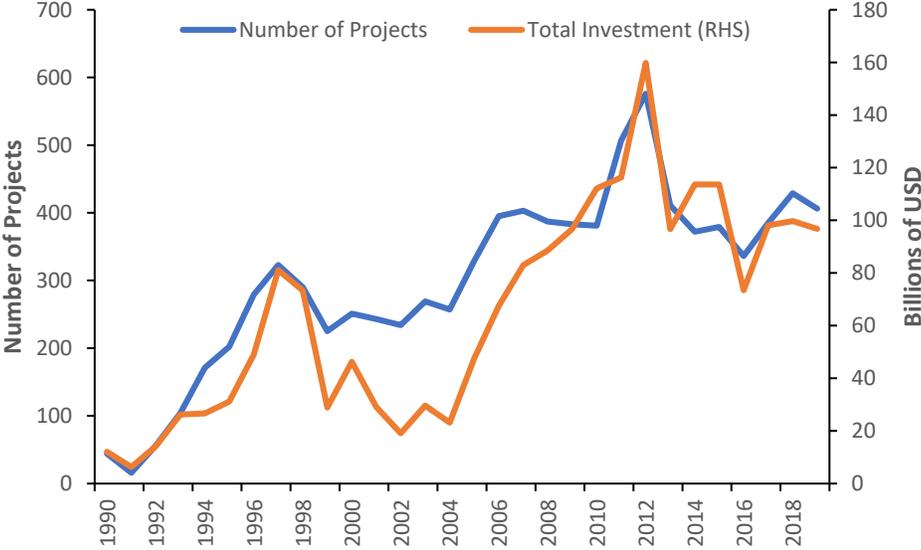
<sup>3</sup> Garcia-Kilroy and Rudolph (2017).

<sup>4</sup> Garcia-Kilroy and Rudolph (2017).

<sup>5</sup> Asian Development Bank (2017).

the region.<sup>6</sup> In the past 25 years, about 335 PPP projects have occurred in Sub-Saharan Africa and compared to other developing economies, multilateral institutions play a much larger role in financing PPPs in the region than elsewhere.

**Figure 1. Public Private Partnerships 1990-2019**



Source: Private Participation in Infrastructure Database. World Bank.

Fiscally constrained governments often view PPPs as an alternative to traditional public investment, as private participation in infrastructure allows them to mobilize and leverage private financing that was previously unattainable. By collaborating with the public sector, the private sector provides these governments with the ability to share risk and invest in infrastructural developments, thereby enhancing the local economy. While PPPs may seem like a panacea or silver-bullet in delivering development outcomes and infrastructure for long-term economic growth, there are some limitations to the process. First, the process involves various stakeholders, such that it can become difficult to coordinate their diverging interests. Secondly, a clear regulatory framework needs to be in place for PPPs to flow smoothly, and this can pose a challenge to developing economies venturing into PPPs for the first time. Finally, given the amount of capital

<sup>6</sup> South Africa, Nigeria, Kenya and Uganda account for 48% of total projects in the region, approximately 62% of total investment commitment. World Bank (2017).

involved in most PPP projects and the lengthy duration of the projects, there is a considerable amount of risk involved that the public and the private sector can be reluctant to mitigate. However, PPPs can also provide higher levels of efficiency in construction and service delivery through an incentive mechanism that leverage private sector knowledge and skills.

Given the significance of PPPs in the developing world as well as worldwide, scholars have started to research the underlying determinants of PPPs. As a combination of private and public interests, PPPs are subject to various constraints, be they economic, institutional and/or political. The private sector's participation can be enhanced or restricted by factors ranging from legislative limitations to the local investment climate and long-term expectations. In this manner, determinants of private investment in PPPs can be considered akin to those of foreign direct investment and fixed capital investment. However, there is the public component of these projects, and consequently, determinants of public spending also play a role in assessing the origins of PPPs. As such, it is expected that the determinants of PPPs, while sharing some characteristics with the determinants of public spending, fixed capital investment and foreign direct investment, will still be somewhat unique to the specificities of this type of long-term contract between the state and the private sector.

In this paper, we focus on the political determinants of PPPs. In the literature, most of the emphasis has been on institutional and economic variables, not necessarily political variables. While most studies have focused on institutional (Pargal (2003); Hammami et al. (2006)) and economic variables (Basilio (2011); Jensen and Blanc-Brude (2005); and Araya, Schwartz, and Andres (2013)) influencing investment in PPPs, to the best of our knowledge, at this time, there are no studies considering the role of partisanship and political fragmentation on PPPs. This is relevant because while PPPs are viewed as an alternative to traditional public procurement and spending for infrastructure, they do not occur in a political vacuum. Political institutions and party politics play a role in PPP policy making as they influence transaction costs and political parties' incentives.

On the one hand, there is the perception that more pro-market parties favor the implementation of PPP, but no empirical analysis has ever confirmed this perception. On the other

hand, legislative fragmentation could influence political transaction costs and, thus, the incentives of governments of using PPP. Typically, higher legislative fragmentation increases public spending to accommodate diverse preferences, and so it is expected that PPPs increase as well. In this paper we explore whether both political factors partisanship of the executive branch and legislative fragmentation affect private investment in PPPs. This paper is then organized as follows. First, we provide a literature review of the work that has been presently done concerning determinants of PPPs, showing how the literature has centered in underlying the economic, fiscal, and macro-institutional factors but not on political institutions. Second, we present the relevance of understanding the role played by political institutions and motivations to explain PPP adoption and consolidation. In so doing, we highlight the importance of understanding the role played by legislative transaction costs and partisan politics to provide a more nuanced framework of the forces at play when a country chooses to adopt a PPP framework. Third, we specify the statistical model and the data used to show the relevance of both variables. Finally, we present our conclusions and discuss possible venues for future research.

## **2. Literature Review: economic and institutional determinants of PPPs**

The role of institutional and economic variables on private investment in infrastructure has recently been gaining traction in the policy world. These studies build on the broader literature regarding the economic and institutional determinants of investment be it foreign direct investment, private investment, and/or public investment. With the increase in need for investment in infrastructure in the developing world, the empirical literature has begun to focus on the determinants of investment in this sector, utilizing cross-country specifications<sup>7</sup>. In particular, as PPPs gained relevance in infrastructure in recent years, a plethora of studies analyzed the main determinants of PPPs. This section briefly reviews this latter literature.

In the first place, the literature on the economic determinants of PPPs has focused on both the structural and economic policy determinants of PPPs. On the one hand, regarding structural economic determinants, PPPs occur more frequently in economies where aggregate demand and

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<sup>7</sup> Given the limited availability of data pertaining to PPPs (specifically those not related to infrastructure), most of the studies use the World Bank's Private Participation in Infrastructure (PPI) database, which is limited to developing economies. Inferences from econometric studies are then made using this database, extrapolating the conclusions to PPPs in general.

markets are large enough to allow for self-financing and quick and easier cost recovery. This finding is also confirmed by Basilio (2011), Jensen and Blanc-Brude (2005), and Araya, Schwartz, and Andres (2013), who show that market size, aggregate demand and purchasing power are critical determinants for PPPs. The relationship between the size of the market and private sector participation can be explained by the fact that the commercial risk of these projects is quite high, and so the private sector needs some risk mitigation found in the form of market size, for when services are provided to a large number of consumers paying market price, cost recovery is faster and the ability to pay for these services is greater. At the same time, market size could also proxy for infrastructure demand or private sector financing capacity, all potential predictors of PPP demand.

On the other hand, in connection to economic policies the literature highlights the importance of the macroeconomic stability and fiscal policy. Authors like Dalami and Klain (1997) and Araya et al. (2013) show the importance of stable macroeconomic conditions and especially of low inflation for investment in PPPs. Related to importance of a stable macroeconomic investment climate, Araya et al. (2013) also investigate the relationship between PPPs and overall country risk, as a country's sovereign risk rating encompasses institutional, financial, and economic characteristics. As expected, they show that a country's sovereign risk rating is statistically significant in affecting the probability of having private participation in infrastructure in developing economies. In fact, they show that this relationship is more sensitive than that between country risk and foreign direct investment. Specifically, the difference of one standard deviation in a country's sovereign risk score leads to a 27% increase in probability of having private sector participation in infrastructure. In the issue of fiscal policy, Hammami et al. (2006) show that PPPs are more common in countries with heavily indebted governments, since PPPs are viewed as alternatives to public spending. Consequently, governments are more willing to use the private sector when they do not have sufficient public financial resources. However, this effect seems to disappear once the overall institutional quality of the country is considered.

In the second place, the literature on the role played by institutions concludes that more effective rule of law, measured via the World Bank's governance indicators, is associated with more infrastructure projects via PPPs (Hammami et al. 2006 and Araya et al. 2014). Improving the

rule of law by one standard deviation increased private investment in infrastructure by 4.3%.<sup>8</sup> Taking a broader perspective, Ba et al. (2010) consider the overall quality of governance and how it impacts private investment in infrastructure. They find that, in the case of power sector, private investors consider the quality of governance—as well as the development of the financial sector—in their decision to commit resources. The role of institutional determinants in private sector participation in infrastructure is also studied by Jensen and Blanc-Brude (2005), who argue that the protection of property rights and the quality of the bureaucracy are the most important institutions behind private sector participation. Their study offers a more sector specific analysis, as it relies on 460 projects in water and sanitation in 60 developing countries, but the lessons learned that the private sector will be more likely to enter into long-term commitments with the public sector where governments are better at upholding contracts and protecting private property travel to other sectors.

Focusing on the regulatory framework, specifically in Latin America, Pargal (2003) finds that legislation liberalizing investment is a significant determinant of PPPs, whereas Kirkpatrick et al. (2006) find that the institutional framework is the most relevant. Pargal (2003) studies the very beginning of private sector investment in infrastructure, analyzing the 1980-1998 period. Her evidence suggests that the institutional framework for initiating investment might be more relevant than the macroeconomic investment climate itself. Kirkpatrick et al. (2006)'s research builds on this, analyzing the effect of regulatory institutional framework on the private sector's decision to commit resources to infrastructure.

While most studies seem to agree on the role of the main institutional determinants of investment, corruption (freedom from or control of) proved to be controversial. Hammami et al. (2006) and Araya et al. (2014) both find that lower corruption leads to greater private sector participation in investment in infrastructure, as low corruption provides for a stable institutional framework. In particular, Araya et al. found that decreasing corruption by 10 points increases PPP investment by almost 7%.<sup>9</sup> However, in a diverging conclusion, in their longitudinal analysis of 40 countries between 1990 and 2000, Banerjee et al. (2006) provide evidence that countries with

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<sup>8</sup> Araya et al. (2014).

<sup>9</sup> Ibid.

higher levels of corruption attract more private participation in infrastructure, although property rights and bureaucratic quality are relevant determinants of PPI. In their study, a one-unit increase in the corruption index results in 31% more infrastructure investment. Banerjee et al (2006) propose that this occurs because investors seeking high returns must risk investing in high-corruption places, which often have location-specific advantages.<sup>10</sup> This view is supported by Mengistu (2013), who finds that, for countries with inefficient governments, corruption is also positively associated with more private participation in infrastructure. Both papers argue that perhaps this is indicative of the fact that, while institutional quality is relevant, financial, and economic conditions may be more significant in investment decisions.

### **Political institutions and PPPs investment**

Even when no previous study has analyzed the relationship between political factors and PPP investment, several strands of the literature shed light on how political institutions and partisanship play a key role in policy making both at the institutional and the partisan level. First, at the political institutions level, as for example illustrated in the pioneer empirical work of Persson and Tabellini (2003), is clear that electoral systems, political regimes, and the form of government influence economic decisions in terms of public spending. Among the various factors influencing public spending and the size of the fiscal budget, one political element that has become salient in the literature is government fragmentation—also perceived as the effective number of parties. It is broadly accepted in the literature that governments with a larger number of parties in the legislature tend to experience greater government spending, as parties must bargain and negotiate to pass the budget. This stems from the conception that deficits and overspending are a result of pork barrel in a common-pool resource problem.<sup>11</sup>

Econometric studies done particularly with OECD countries show that coalition governments are associated with greater deficit spending than single-party governments, and the size and persistence of budget deficits is greatest when there is a multiparty coalition.<sup>12</sup> Bawn and

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<sup>10</sup> This might also be a result of the time frame used in the study. Looking at developing countries between the period 1990-2000 captures the instant in time when investment in infrastructure was just beginning to take off while corruption indexes had not yet been specifically targeted.

<sup>11</sup> Weingast et al. (1981); Velasco (1999).

<sup>12</sup> Roubini and Sachs (1989); Grili et al. (1991); Alesina et al. (1997).

Rosenbluth (2006) analyzed the fiscal behavior of 17 European countries during the 1970-1998 time period, and found that increasing the number of parties in the governing coalition resulted in an increase of government spending as a percentage of GDP. In fact, an additional party in the governing coalition corresponded practically to an additional half percentage point of GDP spent by the public sector. Their evidence shows that it is not about the overall number of parties in the legislature, but about the number of parties in government. This result also applies to cabinet size: Kontopoulos and Perotti (1999) captured a positive correlation between cabinet size and budget deficit, in addition to the evidence pertaining to government coalition.

While most of the research on this subject is limited to OECD countries, a couple scholars have attempted to assess whether the relationship between the size of the governing coalition and the fiscal budget holds true across the board. Elgie and McMenanim (2008), for example, add ten non-OECD countries to the commonly used group of OECD data to test whether the size of the deficit is indeed positively correlated with the size of the governing coalition. Their results were indicative that political fragmentation was not as salient a predictor of the size of the fiscal budget, but that it varied with the institutionalization of democracy. In other words, as democratic governance became stronger, legislative fragmentation became relevant. While this would suggest that the hypothesis does not necessarily travel to developing countries, Mukherjee (2003) shows that this is not necessarily the case. By examining cross-country and panel data evidence of 110 countries, he found that an increase in the number of represented parties lead to a higher central government expenditure, particularly with regards to subsidies and transfers.

Second, the role of partisan politics in economic or policy decisions has also been deeply studied. This is mainly based on the rationale that right-wing or more pro-market parties tend to create investment climates that are more market-friendly and subsequently rely more on the private sector for the provision of public goods. For example, building on Hibbs (1997) and Nordhaus (1975) political business cycle model, the political economy literature on investment took on a partisan approach. Most of this literature is based on the premise that right-wing parties are supported by capital-owners, whereas left-wing parties cater to labor. Within this framework, right-wing parties are more likely to create economic environments where inflation is low and private investment flourishes, whereas left-wing parties are more concerned about unemployment.

Theoretical models have been established where left-wing administrations favor large government and are more willing to tolerate budget deficits than right-wing parties.<sup>13,14</sup> Additionally, empirical studies have since supported the premise that left-wing regimes are more prone to social spending focusing on redistribution, thereby implying higher public investment (at the expense of private investment) in infrastructure, health and education.<sup>15</sup> Meanwhile, right wing parties are more inclined to reduce public spending, allocating resources to areas that favor economic development via private initiatives, such as investment in infrastructure, transportation, industrial and technological development. In his analysis of the factors contributing to privatization, Boix finds that strategies towards public businesses depended mostly on the partisan orientation of the cabinet.<sup>16</sup> Specifically, right-wing governments were more likely to approve privatization programs in the 1970s, while left-wing governments held on to the public business sector as a mechanism to support less advantaged workers. While Boix's sample is limited to industrialized, OECD nations, Murillo (2002) considers the impact of these factors on privatization in Latin America and provides evidence corroborating this hypothesis for public utility privatizations occurred in Argentina, Chile, and Mexico.

These two strands of the political economy are relevant to gain a deeper understanding on the determinants of PPPs. On the one hand, government fragmentation could influence transaction costs and hence PPPs policy making. Government fragmentation increases budgetary transactions costs due to the need to satisfy a higher number of government constituencies. As the price of on-budget fiscal measures increases, so does the attractiveness of an off-balance type of financing such as PPPs are in most of the countries. Hence, one should expect PPP investment increase with government fragmentation. On the other hand, similar to privatizations or other pro-market reforms policies, one should expect PPPs to emerge more often under pro-market political parties, even though this effect should disappear with time, as PPPs are adopted and consolidated within a country policy toolkit. The next section outlines the empirical strategy used to test both these hypotheses.

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<sup>13</sup> Alesina and Tabellini (1990).

<sup>14</sup> Alt and Dreyer Lassen (2005).

<sup>15</sup> Boix (1997).

<sup>16</sup> *ibid.*

### 3. Empirical Strategy: Model Specification and Data

We developed a simple statistical model to test the main hypothesis outlined above. At the same time, we introduce some control variables to validate some of the findings in the previous literature. As mentioned, regarding how PPPs are affected by political factors we study the role of partisanship and the government structure. On the one hand, we study if partisanship explains the use of PPPs and, in particular, if pro-market governments are more likely to use the private sector as an alternative mean for providing infrastructure, thereby creating the scenario where PPPs are more salient. On the other hand, following the political fragmentation and public spending literature, we study if weather higher government fragmentation influences PPP as a mechanism to provide infrastructure. In the latter sense, from a political point of view, PPPs are primarily an alternative to budget financing and, hence, fragmented governments will rely more on PPPs, since the price of using the budget increases due to the need to accommodate competing demands.

#### **Data**

The data used to assess the volume of PPPs comes from the World Bank's PPI database, which, for the purposes of this analysis, and following the convention in the literature, can be treated as equivalent to PPPs. The data includes detailed information by year and country, spanning 1990 - 2019 for 139 middle- and low-income countries. It encompasses more than 7,000 projects and reflects about US\$1,700 billion in investment. It is an unbalanced panel data, capturing both public and private contributions to infrastructure investments in projects which have come to financial closure that given year. Following the literature, PPI is measured in investment levels.<sup>17</sup>

In order to test whether or not political ideology has an impact on PPPs undertaken in any given year, we employ the Database of Political Institutions (DPI, 2020).<sup>18</sup> It offers a measure that accounts for partisan behavior, by coding the political party of the executive branch according to economic policy along a right-left spectrum.<sup>19</sup> Employing this coding, we design a binary variable

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<sup>17</sup> Araya et al. (2013); Araya et al. (2014).

<sup>18</sup> Cruz et al. (2016). Updated version of Beck et al. (2001).

<sup>19</sup> Governments are coded as Right (1) if defined as conservative, Christian democratic, or right-wing; coded as Left (2) if defined as communist, socialist, social democratic or left-wing; Center (3) if defined as centrist or when party

to test whether political ideology in the executive branch is a statistically significant determinant with regards to PPPs.

$$Left_{it} = \begin{cases} 1, & \text{if government is classified as left wing} \\ 0, & \text{if otherwise} \end{cases}$$

To capture political fragmentation in the legislature, we use the Herfindahl Government Index (Herfgov), also from the DPI. The Herfindahl Government Index is the squared sum of government seats. Intuitively, it calculates the effective number of parties. The greater the index, the smaller the political fragmentation in the legislature. In addition to the Herfindahl Government Index and the political ideology of the executive, we also use a checks and balances measure (Checks) from the DPI. Checks and balances is a categorical value that ranges from 1 to 18 depending on the levels of checks and balances in the country. The median country in our database has a checks and balance of 3, and given that this is a categorical variable, we construct a dummy where:

$$Checks_{it} = \begin{cases} 1, & \text{if government is classified with Checks} > 3 \\ 0, & \text{if otherwise} \end{cases}$$

If the DPI's checks and balances measure is high, we expect a larger volume of PPP's, considering that the executive branch would face higher transaction costs with other branches of power to reach an agreement on public investment projects. In contrast, if the Herfindahl Government Index is high, we expect a lower volume of PPP's, as governments face lower transaction costs with the legislature and would have a better likelihood of expanding investment through the budget.

For our control variables, we rely on the World Bank's World Development Indicators and Governance Indicators databases. We used the following variables: GDP, inflation rate, GDP growth, trade openness, budget deficit and regulatory quality as control variables. We expect to find that *GDP*, *GROWTH*, *TRADE* and *DEFICIT* have a positive, statistically significant effect on PPI, as PPI is more likely to occur in larger economies that are growing and are more open to

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position be best described as centrist; and (0) for all those cases which do not fit into the above mentioned categories.

investment. We expect to find a negative statistically significant relationship between *INFLATION* and PPI, as investments of any kind are likely to decrease in times of macroeconomic instability. Descriptive statistics for our dependent and independent variables are presented on Table 1.

**Table 1. Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
PPP Investment	2,252	770.7	3393.3	0.0	54461.6
PPP Infra	2,252	720.4	3208.2	0.0	53821.1
PPP Social	2,252	50.3	384.7	0.0	8481.4
GDP Billions (Constant 2010)	2,252	201.0	716.0	0.4	11500.0
Inflation	2,252	16.2	186.1	-11.7	7481.7
Growth	2,252	4.2	4.2	-33.1	34.5
Trade	2,252	4.2	4.2	-33.1	34.5
Herfindahl Government	2,252	74.3	34.2	0.2	311.4
Deficit	2,252	0.8	0.3	0.1	1.0
Left	2,252	-2.8	5.8	-183.5	40.3
Checks	2,252	0.3	0.5	0.0	1.0

### Model

We run the following ordinary least squares (OLS) regressions with country fixed effects ( $\mu_i$ ) to control for time invariant country-specific characteristics. To lessen concerns about potential endogeneity between PPPs and GDP, we assume that investments in PPPs are affected by the events of the previous year and, as such, lag the independent variables one year. Additionally, we run regressions for two periods: 1990-2019 and 2002-2019. We use these two periods considering that: i) 75% of PPP investment were made after 2001; and ii) our regulatory quality variable, which controls for the ability of the government to formulate and implement sound policies and regulations to promote the private sector, is only continuously available for this second period<sup>20</sup>.

$$\ln PPI_{it} = \beta_0 + \mu_i + \beta_1 HerfGov_{it} + \beta_2 Left_{it-1} + \beta_3 Checks_{it} + CONTROL_{it} + \varepsilon_{it} \quad (1)$$

We run regression on total PPI investments ( $\ln PPI_{it}$ ), but also on two other aggregations of PPI to see if our results are consistent between different types of investments. We use  $\ln PPI_{Traditional_{it}}$  for projects related to energy and transport. Additionally, we use

<sup>20</sup> Regulatory quality index is available from 1996 to 2019 but has gaps for the years 1997, 1999, and 2001. We therefore take the 2002-2019 to avoid missing values for these years.

$\ln PPI_{NonTraditional_{it}}$  for projects focused on ICT, water and sewerage, and municipal solid waste. We choose this division between traditional and nontraditional projects considering that: i) traditional PPI investments are the majority of our sample (e.g. electricity projects are roughly 50% of PPI investments); and ii) the nature of these projects and the way they are structured (e.g. tariffs, tolls, etc.) is different in nature and increases their likelihood of using PPPs vis-à-vis nontraditional sectors.

$$\ln\_PPI\_Traditional_{it} = \beta_0 + \mu_i + \beta_1 HerfGov_{it} + \beta_2 Left_{it-1} + \beta_3 Checks_{it} + CONTROL_{it} + \varepsilon_{it} \quad (2)$$

$$\ln\_PPI\_NonTraditional_{it} = \beta_0 + \mu_i + \beta_1 HerfGov_{it} + \beta_2 Left_{it-1} + \beta_3 Checks_{it} + CONTROL_{it} + \varepsilon_{it} \quad (3)$$

## Results

Table 2 reports our results for the estimation of equation (1)-(3) for the two periods of interest (1990-2019 and 2002-2019). Our initial findings corroborate that of the literature regarding the economic determinants of private investment in infrastructure, GDP, inflation, GDP growth, and trade were all statistically significant, with the expected relationships to PPPs. Countries with larger GDP experience greater investment in PPPs, as do economies that are growing at a faster rate. Meanwhile, countries with higher inflation experience less investment in PPPs. Our deficit variable was only significant at the 90% level, but is still positive, showing that governments with a high deficit are more likely to use PPPs. It is important to highlight that this macroeconomic control variables seem to be stronger for total PPI and traditional (energy and electricity) investments, rather than for nontraditional PPI. In Column 3, macroeconomic variables like inflation and growth do not show any relationship with Social PPPs.

In Columns 4-6 we can see our estimation for the period 2002-2019, while controlling for countries' regulatory quality. It is important to highlight that some of these macroeconomic variables, like inflation and trade, are not significant at the 95% level for our second period of interest (2002-2019). This could be explained by greater economic stability in developing countries during this period, because of better macroeconomic frameworks with policies such as inflation targeting, and fiscal rules being implemented. Moreover, our regulatory quality also shows a high significance level, which can explain why some of these macroeconomic variables are no longer significant.

**Table 2. Results**

	1990-2019 (1) Total PPI	1990-2019 (2) Infra PPI	1990-2019 (3) Social PPI	2002-2019 (4) Total PPI	2002-2019 (5) Infra PPI	2002-2019 (6) Social PPI
GDP (t-1)	0.847*** (0.148)	0.816*** (0.151)	0.538*** (0.0980)	0.751*** (0.240)	0.703*** (0.245)	0.692*** (0.127)
Inflation (t-1)	-0.884*** (0.162)	-0.828*** (0.161)	-0.0867 (0.0882)	-0.717* (0.369)	-0.543 (0.372)	-0.147 (0.144)
Growth (t-1)	0.198** (0.0922)	0.179* (0.0915)	0.0432 (0.0427)	0.238** (0.119)	0.242** (0.117)	0.00430 (0.0499)
Trade (t-1)	0.473** (0.221)	0.377* (0.227)	0.274** (0.126)	0.155 (0.284)	0.0444 (0.293)	0.204 (0.137)
Deficit	0.0102* (0.00596)	0.0116* (0.00628)	0.00342 (0.00308)	0.0107* (0.00609)	0.0107* (0.00616)	0.00671 (0.00428)
Herfindahl	-0.478** (0.244)	-0.525** (0.245)	0.175 (0.156)	-0.753** (0.350)	-0.839** (0.356)	0.294 (0.211)
Left Gov. (t-1)	-0.317* (0.170)	-0.330* (0.171)	0.0873 (0.0735)	-0.104 (0.218)	-0.116 (0.222)	0.178* (0.0969)
Checks	0.126 (0.185)	0.0869 (0.191)	0.0905 (0.143)	0.241 (0.223)	0.356 (0.240)	0.160 (0.187)
Regulatory Quality				0.868*** (0.309)	0.798** (0.312)	0.146 (0.148)
Observations	2,252	2,252	2,252	1,621	1,621	1,621
R-squared	0.549	0.533	0.486	0.576	0.555	0.556

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

With regards to our political variables, for the 1990-2019 period, we find that left-wing governments were less supportive of PPPs, but this variable is only significant at the 90% level. In fact, on average, having a left-wing government meant a 31%-33% decrease in total and traditional sectors via PPPs. Interestingly, this relationship is no longer statistically significant when considering only the 2002-2019 period. This could be a result of the changing behavior of traditional left-wing parties in the developing world, as well as an accommodation of the PPPs policy within a country public policy toolkit. The new left in the developing world, particularly in Latin America and China, is more market-friendly, creating an investment climate that appeals to domestic and foreign investors.<sup>21</sup> This shift in economic approach could have contributed to political ideology no longer being a salient determinant of investment in infrastructure in recent time periods.

<sup>21</sup> Castaneda and Morales (2008).

Government fragmentation also behaved in the expected way. The Herfindahl Government Index is statistically significant in both iterations of the model (1990-2019 and 2002-2019 time periods) and specially for total PPI investment and traditional investments. As the government becomes more concentrated, there is less investment in PPPs. As in the literature between fiscal institutions and government structure, in fragmented government there is a pressure to accommodate the interest of different constituencies and higher transaction costs that translate in higher spending needs. In the context of PPPs, in the same way as with fiscal spending, fragmented governments could also be using more PPPs to accommodate different constituencies and interests within the government. At the same time, PPPs could be an attractive source of finance, especially in fragmented governments already stressed by coalitional pressures. This is so because under these circumstances, governments could see in PPPs a useful instrument to expand infrastructure finance, since normally PPPs are registered as an off-budget item. So, this could also be indicative of the fact that more concentrated governments find it easier to use the public budget for investment in infrastructure, not having to rely on the private sector for infrastructure projects, thereby suggesting a certain substitution effect between PPPs and public spending. With the increase in the relevance of fiscal rules in recent years in most emerging countries, this situation could have been more common. Finally, our checks and balance measure has a positive relationship with PPPs as we had hypothesized, but the variable is not significant in any of our estimations.

### **Robustness checks**

As a robustness check, we run our baseline regressions (1)-(3) but controlling for public investment as a percentage of GDP. Intuitively, governments that have high public investment should have less interest in PPPs given that the marginal benefit of an additional project via PPPs is less than if the government faced lower levels of public investment. Table 3 shows results after controlling for public investment. Our results are consistent with our hypothesis and higher levels of public investment are associated with lower PPPs, which would reflect a substitutability between both types of investment. Moreover, our Herfindahl index variable is significant at the 99% level after controlling for public investment, showing that more fragmented governments, that face higher transaction costs with the legislature, rely less on PPPs.

It is important to underscore that we do not have data availability for public investment in all the countries used in our estimate in Table 1, and therefore results are not fully comparable. Results in table 2 cover 61 countries with data availability, while our baseline results include 110 countries. Additionally, we are aware that there could be reverse causality between public investment and PPPs, as private actors leverage public resources and available investments for their projects.

**Table 3. PPPs and Public Investment**

	1990-2019 (1)	1990-2019 (2)	1990-2019 (3)
	Total PPPI	PPPI Traditional	PPI Non Traditional
GDP (t-1)	1.137*** (0.223)	1.190*** (0.222)	0.506*** (0.151)
Inflation (t-1)	-0.735*** (0.221)	-0.698*** (0.223)	-0.0434 (0.121)
Growth (t-1)	0.135 (0.147)	0.0882 (0.145)	0.0592 (0.0702)
Trade (t-1)	0.529* (0.282)	0.335 (0.291)	0.519*** (0.181)
Deficit	0.00660 (0.00530)	0.00766 (0.00558)	0.00346 (0.00274)
Herfindahl	-1.504*** (0.393)	-1.631*** (0.390)	-0.0244 (0.258)
Left Gov. (t-1)	-0.415* (0.246)	-0.371 (0.247)	0.0198 (0.125)
Checks	0.170 (0.286)	0.138 (0.292)	0.00715 (0.244)
Public investment	-0.384** (0.192)	-0.423** (0.189)	0.104 (0.101)
Observations	1,239	1,239	1,239
R-squared	0.543	0.531	0.493

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

We are also aware of the potential multicollinearity problem of our Herfindahl index variable and Public investment, considering that political fragmentation can also be a determinant of public investment. To address this problem, we use the part of public investment that is not explained by the Herfindahl index measure, making use of the residuals of their partial correlation. Table 3 shows the results of our benchmark regressions after controlling for these residuals. Our Herfindahl measure remains significant at the 99% level, while public investment is negative but is only significant at the 90% level.

**Table 4. PPPs and Public Investment Residual**

	1990-2019	1990-2019	1990-2019
	Total PPPI	PPPI Traditional	PPI Non Traditional
	(1)	(2)	(3)
GDP (t-1)	1.111*** (0.221)	1.164*** (0.220)	0.500*** (0.150)
Inflation (t-1)	-0.707*** (0.224)	-0.668*** (0.227)	-0.0595 (0.121)
Growth (t-1)	0.129 (0.150)	0.0801 (0.149)	0.0592 (0.0726)
Trade (t-1)	0.483* (0.284)	0.281 (0.293)	0.521*** (0.181)
Deficit	0.00195 (0.00722)	0.00317 (0.00758)	0.00440 (0.00333)
Herfindahl	-1.481*** (0.381)	-1.593*** (0.378)	-0.104 (0.249)
Left Gov. (t-1)	-0.414* (0.250)	-0.371 (0.252)	0.0555 (0.119)
Checks	0.263 (0.534)	0.219 (0.547)	-1.308 (1.004)
Public investment	-0.0428* (0.0232)	-0.0432* (0.0230)	0.0106 (0.0122)
Observations	1,239	1,239	1,239
R-squared	0.542	0.530	0.496

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### 4. Conclusions

In this note we presented evidence on the impact of political factors on PPPs. On one hand, we highlighted the strong role played by government structure and the relative lack of importance of partisanship in explaining PPPs use these days. The relevance of government fragmentation for PPP financing points to the importance of governmental incentives when deciding on how to finance infrastructure. In this sense, one important policy conclusion is the one related to the institutional framework under which PPPs take place. This means, the set of rules and regulations that limit and constrict political incentives and professionalize the decision-making process under which PPPs take place. And especially the framework that establishes when an infrastructure should be structured through a PPP or a public procurement and how PPPs risks should be measured and managed.

On the other hand, we find no robust evidence that the demand for PPPs is fostered by more pro-market parties and less by left wing parties, so criticisms based on political ideology seem not to have an empirical base. While in the past, political partisanship could have played a role in the decision to invest via PPPs, it is not currently a determinant factor, as governments have recognized the subject as a global one, regardless of political inclinations. And PPPs seem a clear and accepted contractual mechanism, especially in the energy and transport sector where the PPP mechanism is more consolidated.

Next steps to further strengthen this study would be to develop case studies to corroborate this statistical evidence, and it would be also meaningful to further analyze the causal mechanism through which government fragmentation interacts with private and public participation in investment. It would be specially interesting to analyze a potential substitution effect between traditional investment procurement and PPP in the context of high transaction costs.

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