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Public-Private Partnership (PPP) Market  
Performance: A Fuzzy Set Qualitative  
Comparative Analysis (FSQCA)

Carter Casady; Stanford University, USA

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# **ASSESSING THE INSTITUTIONAL DRIVERS OF PUBLIC-PRIVATE PARTNERSHIP (PPP) MARKET PERFORMANCE: A FUZZY SET QUALITATIVE COMPARATIVE ANALYSIS (FSQCA)**

By Carter B. Casady<sup>1\*</sup>

## **ABSTRACT**

In recent years, a handful of studies have examined critical success factors (CSFs) that support the emergence and sustenance of PPP programs. However, few if any of these studies have examined whether different constellations of institutional factors create unique causal “paths” to mature PPP market performance. To answer this question, this study uses fuzzy set Qualitative Comparative Analysis (fsQCA) to examine the institutional settings of 55 different PPP markets across Latin American and the Caribbean (LAC), Europe, the Middle East, and Africa (EMEA), and the Asia-Pacific region (APAC). The results of this study show that certain institutional capabilities may be critical for PPP market maturity only when they are combined with one or more other causes.

## **KEYWORDS**

Public-private partnerships (PPPs); institutions; maturity; market performance; fuzzy set Qualitative Comparative Analysis (fsQCA)

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<sup>1</sup> Department of Civil and Environmental Engineering, Stanford University, USA, +1 (310) 592-8163, [cbcasady@stanford.edu](mailto:cbcasady@stanford.edu). \* Corresponding author

## INTRODUCTION

Globally, public-private partnerships (PPPs) have increased in popularity as an alternative procurement model for infrastructure projects. PPPs generally bundle various infrastructure project phases, including facility design, construction, financing, operations, and maintenance, into long-term contracts with private consortiums (Casady and Geddes 2016; World Bank 2017b). Seen as a key solution to the ~\$70 trillion global infrastructure gap, PPPs are widely touted for their ability to address some of the shortcomings in traditional infrastructure provision. However, their performance to date remains unclear and subject to extensive debate (see e.g. Teisman and Klijn 2002; Hodge and Greve 2007; Hodge and Greve 2010; Hodge and Greve 2017). The divergence of PPP policies, legislation, agency formation, and regulatory frameworks across Europe, North America, Asia, Latin America, and Africa has also complicated assessments of PPP efficacy (Van den Hurk et al. 2015). While some countries have eagerly embraced PPPs and developed extensive PPP programs, others have remained skeptical of the PPP approach (Verhoest et al. 2013). Some scholars have pointed to limited public sector capacity, lack of political will, and perceived legitimacy and trust issues between the public and private sector as reasons for past PPP failures (see, e.g. Mahalingam 2010; Delhi et al. 2010; Mahalingam et al. 2011; Jooste et al. 2011; Jooste and Scott 2012; Van den Hurk et al. 2015; Verhoest et al. 2015; Opara et al. 2017; Soecipto and Verhoest 2018). However, researchers have only recently started to stress the importance of institutional settings in PPP program success (Hodge, Greve, and Biygautane 2018; Casady, Eriksson, Levitt, and Scott 2018; Casady, Eriksson, Levitt, and Scott 2019).

While direct and indirect support from governments and Multilateral Development Banks (MDB) have played a significant role in bringing more PPP projects to market, growing empirical evidence suggests strong institutions and good governance impact programmatic results. In general, the sustained growth and mobilization of private investment in infrastructure through PPPs largely depends on key enabling institutional factors and regulatory conditions within a country. For example, Moszoro et al. (2014) show that private participation in infrastructure (PPI) investment is “highly sensitive to conditions such as freedom from corruption, rule of law, quality of regulations, and the number of disputes in a sector” (PPIAF 2016, 26-27). This sensitivity of PPP markets to broader institutional factors has forced many countries, particularly those within emerging markets and developing economies (EMDEs), to improve their regulatory and investment environments for PPPs. Although data remains limited on the subject, evidence from the Economist Intelligence Unit (EIU) Infrascope index (EIU 2017a, 2017b, 2018a) and World Bank benchmarking reports on PPP procurement (World Bank 2017a, 2018) suggest the readiness and capacity of countries to deliver sustainable, long-term PPP projects is associated with a successful PPP investment environment (PPIAF 2016). Other scholars exploring PPP performance (see, e.g. Pessoa 2010; Wankuan, Yongheng, and Youqiang 2010; Liu, Love, Davis, Smith, and Regan 2013; Chou and Pramudawardhani 2015; Muhammad and Johar 2017, etc.) have also shown that “a lack of institutional capacity, weak governance systems, and unclear or unsuitable rules and regulations . . . [make] PPI arrangements more ineffective in practice” (Pessoa 2010, 1). This is because “PPPs, due to their multifarious nature, require more rigour in establishing the explanatory factors and evaluating the extent of their

contribution . . . [to] the success of PPP projects” (Muhammad and Johar 2017: 9130).

In recent years, a handful of studies have examined critical success factors (CSFs) that support the emergence and sustenance of PPP programs (Zhang, 2005; Jooste et al. 2011; Jooste and Scott 2012; Matos-Castaño, Dewulf, and Mahalingam 2012; Matos-Castaño, Mahalingam, and Dewulf 2014; Chou & Pramudawardhani, 2015; Opara et al. 2017). For example, in their examination of the PPP institutional environment in the Netherlands and India, Matos-Castaño et al. (2014) conclude that trust, political legitimacy, and organizational capacity are critical for the emergence and stabilization of PPP programs. Chou and Pramudawardhani (2015) also show that adequate institutional capacity, transparent procuring processes, favorable governance/governmental success, and stable macroeconomic, political and social conditions drive PPP programmatic outcomes. Opara et al. (2017, 77) further suggest that “strong political leadership support for [PPPs], a favourable policy environment, and effective organizational capacity are pre-requisite factors for the successful implementation of [PPPs].”

However, few if any of these studies have examined whether different constellations of institutional factors create unique causal “paths” to mature PPP market performance (Berg-Schlosser, De Meur, Rihoux, and Ragin 2009). This study thus attempts to build on the cross-country findings and institutional representations of PPP markets from other extant studies by addressing the following research question:

- (1) What combinations of institutional factors lead to mature PPP market performance?

To address this research question, we begin by outlining our working definition of mature PPP market performance. Next, we use Casady et al.’s (2019) conceptual model of PPP institutional maturity to describe a theoretic set of institutional conditions associated with mature PPP markets. Then, we outline our analytical approach and case selection. Finally, we discuss our results and their implications for future research on PPP market performance.

### **DEFINING MATURE PPP MARKET PERFORMANCE**

While PPPs have grown in popularity globally, Hodge and Greve (2017) point out that PPP project and programmatic performance remains contested. Questions about the efficacy of PPPs persist because “[t]here is a need to better understand the potential causal factors behind why they may be capable of producing better performance compared with traditional arrangements” (Hodge and Greve 2017, 56). However, what constitutes “better performance” has yet to be clearly articulated. Given the inconclusive international results of Value-for-Money (VfM) to date, Hodge and Greve (2017, 70) further posit that governments emphasize “the political and governance strengths of [PPPs] over the promised traditional utilitarian project benefits” such as efficiency, risk-transfer, and life cycle costing. This conceptualization acknowledges the inherently political nature of PPPs and may explain why governments worldwide continue to embrace them as a “successful” infrastructure project delivery tool.

Much like PPP “success” and “good” governance, PPP program “maturity” is also an attractive language game (McConnell 2010). Although many facilitating factors such as “market potential, institutional guarantees, government credibility, financial accessibility . . . consolidated management, and corruption control” (Yang, Hou, and Wang 2013, 301) have been associated with PPP market maturation in the past, definitions of PPP market maturity remain elusive because only a select number of studies have tangentially examined the impact of institutional settings on PPP programmatic performance (see, e.g. Jooste et al., 2011; Scott, Levitt, and Orr 2011; Matos-Castaño et al. 2012; Matos-Castaño et al. 2014; Opara et al. 2017; Casady et al. 2019). While none of these studies have offered a uniform meaning of “mature” PPP market performance to date, they do exhibit common thematic elements which support a succinct, working definition. For example, Casady et al. (2019, 8) describe PPP institutional maturity as:

the development of legitimacy, trust, and capacity in the PPP process overtime via the structuration of organizational fields (DiMaggio and Powell 1983; Scott and Meyer 1994) whereby ‘organizations ... [combine] in varying constellations of field configurations’ (Jooste and Scott 2012, 151).

Likewise, Matos-Castaño et al. (2014) indicate institutional capabilities enable PPP markets to “emerge” and “stabilize” towards maturity while Opara et al. (2017, 77) state that institutional environments significantly influence “program permanence/continuity.” Naturally, this common emphasis on PPP programmatic development, stability, and permanency across studies allows us, for the purposes of this research, to define our outcome of mature PPP market performance as:

**O1:** The sustained and stable mobilization of private investment in infrastructure through PPPs.

### **PPP INSTITUTIONAL MATURITY: A CONCEPTUAL MODEL**

With a working definition of mature PPP market performance now in place, we now turn to describing a theoretic set of institutional conditions associated with mature PPP markets. To do so, we look to Casady et al.’s (2019) conceptual model of PPP institutional maturity. In this model, PPP institutional maturity consists of three critical components—*legitimacy*, *trust*, and *capacity*. Legitimacy represents the “generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions” (Suchman 1995). Trust is defined as “a disposition and attitude concerning the willingness to rely upon the actions of or be vulnerable towards another party, under circumstances of contractual and social obligations, with the potential for collaboration” (Edkins and Smyth 2006), while capacity generally refers to “the ability of actors [i.e. governments] to structure and govern PPP projects” (Matos-Castaño et al. 2014). Within this framework, we have identified six institutional conditions from the extant literature. There are:

**C1:** *Conducive regulatory environments* – The extent to which relevant regulatory frameworks incentivize PPP utilization, reduce barriers to PPP execution, or both.

**C2:** *Bid/contractual transparency* – The degree of publicness surrounding PPP procurement, bid documents, and contractual changes.

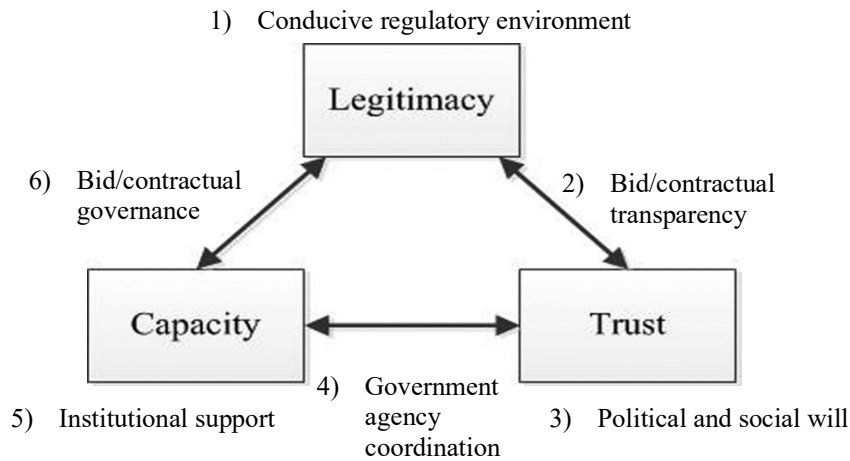
**C3:** *Political and social will* – The extent to which the government and the public both support PPP project delivery.

**C4:** *Government agency coordination* – The degree to which PPPs are nationally prioritized and coordinated amongst various agencies.

**C5:** *Institutional support* – The extent of institutional agency support for PPP procurement

**C6:** *Bid/contractual governance* – The degree to which government has implemented governance mechanisms for managing PPP projects.

These conditions were chosen to delineate the critical institutional capabilities of mature PPP market performance, as well as their interactions (see Figure 1).



**Figure 1:** Causal Institutional Conditions

Taken together, these institutional capabilities and their underlying conditions offer a succinct conceptual framework for examining mature PPP market performance—i.e. the sustained and stable mobilization of private investment in infrastructure through PPPs.

### **ANALYTICAL APPROACH AND CASE SELECTION**

To explore whether different constellations of institutional factors create unique causal “paths” to mature PPP market performance, we next use fuzzy set Qualitative Comparative Analysis (fsQCA) to examine the institutional settings of 55 different PPP markets across Latin American and the Caribbean (LAC), Europe, the Middle East, and Africa (EMEA), and the Asia-Pacific region (APAC).

### **METHODOLOGY**

FsQCA was selected for this study because it is an analytical technique which is well-suited for identifying combinations of causal conditions observed in macro social phenomena. This approach also combines the inferential power from “large n” data sets with in-depth case knowledge. As a set-based analytical methodology, fsQCA does not estimate the average effect of independent variables on a dependent variable,

an approach typically employed by “large n” statistical analysis. Rather, fsQCA involves the scoring of causal and outcome conditions for each case based on “the extent of its membership in a set of cases sharing a particular characteristic” (Boudet, Jayasundera, and Davis 2011, 501). A range of continuous values from 0 to 1 is used to score both the causal conditions and outcome measures. Cases with a score of 0 are considered to be “fully out” of a set of cases with a given characteristic while cases with a score of 1 are considered to be “fully in” the set (Ragin 2008). Using a combination of comparative-case analysis methods and Boolean algebra, this scoring method eliminates irrelevant variation from consideration and isolates key causal combinations, or “recipes,” which produce the observed outcome. Boudet, Jayasundera, and Davis 2011, 501).

In short, this methodology, developed over the past 30 years by Charles Ragin, “compares evidence from real cases with all theoretically possible causal combinations that could produce the outcome” (Boudet, Jayasundera, and Davis 2011, 501). Its consideration of how causes combine along different pathways to reach similar outcomes also makes this comparative-case analytic method a powerful tool for generalizing findings from a relatively limited number of cases (Ragin 2000; Ragin 2008; Ragin 2014). In the case of mature PPP market performance, its advantageous to explore maturity as the result of “recipes” that combine different institutional factors. FsQCA further acknowledges that certain institutional capabilities may be critical for PPP market maturity only when they are combined with one or more other causes. This makes fsQCA uniquely suited for research on mature PPP market performance because achieving PPP market maturity “is path-dependent and is a function of a variety of context-specific variables[,]” meaning “[t]here is no one-size-fits-all institutional framework that is universally applicable for the pursuit of PPPs” (Matos-Castaño et al. 2014, 48).

### **CASE SELECTION**

Although many of the concepts underpinning this analysis are typically difficult to operationalize, we operationalize the aforementioned causal and outcome conditions using a unique data set. In this research, data on each PPP market was derived from the Economist Intelligence Unit’s (EIU) Infrascopes index (EIU 2017a, 2017b, 2018a). This index was created to serve as a “benchmarking tool that evaluates the capacity of countries to implement sustainable and efficient public-private partnerships (PPPs) in key infrastructure sectors, principally transport, electricity, water and solid waste management” (EIU 2018b). The index covers 55 countries across Latin American and the Caribbean (LAC), Europe, the Middle East, and Africa (EMEA), and the Asia-Pacific region (APAC).

This index is well-suited for fsQCA because it offers rich data on PPP institutional support structures and programmatic outcomes. The data specifically includes information on:

- (1) Enabling laws and regulations
- (2) The institutional framework
- (3) Operational maturity
- (4) Investment and business climate
- (5) Financing facilities for infrastructure projects

Additionally, the countries under examination serve as an ideal target population for an fsQCA study of PPP market performance because they exhibit a sufficient amount of heterogeneity within the outcome to offer a meaningful analysis. Moreover, the larger set of cases used in this study may enhance the validity of the findings and allow for middle range theory building.

For each construct, subsets of indicators were selected and aggregated to produce a normalized score from 0-100 (see Table 1). Mature performing countries achieve a score of 80 and above. Developed countries score between 60 and 79. Emerging markets score between 30 and 59 while nascent PPP markets score under 30.

<p><b>1) Conducive Regulatory Environment (100%)</b>          Codification of PPP procurement practices (33%)          a) Existence of manuals or policies for PPP procurement          b) Procedures for appeals in regulations          c) Selection criteria outlined in regulations          d) Options analysis and value for money assessment required          Contingent liabilities (33%)          a) Regulations on contingent liabilities          b) Measurement of contingent liabilities          Political effectiveness (33%)</p>	<p><b>4) Institutional Support (100%)</b>          Existence of a PPP dedicated agency (17%)          Dedicated PPP agency adequately staffed (17%)          PPP dedicated agency stability (17%)          a) Reporting lines of PPP dedicated agency          b) Independence of PPP dedicated agency          c) PPP procurement process coordination guidelines          Project development fund (17%)          Existence of a public PPP registry (17%)          National PPP monitoring and reporting (17%)          a) Reports on PPP projects          b) Reports on PPP project phases          c) Agency for evaluation of PPP project results</p>
<p><b>2) Bid/Contractual Transparency (100%)</b>          Publication of contracts/contract changes (33%)          a) Publication of contracts required          b) Publication of changes in contracts required          Consultation (33%)          a) Consultation required for PPPs          b) Consultation for unsolicited proposals          c) Publication of consultation findings          Renegotiations (33%)          a) Transparent renegotiation system          b) Transparency: renegotiations disclosed by law          c) Independent oversight of renegotiations</p>	<p><b>5) Bid/Contractual Governance (100%)</b>          Unsolicited proposals (33%)          a) Policies and procedures for unsolicited proposals          b) Ratio of unsolicited proposals          Renegotiations procedures (33%)          a) Termination in project agreement          b) Compensation mechanisms for renegotiations          Contract termination (33%)          a) Appeals in case of contract termination          b) Expedited contract transfer for project exit          c) Fair compensation for early termination          d) Termination procedure in PPP contract</p>
<p><b>3) Political and Social Will (100%)</b>          Political will for PPPs (50%)          a) High-level political support for PPPs          b) Bipartisan or multi-party support for PPPs          Attitudes towards PPPs: opposition to PPPs (50%)  <b>4) Government Agency Coordination (100%)</b>          National infrastructure plan (50%)          a) Existence of a national infrastructure plan          b) PPP prioritization in national infrastructure plan          Inter-agency coordination (50%)          a) Existence of coordination mechanisms</p>	<p><b>Outcome: Maturity (100%)</b>          Experience with PPP contracts (50%)          a) Number of PPP projects in the past 5 years          b) Total PPP investment (% of GDP)          c) Distress level – cancellations in the past 5 years          Expropriation/Government Payment Risk (50%)          a) Project expropriations in the past 10 years          b) Unilaterally enforced price revisions</p>



b) Guidance for interaction amongst agencies	c) Government payments: PPP contract defaults
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**Table 1:** Causal and Outcome Condition Indicators

These indicators were selected from the Infrascopie Index and grouped by condition based on the authors' substantive knowledge of the PPP field. For example, the condition of political and social will consists of two underlying metrics: (1) Political will for PPPs (measured by high level support and bipartisan support) and (2) attitudes toward PPPs (measured by opposition). These indicators were averaged together to produce an overall score of PPP political and social will in each country. A similar process was conducted for the other conditions as well.

### EXPECTED FINDINGS AND IMPLICATIONS

Although the data analysis is not yet complete, the ultimate results of this analysis are expected to show that countries achieve mature PPP market performance through different combinations of institutional factors.

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