

ASSESSING PUBLIC-PRIVATE PARTNERSHIP (PPP) GOVERNANCE,
INSTITUTIONALIZATION, AND MARKET MATURITY IN THE UNITED
STATES AND ABROAD

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DOCTOR OF PHILOSOPHY

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ABSTRACT

Infrastructure public-private partnerships (PPPs) represent long term contractual arrangements between public agencies and private partners that increase private participation and risk sharing in various stages of the project lifecycle, including facility design, construction, financing, operations, and maintenance. Globally, PPPs have increased in popularity as an alternative procurement model for infrastructure projects, but their efficacy and performance remain subject to extensive debate. In recent years, scholars have begun to stress the importance of institutional settings in PPP outcomes as well as identify critical success factors (CSFs) that support the emergence and sustenance of PPP programs. This research builds on the nascent work of these scholars by exploring the political, economic, social, and legal factors affecting PPP governance, institutionalization, and market development, both in the United States and abroad.

The first portion of this research begins by examining infrastructure PPPs within the increasingly fragmented and uncertain public management paradigm known as New Public Governance (NPG). Drawing on literature across public administration, organizational theory, public policy, and project management, this work (re)defines PPPs within the NPG paradigm and develops a PPP institutional maturity model based on three institutional capabilities—*legitimacy*, *trust*, and *capacity*. The U.S. PPP market is then used as a case example to explore how the maturity of PPPs in an institutional setting depends on legitimacy, trust, and capacity in the PPP model.

The second portion of this research then explores PPP institutionalization, a process which is overlooked in much of the extant literature. To address this gap, a combination of Johnson et al.'s (2006) four phases of institutionalization—*innovation*, *local validation*, *diffusion*, and *general validation*—and Mrak's (2014) three models of PPP institutionalization—*centralized*, *decentralized*, and *mixed*—are utilized to examine the current state of the U.S. PPP market. Using data on 368 U.S. PPP projects from Inframation's global transactions database, the case analysis indicates America's PPP institutionalization process is strongly decentralized and currently in a state of diffusion. The analysis also suggests general validation of PPPs in the U.S. will likely be predicated on shifting to a mixed PPP institutionalization model.

Finally, the last portion of this research takes an international perspective and examines whether different constellations of institutional factors create unique causal "paths" to mature PPP market performance. Using fuzzy set Qualitative Comparative Analysis (fsQCA) to examine the institutional settings of 48 different PPP markets

across Latin American and the Caribbean (LAC), Europe, the Middle East, and Africa (EMEA), and the Asia-Pacific region (APAC), this research indicates that certain institutional conditions are critical for PPP market maturity when combined with one or more other causes.

Overall, this research makes a variety of theoretical and practical contributions to PPP governance. First and foremost, this work offers a succinct theoretical framework for assessing PPP institutional maturity. It also represents the first systematic examination of the PPP institutionalization process. Moreover, this research operationalizes its theory and offers academics, policymakers, and industry practitioners a critical lens for assessing PPP market maturity across localized, institutional settings. Moving forward, this research will be valuable for highlighting PPP market signals and isolating recommendations for institutional reform.

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CHAPTER 1 – INTRODUCTION

Today, the provision, renovation, and maintenance of physical infrastructure remains one of the most pressing challenges governments face around the world. Public infrastructure investments in bridges, roads, seaports, railways, airports, public transit, water and wastewater treatment facilities, and renewable energy facilities as well as schools, hospitals, prisons, and courthouses are needed on an immense scale. Global predictions from the McKinsey Global Institute (2013) and OECD (2015) estimate that between US\$57 trillion and US\$71 trillion in infrastructure investment is needed in key sectors such power generation, transmission and distribution, telecommunications, water and transportation by 2030 in order to address deferred maintenance, population growth, modernization, and keep pace with global economic growth.¹ In the past, governments would rely on traditional infrastructure delivery to meet these investment gaps. However, “democratic societies are systematically prone to spend far too *little* on normal civic infrastructure” because “[they] repeatedly under-imagine their benefits in the long run, and over-emphasize their hassles and costs” (Fallows 2015). Misaligned incentives across the project lifecycle (Levitt et al. 1980; Henisz et al. 2012) and divergent investment priorities (Benyon, Kim, and Levitt 2017) have also left many governments searching for alternative infrastructure delivery models.

As a result, the public sector is increasingly executing infrastructure services via collaborative models, characterized by public and private sector cooperation. Commonly referred to as infrastructure public-private partnerships (PPPs), this delivery model generally describes long term contractual arrangements between public agencies and private partners that increase private participation and risk sharing in various project lifecycle stages, such as facility design, construction, financing, operations, and maintenance (Casady and Geddes 2016; World Bank 2017b). In these arrangements, the public sector awards a long-term contract to a private actor in the form of a concession. The government acts as the owner while the private partner manages the design and construction of the facility, acts as the service provider, and often also arranges private financing. When PPPs are appropriately planned, executed, and managed, they stand to offer a wide range of potential benefits, such as better on-time and within-budget delivery, design innovation, novel forms of financing, efficient risk

¹ The International Energy Agency (2013) estimates global expenditures for transportation, reconditioning, upgrading costs, new construction, and annual operations and maintenance will reach approximately \$120 trillion by 2050.

allocation, life cycle costing, and other project synergies (Casady and Geddes 2016). The promise of such benefits has led to an explosion in PPP investments (see Figure 1).

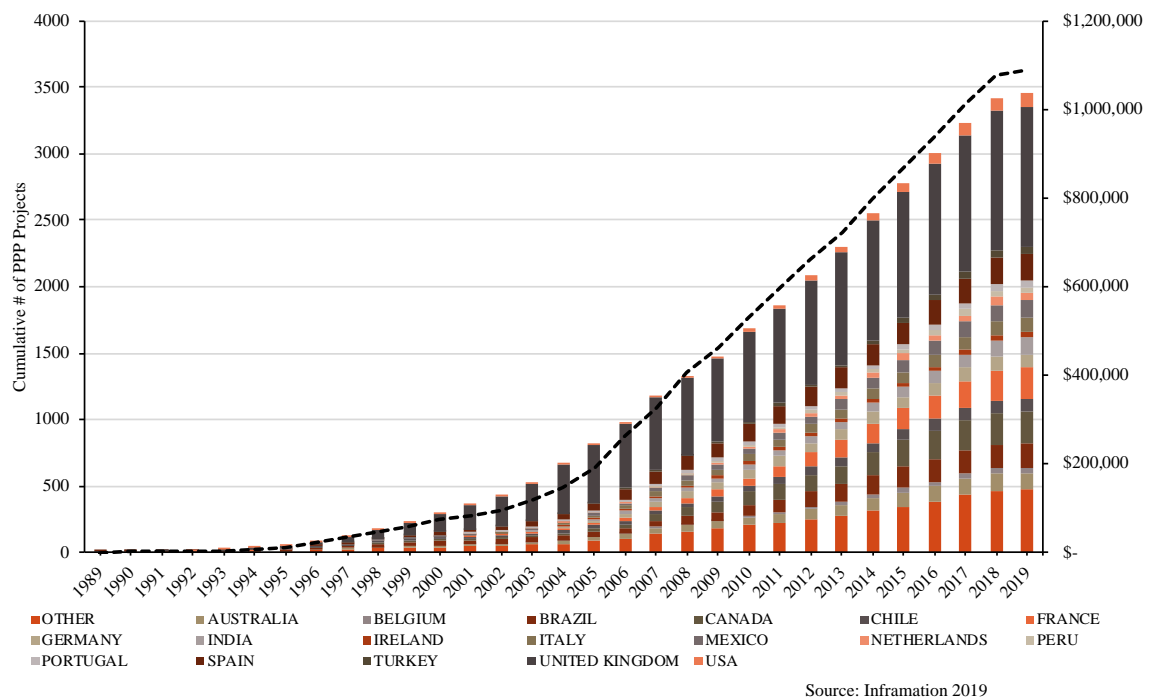


Figure 1: Cumulative PPP Project and Investment Totals (1989 – 2019)

PPP INSTITUTIONAL CHALLENGES

However, as more and more fiscally-constrained governments pursue PPPs to reap the socioeconomic gains of infrastructure development, public agencies must also deepen their understanding of the various engineering, economic, political, sociological, and policy tools available to them (Bovaird 2007; Hodge et al. 2010; Girth 2017). This is true because the increased blending of public and private domains makes crafting hybrid governance systems no simple matter (Ansell and Gash 2008). The different institutional goals, norms, and expectations within each sector make partnership especially challenging (Bryson, Crosby, and Stone 2006). For example, PPPs in the past have been associated with losses of long-term, governmental flexibility (Ross and Yan 2015), high transaction costs and long tendering periods (KPMG 2010; Reeves, Palcic, Flannery, and Geddes 2017), government budgetary problems (Hellowell and Vecchi 2015), and inadequate value for money (VfM) (HM Treasury 2012; Burger and Hawkesworth 2011).

Naturally, these institutional challenges have led to mixed government experience with PPPs (Milmo, Inman, and Durrani 2009). Because there is also no one-size-fits-

all institutional framework for the pursuit of these arrangements (Matos-Castano, Mahalingam, and Dewulf 2014), PPP policies, legislation, and agency formation also tend to diverge regionally, nationally, and at the sub-national level (Van den Hurk et al. 2015). This divergence makes institutional, political, and government support structures especially important for PPP governance, institutionalization, and market maturation (Van den Hurk et al. 2015; Verhoest et al. 2015; Soeipto and Verhoest 2018). For example, a handful of scholars have attributed past PPP failures to:

- 1) Limited capacity;
- 2) Lack of political will;
- 3) Perceived legitimacy and trust issues; and
- 4) The absence of a conducive institutional environments (see, e.g. World Bank 2007; Mahalingam 2010; Jooste and Scott 2012)

In the increasingly fragmented and uncertain public management paradigm of New Public Governance (NPG), these factors remain important for the ongoing reformation of PPP-enabling capacity and warrant greater scrutiny (Jooste et al. 2011). This dissertation provides this additional examination and bridges the gap between the domains of public policy, public administration, organizational theory, and project management through its exploration of the political, economic, social, and legal factors affecting PPP governance, institutionalization, and market development.

RESEARCH QUESTIONS

In the stand-alone chapters to follow, this dissertation explores government responses to the PPP phenomena through three different analytical lenses: 1) theory building, 2) exploration, and 3) comparative analysis.

Theory Building

In chapter 2, this dissertation begins by articulating the need for a unifying theoretical framework of PPP institutional maturity. Using a theory building, multi-method approach based on extant literature and a case analysis of the U.S. PPP market, this chapter explores the following research questions:

- 1) How does institutional maturity (re)define PPPs within the New Public Governance (NPG) paradigm?

- 2) In what ways does institutional maturity affect the use of PPPs as a NPG tool?

Exploration

Chapter 3 then explores the U.S. PPP market in more detail. Although the United States has historically embraced private sector involvement in the provision of other government services (see e.g. Moulton and Anheier 2002; Kinder 2012), the U.S. remains notable as one advanced economy where PPP institutional capacity is relatively underdeveloped (Mahalingam 2010). Because no detailed study of PPP institutionalization in the United States currently exists,² this chapter attempts to document the institutionalization of PPPs in the United States for the first time. In doing so, this chapter answers the following research questions:

- 1) At what stage in the institutionalization process is the U.S. PPP market?
- 2) What model of PPP institutionalization is the US experiencing?

Comparative Analysis

Next, chapter 4 expands the focus of the dissertation and explores international PPP market performance. Using the theoretical framework developed in chapter 2, this section begins to explore the following research question:

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

Comparative Analysis

Using fuzzy set Qualitative Comparative Analysis (fsQCA), this chapter analyses 48 PPP markets across Latin America American and the Caribbean (LAC), Europe, the Middle East, and Africa (EMEA), and the Asia-Pacific region (APAC). By exploring different causal pathways to mature PPP market performance, this chapter attempts to validate the theory building process outlined in chapter 1 and lay the groundwork for future assessments of PPP market maturity across different institutional settings.

² While Buckberg, Mudge, and Sheffield (2018) do not examine PPP institutionalization explicitly, they do provide a detailed overview of recent trends in the U.S. PPP market.

Finally, chapter 5 concludes this dissertation by summarizing the contributions of this work and outlines areas for future research of PPP governance, institutionalization, and market development.

CHAPTER 2 – (RE)DEFINING PUBLIC-PRIVATE PARTNERSHIPS (PPPS) IN THE NEW PUBLIC GOVERNANCE (NPG) PARADIGM: AN INSTITUTIONAL MATURITY PERSPECTIVE³

Infrastructure projects are complex, politically contentious, and difficult to execute. Representing some of the largest financial commitments governments make, these projects are fraught with economic uncertainty, public versus private distributional issues, and environmental considerations. Across the project lifecycle, the distinct phases of infrastructure projects—from planning, design, and construction through operations and maintenance—create high degrees of ‘broken agency’⁴ between diverse and dynamic stakeholder networks. In traditionally procured projects, this ‘broken agency’ has incentivized infrastructure planners to systematically overestimate project benefits and underestimate costs (Flyvbjerg 2002), engineers to indemnify themselves from potential future liabilities through overly-conservative designs (Levitt et al. 1980), contractors to build cheaply by barely meeting specifications while exploiting ambiguities in design specifications through contractual change orders (Henisz et al. 2012), and governments to favor building new infrastructure assets or other non-infrastructure priorities over investments in the maintenance of existing assets (Bennon, Kim, and Levitt 2017). Additionally, because infrastructure exhibits unique, asset-specific characteristics, high barriers to entry, and limited competition (Williamson 1985; Vining, Boardman, and Poschmann 2005; Boardman and Vining 2012), projects naturally become magnets for corruption in institutional settings where the effectiveness and transparency of governance are weak or failing. These conditions, in total, persistently threaten infrastructure contracting, give rise to both hold-up problems and opportunism (Obermann 2007; Spiller 2011), and create complex organizational, political, and normative governance issues (Scott, Levitt, and Orr 2011).

To address these infrastructure governance concerns, governments have increasingly turned to public-private partnerships (PPPs) to help deliver infrastructure projects. While the definition of public-private partnerships is inherently broad, PPPs

³ This chapter has already been published in *Public Management Review* (<https://www.tandfonline.com/doi/full/10.1080/14719037.2019.1577909>).

⁴ Broken agency involves parties at one phase of the project making decisions in their own interest that impose undue costs on counterparties in subsequent phases of project delivery.

used in infrastructure project delivery generally refer to long term contractual arrangements between public agencies and private partners that increase private participation and risk sharing in various stages of the project lifecycle, including facility design, construction, financing, operations, and maintenance. When appropriately planned, executed, and enforced, PPPs can offer a wide range of potential benefits, such better on-time and within-budget delivery, design innovation, access to novel forms of capital, efficient risk allocation, life cycle costing, and off-balance-sheet financings⁵ (OECD 2012; Casady and Geddes 2016).

For many, ‘[s]uch partnerships may be seen as new forms of governance, which fit in with the imminent network society’ (Teisman and Klijn 2002, 197). Although the PPP label has been around since the early 1960s (Bovaird 2010), ‘modern’ infrastructure PPPs were conceived in the New Public Management (NPM) era of the 1990s as a way to improve the internal management of government infrastructure provision (see, e.g. Osborne 1993; Kaul 1997; Lane 2000). Since then, infrastructure PPPs have begun to break with the NPM agenda (Greve and Hodge 2010; Conteh 2010). In the post-NPM era, PPPs are increasingly seen as part of a larger paradigm which enables ‘governments to engage with a number of private agents in often complex and contractually sophisticated relationships’ (Greve and Hodge 2010, 150). This theoretical paradigm is known as New Public Governance (NPG). NPG captures the increasingly fragmented and uncertain nature of public management in the 21st century and ‘[recognizes] the legitimacy and interrelatedness of both the policy making and the implementation/service delivery processes’ (Osborne 2006, 384). In this paradigm, PPPs may be viewed as a tool of NPG which provides infrastructure services through a dense network of state–business linkages. While many forms of direct infrastructure provision still offer public agencies the ability to ‘[internalize] transactions, [minimize] legalisms involved in complex contractual negotiations with external actors, and [provide] a more stable framework for bargaining,’ PPPs present governments with an opportunity to break the public-sector monopoly, inject competition and flexibility into provision of infrastructure assets, extend the public sector’s access to technical,

⁵ PPPs actually impact the intertemporal government budget in much the same way as traditional provision. While the PPP can save the government the initial capital expenditures and investment outlays, the government must relinquish either future user fee revenue (if the PPP project is financed with user fees) or future spending (if the PPP is financed with payments from the government budget) (Geddes 2011).

financial, and physical resources, and improve service quality, all while operating in increasingly uncertain policy environments (Salamon 2002, 31).

However, this broadened view of PPPs within NPG ‘remain[s] transfixed by the PPP ideal’ (Hodge, Greve, and Biygautane 2018, 1109), and some scholars question whether PPPs are more of a language game rather than a governance scheme (see e.g. Teisman and Klijn 2002; Hodge and Greve 2007; Hodge and Greve 2010). In reality, PPPs are not a panacea for the shortcomings of traditional infrastructure provision. Delivering public benefit through PPPs is actually very challenging and complex (Guasch, Laffont, and Straub 2008). This is because ‘the idea of partnership [within PPPs] is often introduced without much reflection on the need to reorganize policy-making processes and to adjust existing institutional structures’ (Teisman and Klijn 2002, 197). According to Greve and Hodge (2010, 156):

PPP presents challenges to the traditional forms of public administration in terms of the complexity of the deals and the number of actors involved; the government’s capacity to steer; the choice between governance forms; possible strategic behavior by the private-sector organizations; and the duration of contracts which makes evaluation difficult.

While some governments have adjusted their governance arrangements in order to pursue large PPP programs, others still lack the institutional arrangements necessary for PPP utilization (Hodge, Greve, and Biygautane 2018). As a result, public sector experience with infrastructure PPPs has been mixed. In a variety of international jurisdictions, ‘there have been multiple, highly publicized cases of public opposition to private provision of infrastructure and large numbers of contract renegotiations and cancellations’ (Jooste and Scott 2012, 150). A growing body of literature has attributed these failures to limited public sector capacity, lack of political will, perceived legitimacy and trust issues between the public and private sector, and the absence of a conducive institutional environment for PPPs (see, e.g. Mahalingam 2010; Delhi et al. 2010; Jooste et al. 2011; Jooste and Scott 2012; Van den Hurk et al. 2015; Verhoest et al. 2015; Opara et al. 2017; Soeipto and Verhoest 2018). However, little work to date has attempted to connect the conceptual foundations of PPP institutional maturity—i.e. *legitimacy*, *trust*, and *capacity*—with the broader theoretical paradigm of New Public Governance (Greve and Hodge 2010).

In order to enrich the extant literature on PPP institutional, political, governmental support, our paper explores the overarching relationship between PPP institutional capabilities and NPG using an institutional maturity perspective. This perspective serves as a succinct theoretical lens for the study of PPP market development. In the following section, we begin by describing the specific research questions we attempt to answer using this institutional maturity perspective. Next, we outline our research design and investigation methodology. Then, we operationalize Mahalingam et al.'s (2011) institutional framework of *legitimacy*, *trust*, and *capacity* to (re)define PPPs within the NPG paradigm. We subsequently examine the importance of these institutional capabilities as supporting elements of institutional maturity by exploring the maturity of the U.S. PPP market. Finally, we conclude by discussing how our analysis of the U.S. PPP market contributes to the development of NPG and institutional theory.

NEW PUBLIC GOVERNANCE: A PUBLIC SECTOR PARADIGM SHIFT

The role of public sector institutions has evolved over time from 'one of doing to one of arranging' (Salamon 2002, 8). In the post-New Public Management (NPM) era, public sector reforms have broadly changed traditional functions of government to allow for enhanced private sector involvement in the delivery of public services (Hood 1991; Rhodes 1996; Kaul 1997; Peters and Pierre 1998; Salamon 2002; Jooste and Scott 2012; Van den Hurk et al. 2015). Over the years, public sector agencies have 'reinvented, downsized, privatized, devolved, decentralized, deregulated, delayed, subjected to performance tests, and contracted out' to assuage growing public concerns about government competency, program costs, and institutional effectiveness (Salamon 2002, 1). These changes in the scale and scope of public sector agencies have created new indirect forms of governing known as 'third-party government' or 'government by proxy' (Salamon 2002; Kettl 2013).

The rise of third-party government in the 21st century has made public sector institutions more reliant on intricate, interdependent relationships with third party actors to address public policy problems (Hodge and Greve 2007; Kettl 2013). These increasingly complex, networked environments have created a new, post-NPM paradigm known as New Public Governance (NPG). NPG is grounded in organizational sociology and network theory and accounts for the increasing fragmentation and uncertainty involved in public management (Haveri 2006). In NPG, the asymmetric

power relationships found in principal-agent theory (Zeckhauser and Pratt 1985) as well as dynamic, interdependent stakeholder settings found in network theory (Kickert, Klijn, and Koppenjan 1997) help define the government's role in organizing and maintaining third-party networks, enabling private partners to solve public issues, and upholding collectively held objectives in complex policy environments. In recent years, NPG has become 'the dominant regime of public policy implementation and services delivery, with a premium being placed upon the development of sustainable public policies and public services and the governance of inter-organizational relationships' (Osborne 2010, 414).

THE ROLE OF PUBLIC-PRIVATE PARTNERSHIPS IN NEW PUBLIC GOVERNANCE

While NPG appears to be a novel conceptual approach, sharing public authority with networks of private entities is not 'new' (Wettenhall 2005). According to Kettl (1993, 4):

Every major policy initiative launched by the [U.S.] federal government since World War II—including Medicare and Medicaid, environmental cleanup and restoration, antipoverty programs and job training, interstate highways and sewage treatment plants and even security in post-conflict zones—has been managed through public-private partnerships.

In an increasingly globalized economy, governments are continuing to shift the provision and management of public services to private actors using public-private partnerships (PPPs). Without the requisite knowledge, capacity, or management capabilities needed to operate in certain daunting policy environments, public agencies are using the expertise and managerial proficiency of private firms to carry out certain administrative responsibilities. As a result, PPPs have seen increasing use across a wide range of public and private collaborative endeavours (Bovaird 2004; Hodge and Greve 2007).

Although PPPs still do not have a uniform meaning or core underlying concept (Marsilio, Cappellaro, and Cuccurullo 2011), Hodge and Greve (2007, 2010) indicate PPPs may encompass five different families of governance arrangements (see Figure 2).

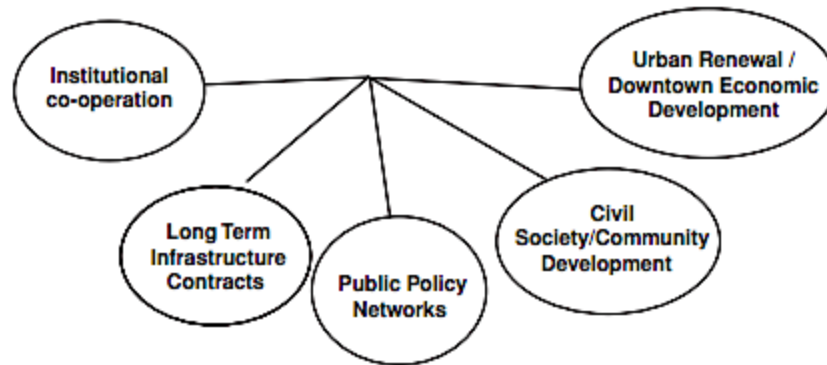


Figure 2: Five Families of PPPs as Governance Arrangements

Among these five different families, long-term infrastructure PPP contracts emerged from the U.K.'s Private Finance Initiative (PFI) during the 1990s as a popular policy mechanism for governments to engage private firms in the delivery and management of infrastructure services (Boardman, Greve, and Hodge 2015). Globally, these infrastructure PPP contracts serve as alternative procurement arrangements designed to incorporate private-sector expertise, resources, and risk management proficiency into various stages of the infrastructure project lifecycle (Casady and Geddes 2016). Figure 3 illustrates the general spectrum of infrastructure PPP contractual models.

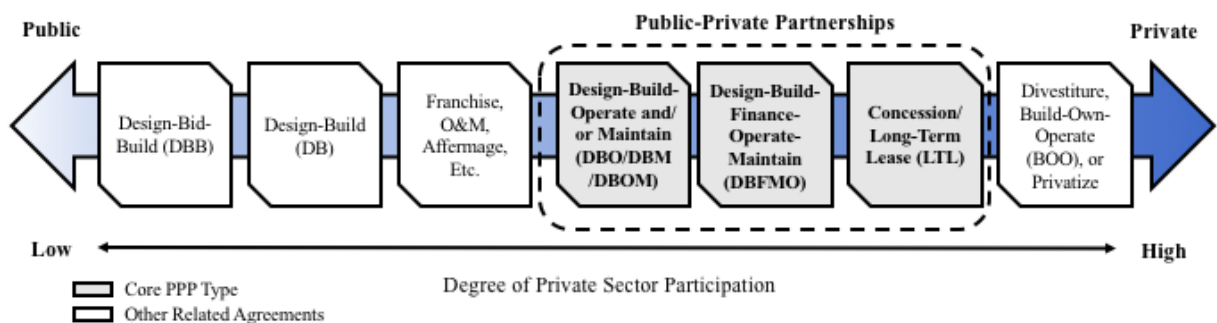


Figure 3: General Spectrum of PPP Model Types

Enhanced private sector involvement and cooperation in the decision-making and provision of infrastructure involves bundling of project lifecycle phases and reallocation of risks from public to private actors. The two distinctive features of

PPPs—taxpayer/private partner risk sharing and project phase bundling—allow public agencies to construct innovative procurement arrangements for building and managing infrastructure facilities based on trade-offs in contractual incentives, project flexibility, and institutional (Martimort and Pouyet 2008; Iossa and Martimort 2015; Girth 2017). At their core, PPPs can create social value through life-cycle costing and appropriate risk allocation to parties which are best positioned to managed complex, infrastructure-delivery-related risks (Hodge, Greve and Boardman 2010; Casady and Geddes 2016).

However, PPPs can also create new governance challenges. Dutz et al. (2006, 1) note that:

[The] shift from traditional public sector methods [to NPG] places new demands on government agencies. They need the capacity to design projects with a package of risks and incentives that makes them attractive to the private sector. They need to be able to assess the cost to taxpayers, often harder than for traditional projects because of the long-term and often uncertain nature of government commitments. They need contract management skills to oversee these arrangements over the life of the contract. And they need advocacy and outreach skills to build consensus on the role of PPPs and to develop a broad program across different sectors and levels of government.

Confronted with these NPG obstacles, governments around the world have responded to the PPP phenomenon in very different ways (Petersen 2011). While some countries have been skeptical of the purported benefits infrastructure PPPs have to offer, others have enthusiastically embraced PPPs and developed extensive PPP programs (Verhoest et al. 2013). The resulting divergence of PPP policies, legislation, agency formation, and legal precedents across Europe, North America, Asia, Latin America, and Africa has produced wildly diverse PPP institutional settings (Van den Hurk et al. 2015). Even within leading PPP jurisdictions, such as Canada, Australia and the United Kingdom, sub-national PPP approaches differ and no uniform PPP models exist (Siemiatycki 2013). These developments indicate that ‘institutional change . . . 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-Castano, Mahalingam, and Dewulf 2014, 48).

Recent research examining the development of conducive and/or constraining PPP environments have sought to understand these trends. Particular emphasis in the extant

literature has focused on examining how institutional, political, and governmental support structures affect the development of PPP-enabling fields (Delhi et al. 2010; Jooste et al. 2011; Van den Hurk et al. 2015; Verhoest et al. 2015; Soecipto and Verhoest 2018). This is important because the development of ‘PPP-enabling capacity has not been answered by a reformation of public agents alone—rather a network of new enabling organizations (public, private and non-profit) has emerged. These organizations, in varying ways, attempt to support the development and continued operation of PPPs for the benefit of public, private and civic actors’ (Jooste et al. 2011, 12). While these research endeavours have deepened our scientific understanding of how institutional settings affect PPP program success, the extant literature, in many ways, lacks a clear conceptual framework of the overarching relationship between New Public Governance and PPP institutional maturity. Therefore, the aim of this paper is to articulate a model for PPP institutional maturity which builds on the extant literature and addresses the following research questions:

- (1) How does institutional maturity (re)define PPPs within the New Public Governance (NPG) paradigm?
- (2) In what ways does institutional maturity affect the utilization of PPPs as a NPG tool?

RESEARCH DESIGN: MODEL DEVELOPMENT AND CASE ANALYSIS

To answer these research questions, we use a two-step research design. We first develop a model of PPP institutional maturity based on a neo-institutional framework proposed by Mahalingam et al. (2011). Then, we apply this model to the U.S. infrastructure PPP market and explore its theoretical implications. The research design follows the recommended process of a theory-building, case-based approach (Eisenhardt and Graebner 2007).

Since we are developing an existing framework through theory building, our two-step research design naturally aligns with the positivist public administration research methods tradition (Whetsell and Shields 2015). Moreover, our application and development of existing theory through observation, analysis, and explanation of a case offers ‘a richness of understanding’ which ‘compensate[s] for weaknesses in traditional [research] approaches’ (Perry 2012, 480).

MODEL DEVELOPMENT: BUILDING A PPP INSTITUTIONAL MATURITY FRAMEWORK

The development of our PPP institutional maturity model is based on Mahalingam et al.'s (2011) neo-institutional framework. This conceptual framework was chosen to describe how institutional maturity (re)defines PPPs within the New Public Governance paradigm because of 'its simplicity in representing elements of the [PPP] institutional environment' (Matos-Castano et al. 2014, 52). In this framework (see Figure 4), *legitimacy*, *trust*, and *capacity* are delineated as the broad institutional capabilities supporting government utilization of PPPs.

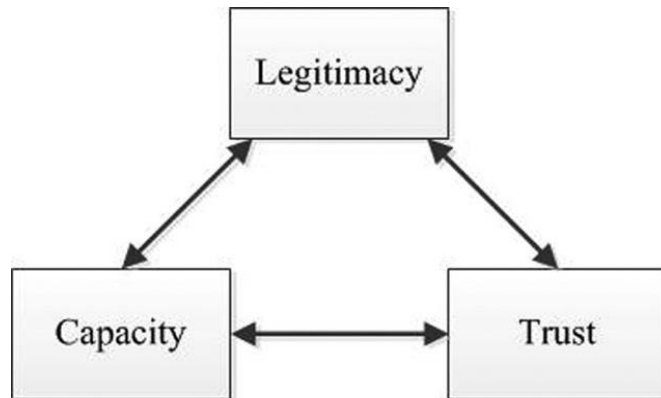


Figure 4: Mahalingam et al.'s (2011) Institutional Capabilities

According to Suchman (1995, 574), legitimacy in this context is defined as 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.' Trust, on the other hand, represents '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, 84), while capacity generally refers to 'the ability of actors [i.e. governments] to structure and govern PPP projects' (Matos-Castano et al. 2014, 53)

Interactions amongst these institutional capabilities are important and well documented. For example, past research has linked governance capacity with legitimacy (Van Gossum et al. 2010), found clear relationships between legal accountability or legitimacy and trust (Fard and Rostamy 2007), and concluded 'that governance and capacity are intimately connected and that innovative, simultaneous blending of public management and civic capacities is needed to build trust and govern effectively under new and challenging conditions' (Hall 2002, 23). Taken together,

these institutional capabilities provided us with a succinct conceptual framework to understand the governance of PPPs within the NPG paradigm.

DEFINING THE ELEMENTS OF PPP INSTITUTIONAL MATURITY

While there are a variety of facilitating factors associated with PPP market maturation such as ‘market potential, institutional guarantees, government credibility, financial accessibility . . . consolidated management, and corruption control’ (Yang, Hou, and Wang 2013, 301), we draw on institutional theory to define 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). In New Public Governance, the maturity of these institutional capabilities are particularly important because successful execution, management, and enforcement of PPP contracts depends on a government’s capacity to properly align incentives, orchestrate and maintain a trustworthy stakeholder network across the project lifecycle, and legitimize its PPP procedures (Salamon 2002; South, Levitt, and Dewulf 2015)

Legitimacy

Governments need to take a leading role in promoting PPP legitimacy. Legitimization is critical to PPP success within the NPG paradigm because PPP projects supplant traditional infrastructure services provided by governments with those offered by private operators. These projects also typically involve large financial commitments from private firms seeking long-term returns on their investments. Forrer et. al. (2007) suggest governments bolster the legitimacy of their PPP programs by evaluating projects along six dimensions—risk, costs and benefits, political and social impacts, expertise, collaboration, and performance measurement. Using this approach, governments can track mutual influence, participation rights, and transparency within PPPs, assess ‘the net gains to the public offered by [PPPs]’ versus more traditional, government-procured infrastructure services, and create an overarching alignment of public and private interests (Forrer et. al. 2007, 482).

Governments also legitimize their PPP models by creating standardized PPP procurement procedures (Brinkerhoff and Brinkerhoff 2011), ensuring community involvement in and acceptance of PPPs, providing conducive political environments (Flinders 2005), and building supportive legal frameworks (Tvarnø 2006). The

development of PPP legal frameworks is particularly important because these laws create ‘a general sense . . . that a given policy decision has been formulated in acceptable ways, through justifiable procedures’ (see e.g. Hult and Walcott 1990, 63-67). Because codification of PPP legislation enhances the perceived legitimacy of PPP procurement structures and processes, our case analysis uses the proliferation of these legal frameworks as a primary indicator of growing PPP legitimacy.

Trust

The development of formal relationship standards and procedures within government regulatory frameworks also fosters trust in PPPs. These formal rules of engagement promote trust in these long-term, relational contracting networks between the public and private sector by enhancing the efficacy, efficiency, transparency, and predictability of these relationships. For example, the advent of PPP procurement ‘fairness auditors’ in some PPP contexts has enhanced both the legitimacy and reliability of project award procedures. These fairness auditors observe PPP procurement and ensure compliance with required rules and procedures. In doing so, they promote transparency and equity in the PPP process while reining in expropriation and hold-up problems (Shukla, Zaidi, and Innes 2015). Overall, recent evidence suggests that trust and management are significantly correlated with perceived PPP project performance (Warsen et al. 2018).

Additionally, in both a plural and pluralist sense, PPPs are specifically designed to engage multiple interdependent actors in the delivery of infrastructure assets through inter-organizational relationships, trust or relational contracts, and processes which stress service effectiveness and outcomes (Osborne 2006, 2010). Because PPPs reflect a certain willingness on the part of the government to contractually rely upon the actions of third-party actors to deliver infrastructure services, growing government support and utilization of PPPs often signals a certain level of trust in PPPs as a viable form of project delivery. We use this intuition in our case analysis as a proxy for measuring the level of trust in PPPs across the United States.

Capacity

Finally, as more and more private firms gain interest in delivering infrastructure as a service concession, rather than an asset, to generate stable, long-term, inflation-adjusted returns on their investments, governments will need to increase their capacity to operate in these networked environments and develop proper safeguards within their PPP governance frameworks to ensure ‘public services are not compromised for the sake of

private profits’ (Forrer et al. 2007, 477). Within the increasingly fragmented and uncertain nature of NPG, government relationships with the private sector in PPP transactions cannot be self-administering; ‘they require, rather, aggressive management by a strong, competent government’ (Kettl 2011, 6).

Public agencies build capacity to effectively steward PPP projects through documented experience, training, and the creation of institutional mechanisms (Matos-Castano et al. 2014). For example, the establishment of PPP units is a common method for ensuring sufficient governmental capacity. These quasi-governmental agencies have “a lasting mandate to manage multiple PPP transactions, often in multiple sectors” and “[ensure] that PPPs meet specific quality criteria such as affordability, value-for-money (VfM), and appropriate risk transfer” (World Bank 2007, 2). In this mandate, PPP units generally maintain responsibility for project scoping, business case development, market sounding, bid evaluation, and contract enforcement, among other tasks (Istrate and Puentes 2011; Casady and Geddes 2016). By providing PPP policy guidance, programmatic support, project-delivery approval, and quality control (EPEC 2014), these organizations promote reliable and replicable procurement practices, assist public sector agencies in developing robust project pipelines, and enhance the market visibility and transparency of PPP projects, both to investors and the general public (Martin, Lawther, Hodge, and Greve 2015, Casady and Geddes 2016). Naturally, the utilization of these PPP-enabling organizations serves as a critical focal point of our assessment of PPP institutional capacity in the US.

A PPP Institutional Maturity Model

Overall, legitimacy, trust, and capacity play a critical role in PPP success. Within the broad theoretical paradigm of NPG, we view these institutional capabilities as three critical components of PPP institutional maturity (see Figure 5).

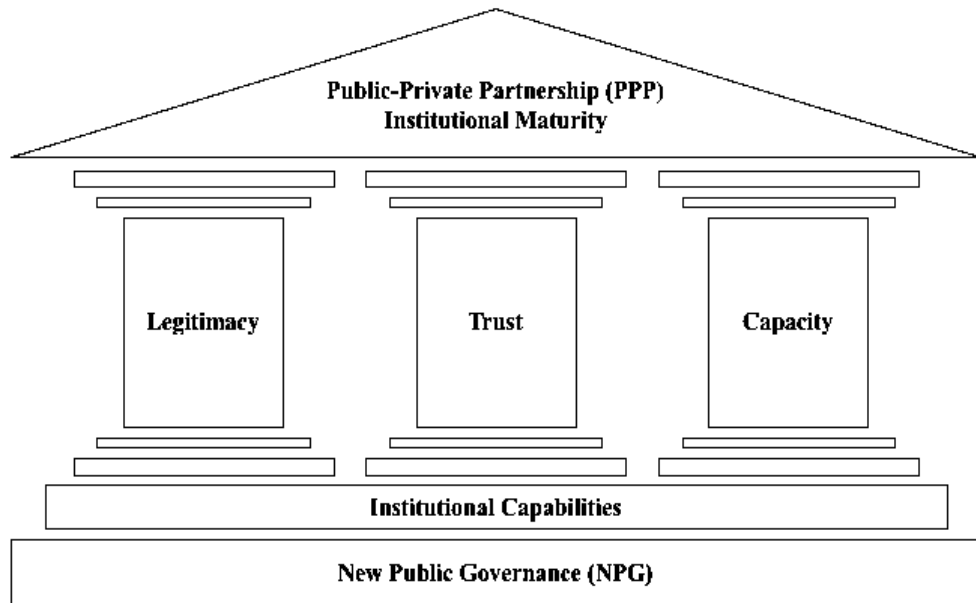


Figure 5: Components of PPP Institutional Maturity

Through this model, we offer a ‘transformative’ perspective of PPPs within NPG, one which ‘[combines] a number of theoretical perspectives accounting for how environmental pressures, polity features and historical institutional context shape the process and outcome of public policy’ (Conteh 2010, 751). Taken together, these institutional capabilities provide us with a conceptual framework to (1) describe how institutional maturity (re)defines PPPs within the NPG paradigm, and (2) theorize on the effects institutional maturity has on PPP utilization as a NPG tool. In the next section, we examine the institutional maturity of the US PPP market to show how these institutional elements play a critical role in the ability of government agencies to make effective public use of private interest.

CASE ANALYSIS: LEGITIMACY, TRUST, AND CAPACITY IN THE US PPP MARKET

CASE SELECTION: THE U.S. PPP MARKET

In order to explore how institutional maturity affects the use of PPPs, we apply our PPP institutional maturity model to the U.S. infrastructure PPP market. The selection of the U.S. PPP market case was guided by theoretical sampling logic (Glaser and Strauss 1967) and based on two principal factors. First, the U.S. has historically seen closer private sector involvement in the provision of government services (see e.g. Moulton and Anheier 2002; Martin 2005; Kinder 2012). Second, although the U.S. has the potential to develop into the world’s largest PPP market, its current PPP market remains

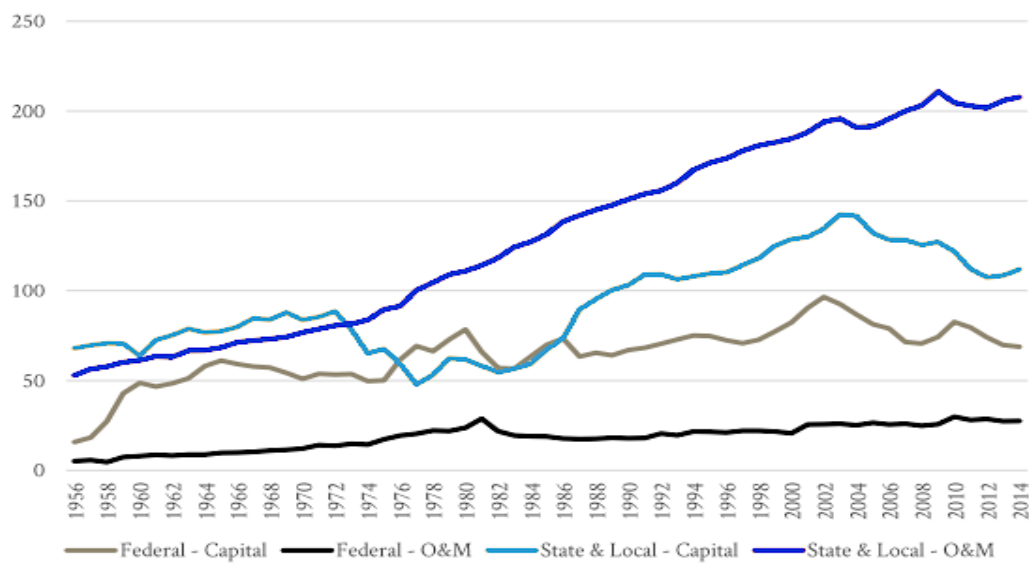
relatively nascent (see e.g. McNichol 2013, Casady and Geddes 2016). The U.S. case suits theory development because these observations seem to be at odds with one another and indicate institutional barriers may be affecting government utilization of PPPs as a NPG tool in the United States.

In a theory-building, case-based approach, it is also recommended that the selected methods suit the purpose of the case analysis (Eisenhardt and Graebner 2007). Because the relationship between NPG and institutional maturity in the context of PPPs is currently not well documented, our analytical approach to this case was exploratory. We initially conducted a systematic search of databases for academic manuscripts containing a combination of keywords such as Public Private Partnership (PPP), Public Administration, Institution, and Maturity. Our refined search yielded 198 relevant journal articles, but none of them applied a framework resembling Mahalingam et al. (2011) to institutional maturity and PPPs. In addition to consulting the broader body of academic literature, we also reviewed manuscripts, government reports, news articles, commercial databases, and other print/online sources directly pertaining to the U.S. PPP market. Because time and space requirements preclude us from providing a detailed historical account of U.S. PPP market development, we limited our research focus to the interplay of NPG theory and institutional/structuration theory in our application of the PPP institutional maturity model to the U.S. PPP market.

KEY INSTITUTIONAL BARRIERS

The history of private sector involvement in human service delivery within the United States is long. For decades, contracting has served as America's primary mode of service delivery. Yet, the U.S. has been slow in adopting the PPP procurement model. Although PPPs only account for a minority of global infrastructure investment, PPPs in the U.S. are especially rarely relative to the country's high levels of infrastructure investment. This is because '[m]any US state and county government human service agencies still must operate under traditional public procurement laws and regulations predicated upon the existence of a buyer/seller relationship, not a partnership relationship' (Martin 2005, 145). Over the years, these legal constraints have 'hindered the ability of many US state and local governments to create true public-private partnerships' (Martin 2005, 145).

The avoidance of PPPs is also historically rooted in the ‘institutional bifurcation’ of infrastructure spending decisions across various levels of government. Traditionally, U.S. infrastructure has been developed with “OPM”— other people’s money. Since the end of World War II, the U.S. federal government has funded many, nationally-significant capital projects such as the Interstate Highway Program, wastewater treatment facilities built under the Environmental Protection Agency's Clean Water Program, and the Urban Mass Transportation Agency’s urban mass transit programs of the 1970s - 1990s using 90% federal funds and only 10% local funds. At the same time, states and local jurisdictions have largely retained responsibility for funding the ongoing operations and maintenance of these capital investments (see Figure 6).



Source: CBO (2015)

Figure 6: Aggregate U.S. Infrastructure Spending – Transportation & Water (\$Bn 2014)

Within this unbalanced funding model, electoral cycles accentuate the institutional bifurcation between federal, state, and municipal infrastructure priorities. Constructing new infrastructure projects is usually more politically attractive for politicians than spending taxpayer dollars on maintaining existing projects over the long term (Surowiecki 2016). As a result, state and local legislators tend to defer maintenance expenditures indefinitely, letting roads, bridges, buildings, and other assets deteriorate until the federal government steps in to provide additional funding for replacement infrastructure (CBO 2015; Bennon, Kim, and Levitt 2017).

Enhanced private investment in U.S. infrastructure via PPPs is also dis-incentivized by federal, state and local tax exemption on interest payments for public sector bonds.

This tax-exemption is unique to the U.S. Consequently, U.S. municipal bonds have historically carried lower interest rates than comparable privately issued bonds. This practice does not really reduce the cost of public borrowing to the government—the local, state and federal governments are forgoing taxes they could otherwise collect. Rather, it is a means to cross-subsidize and favor investments in infrastructure over other kinds of federal, state and local government spending. However, since taxpayers in all municipal jurisdictions contribute to their state and federal tax bases, it is foolish for any government not to take advantage of the lower cost municipal bonds. Thus, tax-exempt public bonds have historically tilted the playing field in favor of government financing, operating and maintaining—albeit often under-maintaining—infrastructure assets. Taken together, these key institutional barriers undermine the perceived legitimacy, trust, and capacity of PPPs in the United States.

GROWING LEGITIMACY: PPP-ENABLING LEGAL FRAMEWORKS

Despite these institutional hurdles, the PPP model in the U.S. is slowly gaining legitimacy. The primary indicator of this growing legitimacy is the ongoing proliferation of legal and regulatory frameworks supporting PPP procurement. As of August 2018, 37 states, Puerto Rico and the District of Columbia had enacted PPP-enabling statutes (see Figure 7).

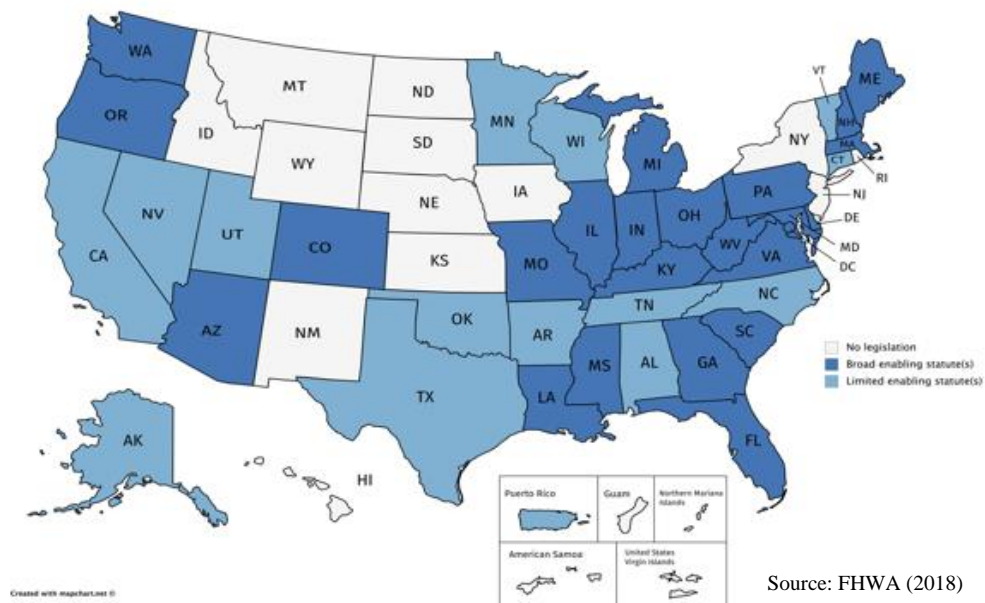


Figure 7: PPP Enabling Legislation

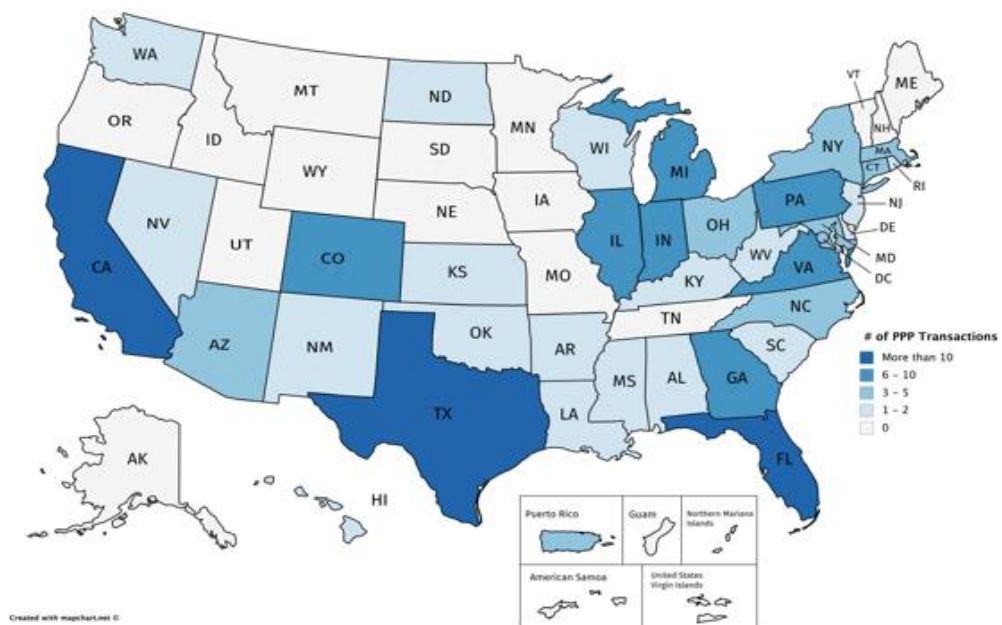
These laws codify the rules of engagement between public and private actors in PPP contracts. Moreover, these state-level enabling laws, both specific and generic in nature,

support PPP procurement structures and processes by removing the institutional barriers found in traditional public procurement laws and regulations.

However, not all PPP laws in the United States are created equal. Diverse local demand side, supply side, and political/institutional drivers have created disparities in these statutes (Geddes and Wagner 2013). This variability across U.S. states can either create a supportive environment for PPP procurement or discourage PPP activity in some cases (Geddes and Reeves 2017). While traditional public finance considerations, such as federal highway aid, have shown little impact (Geddes and Wagner 2013), differences in economic factors such as state debt and urban travel demand have had a significant effect on the adoption and favorability of PPP-enabling laws (Geddes and Wagner 2013; Albalade, Bel, and Geddes 2017; Boyer and Scheller 2017). Despite these differences, the ongoing growth in jurisprudence supporting PPPs across the U.S. is only further legitimizing their use as viable project delivery mechanism.

TRUST IN THE PPP MODEL: PPPs AS A PRAGMATIC NPG TOOL

To complement this growing legitimization of the PPP model, more and more governments across the United States are embracing PPPs as a NPG tool for infrastructure service provision. Since 2015, 36 states plus Puerto Rico and the District of Columbia has launched or closed at least one PPP transaction (see Figure 8).

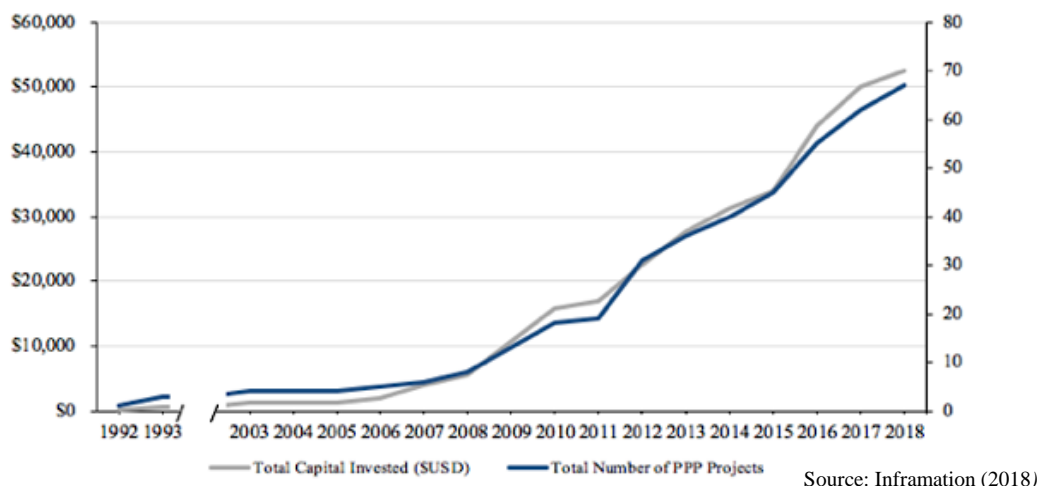


Source: Inframation (2018)

Notes: Including projects that have reached financial close or are in procurement.

Figure 8: PPPs Since 2015, By State

Although total PPP investment still lags considerably behind levels found in other jurisdictions globally, the U.S. has invested ~\$53 billion in 67 projects since 1992 (see Figure 9).



Notes: Because there was little to no PPP activity in the U.S. from 1993 - 2003, these years were not included for

Figure 9: PPPs Reaching Financial Close in the United States (1992 - 2018)

Increasing PPP activity in the U.S. is being spurred by the substantial infrastructure deficit and its ongoing effects on economic progress. Likewise, government and jurisdiction debt-stress, particularly at the local level, is driving governments' choice of private involvement in contracts, as is the jurisdiction's tax burden (McQuaid and Scherrer 2010; Albalate, Bel and Geddes 2015; Boyer and Scheller 2017). Increasingly smaller discretionary budgets from a combination of growing healthcare and pension entitlement obligations as well as public opposition to tax increases have also exacerbated declines in federal, state, and local funding for infrastructure. In these challenging conditions, trust of PPPs has become 'a pragmatic rather than a political decision' (Albalate, Bel, and Geddes 2017, 41).

BUILDING PPP CAPACITY: STATE AND FEDERAL PPP-ENABLING ENTITIES

Despite growing legitimacy and trust in the PPP model, the development of PPP capacity in the United States remains in its infancy. However, in recent years, institutions supporting PPP procurement at the federal, state, and municipal level have become more prominent (Iseki et al. 2009).⁶

⁶ See Iseki et al. (2009) for a detailed assessment of PPP-enabling federal legislation.

State and Municipal PPP Units

While some states conduct their PPP programs directly through the state's department of transportation (e.g. Florida and Texas), a handful of states and municipalities (e.g. Virginia, California, Washington, Michigan, Oregon, Colorado, Georgia, Indiana, and Washington DC) have established agencies to enhance PPP procurement capacity. These agencies, commonly known as PPP units, steward governments through the PPP procurement process. According to the European PPP Expertise Centre, the main functions of PPP units are:

- (1) PPP policy support and related activities;
- (2) program and project-delivery support; and
- (3) project approval and quality control.

In the United States, a selected number of states and municipalities are starting to utilize these PPP units in order to enhance the consistency, transparency, and capacity of their government PPP programs. While these developments are notable for the broader maturation of the U.S. PPP market, many states and localities still lack any formalized institutional capacity to manage their PPP projects.⁷

Federal Support of PPPs

At the federal level, efforts have also begun to consolidate PPP knowledge, procurement guidelines, and expertise. For example, in May 2018, the Federal Transit Administration (FTA) issued a Final Rule on Private Investment Project Procedures (PIPP) which:

establishe[d] procedures that allow recipients of FTA funds to identify perceived impediments to the use of public-private partnerships (P3s) and private investment in public transportation capital projects either proposed or under construction and in the Statewide Long-Range Transportation Plan or the Metropolitan Transportation Plan, and seek a waiver or modification of such impediments” (FTA 2018).

Additionally, a few offices within the U.S. Department of Transportation are working to promote alternative infrastructure delivery mechanisms such as PPPs. Organizations

⁷ Within the last year, both Texas (TxDOT) and California (Caltrans) lost their transportation PPP authorization.

like the Federal Highway Administration's (FHWA) Office of Innovative Program Delivery (OIPD) are specifically tasked with enhancing public-sector capacity and providing technical guidance for states interested in pursuing innovative financing and project management arrangements (i.e. PPPs). Likewise, the Build America Bureau was created following the passage of the Fixing America's Surface Transportation (FAST) Act in 2015 in order to '[serve] as the single point of contact and coordination for states, municipalities and project sponsors looking to utilize federal transportation expertise, apply for federal transportation credit programs and explore ways to access private capital in public private partnerships' (Build America Bureau 2017). Operating under the Office of the Undersecretary for Transportation Policy, the Bureau builds off of the foundation established by the Build America Transportation Investment Center (BATIC) and is responsible for:

- (1) Streamlining federal credit enhancement (i.e. loans, guarantees, and standby lines of credit) through the Transportation Infrastructure Finance and Innovation Act (TIFIA) and Railroad Rehabilitation and Improvement Financing (RRIF) revolving funds;
- (2) Administering Infrastructure For Rebuilding America (INFRA) grants for critical U.S. highway and bridge projects;
- (3) Managing the tax-exempt Private Activity Bonds (PABs) program for prospective PPP concessionaires; and
- (4) Providing a centralized repository of information for project coordination, project-level technical assistance, and alternative delivery assessment (Build America Bureau 2017).

Together, organizations like the Bureau and OIPD are encouraging the adoption of best practices in PPP project development, delivery, financing, and management. In doing so, they are attempting to address the aforementioned institutional barriers favoring traditional project delivery. However, the role of these federal institutions in the development of the U.S. PPP market should not be overstated. Because most infrastructure provision is done by states and municipalities, 'developments at the federal level are often limited in scope and effect and typically provide only general guidelines for PPP implementation' (Geddes and Reeves 2017, 159).

PPP INSTITUTIONAL MATURITY IN THE UNITED STATES

Overall, it appears PPPs are slowly gaining traction in the United States. However, there is little indication PPPs will become a commonplace infrastructure procurement strategy in the near term. This is because PPPs currently lack maturity within America's broader institutional environment. The absence of cohesive project prioritization frameworks, standardized contracts, consistent procurement standards, sufficiently uniform PPP-enabling legislation, PPP units, and a robust PPP project pipeline indicate that PPPs do not seem to fit within America's national and regional priorities as well as existing governance mechanisms and procurement processes. Although it is exceptionally difficult to 'assess goodness of fit as part of a process of institutional change, and decide whether the direction of change is towards institutions that are more supportive of an efficient market economy and improved social development' (Shirley 2005, 31), 'good fitting' institutional innovations generally do 'not depend on absent or weak institutions and [are] insulated from or adapted to perverse institutions' (Shirley 2005, 30). In the United States, however, it is fairly evident that PPPs remain dependent on one or more absent and/or weak components of PPP institutional maturity.

Across the country, governments continue to grapple with poor transparency and stakeholder education, protracted procurements, and limited PPP expertise (Martin 2017). This is because '[p]ublic procurement authorities often fail to appreciate the significant differences between PPPs and traditional forms of procurement and the implication of these differences for the level of resources, the unique skills, the output-based nature of the contracts, and the new processes and institutions required' (Farquharson et al. 2011, 23). Moreover, the fragmented distribution of powers and responsibilities of infrastructure provision across different levels of government has created wide variation in project governance across state lines, within specific infrastructure sectors, and even within cities or metropolitan transit authorities that deliver PPP projects (Albalade, Bel and Geddes 2015). This lack of coherence in PPP policies offers few incentives for private firms to enter into long-term infrastructure contracts with governments (Geddes and Reeves 2017), and undermines the foundational components of institutional maturity needed for a successfully coordinated PPP program. If the U.S. is going to promote legitimacy, trust, and capacity in the PPP model and develop a robust PPP market, public agencies must eventually

‘establish clear, predictable and legitimate institutional framework[s] supported by competent and well-resourced authorities’ (OECD 2012, 8).⁸

CONCLUSIONS

Around the world, PPPs are becoming a popular alternative procurement tool for infrastructure services. In the globalized economy, public sector organizations tasked with vague, competing, and dynamic objectives are increasingly limiting their ability to exercise complete control over infrastructure delivery by engaging in complex and contractually sophisticated partnerships with private actors. These broader relationships between government and the private sector are characteristic of the increasingly fragmented and uncertain nature of public management in the 21st century known as New Public Governance (NPG). In this paradigm, PPPs may be viewed as a tool of NPG which public sector agencies use to activate third-parties for infrastructure project delivery, orchestrate and maintain relevant stakeholder networks across the project lifecycle, and modulate appropriate rewards and penalties through contracts in order to elicit cooperative behavior. However, PPPs are not self-administering. They require strong institutional capabilities to be successful.

Although recent research has scrutinized the underlying institutional factors facilitating successful PPP development, little work to date has attempted to connect the conceptual foundations of PPP institutional maturity—i.e. *legitimacy*, *trust*, and *capacity*—with the broader theoretical paradigm of NPG. In order to enrich the extant literature on PPP institutional support, our paper used a theory building, case-based approach to explore the overarching relationship between PPP institutional capabilities and NPG. In this analysis, we developed a succinct conceptual framework of PPP institutional maturity which (re)defines PPPs within the NPG paradigm and offers a theoretical lens for studying PPP market development. Additionally, our research illustrates how legitimacy, trust, and capacity affect the ability of public agencies to organize and maintain third-party networks, enable private partners to solve infrastructure delivery issues, and uphold collectively held objectives in PPP projects. Our case analysis also shows that infrastructure PPPs lack a ‘goodness of fit’ within America’s current institutional environment due to the weakness and/or absence of one or more institutional components. While these results are illustrative of the effects institutional maturity has on PPPs in the NPG paradigm, more research is needed to

⁸ For a more detailed review of PPP governance mechanisms, see OECD (2012).

generalize these observations beyond the unique confines of the U.S. PPP market. Moreover, future work should utilize New Public Governance as ‘a coherent conceptual framework from which to develop [more] theory and research that can inform [PPP governance] in the twenty-first century’ (Osborne 2006, 384).

CHAPTER 3 – EXAMINING THE STATE OF PUBLIC-PRIVATE PARTNERSHIP (PPP) INSTITUTIONALIZATION IN THE UNITED STATES⁹

Around the world, public-private partnerships (PPPs) have been widely touted for their ability to overcome shortcomings in traditional infrastructure procurement. However, these agreements also create many unique governance issues for public agencies (Guasch, Laffont, and Straub 2008; Mahalingam 2010; Garvin 2010; Delhi and Mahalingam 2017). By their nature, PPPs force governments to engage private firms in complex, co-dependent relationships, networks, and exchanges throughout the lifecycle of public infrastructure assets (Grimsey and Lewis 2007; Yescombe 2011; South, Levitt, and Dewulf 2015). One of the longstanding concerns associated with these types of long-term contracts is the resulting loss of government flexibility (Ross and Yan 2015). Additionally, PPPs as a procurement model exhibit high transaction costs and long tendering periods (KPMG 2010; Reeves, Palcic, Flannery, and Geddes 2017). Moreover, PPPs may not always provide the public sector and taxpayers with adequate value for money (VfM) (HM Treasury 2012; Burger and Hawkesworth 2011). In some cases, PPPs can even create budgetary problems (Hellowell and Vecchi 2015). If governments lack the capacity to engage private firms in these complex, networked environments, successful planning, execution, and stewardship of PPPs becomes especially challenging (Geddes and Reeves 2017).

PPPs thus require proper safeguards (Buxbaum and Ortiz 2007), strong political commitment (Greve and Hodge 2010), “aggressive management by a strong, competent government” (Kettl 2011, 6), and well-designed governance mechanisms (OECD 2015) in order to ensure “public services are not compromised for the sake of private profits” (Forrer et. al. 2007, 477). Although successful PPP stewardship has been attributed to a variety of different factors (see, e.g. Hodge and Greve 2005; Grimsey and Lewis 2007; Kwak et al. 2009), many scholars generally agree mature PPP programs depend on one

⁹ This chapter is already published in the *Engineering Project Organization Journal* (<https://img1.wsimg.com/blobby/go/d0dd54db-2225-42e2-a2f9-e42e4b1f907b/downloads/Vol8Casady.pdf?ver=1561818071648>)

critical factor: a strong institutional setting (see, e.g. Jooste et al. 2011, Martin et al. 2013; Matos-Castaño et al. 2014, Chou and Pramudawardhani 2015; Opara et al. 2017). Mrak (2014, 92) points out that “[e]xperience from other countries clearly indicates that creating effective institutional support is of key importance for initiating and developing the PPP concept in a country.” In leading PPP jurisdictions, such as Australia, Canada, and the United Kingdom, as well as other countries across Europe, Asia, and Latin America, elaborate institutional structures, economic policies, and social norms have emerged to support the use of PPPs. Farquharson et al. (2011) note that many of these mature settings have:

- (1) Clear policy rationales for PPPs;
- (2) Streamlined PPP legislation;
- (3) Transparent approval processes;
- (4) Robust project pipelines;
- (5) Consistent frameworks for project selection, preparation, and procurement;
- (6) Standardized commercial contracts;
- (7) Clear dispute resolution procedures; and
- (8) Multiple PPP units managing bid preparation, solicitation, and evaluation.

While these features may be commonplace within many well-developed PPP jurisdictions, “institutional change . . . 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). Moreover, because institutional change is path-dependent, institutionalization is not deterministic. Markets can mature and regress due to changes in the institutional setting. As a result, countries around the world use a wide variety of PPP approaches and most lack national PPP models (Hodge 2013; Siemiatycki 2013; Van den Hurk et al. 2015).

Recent research examining the development of PPP institutional settings have sought to understand these cross-national differences and development trends. To date, only a handful of studies have examined the impact of institutional, political, and government support structures on PPP market development and performance (see, e.g.

Forrer et. al. 2007; Delhi et al. 2010; Jooste et al. 2011; Jooste and Scott 2012; Wibowo and Alfen 2015; Van den Hurk et al. 2015; Verhoest et al. 2015; Delhi and Mahalingam 2017; Soecipto and Verhoest 2018). For instance, Forrer et. al. (2007) suggest governments track mutual influence, participation rights, and transparency within PPPs along six dimensions—risk, costs and benefits, political and social impacts, expertise, collaboration, and performance measurement—in order to avoid instances of corruption and regulatory capture. Wibowo and Alfen (2015) have also documented 30 government-led critical success factors (CSFs) for PPP infrastructure development. Likewise, Delhi and Mahalingam (2017) recently identified 19 dimensions influencing PPP institutional environments and project characteristics, 13 strategic governance mechanisms that impact post-award PPP outcomes, and 7 outcome dimensions—financial sustainability, adaptability, legitimacy, the extent of restructuring, sustained performance, conformance to budget and conformance to schedule—that can be used to assess post-award PPP performance, predict post-award outcomes, and design projects for optimal governance across the lifecycle.

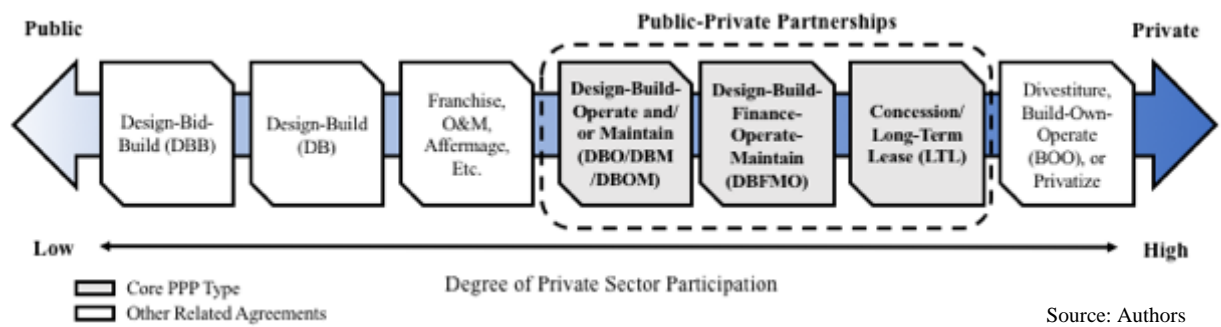
While many of these studies highlight conditions which are critical to PPP market development, relatively little attention has been given to the process by which countries institutionalize the PPP model. This paper, thus, builds on these extant studies of PPP institutional environments by exploring the process of PPP institutionalization in the United States. By examining the process in which PPPs “emerge, diffuse, and become legitimated over time” (Lawrence, Winn, and Jennings 2001 , 624), we intend to show “that institutional support or the lack of it is one of the key factors that defines a country's success or failure in establishing an active PPP program” (Mrak 2014, 93). In the following section, we begin with a brief overview of PPPs, the concept of PPP institutionalization, and the research questions we attempt to answer in our exploratory analysis of the U.S. PPP market. Next, we outline our research design and methodology. Then, we utilize a combination of Johnson et al.’s (2006) four phases of institutionalization—*innovation*, *local validation*, *diffusion*, and *general validation*—and Mrak’s (2014) three models of PPP institutionalization—*centralized*, *decentralized*, and *mixed*—to examine the current state of the U.S. PPP market. Finally, we conclude by summarizing our contributions and their implications for further research.

PUBLIC-PRIVATE PARTNERSHIPS AND THE INSTITUTIONALIZATION PROCESS: AN OVERVIEW

Public-private partnerships (PPPs) are not new (Wettenhall 2003, 2005; Bovaird 2004; Hodge and Greve 2007). According to Kettl (1993, 4):

Every major policy initiative launched by the [U.S.] federal government since World War II—including Medicare and Medicaid, environmental cleanup and restoration, antipoverty programs and job training, interstate highways and sewage treatment plants and even security in post-conflict zones—has been managed through public-private partnerships.

However, long-term infrastructure PPP contracts emerged as a popular mechanism for governments to engage private firms in infrastructure project delivery following the U.K.'s Private Finance Initiative (PFI) during the early 1990s. Since then, the U.S. and governments around the world have been increasingly incorporating private-sector expertise, resources, and risk management proficiency into infrastructure project delivery through the use of PPPs. Although PPPs do not have a uniform meaning (Marsilio, Cappellaro, and Cuccurullo 2011), these contracts generally bundle various infrastructure project phases, including facility design, construction, financing, operations, and maintenance, into long-term contracts with private consortiums. These contractual arrangements typically involve a significant transfer of risks from the public-sector project sponsor to private, third-party actors and link remuneration to performance of the contracted service (Casady and Geddes 2016; World Bank 2017b). Together, these two unique features of PPPs—bundling phases and taxpayer/private partner risk sharing—allow governments to holistically address multiple stages of the project lifecycle without developing the technical, financial, and physical resources needed to deliver and maintain these projects themselves. Depending on how public agencies construct these innovative procurement agreements, PPPs can take on a wide range of structures (see Figure 10).



Source: Authors

Figure 10: Spectrum of PPP Delivery Types

Across the PPP spectrum, governments must balance trade-offs between contractual incentives, project flexibility, and institutional dynamism (Bennett and Iossa 2006; Martimort and Pouyet 2008; Iossa and Martimort 2015). When appropriately planned, executed, and managed, PPPs can deliver benefits such as on-time and within-budget delivery, enhanced technological implementation, access to new forms of capital, novel financing solutions, design innovation, optimized risk sharing, life cycle costing, and faster project development (Hodge and Greve 2007; Raisbeck, Duffield, and Xu 2010; Hodge, Greve, and Boardman 2010; Lammam et al. 2013; Engel, Fischer, and Galetovic 2014; Casady and Geddes 2016).

DEFINING PPP INSTITUTIONALIZATION

In order for countries to realize the benefits of PPPs, governments must undergo a process of “PPP institutionalization.” According to Mrak (2014: 93-94):

The term “PPP institutionalization” can be understood to mean the formation of a standardized PPP model promoted by a central or regional government and carried out in the form of a broad spectrum of activities at various levels of decision-making and in various public sector bodies.

In markets where PPP institutionalization is successful, strong institutional platforms help shape and deliver policy, prepare and procure projects, and manage/regulate project agreements (Farquharson et al. 2011). These institutional settings generally mature over time through an ongoing structuration of organizational fields (Scott and Meyer 1994). Organization fields, typically, are defined around a specific type of organization—in this case, a PPP project—but also include other types of organizations that importantly relate to this organization by providing resources, consuming services,

expressing opposition, or providing oversight. Field “structuration” refers to the processes by which arenas of social activity are ordered. As this process proceeds, organizations engage in increased interaction, are increasingly interdependent, and exhibit greater consensus on appropriate organizational forms and procedures for doing work (DiMaggio and Powell 1983). Mature fields also exhibit higher levels of legitimacy based on “generalized perception[s] or assumption[s] that the actions of [entities involved in PPP projects] are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions” (Suchman 1995b, 574). In PPP markets, this maturation process typically relies on broad facilitating factors such as “market potential, institutional guarantees, government credibility, financial accessibility, government capacity, consolidated management, and corruption control” (Yang, Hou, and Wang 2013, 301). These factors, coupled with local geography, political conditions, and capital market sophistication, drive the viable formation of partnerships (Eggers and Startup 2006). Moreover, regulative and normative interactions, characterized by legislation, agency development, and legal precedents, further underpin PPP-enabling institutions by clarifying responsibilities, interfaces, procedures, and processes both within and between market actors and the public sector. Taken together, these significant institutional and strategic elements influence the adoption, maturation, and legitimation of PPP markets.

THE U.S. PPP MARKET: A UNIQUE CASE

Not surprisingly, governments around the world have responded to the PPP institutionalization process in very different ways (Petersen 2011). While some countries have eagerly embraced PPPs and developed extensive PPP programs, others have remained skeptical of the PPP model (Verhoest et al. 2013). The United States is one of the latter countries where institutional capacity for PPPs remains relatively underdeveloped. Although the United States has historically embraced private sector involvement in the provision of other government services (see e.g. Moulton and Anheier 2002; Kinder 2012), its current infrastructure PPP market remains relatively nascent (McNichol 2013, Casady and Geddes 2016). This is because:

[U.S.] public procurement authorities often fail to appreciate the significant differences between PPPs and traditional forms of procurement and the implication of these differences for the level of resources, the unique skills,

the output-based nature of the contracts, and the new processes and institutions required (Farquharson et al. 2011, 23).

Moreover, PPP institutionalization in the U.S. is often inhibited by public sector fragmentation, a conflicted and inconsistent political setting, lack of project preparation capacity, and insufficient trust in the private sector to properly design and structure PPP projects (Mahalingam 2010). In spite of these observations within America's unique institutional setting, there is currently no detailed study analyzing the institutionalization of PPPs in the United States.¹⁰ Thus, the aim of this paper is to explore the U.S. PPP institutionalization process and address the following research questions:

- (1) At what stage in the institutionalization process is the U.S. PPP market?
- (2) What model of PPP institutionalization is the United States experiencing?

RESEARCH DESIGN AND METHODOLOGY

To answer these research questions, we use a theory-building, case-based research design (Eisenhardt and Graebner 2007). Commonly used in evaluations, this case study method was selected because our research addresses descriptive questions and draws on theoretical propositions of institutionalization (Yin 2017). More specifically, our approach utilizes two different theoretical frameworks of institutionalization in order to analyze the U.S. PPP market as a single, holistic case.

FRAMEWORK #1: STAGES OF PPP INSTITUTIONALIZATION

The first theory we employ is Johnson et al.'s (2006) four phases of institutionalization—*innovation*, *local validation*, *diffusion*, and *general validation*. In typical institutionalization processes, “[innovations] are first recognized, then accepted by relatively few actors, and then widely diffused and broadly accepted within a field” (Lawrence, Winn, and Jennings 2001, 626; see also, e.g. Meyer and Rowan 1977; Zucker 1987; Suchman 1995a; Hall and Scott 2018). Together, these phases form a temporal pattern, known as an “instance of institutionalization” (Lawrence, Winn, and Jennings 2001). Figure 11 exhibits a traditional, S-shaped institutionalization curve.

¹⁰ While Buckberg, Mudge, and Sheffield (2018) do not examine PPP institutionalization explicitly, they do provide a detailed overview of recent trends in the U.S. PPP market.

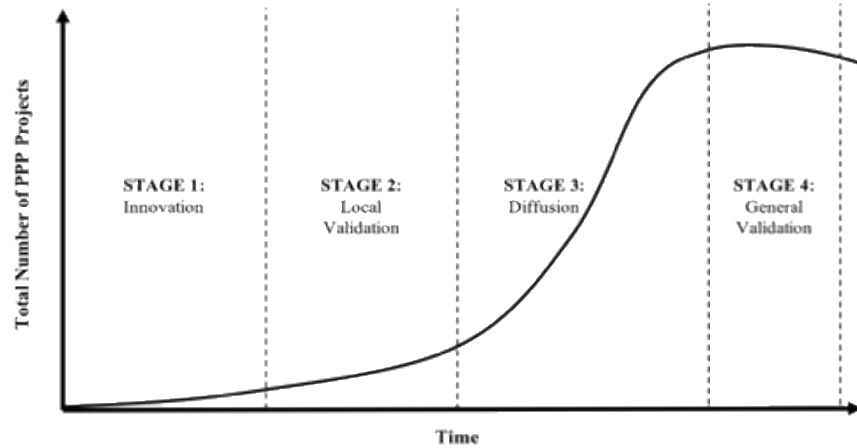


Figure 11: Traditional Institutionalization Curve

While “no one precise shape of curve [and length of stage] fits the dynamics associated with all instances of institutionalization” (Lawrence, Winn, and Jennings 2001, 627), this model represents a typically pattern of more successful innovations. In the context of PPPs, the four phases of institutionalization are defined as follows:

- (1) *Innovation* – the emergence of PPPs as an innovative procurement mechanism to deliver infrastructure assets;
- (2) *Local Validation* – the utilization of PPPs in specific, localized settings¹¹;
- (3) *Diffusion* – the proliferation of PPPs in other contexts; and
- (4) *General Validation* – the widespread acceptance, utilization, and effective governance of PPPs in infrastructure project delivery.

Using these phases of institutionalization, we attempt to isolate America’s current stage in the PPP institutionalization process.

FRAMEWORK #2: MODELS OF PPP INSTITUTIONALIZATION

Within these transitory stages, we also attempt to classify the type of PPP institutionalization the United States is experiencing. The type of PPP institutionalization a country experiences typically depends on the creation of specialized PPP units or task forces within the government. These organizations retain “[r]esponsibility for the development and promotion of the standardized [PPP] model”

¹¹ This could include specific jurisdictions or isolated sectors.

(Mrak 2014, 94) and are designed to provide PPP policy guidance, program support, project-delivery approval, and quality control (EPEC 2014). Within these areas, PPP units generally engage in tasks such as project scoping, business case development, market sounding, bid evaluation, and contract enforcement (Istrate and Puentes 2011; Casady and Geddes 2016). In many cases, PPP units also have “a lasting mandate to manage multiple PPP transactions, often in multiple sectors” and “[ensure] that PPPs meet specific quality criteria such as affordability, value-for-money (VfM), and appropriate risk transfer” (World Bank 2007, 2).

Governments undergoing PPP institutionalization commonly establish PPP units to build government capacity, enhance market visibility and transparency, develop robust project pipelines, and standardize PPP procurement practices (Casady and Geddes 2016). However, the way countries experience PPP institutionalization largely depends on how these quasi-governmental agencies are structured and utilized at various levels of government. Mrak (2014) points out that PPP institutionalization generally follows three basic models—*centralized*, *decentralized*, or *mixed*.

In the first case, when PPP institutionalization is strongly centralized, “the entire institutional organization of the country or region for PPP is focused on one specialized institution” (Mrak 2014, 96). Conversely, when countries adopt a strongly decentralized approach to PPP institutionalization, no central PPP unit exists to support and coordinate PPP project preparation and execution. In this decentralized model, responsibility for PPP projects is left to state agencies, line ministries, or other local/municipal authorities. Unsurprisingly, the mixed model of PPP institutionalization integrates the previous two models. As the most frequently used form of PPP institutional organization, this mixed approach often has (1) a central/national PPP unit, (2) sectoral PPP agencies, and (3) other supporting institutions working together within a broader PPP-enabling field (Jooste et al. 2012; Mrak 2014). Taken together, our case analysis utilizes these conceptual models in order to classify the type of PPP institutionalization unfolding in the United States.

DATA SOURCES

Finally, in a theory-building, case-based research design, it is recommended that the selected methods align with the purpose of the case analysis (Eisenhardt and Graebner 2007). Because the institutionalization process of PPPs in the United States is currently not well documented, our analytical approach and application of institutionalization

theory to this case remains exploratory. To conduct our exploratory analysis, we analyzed data on 368 U.S. PPP projects from Inframation’s global transactions database.¹² This data contains project information across state/local jurisdictions on grantors, transaction sizes, development types (i.e. greenfield or brownfield), sectors, contractual models (e.g. DBFOM), and procurement stages (pre-launch to financial close).¹³ The development types, procurement stages, and sectors examined in this analysis are defined in Table 1.

Table 1: Variable Definitions

Development Type	Sector
1) Greenfield: Construction of a piece of infrastructure which did not previously exist	1) Transport: roads, rail, airports, ports, light rail, carparks, bridges and tunnels, rolling stock
2) Brownfield: Trade of a part or whole of an existing asset, which may include obligation to improve or expand existing facilities	2) Social Infrastructure: healthcare, schools, prisons, defense, social housing, accommodation, street lighting, leisure
	3) Environmental: water, waste
	4) Renewable Energy: solar PV and CSP, onshore and offshore wind, biomass, hydro, geothermal, tidal, wave and project portfolios, electricity storage
	5) Power: energy generation, energy transmission, oil and gas storage
	6) Telecommunications: fixed line, wireless transmission, data centers
Procurement Stage	
1) Pre-launch: Grantor is contemplating an asset tender	
2) In procurement: Time period from the formal or informal launch of a tender until financial close	
3) Financial close: The preferred bidder secures financing and completes all regulatory processes	

Table 2 breaks down the project data by development type, procurement stage, and sector.

Table 2: PPP Projects By Development Type, Procurement Stage, and Sector

Development Type			Procurement Stage		
Greenfield	357	97%	Transport	191	52%
Brownfield	11	3%	Social Infrastructure	93	25%
Total	368	100%	Environment	43	12%
Sector			Power	11	3%
Pre-Launch	136	37%	Other	5	1%
In Procurement	128	35%	Telecommunications	18	5%
Financial Close	67	18%			

¹² This count reflects PPP project status as of August 31, 2018. Projects that were refinancing, without private financing, or private-to-private transactions were excluded from this analysis.

¹³ The data in the Inframation’s database is collected by a devoted team of journalists who review PPP contracts/documents and conduct interviews with public and private sector stakeholders in the market.

On Hold	11	3%	Renewables	7	2%
Cancelled	26	7%	Total	368	100%
Total	368	100%			

In addition to the project data, we also reviewed archival records directly pertaining to the U.S. PPP market, such as academic manuscripts, government reports, news articles, commercial databases, and print/online sources (see, e.g. Iseki et al. 2009; Garvin 2010; Geddes 2011; Geddes and Wagner 2013; Albalate, Bel, and Geddes 2015; Surowiecki 2016; Albalate, Bel, and Geddes 2017; Bennon, Kim, and Levitt 2017; Geddes and Reeves 2017; Buckberg, Mudge, and Sheffield 2018). Using these quantitative and qualitative sources, we then applied the aforementioned theories of PPP institutionalization to the U.S. PPP market.

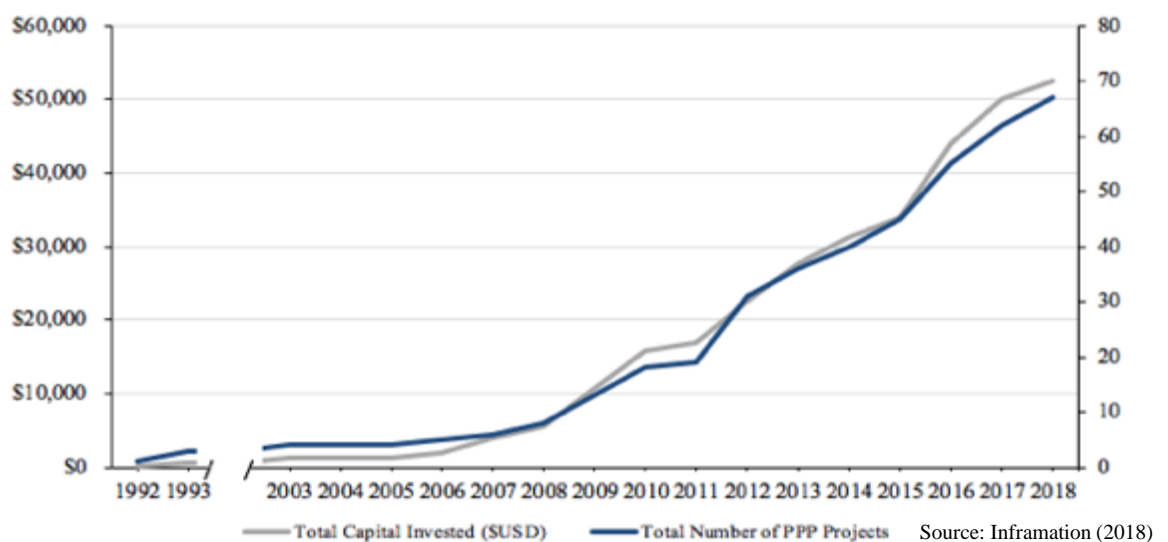
By developing existing theory through observation, analysis, and explanation of the U.S. case, our methodology offers “a richness of understanding” which “compensate[s] for weaknesses in traditional [research] approaches” (Perry 2012, 480). However, this research does have its limitations. For example, we cannot benchmark the US case against international PPP experience because we purposefully did not set thresholds for the stages of PPP institutionalization in this paper. We did this for a number of reasons. First, as an exploratory analysis, we wanted to let the data indicate where changes in the stages emerged. Second, we did not want to project international PPP experiences on to the U.S. because not all countries are expected to follow the same institutionalization curve or length of stages. We also felt it was unreasonable to expect the scale of PPP programs to conform to a uniform set of thresholds. Additionally, because time and space requirements preclude us from providing a detailed historical account of PPP institutionalization across every U.S. state and territory, the scope of this research was also limited to analyzing the U.S. PPP market as a single, holistic case. While case studies can contain nested units or embedded subcases within the main unit of analysis (Yin 2017), we did not attempt to assess PPP institutionalization at specific state and local jurisdictions. Moreover, because this paper focuses narrowly on PPP institutionalization, we cannot possibly do justice to all of the broader institutional processes and experiences affecting the totality of America’s infrastructure stock. Despite these limitations, this research remains the first of its kind to systematically examine the process of PPP institutionalization. In the next section, we begin our case analysis of PPP institutionalization in the U.S.

CASE ANALYSIS: PPP INSTITUTIONALIZATION IN THE UNITED STATES

BARRIERS TO INNOVATION

Although PPPs are not necessarily “new,” they, like other innovations, arose primarily in “response to structural conditions . . . that create[d] strategic interests or contingent events for actors in local contexts” (Johnson et al. 2006, 60). Examples of these structural conditions include endemic project cost overruns, schedule delays, and deferred maintenance. Many countries around the world have increasingly turned to PPPs to address these pervasive issues in infrastructure service delivery. In doing so, they have been forced to navigate challenging institutional dynamics involved in PPP governance, settings which can either enable or constrain the development of effective PPP programs (Henisz et al. 2012, Delhi and Mahalingam 2017). While leading PPP jurisdictions like Canada, Australia, and the United Kingdom have established “mature systems of government regulation as well as [normalized] market rules” to address these governance challenges, weak institutions and scarce institutional capacity in other nations, specifically the United States, have made PPP institutionalization especially challenging (Wang, Wu, and Zhu 2018, 296).

The United States has been particularly slow to adopt PPPs as an innovative procurement model (Garvin 2010). Today, only 67 projects have reached financial close across the United States, totalling roughly \$53 billion in investments (see Figure 12).



Notes: Because there was little to no PPP activity in the U.S. from 1993 - 2003, these years were not included for illustrative purposes.

Figure 12: PPPs Reaching Financial Close in the United States (1992 - 2018)

Following the first PPP procurements in the early 1990s, the United States experienced little to no PPP activity for a little more than a decade. Only within the last ten years

have PPPs started to gain some traction. This gradualism in PPP adoption has been widely attributed to historically rooted, institutional barriers in the U.S. market (Geddes 2011; Bennon, Kim, and Levitt 2017). For example, since the end of World War II, construction of nationally significant infrastructure—e.g. the Interstate Highway Program, Clean Water Program, Urban Mass Transportation Agency’s (UMTA)¹⁴ transit program—has traditionally been funded using 90% federal funds and 10% local funds. At the same time, states and municipalities tasked with the funding of ongoing operations and maintenance of these projects have tended to defer maintenance expenditures indefinitely until the federal government steps in to fund the rehabilitation or replacement of deteriorating infrastructure assets (Kirk and Mallett 2013; Bennon, Kim, and Levitt 2017). This historical bifurcation of infrastructure investment priorities between federal, state, and municipal governments has created an unbalanced funding model which dis-incentivizes private investment in U.S. infrastructure. Moreover, the underlying fragmentation of infrastructure provision responsibilities across different levels of government undermine any sort of harmonization between the U.S. PPP program, the budget, and its public procurement system (Mrak 2014; Albalade, Bel, and Geddes 2015; Bennon, Kim, and Levitt 2017).

Election cycles and the unique, tax-exempt municipal bond market in the United States accentuate this misalignment in federal, state, and local investment priorities by creating political incentives which favor new infrastructure projects and public borrowing over adequate maintenance of existing infrastructure assets and private financing. It is not uncommon for politicians to favor launching new infrastructure projects rather than spending taxpayer dollars on maintaining existing assets (Surowiecki 2016), nor is it politically attractive for public agencies to pass up the cost of capital advantages associated with municipal bond financing.¹⁵ Taken together, these institutional barriers have significantly tilted the playing field away from PPPs and in favour of the government financing, operating and maintaining—albeit under-maintaining—U.S. infrastructure projects (Bennon, Kim, and Levitt 2017).

¹⁴ The Urban Mass Transportation Agency (UMTA) became the Federal Transit Administration (FTA) in 1991.

¹⁵ Tax-exemption on municipal bonds does not really reduce the cost of public borrowing. Government are simply forgoing taxes they could otherwise collect.

LOCAL VALIDATION: A DECENTRALIZED PROCESS

As a result, local validation of PPPs in the U.S. has been relatively decentralized. Because the U.S. lacks a central PPP unit to support and coordinate PPP project preparation and execution, responsibility for PPP projects has largely been left to state agencies and other local/municipal authorities. As a result, wide variation in PPP utilization, execution, and governance exists across state lines, within specific infrastructure sectors, and amongst cities as well as some metropolitan transit agencies. The absence of clear PPP policy guidelines, cohesive project prioritization frameworks, uniform procurement procedures, and standardized contracts has created an unstable policy environment devoid of the technical capacity, regulator autonomy, decision-making predictability, and process transparency found in more mature PPP markets (Garvin 2010; Bennon, Kim, and Levitt 2017). Although some states and municipalities have established PPP-enabling organizations or units to help governments navigate the complexities of PPP proceedings with greater consistency, transparency, and legitimacy, these entities differ significantly in their institutional organization and scope of responsibilities. While some states conduct their PPP programs directly through the state's department of transportation (e.g. Florida and Texas), others utilize more specialized entities or offices to steward their PPP programs (e.g. Virginia, Indiana, Colorado, California, and Washington, DC). Consequentially, states across the U.S. have experienced variable PPP tendering durations and a relatively uneven distribution of PPP procurements (see Figure 13).

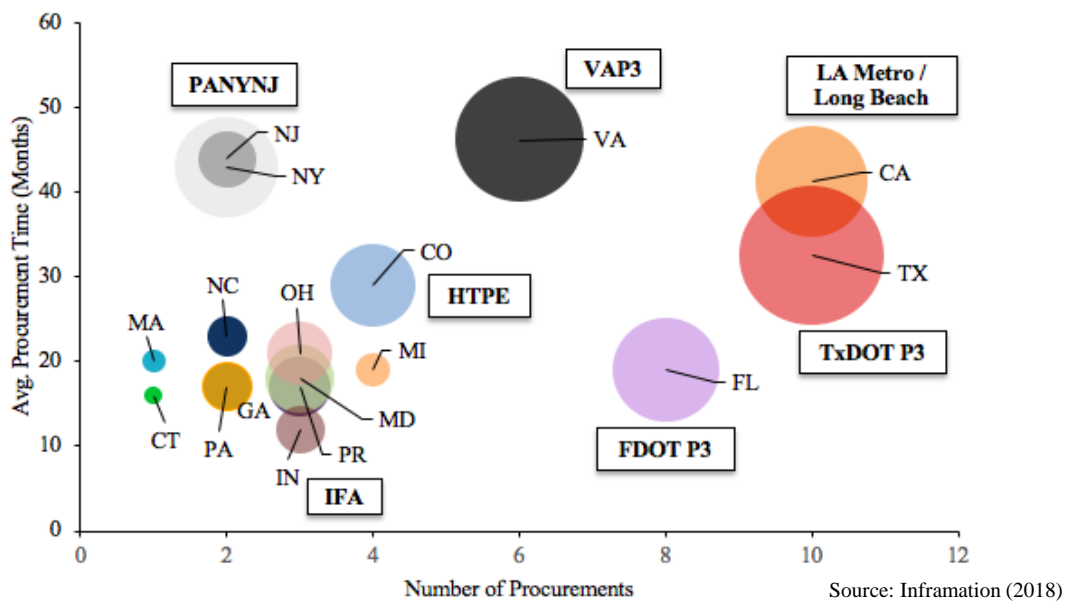


Figure 13: PPP Procurements in U.S. (Node Size = Total Private Capital Attracted)

This local validation of the PPP model in a handful of states is not surprising. Higher PPP adoption has generally occurred in more populated states where larger markets exist for potential users or customers (Albalate, Bel, and Geddes 2015). For instance, only California and Texas have delivered ten PPP projects while many others have yet to complete a single procurement.¹⁶ Moreover, in America's unique institutional setting, characterized by divergent national and regional priorities and dissimilar infrastructure processes, states attempting to deliver experience and build confidence in their PPP procurement capacity have only been able to procure a handful of "pathfinder" projects (Bennon, Kim, and Levitt 2017).

DIFFUSION: AMERICA'S CURRENT PHASE OF PPP INSTITUTIONALIZATION

Despite these institutional barriers, the use of PPP projects in the United States continues to grow. Increasing PPP activity is largely being driven by the ongoing economic, political, and social consequences of America's enormous infrastructure deficit (Buckberg, Mudge, and Sheffield 2018). For instance, local jurisdiction debt-stress and tax burdens are forcing governments toward enhanced private involvement in infrastructure contracting (Bel and Fageda 2009; Albalate, Bel and Geddes 2015; Boyer and Scheller 2017). Moreover, increasing healthcare and pension obligations, declining discretionary budgets, and growing public opposition to tax increases are exacerbating declines in federal, state, and local funding for infrastructure investment (Cawley 2013; DeCorla-Souza, Lee, Timothy, and Mayer 2013; Engel, Fischer, and Galetovic 2014). Taken together, these challenging structural conditions have made the adoption of PPPs "a pragmatic rather than a political decision" (Albalate, Bel, and Geddes 2017, 41).

¹⁶ Within the last year, both Texas (TxDOT) and California (Caltrans) lost their transportation PPP authorization.

To accommodate this growing pragmatism, the United States has experienced a proliferation of general administrative law, sector regulations, and specifically stipulated PPP contract provisions (Queiroz and Lopez 2013). As of August 2018, 37 states, the District of Columbia, and one U.S. territory have enacted PPP statutes (see Figure 14).

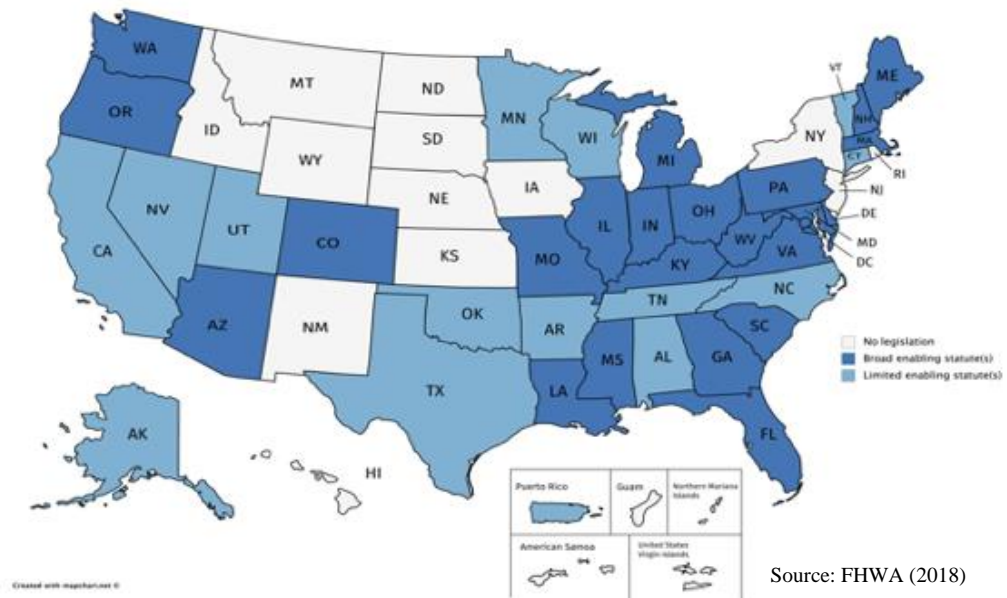
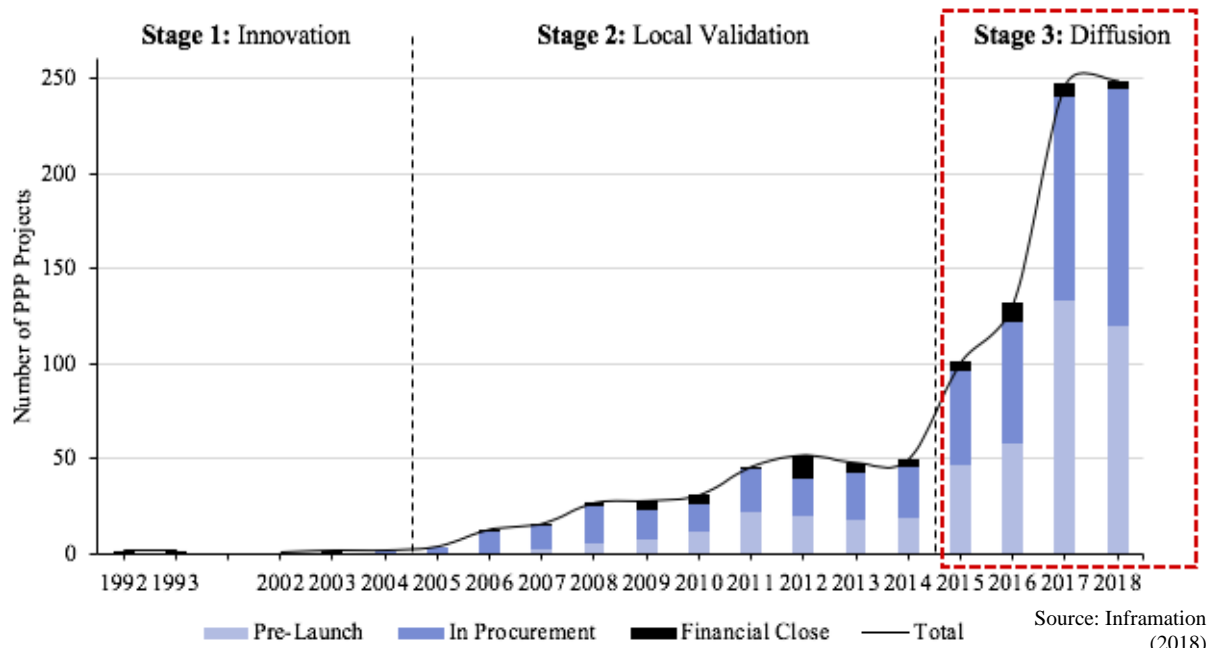


Figure 14: PPP Enabling Legislation

While the adoption and favorability of PPP-enabling laws has typically followed local demand side, supply side, and political/institutional drivers such as state debt and urban travel demand (Geddes and Wagner 2013; Albalade, Bel, and Geddes 2017; Boyer and Scheller 2017) rather than traditional public finance considerations, such as federal highway aid (Geddes and Wagner 2013), the implementation of these statutes has not been consistent. Wide spread variation currently exists between state-level, PPP-enabling environments. Depending on how the institutional framework surrounding PPP procurement is structured, these statutes can either provide a supportive environment for PPP procurement or undermine PPP activity. Overall, difficulties associated with balancing contractual flexibility and public-interest protections have created large disparities in PPP favorability between states (Geddes and Reeves 2017; Iseki et al. 2009). Yet, even with these challenges, a growing body of procurement law and jurisprudence is emerging across the U.S. as the PPP market matures.

Naturally, the slow development and maturation of PPP-enabling institutions, legal frameworks, and governance structures is having an effect on America's PPP institutionalization process. Figure 15 depicts the progression of PPP institutionalization in the United States as "a contested process that unfolds across time" (Johnson et al. 2006, 59).¹⁷

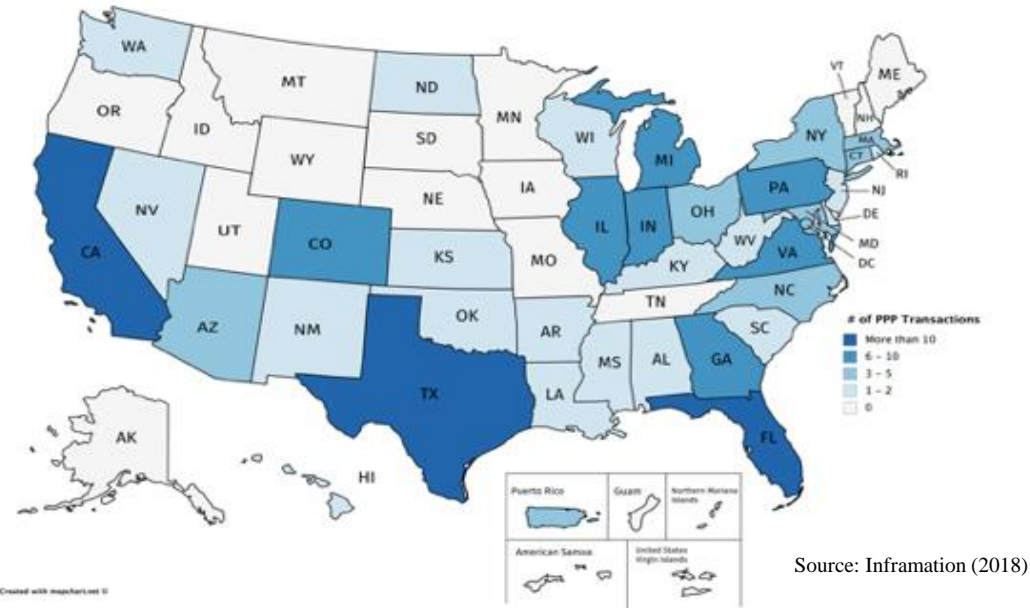


Notes: Project counts reflect the year-end project status. This excludes projects that were classified as cancelled, on hold, without private financing, private-to-private transactions, or refinancing. Because there was little to no PPP activity in the U.S. from 1993 - 2003, these years were not included for illustrative purposes.

Figure 15: PPP Institutionalization in the United States (1992 - 2018)

After years of limited PPP use during the innovation and local validation phases of institutionalization, the pipeline of U.S. PPP projects has grown rapidly in recent years. Since 2015, 36 states plus Puerto Rico and the District of Columbia has launched or closed at least one PPP transaction (see Figure 16).

¹⁷ These findings generally conform with the three-stage PPP market maturity curve conceived by Eggers and Startup (2006).



Notes: Including projects that have reached financial close or are in procurement. Excludes pre-launch projects.

Figure 16: PPPs Since 2015, By State

Many of these states now pursuing PPPs have also “[come] up with their own plans for raising additional transportation revenue — while hoping the federal government continues their historic role as a strong partner in their efforts” (Transport for America 2018). Since 2012, 31 states have approved legislation to raise additional transportation revenue (see Figure 17).

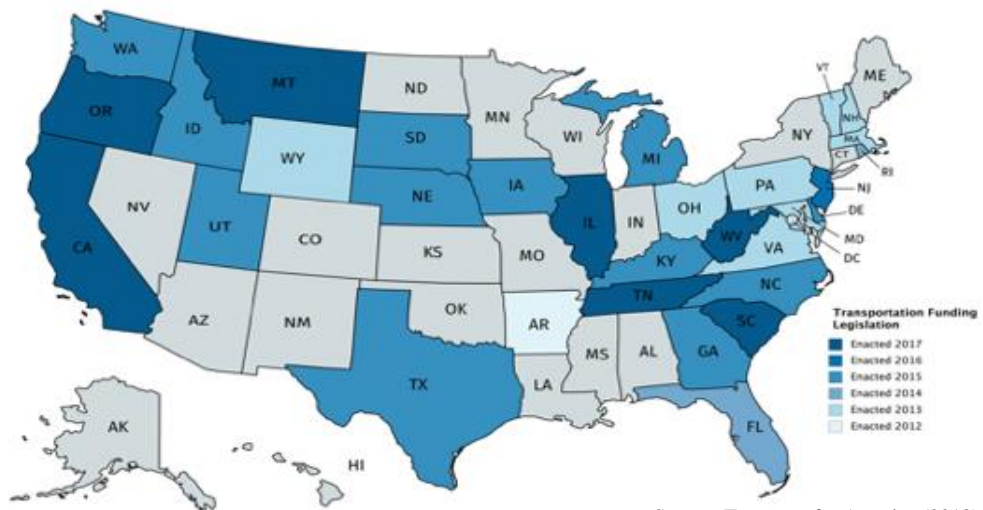
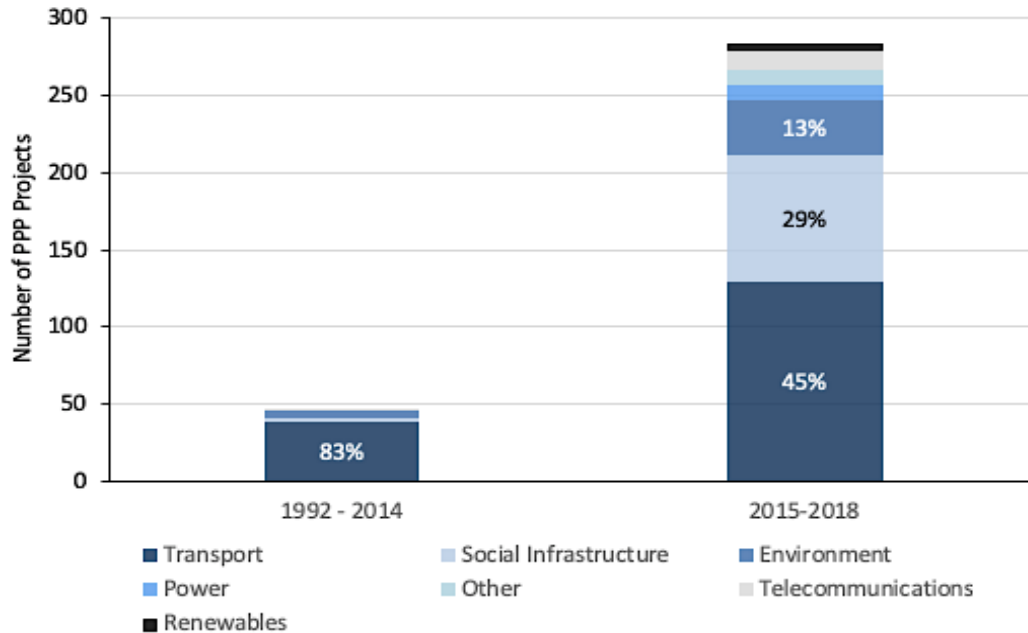


Figure 17: Transportation Funding Legislation Since 2015, By State

As a result, the prominence of transportation PPPs has waned in recent years.¹⁸ As PPPs have diffused across the US, the pipeline of projects has become more diverse (see Figure 18).



Source: Inframation (2018)

Notes: Includes projects that are pre-launch, in procurement, or have reached financial close.

Figure 18: PPP Projects by Sector

Prior to 2015, 83% of all U.S. PPPs were concentrated in the transportation sector. Today, transportation accounts for only 45% of the overall total while social infrastructure and environmental PPPs now make up 29% and 13% of the project pipeline respectively. These developments indicate the U.S. PPP market is maturing. However, America’s decentralized diffusion process has yet to produce a growth pattern reflecting widespread acceptance of the PPP model. Inconsistent PPP procurement procedures, dissimilar legal and regulatory environments across state lines, and minimal use of PPP-enabling organizations (e.g. PPP units) continue to create instability in the market. Although the number of projects has skyrocketed in recent years, the U.S. is still experiencing a high rate of project cancellations. Currently, for every six projects that reach financial close, one PPP project is cancelled. Additionally, there are a handful of projects in the pipeline which remain on hold with no timetable for completion.

¹⁸ If transportation funding is available through traditional procurement, the incentive for governments to pursue transport PPPs is diminished.

These ongoing institutional challenges within America’s fractured federalism have led many private firms and public agencies to believe that current U.S. institutions (e.g. laws, rules, social norms, and policy) do not offer enough incentives, transparency, and accountability for the U.S. to successfully deliver a coordinated PPP program (Geddes and Reeves 2017). If the U.S. is going to adhere to the natural progression of the institutionalization process and generally validate the PPP model, then more U.S. public agencies at the federal, state, and municipal level will need to improve their governance capacities, address existing knowledge gaps, share and adopt best practices, and “reform institutions or build new organizations to assess and manage new models for infrastructure procurement and assets management” (Bennon, Kim, and Levitt 2017, 24; Boyer 2016).

ACHIEVING GENERAL VALIDATION THROUGH A MIXED PPP INSTITUTIONALIZATION MODEL

Although the U.S. PPP market is currently in a state of decentralized diffusion, it still, in many ways, remains “at earlier stages of PPP development and could benefit from the opportunity to learn from the trailblazers who have moved to more advanced stages” (Eggers and Startup 2006, 6). Among mature markets which have generally validated the PPP model, the most frequently used form of PPP institutional organization is the mixed model, consisting of (1) a central/national PPP unit, (2) sectoral PPP agencies, and (3) other enabling institutions. The U.S. could readily move from a strongly decentralized PPP institutionalization model to a mixed approach by “establish[ing] clear, predictable and legitimate institutional framework[s] supported by competent and well-resourced authorities” (World Bank & DFID 2009; OECD 2012, 8).¹⁹

In recent years, efforts have begun at the federal level to centralize PPP knowledge, procurement guidelines, and expertise as legislative measures and supporting federal institutions have become increasing favorable toward PPP procurement (Iseki et al. 2009).²⁰ Most of these efforts have occurred in the transportation sector which holds the largest share of U.S. PPPs. For example, in May 2018, the Federal Transit Administration (FTA) issued a Final Rule on Private Investment Project Procedures (PIPP) which:

¹⁹ For a more detailed review of PPP governance mechanisms, see World Bank and DFID (2009) as well as OECD (2012).

²⁰ See Iseki et al. (2009) for a detailed assessment of PPP-enabling federal legislation.

establishe[d] procedures that allow recipients of FTA funds to identify perceived impediments to the use of public-private partnerships (P3s) and private investment in public transportation capital projects either proposed or under construction and in the Statewide Long-Range Transportation Plan or the Metropolitan Transportation Plan, and seek a waiver or modification of such impediments” (FTA 2018).

Additionally, within the US Department of Transportation, entire offices are now dedicated to promoting PPPs as an alternative infrastructure delivery mechanism. For example, the Federal Highway Administration’s (FHWA) Office of Innovative Program Delivery (OIPD) offers technical guidance and public-sector capacity support for innovative financing and project management arrangements such as PPPs. Likewise, the passage of the Fixing America's Surface Transportation (FAST) Act in 2015 led to the creation of the Build America Bureau, an entity designed to “[serve] as the single point of contact and coordination for states, municipalities and project sponsors looking to utilize federal transportation expertise, apply for federal transportation credit programs and explore ways to access private capital in public private partnerships” (Build America Bureau 2017). Operating under the Office of the Undersecretary for Transportation Policy, this nascent bureau replaced the Build America Transportation Investment Center (BATIC) and assumed responsibility for streamlining access to credit and grant opportunities as well as encouraging the adoption of best practices in project development, delivery, financing, and management. Some of the Bureau’s core responsibilities include:

- (1) Centralized project coordination, project-level technical assistance, and alternative project delivery assessment;
- (2) Federal credit enhancement via Transportation Infrastructure Finance and Innovation Act (TIFIA) and Railroad Rehabilitation and Improvement Financing (RRIF) direct loans, loan guarantees, and standby lines of credit;
- (3) Management of the tax-exempt Private Activity Bonds (PABs) program for prospective PPP concessionaires; and
- (4) Administration of Infrastructure For Rebuilding America (INFRA) grants for critical projects on US highways and bridges (Build America Bureau 2017).

Together, federal institutions like the Bureau and OIPD are working to address ongoing institutional barriers in the U.S. market which affect PPP adoption and utilization. However, their role within a mixed model of PPP institutionalization should not be overstated. Because infrastructure provision happens primarily at the state and local level, “developments at the federal level are often limited in scope and effect and typically provide only general guidelines for PPP implementation” (Geddes and Reeves 2017, 159). This is particularly true in other sectors outside of transportation where private activity is stronger (e.g. energy, social infrastructure, etc.) and the need for any centralized federal support at the agency level is minimal.

Thus, the U.S. PPP market still stands to benefit from broader institutional reforms in its PPP-enabling field, such as:

- (1) Enhanced political commitment to PPPs as an alternative delivery mechanism;
- (2) Overarching policy guidance and sector-specific models “that may respond, in a logical, consistent, and consultative way, to inevitable changes in policy and the market” (Farquharson et al. 2011, 19);
- (3) More consistent PPP legislation and procurement procedures across levels of government;
- (4) Transparent infrastructure project prioritization using non-partisan, expert panels; and
- (5) The adoption and utilization of PPP units at the regional and national level.

These general reforms are common in more mature PPP markets, and the “US can capitalize on the tested experience of its international counterparts” to implement them (Garvin 2010, 402). By doing so, the U.S. may be able to avoid setbacks in the institutionalization process and “move up the PPP maturity curve more rapidly and leapfrog to more advanced stages of maturity” (Eggers and Startup 2006, 6).

However, careful consideration must always be given to the transferability of PPP international best practices (Acerete, Gasca, Stafford, and Stapleton 2015). This is especially true at the state and local level where more research is needed on the localized development of PPP-enabling institutions (Boardman, Greve, and Hodge

2015; see also Van den Hurk et al. 2015). Additionally, successful validation of the PPP approach in the United States will require further work on comprehensive performance metrics for PPPs as well as objective criteria for a multi-level assessment of PPP institutionalization across state and local US jurisdictions. In this regard, the framework recently developed by Delhi and Mahalingam (2017, 115) may be useful for “understand[ing] the minimum set of governance strategies that could be enacted in a given institutional environment for successful outcomes.” In general, however, the U.S. has a unique opportunity to accelerate its PPP institutionalization process by closing the knowledge gap, adopting domestic and international best practices, and establishing credible governance processes supported by a mature, enabling institutional environment.

CONCLUSIONS

Public sector institutions facing vague, competing, and dynamic policy objectives are increasingly using PPPs to overcome shortcomings in traditional infrastructure project delivery. Although traditional infrastructure procurement methods offer governments, in most projects, the ability to “[internalize] transactions, [minimize] legalisms involved in complex contractual negotiations with external actors, and [provide] a more stable framework for bargaining” (Salamon 2002, 31), many governments globally have turned to PPPs in order to break the government monopoly on infrastructure development, inject competition and flexibility into infrastructure contracting, improve infrastructure service quality, and enhance the public sector’s technical, financial, and physical capacity to deliver projects. PPPs also offer some attractive potential benefits such as on-time and within-budget delivery, life cycle asset maintenance, design innovation, and enhanced access to private capital.

However, PPP projects in the US and around the world also present governments with a unique governance task. These alternative procurement mechanisms contain embedded challenges across many stages of the project lifecycle. High transaction costs, long procurement timelines, budgetary problems, and lost government flexibility are just some of the issues that can arise from PPP contracting. Moreover, the planning, execution, and management of these projects becomes especially challenging without a mature institutional setting. While some researchers have begun to “systematically develop a comprehensive typology of institutional conditions and project specific strategies” which promote satisfactory market development and PPP project

performance (Delhi an Mahalingam 2017, 131), the process of PPP institutionalization has garnered relatively little attention. Our research addresses this gap in the literature in the following ways. First, we use a combination of extant institutionalization theories to define the phases and types of PPP institutionalization. Next, we use the U.S. PPP market as test case to explore the descriptive power of these criteria for PPP market development. Finally, this paper reinforces the critical role institutional settings play in the successful planning, execution, and enforcement of PPPs contracts. By applying Mrak’s (2014) and Johnson et al.’s (2006) institutionalization frameworks to the U.S. PPP market, our review: (1) identifies America’s current stage in the PPP institutionalization process; (2) classifies the type of PPP institutionalization unfolding in the U.S., and (3) highlights various institutional deficiencies across the United States that require further development and reform. While some scholars might argue that one cannot generalize from a single case,²¹ our examination of the U.S. PPP market shows that analyses of PPP institutionalization can serve as a powerful tool for examining market development, isolating PPP governance shortcomings, and identifying areas of institutional reform.

Moving forward, we are interested in using Inframation’s data on 5,607 PPP projects across Africa, Asia, Australasia, Europe, Latin America, North America, and the Middle East to test whether patterns of PPP institutionalization conform to the alternative institutionalization curves outlined in Lawrence, Winn, and Jennings (2001) (see Figure 19).

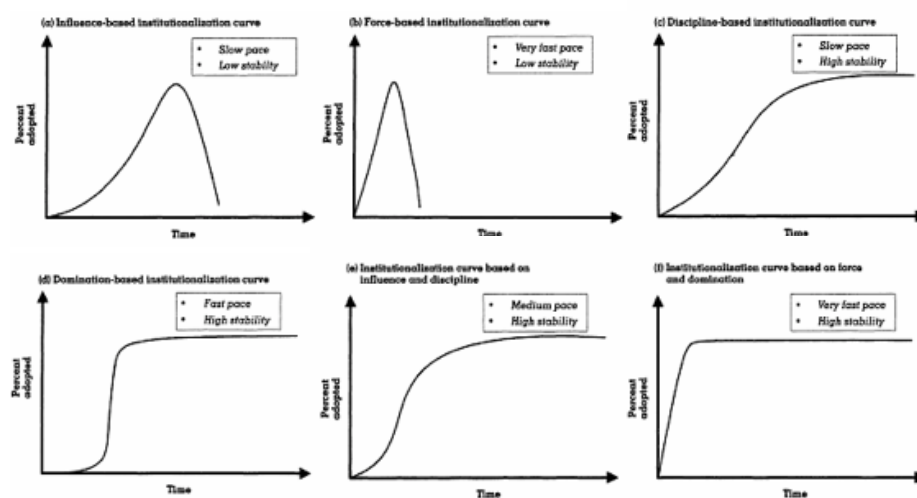


Figure 19: Alternative Institutionalization Dynamics

²¹ See Flyvbjerg (2006) for a detailed treatment of common misunderstandings associated with case study research.

However, this is just one line of inquiry. Other scholars should also expand on the initial insights of this paper by exploring PPP institutionalization temporal dynamics in other countries. Moreover, future research should aim to further explicate the PPP institutionalization process, map changing institutional dynamics overtime, and develop key metrics of PPP market maturity.

CHAPTER 4 – EXAMINING THE INSTITUTIONAL DRIVERS OF PUBLIC-PRIVATE PARTNERSHIP (PPP) MARKET PERFORMANCE: A FUZZY SET QUALITATIVE COMPARATIVE ANALYSIS (FSQCA)²²

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, Levitt, and Scott 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).

²² This chapter is currently under review at *Public Management Review*.

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 indices (EIU 2017a, 2017b, 2018a, 2019) 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 a 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 strategy using fuzzy set Qualitative Comparative Analysis (fsQCA). Finally, we discuss the results of our fsQCA 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 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 study, to define 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 next describe 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 the three critical components:

- (1) *Legitimacy* – 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, 574);
- (2) *Trust* – “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, 84); and
- (3) *Capacity* – “the ability of actors [i.e. governments] to structure and govern PPP projects” (Matos-Castaño et al. 2014, 53).

Governments generally use standardized PPP procurement procedures (Brinkerhoff and Brinkerhoff 2011) and supportive legal frameworks (Tvarnø 2006) to legitimize their PPP models. Casady et al. (2019, 8) note that “[t]he development of PPP legal frameworks is particularly important because these laws create ‘a general sense . . . that a given policy decision has been formulated in acceptable ways, through justifiable procedures’ (see e.g. Hult and Walcott 1990, 63-67).” Because this codification of PPP rules, structures, and processes often enhances the perceived legitimacy of PPPs, a primary indicator of PPP legitimacy tends to be a country’s regulatory regime.

Casady et al. (2019, 9) also point out that “growing government [and public] support . . . of PPPs often signals a certain level of trust in PPPs as a viable form of project delivery.” Opara et al. (2017, 77) further highlight that “relevant [PPP] policy measures and committed political support by field actors” often “enables or disables [PPP] outcomes.” This willingness of governments and the public to engage in these long-term, relational contracts thus serves a suitable proxy for measuring trust in PPPs.

Additionally, institutional capacity remains critical for PPP programmatic outcomes (Matos-Castano et al. 2014; Opara et al. 2017). Kettl (2011, 6) stresses that PPP transactions need “aggressive management by a strong, competent government.” In general, public sector capacity to effectively steward PPP projects comes from training, documented experience, adherence to best practices, and the utilization PPP-enabling organizations (e.g. PPP units, project development funds, etc.). The presence

or absence of these institutions in PPP-enabling fields (see, e.g. Jooste et al. 2011; Jooste and Scott 2012) will ultimately signal varying degrees of government capacity to design, execute, and manage PPPs.

Finally, interactions amongst the three institutional capabilities of legitimacy, trust, and capacity are also important for mature PPP market performance. Opara et al. (2017, 77) observe that “institutional environment elements . . . are mutually re-enforcing with synergistic effects.” For example, links between capacity and legitimacy tend to flow through governance mechanisms which “successfully mitigate or solve societal and administrative problems that are legitimately recognized by the stakeholders” (Van Gossum et al. 2010, 253). Likewise, Fard and Rostamy (2007) show clear relationships exist between legal accountability and/or legitimacy and public trust. In the context of PPPs, market transparency often mediates this relationship and is commonly cited as one of the top five most important CSFs for successful PPP implementation (Osei-Kyei and Chan 2015). The same can be said for the link between PPP trust and capacity, a relationship which is mediated by market reliability.²³

Taken together, Casady et al.’s (2019) model of PPP institutional maturity offers a succinct conceptual framework for examining mature PPP market performance. Within this framework, we have identified six institutional conditions for operationalization. They include:

- C1: *Regulatory Regime*** – The extent to which relevant regulatory frameworks incentivize PPP utilization and/or reduce barriers to PPP execution;
- C2: *Market Transparency*** – The degree of publicness/openness surrounding PPP procurement, bid documents, contractual changes, and evaluations;
- C3: *Political and Social Will*** – The level of political and public support for PPP project delivery;
- C4: *Market Reliability*** – The conduciveness of the political/business environment surrounding PPP project development and implementation;
- C5: *Institutional Support*** – The extent to which government institutions and organizations enable PPP procurement and contract management; and

²³ Opara et al. (2017) show that PPP project development and implementation are impacted by the policy/business environment.

C6: Governance Mechanisms – The degree to which governments have implemented governance mechanisms for managing PPP projects

Figure 20 delineates these conditions in a conceptual model.

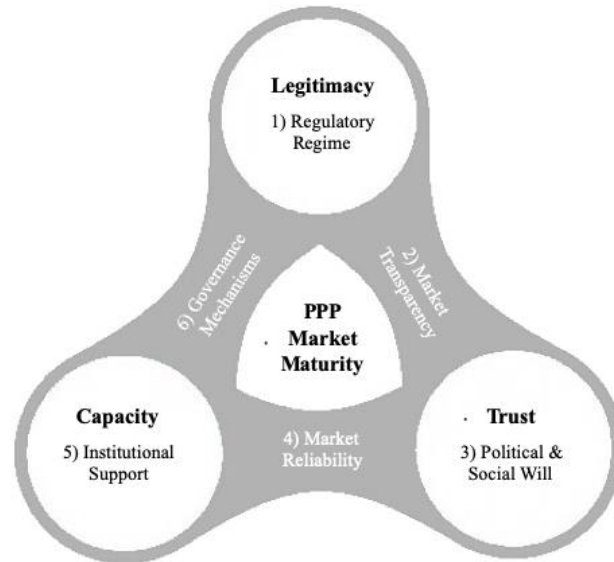


Figure 20: Conceptual Model of PPP Market Maturity

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 48 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 (Jordan, Gross, Javernick-Will, and Garvin 2011). 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 2012). 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.

In short, this methodology, developed over the past 30 years by Charles Ragin and other scholars, “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 2012; Ragin 2014). Jordan et al. (2011, 1159) note that “QCA is [particularly] well suited for research where interactions between conditions and outcomes are not well understood and can be used to build theory in the complex environment of construction.” In the case of mature PPP market performance, its advantageous to thus 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 quantify, 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) Infrascope index (see, e.g. EIU 2017a, 2017b, 2018a, 2019). Commissioned by the Inter-American Development Bank (IDB), Millennium Challenge Corporation (MCC), and European Bank for Reconstruction and Development (EBRD), 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 2019 index covers 67 EMDE countries across Latin American and the Caribbean (LAC), Europe, the Middle East, and Africa (EMEA), and the Asia-Pacific region (APAC) (see Figure 21).

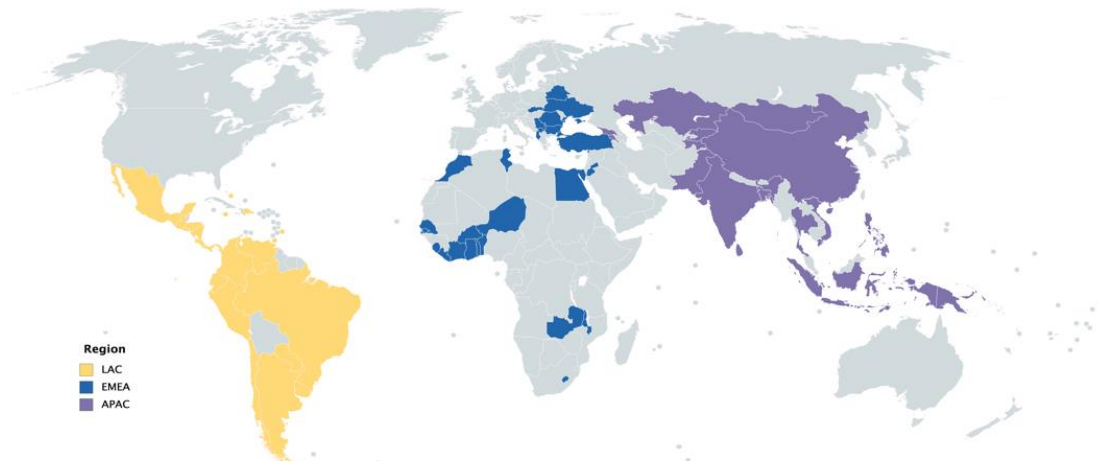


Figure 21: EIU Infrascope Index Coverage

This index is well-suited for fsQCA because it offers rich data on PPP institutional support structures and programmatic outcomes in these emerging markets and developing economies (EMDEs). 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. These countries also offered a great degree of variation in regional location. Moreover, the large set of cases used in this study enhances the validity of the findings and allows for middle range theory building.

Of the 67 countries listed in the index, 48 were selected for inclusion in the analysis. Because this research pursues case-oriented theory building, we had little interest in cases that displayed neither the cause nor the outcome. Cases which did not have any current PPP market activity (within the last 5 years) were thus dropped from the study. Figure 22 presents 16 LAC, 15 EMEA, and 17 APAC cases used in the fsQCA analysis.



Dropped Cases: Bahamas; Barbados; Belarus; Benin; Burkina Faso; Niger; Paraguay; Sierra Leone; Tajikistan; Togo; Trinidad and Tobago; Tunisia; Lesotho; Liberia; Malawi; Papua New Guinea; Gambia; Timor-Leste; Venezuela

Figure 22: Summary of Selected Cases

CODING PROTOCOL

The basis of scoring for each causal and outcome condition is presented in Table 3. For each construct, subsets of indicators were selected from the EIU Infrascopes Index and aggregated to produce a normalized score from 0-100. A scoring scheme was then developed for these normalized scores based on the research team's substantive knowledge of the PPP field. Mature countries in the causal and outcome conditions achieved scores between 75 and 100. Moderately developed countries scored between 50 and 74. Emerging markets scored between 25 and 49 while nascent markets scored between 0 and 24. As specified by Ragin (2012), these ranges were then calibrated into

a four-value scheme using the numerical values 0 (nascent), 0.4 (emerging), 0.6 (moderately developed), and 1 (mature) to indicate whether countries were “fully out,” “more out than in,” “more in than out,” or “fully in” each of the causal and outcome conditions. A step-by-step illustration of the coding protocol for one of these conditions is provided in the appendix. Detailed definitions and coding schemes for the Infrascopes indicators used in the causal and outcome conditions can also be found in EIU (2017b, 2018a, 2019).

FINDINGS: PATHWAYS TO MATURE PPP MARKET PERFORMANCE

Within our relatively large case set, we prioritized high *consistency* and *coverage* measures for pathways leading to mature PPP market performance. Consistency describes the frequency with which recipes lead to the outcome of interest while coverage measures the extent to which the recipes explain the cases included in the analysis. In practice, fsQCA scholars commonly use consistency scores greater than 0.8 for sufficiency and 0.9 for necessity to establish set-theoretic relationships between causal conditions and their outcomes of interest. Likewise, while individual recipes tend to only cover a small subset of cases, fsQCA analyses ideally contain high aggregate coverage scores showing most, if not all, of the cases in the data are explained by at least one causal pathway. Taken together, these metrics indicate an overall “goodness of fit” between the case data and the recipes for the outcome.

In this paper, all of the recipes for mature PPP market performance described below satisfy these consistency thresholds. Additionally, we utilized a “rule of 3” frequency threshold for casual recipes in the truth table procedure to mitigate possible measurement and coding errors in our case set (Ragin 2012).²⁴ Since this research follows a case-oriented theory building approach (Eisenhardt and Graebner 2007; Jordan et al. 2011), we were also less concerned with “which combinations have instances (i.e., at least one case with greater than 0.5 membership)” and more interested in “which combinations have enough instances to warrant conducting an assessment of their possible subset relation with the outcome” (Ragin 2012, 20). From a set-theoretic viewpoint, this meant optimizing for necessity over sufficiency. We thus found it “prudent to treat low-frequency causal combinations in the same way as those lacking

²⁴ According to Sheth and Sisodia (2002a, 2002b), in business and economics, the “rule of 3” suggests there are usually three ‘major players’ in any mature, competitive market. Drawing on these insights, we suggest there must be a least three cases associated with each causal combination of institutional conditions leading to mature PPP market performance.

strong empirical instances altogether” (Ragin 2012, 20). By using this analytical approach, our analysis for necessity and sufficiency explores only the empirically *relevant* causal combinations which lead to mature PPP market performance (see, e.g. Ragin 2000; Ragin 2012; Ragin 2014).²⁵

²⁵ These was also concern that several cases received greater than 0.5 membership due to measurement or coding errors.

Table 3: Causal and Outcome Conditions

Conditions	Economist Intelligence Unit (EIU) Infrascopes Indicators					Scores & Calibration	
Regulatory Regime	PPP CODIFICATION 1. PPP contracts supported by public procurement 2. Codification of PPP procurement practices 2.1 Existence of manuals or policies for PPP procurement 2.2 Online manuals or policies for PPP procurement	PPP SELECTION CRITERIA 1. Competitive bidding required by regulations 2. Selection criteria outlined in regulations 2.1 Economic principles for project selection 2.2 Cost-benefit analysis required 2.3 Options analysis and value for money assessment required 3. Unsolicited bids/proposals 3.1 Policies and procedures for unsolicited proposals	CONTINGENT LIABILITIES 1. Regulations on contingent liabilities 2. Measurement of contingent liabilities	SUSTAINABILITY 1. Environmental impact statement required for PPPs 2. Disaster risk sensitive investment 2.1 Disaster risk management in PPP regulations 2.2. Insurance requirement of disaster risk 3. Climate change commitments in PPP guidelines		<p>NORMALIZED SCORES 0-24 (nascent) 25-49 (emerging) 50-74 (moderately developed) 75-100 (mature)</p> <p style="text-align: center;">↓</p> <p>CALIBRATION 0 (nascent) 0.4 (emerging) 0.6 (moderately developed) 1 (mature)</p>	
Governance Mechanisms	RENEGOTIATIONS 1. Transparent renegotiation system 2. Transparency: renegotiations disclosed by law 3. Independent oversight of renegotiations 4. Termination in project agreement 5. Compensation mechanisms for renegotiations	CONTRACT TERMINATION 1. Appeals in case of contract termination 2. Expedited contract transfer for project exit 3. Fair compensation for early termination 4. Termination procedure in PPP contract	CONCILIATION SCHEMES 1. Existence of conciliation schemes 2. Arbitration 2.1 Access to international arbitration 2.2 Existence of independent arbitration tribunal 2.3 Procedures for appeals in regulations 2.4 Maximum time requirements for arbitration rulings				
Institutional Support	PPP INSTITUTIONAL FRAMEWORK 1. Existence of a PPP dedicated agency 2. Dedicated PPP agency adequately staffed	STABILITY OF PPP DEDICATED AGENCY 1. Reporting lines of PPP dedicated agency 2. Independence of PPP dedicated agency	PREPARATION FACILITIES 1. Preparation facilities 1.1. Existence of project preparation facilities 1.2. Budget for project preparation facilities 2. Project development fund	MONITORING AND REPORTING 1. Monitoring and reporting 2. Agency for evaluation of PPP project results	GOVERNMENT AGENCY COORDINATION 1. PPP procurement process coordination guidelines 2. Existence of coordination mechanisms 3. Guidance for interaction amongst agencies		
Market Transparency	TRANSPARENCY AND ACCOUNTABILITY 1. Existence of a public PPP registry 2. National PPP monitoring and reporting 2.1 Reports on PPP projects 2.2 Reports on PPP project phases 2.3 Publication of needs assessments 2.4 Publication of PPP results evaluation	CONSULTATION 1. Consultation required for PPPs 2. Consultation for unsolicited proposals 3. Publication of consultation findings	FAIRNESS/OPENNESS OF BIDS AND CONTRACT CHANGES 1. Publication of bidding documents required 2. Publication of contracts required 3. Publication of changes in contracts required				
Market Reliability	POLITICAL STABILITY 1. Political effectiveness 2. Sovereign risk	BUSINESS ENVIRONMENT 1. Business environment 2. Currency risk	CAPITAL MARKET FOR PRIVATE INFRASTRUCTURE FINANCE 1. Marketable debt 2. Source of financing for PPPs 3. Participation of institutional investors in PPPs	COMPETITION ENVIRONMENT IN THE LOCAL INDUSTRY 1. Level of concentration in the industry 2. Ratio of unsolicited proposals			
Political & Social Will	PPP PRIORITISATION 1. Existence of a national infrastructure plan 2. PPP prioritization in national infrastructure plan	POLITICAL WILL 1. High-level political support for PPPs 2. Bipartisan or multi-party support for PPPs	SOCIAL WILL 1. Attitudes towards PPPs: opposition to PPPs				
PPP Market Performance	EXPERIENCE WITH INFRASTRUCTURE PPP CONTRACTS 1. Number of PPP projects in the past 5 years 2. PPP investment size relative to GDP	EXPROPRIATIONS, CANCELLATIONS, & DEFAULTS 1. Project expropriations in the past 10 years 2. Unilaterally enforced price revisions 3. Distress level – cancellations in the past 5 years 4. Government payments: PPP contract defaults					

ANALYZING NECESSITY: A FIRST STEP

Before we reached our “analytic moment” (Rihourx and Ragin 2008), we first conducted a necessary conditions analysis for mature PPP market performance. *Necessary* conditions “are those that must be present but alone are not sufficient to produce the outcome of interest” while *sufficient* conditions (or combinations thereof) “are sufficient but not necessary (because of multiple causal pathways) to produce the outcome of interest (Boudet, Jayasundera, and Davis 2011, 504-505). Ragin (2012, 22) notes “[i]t is often useful to check for necessary conditions before conducting the fuzzy truth table procedure.” Our analysis of necessity indicates there are three possible necessary conditions for mature PPP market performance (see Table 4).

Table 4: Necessary Conditions Analysis for Mature PPP Market Performance

Theorized Conditions	Consistency	Coverage
Regulatory Regime	0.973	0.749
Political and Social Will	0.939	0.734
Market Reliability	0.898	0.857
Governance Mechanisms	0.878	0.737
Institutional Support	0.850	0.710
Market Transparency	0.687	0.871

Both a *regulatory regime* and *political and social will* score above the 0.9 consistency threshold for necessary conditions, while *market reliability* falls right along the threshold. Because these conditions pass the necessity test and “makes sense” as necessary conditions, they could “be dropped from the truth table procedure, which, after all, is essentially an analysis of sufficiency” (Ragin 2012, 22). However, because this analysis uses higher frequency and consistency thresholds for the truth table procedure, the necessary conditions were ultimately retained for the sufficiency analysis. Two additional conditions—*governance mechanisms* and *institutional support*—were also very close to the 0.9 threshold but cannot be considered necessary. They do, however, show up as part of one or more of the sufficient causal pathways outlined below.

UNPACKING MATURE PPP MARKET PERFORMANCE IN LAC, EMEA, AND APAC

Among the 48 cases examined, 7 (4 LAC, 2 EMEA, and 1 APAC) were coded as achieving “mature” PPP market performance while 35 others (10 LAC, 12 EMEA, 13 APAC) were considered to have “moderately developed” PPP markets. The intermediate solution results for mature PPP market performance across LAC, EMEA, and APAC are presented below.²⁶

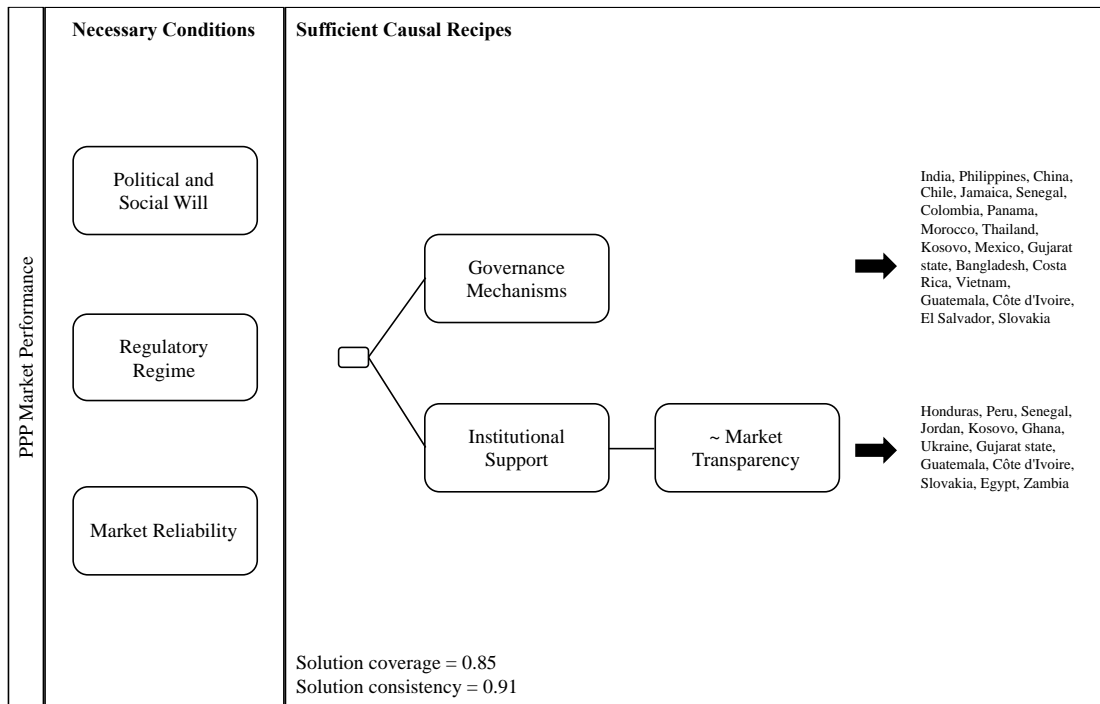


Figure 23: Causal Recipes for Mature PPP Market Performance

Figure 23 illustrates the various combinations of necessary and/or sufficient causal conditions leading to mature PPP market performance. In total, two distinct causal pathways were identified as sufficient for mature PPP market performance, with an overall solution coverage and consistency score of 0.85 and 0.91 respectively. This means these two pathways explain 85% of the case data and consistently lead to moderate and/or mature PPP market performance 91% of the time.

In the first pathway, *governance mechanisms* appear to be sufficient for mature PPP market performance. The consistency measure for this causal recipe is 0.91, meaning that cases with this causal configuration are 91% consistent in exhibiting mature PPP

²⁶According to Ragin (2012, 23), “‘intermediate’ solutions are superior to both the ‘complex’ and ‘parsimonious’ solutions and should be a routine part of any application of any version of QCA.” Another “important benefit of intermediate solutions is that they will not allow removal of necessary conditions—any condition that is a superset of the outcome and that makes sense as a necessary condition” (Ibid, 23).

market performance. The coverage of this recipe for mature PPP market performance is 0.80, meaning that 80% of the sum of the membership scores in the outcome can be explained by this pathway. With such high consistency and coverage scores, this recipe contains a myriad of emblematic case examples (see Figure 4). More importantly, it signals that mature *governance mechanisms* both enhance the capacity of governments to manage PPP contracts and reinforce a certain level of legitimacy in PPP project delivery, providing assurances that events of conciliation, renegotiation, and contract termination are handled appropriately.

Similar observations can be made for the second causal pathway as well. In this recipe, a combination of *institutional support* and the absence of *market transparency* appear to be sufficient for mature performing PPP markets. With a coverage score of 0.62 and a consistency measure of 0.95, this pathway only explains 62% of the case set but exhibits mature PPP market performance with 95% consistency. Upon further reflection, there appear to be two plausible explanations for this unique causal combination of conditions. The first suggests that the presence of mature *institutional support* (i.e. capacity) for PPPs may insulate countries from perverse institutional conditions like nascent or weak *market transparency* (Shirley 2005). Alternatively, countries prioritizing the political and governance strengths of PPPs may be exploiting the absence of external transparency—i.e. the extent to which internal information is visible to the outside world—in order to deliver PPP projects. Emblematic cases such as Honduras, Jordan, Ukraine, Zambia, and others seem to support both of these narratives.

DISCUSSION

Although the results of this second causal pathway appear to run contrary to the expectations of the extant literature, these findings are perhaps not that surprising. PPPs have been routinely attacked for their lack of transparency (e.g. Grimsey and Lewis 2002; Hood and Heald 2006; Papadopoulos 2007; Willems 2014). However, most of these studies focus on transparency as a relationship between the internal organization and external stakeholders without “render[ing] a full account of the various types of transparency that have been distinguished in the academic literature” (Reynaers and Grimmelikhuijsen 2015, 610). Reynaers and Grimmelikhuijsen (2015, 614) point out there are actually three distinct types of transparency associated with PPPs. They are:

- (1) *Input transparency* – the visibility and inferability of information on the project’s financial and service-level parameters, established prior to the actual construction and service delivery in contracts;
- (2) *Process transparency* – the visibility and inferability during the process obtained by performance monitoring and monitoring of expenses; and
- (3) *Output transparency* – the visibility and inferability of output specifications about expected level of performance, provided by output specifications.

In their, study, Reynaers and Grimmelikhuijsen (2015) show that input transparency tends to be high in PPPs while process and output transparency are generally lacking. In our fsQCA analysis, this lack of process and output transparency appears to be captured within the institutional condition of *market transparency* (see Table 1). However, whether this absence of “transparency is problematic [for PPP market performance] depends on the institutional environment in which a PPP is embedded” (Reynaers and Grimmelikhuijsen 2015, 622). Our fsQCA analysis shows that nascent *market transparency* is either insignificant or advantageous for PPP market performance in certain institutional contexts. These findings point to limitations in our conceptual model of PPP market maturity and support the notion that “transparency in PPPs may not be as problematic as previously assumed” (Reynaers and Grimmelikhuijsen 2015, 624). However, as emphasis on *market transparency* increases, transparency may become more problematic for PPP market performance and ultimately “affect how ‘open’ or ‘democratic’ PPP[s] [are] in practice” (Reynaers and Grimmelikhuijsen 2015, 623).

CONCLUSIONS

Despite the growing level of scholarship dedicated to public-private partnerships (PPPs) in recent years, relatively little attention has been paid to the institutional drivers supporting mature PPP market performance. To the best of the writers’ knowledge, this study represents the first known attempt to derive a conceptual model of PPP market maturity and examine whether different constellations of institutional factors create unique causal “paths” to mature PPP market performance. Using fuzzy set Qualitative Comparative Analysis (fsQCA) and data from the 2019 EIU Infrascopie Index, several insights emerge from our systematic evaluation of 48 countries across Latin America

and the Caribbean (LAC), Europe, the Middle East, and Africa (EMEA), and the Asia Pacific region (APAC).

Overall, the results of this fsQCA study show that countries achieve mature PPP market performance through different combinations of institutional factors. The presence of *market reliability*, *political and social will*, and *regulatory regimes* as necessary conditions for mature PPP market performance indicate that legitimacy and trust in the PPP model are essential but alone not sufficient for a mature functioning PPP market. Likewise, the recipes also show that PPP capacity—in the form of mature *governance mechanisms* and/or *institutional support*— is sufficient but not necessary for mature PPP market performance. Taken together, these insights reinforce the importance of legitimacy, trust, and capacity as central institutional capabilities for PPP market maturity.

However, the results also yield some surprising conclusions. In particular, the absence of *market transparency* appears to be far less problematic for PPP market performance than previously assumed. In some cases, nascent *market transparency* is actually advantageous for PPP programmatic outcomes. These findings reveal inherent limitations in our conceptual model of PPP market maturity and lend credence to Hodge and Greve’s (2017, 70) hypothesis that governments may prioritize “the political and governance strengths of [PPPs] over [their] promised traditional utilitarian project benefits.”

Finally, because this study relies on secondary data and only a subset of cases contained in the 2019 EIU Infrascope Index, the results of this analysis should be interpreted with caution. Although significant efforts were made to accommodate existing data limitations, future research should attempt to validate these findings as part of a broader theory-building research agenda. Additional work is also needed to analyze the temporal order of the institutional conditions proposed in this study and their effects on PPP market performance.²⁷ Moreover, future research should explore how changes in these institutional conditions over time ultimately effect PPP market outcomes.²⁸

²⁷ The use of temporal QCA (TQCA) is being explored for this very purpose.

²⁸ Time series QCA (TSQCA) appears to be an attractive method for this type of work.

CHAPTER 5 – CONTRIBUTIONS AND FUTURE RESEARCH

In summary, public-private partnerships (PPPs) have increased in popularity globally as an alternative procurement model for infrastructure projects. 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 effectiveness to date remains unclear and subject to extensive debate. The growing divergence of PPP policies, legislation, agency formation, and legal precedents across Europe, North America, Asia, Latin America, and Africa have complicated assessments of PPP efficacy. While some countries have eagerly embraced PPPs and developed extensive PPP programs, others have remained skeptical of the PPP approach. 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. However, researchers have only recently started to recognize the role institutional settings play in PPP program success. To address this knowledge gap, my thesis explores how institutional factors—i.e. economic, political, social, and legal—affect PPP governance, institutionalization, and market development.

In the chapters above, my research conceptualizes the foundational components of PPP institutional maturity and offers the first systematic examination of PPP institutionalization in the United States. My research also applies fuzzy set Qualitative Comparative Analysis (fsQCA) to 48 countries surveyed in the 2019 Economist Intelligence Unit (EIU) Infrascope Index and identifies necessary and/or sufficient conditions of mature PPP market performance. The contributions from each of these chapters are succinctly summarized below.

(RE)DEFINING PPPs IN NEW PUBLIC GOVERNANCE

Although infrastructure PPPs have been around since the early 1990s, this delivery approach has become increasingly embedded in the fragmented and uncertain public management paradigm known as New Public Governance (NPG). NPG recognizes the legitimacy and interrelatedness of policy making and service delivery processes, whereby private agents engage governments in complex and contractually sophisticated relationships. While NPG is of great interest to many scholars, little work to date connects the conceptual foundations of PPP institutional maturity with NPG. My theoretical work in chapter 2 develops a conceptual model of PPP institutional maturity based on three institutional components—*legitimacy*, *trust*, and *capacity*—and uses this

framework to analyze the factors supporting and/or inhibiting PPP utilization in the United States (see Figure 5). My case analysis indicates PPP utilization in the U.S. remains dependent on one or more absent and/or weak capabilities supporting PPP institutional maturity.

EXPLORING THE STATE OF PPP INSTITUTIONALIZATION IN THE UNITED STATES

Additionally, in typical institutionalization processes, “[innovations] are first recognized, then accepted by relatively few actors, and then widely diffused and broadly accepted within a field” (Lawrence, Winn, and Jennings, 2001: 626). While other researchers have examined the institutional and strategic elements which influence the adoption, maturation, and legitimation of PPP markets, this research, discussed in chapter 3, was the first of its kind to systematically examine the process of PPP institutionalization. In this work, I utilized a combination of Johnson et al.’s (2006) four phases of institutionalization—*innovation*, *local validation*, *diffusion*, and *general validation*—and Mrak’s (2014) three models of PPP institutionalization—*centralized*, *decentralized*, and *mixed*—to examine the current state of the U.S. PPP market. Using data on 368 U.S. PPP projects from Inframation’s global transactions database, my case analysis indicates the U.S. PPP institutionalization process is strongly decentralized and in a state of diffusion (see Figure 15). This analysis further suggests the U.S. could accelerate general validation of PPPs by shifting to a mixed PPP institutionalization model.

THE ROLE OF INSTITUTIONAL CAPABILITIES IN PPP MARKET PERFORMANCE

After examining the U.S. PPP market in detail, my research then takes an international perspective and examines the necessary and/or sufficient institutional conditions supporting mature PPP market performance. Drawing on data from the 2019 EIU Infrascopie Index, a tool which evaluates the capacity of countries to implement sustainable and efficient PPPs, my research uses fuzzy set Qualitative Comparative Analysis (fsQCA) to compare the PPP-enabling environments of 48 across Latin America and the Caribbean (LAC), Europe, the Middle East, and Africa (EMEA), and Asia-Pacific region (APAC). It then uses the previously constructed conceptual model of PPP institutional maturity outlined in chapter 2 to identify different combinations of institutional capabilities which lead to sustained levels of PPP utilization and mature PPP market performance (see Figure 23). The results of this analysis ultimately offer academics, policymakers, and industry practitioners a critical lens for assessing PPP

market maturity across localized, institutional settings. It also highlights various market signals and outlines recommendations for institutional reform.

FUTURE RESEARCH

Moving forward, my future research will build off this dissertation and focus on four primary areas. First, I will investigate the temporal dynamics of PPP institutionalization across countries. With data already in hand from Inframation's global transaction database on 5,607+ PPP projects across Africa, Asia, Australasia, Europe, Latin America, North America, and the Middle East, I am ready to test whether patterns of PPP institutionalization conform to the alternative institutionalization curves outlined in Lawrence, Winn, and Jennings (2001).

Second, some of my future work will analyze the temporal order of the institutional conditions examined in chapter 3 and their effects on PPP market performance. My research will also explore how changes in these institutional conditions over time ultimately effect PPP market outcomes.

Third, I will explore the institutional drivers of deferred maintenance, analyze the escalation of deferred maintenance overtime, and compare PPP vs. traditional maintenance regimes. In my past and current work, the institutional challenges of deferred maintenance emerged as a recurring justification for greater utilization of PPPs. However, the issue of deferred maintenance has garnered relatively little attention in engineering, management, and policy circles. With data provided from Infrastructure Ontario's capital planning division, I intend to examine the institutional drivers of deferred maintenance (e.g. annual maintenance appropriation cycles), measure the escalation of deferred maintenance overtime, and compare PPP vs. traditional maintenance regimes, among other topics. Finally, I intend to expand my research focus and explore novel infrastructure policy areas, such as:

- *Policy Learning within Infrastructure Agencies*—i.e. the transmission of institutional knowledge across infrastructure programs;
- *Asset Recycling*—i.e. policies to reinvest asset sales/concession proceeds into new projects; and
- *In-Kind Asset Transfers*—e.g. government ownership of an economic infrastructure asset is transfer to a pension fund in order to match their long-term actuarial liabilities.

By studying these topics, as well as those outlined above, I intend to further expound research which explores the effects of political, economic, social, and legal factors on PPP governance, institutionalization, and market development/performance.

REFERENCES

- Acerete, Basilio, Mar Gasca, Anne Stafford, and Pamela Stapleton. 2015. "A comparative policy analysis of healthcare PPPs: Examining evidence from two Spanish regions from an international perspective." *Journal of Comparative Policy Analysis: Research and Practice*.
- Albalate, Daniel, Germà Bel, and R. Richard Geddes. 2015. "The determinants of contractual choice for private involvement in infrastructure projects." *Public Money & Management* 35, no. 1: 87-94.
- Albalate, Daniel, Germà Bel, and R. Richard Geddes. 2017. "How Much Vertical Integration? Contractual Choice and Public–Private Partnerships in the United States." *Review of Industrial Organization*: 25-42.
- Ansell, Chris, and Alison Gash. 2008. "Collaborative Governance in Theory and Practice." *Journal of Public Administration Research and Theory* 18, no. 4: 543-571.
- Argentino Pessoa. 2010. "Reviewing PPP Performance in Developing Economies," *FEP Working Papers 362*, Universidade do Porto, Faculdade de Economia do Porto.
- Bel, Germà, and Xavier Fageda. 2009. "Factors explaining local privatization: a meta-regression analysis." *Public Choice* 139, no. 1: 105-119.
- Bennett, John, and Elisabetta Iossa. 2006. "Building and managing facilities for public services." *Journal of public economics* 90, no. 10: 2143-2160.
- Bennon, Mike, Kim, M. Julie, and Raymond E. Levitt. 2017. U.S. Infrastructure Gap(s): Federal Policy and Local Public Institutions. In Press.
- Berg-Schlosser, Dirk, Gisèle De Meur, Benoît Rihoux, and Charles C. Ragin. 2009. "Chapter 1 | Qualitative Comparative Analysis (QCA) as an Approach." In *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques*, edited by Benoît Rihoux and Charles Ragin, pp. 1-18. Thousand Oaks, CA: Sage Publications.

- Bingham, Lisa Blomgren, and Rosemary O'Leary. 2014. *Big ideas in collaborative public management*. Routledge.
- Boardman, Anthony E., and Aidan R. Vining. 2012. "The Political Economy of Public-Private Partnerships and Analysis of Their Social Value." *Annals of Public and Cooperative Economics* 83, no. 2: 117–141.
- Boardman, Anthony E., Carsten Greve, and Graeme A. Hodge. 2015. "Comparative Analyses of Infrastructure Public-Private Partnerships." *Journal of Comparative Policy Analysis: Research and Practice* 17, no. 5: 441-447.
- Boudet, Hilary Schaffer, Dilanka Chinthana Jayasundera, and Jennifer Davis. 2011. "Drivers of conflict in developing country infrastructure projects: experience from the water and pipeline sectors." *Journal of Construction Engineering and Management* 137, no. 7: 498-511.
- Bovaird, Tony. 2004. "Public–Private Partnerships: From Contested Concepts to Prevalent Practice." *International Review of Administrative Sciences* 70, no. 2: 199-215.
- Bovaird, Tony. 2010. "A Brief Intellectual History of the Public-Private Partnership Movement." In *International Handbook on Public-Private Partnerships*, edited by Graeme Hodge, Carsten Greve, and Anthony Boardman, 43–67. Cheltenham, UK: Edward Elgar.
- Boyer, Eric J. 2016. "Identifying a Knowledge Management Approach for Public-Private Partnerships." *Public Performance & Management Review* 40, no. 1: 158-180.
- Boyer, Eric J., and Daniel S. Scheller. 2017. "An Examination of State-Level Public–Private Partnership Adoption: Analyzing Economic, Political, and Demand-Related Determinants of PPPs." *Public Works Management & Policy* 23, no.1: 5–33
- Brinkerhoff, Derick W., and Jennifer M. Brinkerhoff. 2011. "Public–private partnerships: Perspectives on purposes, publicness, and good governance." *Public Administration and Development* 31, no. 1: 2-14.
- Bryson, John M., Barbara C. Crosby, and Melissa Middleton Stone. 2006. "The Design and Implementation of Cross-Sector Collaborations: Propositions from the Literature." *Public Administration Review* 66, Special Issue: Collaborative Public Management: 44-55.

- Buckberg, Elaine, Mudge, Robert, and Hannah Sheffield. 2018. "Rising Tide of Next Generation U.S. P3s – and How to Sustain It." The Brattle Group.
- Build America Bureau. 2017. "About the Build America Bureau." US Department of Transportation. Accessed November 21, 2017.
- Burger, Philippe, and Ian Hawkesworth. 2011. "How to attain value for money: comparing PPP and traditional infrastructure public procurement." *OECD Journal on Budgeting* 11, no. 1: 91.
- Buxbaum, Jeffrey N., and Iris N. Ortiz. 2007. *Protecting the public interest: The role of long-term concession agreements for providing transportation infrastructure*. No. 07-02. Keston Institute for Public Finance Policy and Infrastructure Policy, University of Southern California.
- Casady, Carter B. and R. Richard Geddes. 2016. "Private Participation in US Infrastructure: The Role of PPP Units." Washington, DC: American Enterprise Institute (AEI).
- Casady, Carter B., Kent Eriksson, Raymond E. Levitt, and W. Richard Scott. 2018. "Examining the State of Public-Private Partnership (PPP) Institutionalization in the United States." *Engineering Project Organization Journal* 8, no. 1: 177-198.
- Casady, Carter B., Kent Eriksson, Raymond E. Levitt, and W. Richard Scott. 2019. "(Re)Defining Public-Private Partnerships (PPPs) in the New Public Governance (NPG) Paradigm: An Institutional Maturity Perspective." *Public Management Review*.
- Cawley, Kim P. 2013. *Testimony on the Status of the Highway Trust Fund*. No. 44434. Congressional Budget Office.
- CBO 2015. *Public Spending on Transportation and Water Infrastructure, 1956 to 2014*. Washington, DC: Congressional Budget Office (CBO).
- Chou, Jui-Sheng, and Dinar Pramudawardhani. 2015. "Cross-country comparisons of key drivers, critical success factors and risk allocation for public-private partnership projects." *International Journal of Project Management* 33, no. 5: 1136-1150.
- Conteh, Charles. 2010. "Transcending New Public Management: The Transformation of Public Sector Reforms." *Public Management Review* 12, no. 5: 751-754
- DeCorla-Souza, Patrick, Douglass Lee, Darren Timothy, and Jennifer Mayer. 2013. "Comparing public-private partnerships with conventional procurement:

- incorporating considerations from benefit-cost analysis." *Transportation Research Record: Journal of the Transportation Research Board* 2346: 32-39.
- Delhi, Venkata Santosh Kumar, and Ashwin Mahalingam. 2017. "Factors influencing the post-award governance of PPP projects: A proposed framework." *Engineering Project Organization Journal* 7, no.2 : 114-134
- Delhi, Venkata SK, Seshanka Palukuri, and Ashwin Mahalingam. 2010. "Governance Issues in Public Private Partnerships in Infrastructure Projects in India." Paper presented at the *Engineering Project Organizations Conference*, South Lake Tahoe, CA.
- DiMaggio, Paul, and Walter W. Powell. 1983. "The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields." *American Sociological Review* 48, no. 2: 147-160.
- Dutz, Mark, Clive Harris, Inderbir Dhingra, and Chris Shugart. 2006. "Public-private partnership units: What are they, and what do they do?." Washington, DC: World Bank.
- Economist Intelligence Unit (EIU). 2017a. *Evaluating the environment for public-private partnerships in Eastern Europe, Central Asia and the Southern and Eastern Mediterranean: The 2017 Infrascopes*. New York, NY: EIU.
- Edkins, Andrew J., and Hedley J. Smyth. 2006. "Contractual management in PPP projects: evaluation of legal versus relational contracting for service delivery." *Journal of Professional Issues in Engineering Education and Practice* 132, no. 1: 82-93.
- Eggers, William D., and Tom Startup. 2006. *Closing the Infrastructure Gap: The Role of Public-Private Partnerships*. Deloitte Research Study: Deloitte.
- Eisenhardt, Kathleen M., and Melissa E. Graebner. 2007. "Theory Building from Cases: Opportunities and Challenges." *Academy of Management Journal* 50, no.1: 25–32.
- EIU 2018a. *Evaluating the environment for public-private partnerships in Asia: The 2018 Infrascopes*. New York, NY: EIU.
- EIU. 2017b. *Evaluating the environment for public-private partnerships in Latin America and the Caribbean: The 2017 Infrascopes*. New York, NY: EIU.
- EIU. 2018b. *Measuring the Enabling Environment for Public-Private Partnerships in Infrastructure*. New York, NY: EIU.

- EIU. 2019. *Evaluating the environment for public-private partnerships in Latin America and the Caribbean: The 2019 Infrascop*. New York, NY: EIU.
- Engel, Eduardo, Ronald D. Fischer, and Alexander Galetovic. 2014. *The Economics of Public-Private Partnerships: A Basic Guide*. Cambridge: Cambridge University Press.
- European PPP Expertise Centre (EPEC). 2014. "Establishing and Reforming PPP Units: Analysis of EPEC Member PPP Units and Lessons Learnt." Washington, DC: World Bank Group.
- Fallows, James. 2015. "Why We Can't Think Straight About Public Spending: California High-Speed Rail, and the Latest USAF Bomber." *The Atlantic*.
- Fard, Hassan Danaee, and Ali Asghar Anvary Rostamy. 2007. "Promoting public trust in public organizations: Explaining the role of public accountability." *Public Organization Review* 7, no. 4: 331-344.
- Farquharson, Edward, Clemencia Torres de Mastle, E. R. Yescombe, and Javier Encinas. 2011. *How to Engage with the Private Sector in Public-Private Partnerships in Emerging Markets*. Washington, DC: World Bank.
- Federal Highway Administration (FHWA). 2018. "State P3 Legislation." Washington, DC: U.S. Department of Transportation, Center for Innovative Finance Support.
- Federal Transit Administration (FTA). 2018. *What are Private Investment Project Procedures (PIPP)?* U.S. Department of Transportation (USDOT).
- Flinders, Matthew. 2005. "The politics of public-private partnerships." *The British Journal of Politics and International Relations*, 7, no.: 215–239.
- Flyvbjerg, Bent, Mette Skamris Holm, and Soren Buhl. 2002. "Underestimating costs in public works projects: Error or lie?." *Journal of the American Planning Association* 68, no. 3: 279-295.
- Flyvbjerg, Bent. 2006. "Five misunderstandings about case-study research." *Qualitative Inquiry* 12, no. 2: 219-245.
- Forrer, John, James Edwin Kee, Kathryn E. Newcomer, and Eric Boyer. 2007. "Public-Private Partnerships and the Public Accountability Question." *Public Administration Review* 70, no. 3: 475-484
- Garvin, Michael J. 2010. "Enabling development of the transportation public-private partnership market in the United States." *Journal of Construction Engineering and Management* 136, no. 4: 402-411.

- Geddes, R. Richard and Benjamin L. Wagner. 2013. "Why do U.S. States Adopt Public-Private Partnership Enabling Legislation?" *Journal of Urban Economics* 78: 30-41.
- Geddes, R. Richard, and Eoin Reeves. 2017. "The Favourability of US PPP Enabling Legislation and Private Investment in Transportation Infrastructure." *Utilities Policy* 48: 157-165.
- Geddes, R. Richard. 2011. *The Road to Renewal: Private Investment in U.S. Transportation Infrastructure*. Washington, D.C.: AEI Press.
- Girth, Amanda M. 2017. "Incentives in Third-Party Governance: Management Practices and Accountability Implications." *Public Administration Review* 77, no. 3: 433-444.
- Glaser, B., and A. Strauss. 1967. *The Discovery of Grounded Theory*. Aldine Publishing Company: Hawthorne, New York.
- Greve, Carsten, and Graeme Hodge. 2010. "Public-Private Partnerships and Public Governance Challenges." In *New Public Governance?: Emerging Perspectives on the Theory and Practice of Public Governance*, edited by Stephen P. Osborne, 149-162. Routledge.
- Grimsey, Darrin, and Mervyn Lewis. 2002. "Accounting for public private partnerships." In *Accounting Forum*, 26: 245-270.
- Grimsey, Darrin, and Mervyn Lewis. 2007. *Public Private Partnerships: The Worldwide Revolution in Infrastructure Provision and Project Finance*. Edward Elgar Publishing.
- Guasch, J. Luis, Jean-Jacques Laffont, and Stephane Straub. 2008. "Renegotiation of concession contracts in Latin America: Evidence from the water and transport sectors." *International Journal of Industrial Organization* 26, no. 2: 421-442.
- Hall, Daniel M., and W. Richard Scott 2018. "Early stages in the institutionalization of Integrated Project Delivery, *Engineering Project Organization Journal*.
- Hall, John Stuart. 2002. "Reconsidering the connection between capacity and governance." *Public Organization Review* 2, no. 1: 23-43.
- Haveri, Arto. 2006. "Complexity in Local Government Change: Limits to Rational Reforming." *Public Management Review* 8, no. 1: 31-46.
- Hellowell, Mark, and Veronica Vecchi. 2015. "The Non-Incremental Road to Disaster? A Comparative Policy Analysis of Agency Problems in the

- Commissioning of Infrastructure Projects in the UK and Italy." *Journal of Comparative Policy Analysis: Research and Practice* 17, no. 5: 519-532.
- Henisz, Witold J., Raymond E. Levitt, and W. Richard Scott. 2012. "Toward a unified theory of project governance: economic, sociological and psychological supports for relational contracting." *Engineering Project Organization Journal* 2, no. 1-2: 37-55.
- HM Treasury. 2012. *A New Approach to Public Private Partnerships*. London: HM Treasury.
- Hodge, Graeme A. 2013. "Keynote presentation to Global Challenges in PPP: Cross-Sectoral and Cross-Disciplinary Solutions?," 6–7 November 2013, Universiteit Antwerpen, City Campus, Hof Van Liere.
- Hodge, Graeme A., and Carsten Greve, eds. 2005. *The challenge of public-private partnerships: Learning from international experience*. Edward Elgar Publishing.
- Hodge, Graeme A., and Carsten Greve. 2007. "Public-Private Partnerships: An International Performance Review." *Public Administration Review* 67, no. 3: 545-558.
- Hodge, Graeme A., and Carsten Greve. 2017. "On public-private partnership performance: A contemporary review." *Public Works Management & Policy* 22, no. 1: 55-78.
- Hodge, Graeme A., Carsten Greve, and Anthony Boardman, eds. 2010. *International Handbook of Public-Private Partnerships*. Cheltenham: Edward Elgar Publishing.
- Hodge, Graeme, and Carsten Greve. 2010. "Public-private partnerships: governance scheme or language game?." *Australian Journal of Public Administration* 69: S8-S22.
- Hodge, Graeme, Carsten Greve, and Mhamed Biygautane. 2018. "Do PPP's work? What and how have we been learning so far?." *Public Management Review* 20, no. 8: 1105-1121.
- Hood, Christopher, and David Heald. 2006. *Transparency: The key to better governance?*. Vol. 135. Oxford University Press.
- Hood, Christopher. 1991. "A public management for all seasons?." *Public Administration* 69, no. 1: 3-19.
- Hult, Karen Marie, and Charles Eliot Walcott. 1990. *Governing public organizations: Politics, structures, and institutional design*. Brooks/Cole Pub Co.
- Inframation. 2018. "Global Transactions Database." Accessed August 31, 2018.

- Inframation. 2019. "Global Transactions Database." Accessed April 12, 2019.
- International Energy Agency. 2013. *Global land transport infrastructure requirements: estimating road and railway infrastructure capacity and costs to 2050*. Paris: International Energy Agency.
- Iossa, Elisabetta, and David Martimort. 2015. "The Simple Microeconomics of Public-Private Partnerships." *Journal of Public Economic Theory* 17, no. 1: 4-48.
- Iseki, Hiroyuki, Jeanette Eckert, Kansai Uchida, Ryan Dunn, and Brian D. Taylor. 2009. *Task B-2: Status of Legislative Settings to Facilitate Public Private Partnerships in the U.S. California PATH Research Report UCB-ITS-PRR-2009-32*, Institute for Transportation Studies, University of California, Berkeley, Berkeley, CA.
- Istrate, Emilia, and Puentes, Robert. 2011. "Moving forward on public private partnerships: US and international experience with PPP units." Washington, DC; Brookings Institution.
- Johnson, Cathryn, Timothy J. Dowd, and Cecilia L. Ridgeway. 2006. "Legitimacy as a social process." *Annual Review of Sociology* 32: 53-78.
- Jooste, Stephen F., and W. Richard Scott. 2012. "The public-private partnership enabling field: evidence from three cases." *Administration & Society* 44, no. 2: 149-182.
- Jooste, Stephen F., Raymond E. Levitt, and W. Richard Scott. 2011. "Beyond 'one size fits all': How local conditions shape PPP enabling field development." *Engineering Project Organization Journal*, 1, no.1: 11-25.
- Jordan, Elizabeth, Martha E. Gross, Amy Nicole Javernick-Will, and Michael J. Garvin. 2011. "Use and misuse of qualitative comparative analysis." *Construction Management and Economics* 29, no. 11: 1159-1173.
- Kaul, Mohan. 1997. "The new public administration: management innovations in government." *Public Administration & Development (1986-1998)* 17, no. 1: 13.
- Kettl, Donald F. 2011. *Sharing Power: Public Governance and Private Markets*. Brookings Institution Press.
- Kettl, Donald F. 2013. *Politics of the Administrative Process*. Cq Press.
- Kettl, Donald. F. 1993. "Sharing Power." Washington, DC: Brookings Institution.
- Kickert, Walter JM, Erik-Hans Klijn, and Joop FM Koppenjan, eds. 1997. *Managing Complex Networks: Strategies for the Public Sector*. Sage.

- Kinder, Tony. 2012. "Learning, innovating and performance in post-new public management of locally delivered public services." *Public Management Review* 14, no. 3: 403-428.
- Kirk, Robert S., and William J. Mallett. 2013. *Highway bridge conditions: Issues for Congress. Rep. No. R43103*.
- KPMG. 2010. *Procurement, Review of Barriers to Competition and Efficiency in the Procurement of PPP Projects*. KPMG Corporate Finance (aust) Pty Ltd.
- Kwak, Young Hoon, YingYi Chih, and C. William Ibbs. 2009. "Towards a comprehensive understanding of public private partnerships for infrastructure development." *California Management Review* 51, no. 2: 51-78.
- Lammam, Charles, Hugh MacIntyre, and Joseph Berechman. 2013. "Using public-private partnerships to improve transportation infrastructure in Canada." Vancouver: Fraser Institute.
- Lane, Jan-Erik. 2000. *New Public Management*. Taylor & Francis US.
- Lawrence, Thomas B., Monika I. Winn, and P. Devereaux Jennings. 2001. "The temporal dynamics of institutionalization." *Academy of Management Review* 26, no. 4: 624-644.
- Levitt, Raymond E., David B. Ashley and Robert D. Logcher. 1980. "Allocating Risk and Incentive in Construction." *ASCE Journal of the Construction Division* 106, no. 3: 297-305.
- Liu, Junxiao, Peter ED Love, Peter R. Davis, Jim Smith, and Michael Regan. 2013. "Performance measurement framework in PPP projects." In *P3Book Proceedings of International Conference on PPP Body of Knowledge* in Preston, UK, University of Central Lancashire, Lancashire, pp. 55-64.
- Mahalingam Ashwin. 2010. "PPP experiences in Indian cities: barriers, enablers, and the way forward." *Journal of Construction Engineering and Management* 136, no. 4: 419-29.
- Mahalingam, Ashwin, T. Rajan, J. Seddon, V. Santosh, and S. Srinivasan. 2011. "Creating an Enabling Ambient Environment for PPPs." Chennai: IIT-Madras & Centre for Development Finance.
- Mahalingam, Ashwin. 2010. "PPP experiences in Indian cities: barriers, enablers, and the way forward." *Journal of Construction Engineering and Management* 136, no. 4: 419-429.

- Marsilio, Marta, Giulia Cappellaro, and Corrado Cuccurullo. "The intellectual structure of research into PPPs: A bibliometric analysis." *Public Management Review* 13, no. 6 (2011): 763-782.
- Martimort, David. And Jerome Pouyet. 2008. "To build or not to build: Normative and positive theories of public-private partnerships." *International Journal of Industrial Organization* 26, no.2: 393-411.
- Martin, Lawrence L. 2005. "United States: Human Services." In *The Challenge of Public Private Partnerships: Learning from International Experience*, edited by Graeme Hodge & Carsten Greve: 144-161.
- Martin, Lawrence L. 2017. "Public-Private Partnerships (P3s): What Local Government Managers Need to Know." A Policy Issue White Paper for the International City/County Management Association (IMCA).
- Martin, Lawrence L., Wendell C. Lawther, Graeme A. Hodge, and Carsten Greve. 2015. "Internationally Recommended Best Practices and Promising Practices in Transportation Infrastructure Financing Public-Private Partnerships." In *Private Financing of Public Transportation Infrastructure: Utilizing Public-Private Partnerships*, edited by Wendell C. Lawther and Lawrence L. Martin.
- Martin, Lawrence, Wendell Lawther, Graeme Hodge, and Carsten Greve. 2013. "Internationally recommended best practices in transportation financing public-private partnerships (P3s)." *Public Administration Research* 2, no. 2: 15.
- Matos-Castaño, Julieta, Ashwin Mahalingam, and Geert Dewulf. 2014. "Unpacking the Path-Dependent Process of Institutional Change for PPPs." *Australian Journal of Public Administration* 73, no. 1: 47-66.
- Matos-Castaño, Julieta, Geert Dewulf, and Ashwin Mahalingam. 2012. "The complex interplay between the institutional context and PPP project outcomes." In *Proceedings of the Engineering Project Organization Conference*, pp. 10-12.
- McConnell, Allen. 2010. *Understanding Policy Success: Rethinking Public Policy*. Basingstoke, UK: Palgrave Macmillan.
- McKinsey Global Institute. 2013. *Infrastructure productivity: How to save \$1 trillion a year*. McKinsey Global Institute.
- McNichol, Dan. 2013. "The United States: The World's Largest Emerging P3 Market." Star America Infrastructure Fund and AIG.

- McQuaid, Ronald W. and Walter Scherrer. 2010. "Changing reasons for public-private partnerships (PPPs)." *Public Money & Management*, 30, no. 1: 27–34.
- Meyer, John W., and Brian Rowan. 1977. "Institutionalized organizations: Formal structure as myth and ceremony." *American Journal of Sociology* 83, no. 2: 340-363.
- Milmo, Dan, P. Inman, and A. Durrani. 2009. "A bridge too far for PFI schemes." *The Guardian*.
- Moszoro, Marian, Gonzalo Araya, Fernanda Ruiz-Nuñez, and Jordan Schwartz. 2014. "Institutional and Political Determinants of Private Participation in Infrastructure." In *Public Private Partnerships for Transport Infrastructure: Renegotiations, How to Approach Them and Economic Outcomes*. Washington, DC: ITF Roundtable.
- Moulton, Lynne, and Helmut K. Anheier. 2002. "Public-private partnerships in the United States: Historical patterns and current trends." In *Public-private partnerships: Theory and practice in international perspective*, edited by Stephen Osborne. Routledge, 2002.
- Mrak, Mojmir. 2014. "Institutionalization of Public-Private Partnership: Global Experiences and the Basic Outlines of a Proposal for Slovenia." *Central European Public Administration Review* 4, no. 1: 91-103.
- Muhammad, Zayyanu, and Foziah Johar. 2017. "A Conceptual Framework for Evaluating the Success of Public-Private Partnership (PPP) Projects." *Advanced Science Letters* 23, no. 9: 9130-9134.
- Obermann, Gabriel. 2007. "The role of the state as guarantor of public services: transaction cost issues and empirical evidence." *Annals of Public and Cooperative Economics* 78, no. 3: 475–500.
- OECD. 2012. "Recommendation of the Council on Principles for Public Governance of Public-Private Partnerships." Organization for Economic Cooperation & Development (OECD).
- OECD. 2015. *Fostering investment in infrastructure: lessons learned from OECD investment policy reviews*. Organization for Economic Cooperation & Development (OECD).
- Opara, Michael, Fathi Elloumi, Oliver Okafor, and Hussein Warsame. 2017. "Effects of the Institutional Environment on Public-Private Partnership (P3) Projects: Evidence from Canada." *Accounting Forum* 41, no. 2: 77-95.

- Osborne, David. 1993. "Reinventing Government." *Public Productivity & Management Review*, 349-356.
- Osborne, Stephen P. 2006. "The New Public Governance?" *Public Management Review* 8, no. 3: 377-387.
- Osborne, Stephen P. 2010. "Public governance and public services delivery: A research agenda for the future." In *The New Public Governance?: Emerging Perspectives on the Theory and Practice of Public Governance*, edited by Stephen P. Osborne, 413-428. Routledge.
- Osei-Kyei, Robert, and Albert PC Chan. 2015. "Review of studies on the Critical Success Factors for Public-Private Partnership (PPP) projects from 1990 to 2013." *International Journal of Project Management* 33, no. 6: 1335-1346.
- Papadopoulos, Yannis. 2007. "Problems of democratic accountability in network and multilevel governance." *European Law Journal* 13, no. 4: 469-486.
- Perry, James L. 2012. "How can we improve our science to generate more usable knowledge for public professionals?" *Public Administration Review* 72, no. 4: 479-482.
- Petersen, Ole Helby. 2011. "Public-private partnerships as converging or diverging trends in public management? A comparative analysis of PPP policy and regulation in Denmark and Ireland." *International Public Management Review* 12, no. 2: 1-37.
- Public-Private Infrastructure Advisory Facility (PPIAF). 2016. "The State of PPPs: Infrastructure Public-Private Partnerships in Emerging Markets & Developing Economies 1991-2015." Washington, DC: World Bank Group.
- Queiroz, Cesar, and Alejandro Lopez Martinez. 2013. "Legal frameworks for successful public-private partnerships." In *The Routledge Companion to Public-Private Partnerships*, edited by Piet De Vries and Etienne B. Yehoue, 75-94. Routledge.
- Ragin, Charles C. 2000. *Fuzzy-set social science*. Chicago, IL: University of Chicago Press.
- Ragin, Charles C. 2012. "Qualitative comparative analysis using fuzzy sets (fsQCA)." In *Configurational Comparative Analysis*, edited by Benoît Rihoux and Charles Ragin. Thousand Oaks, CA: Sage Publications.
- Ragin, Charles C. 2014. *The comparative method: Moving beyond qualitative and quantitative strategies*. The University of California Press, Berkeley, CA.

- Raisbeck, Peter, Colin Duffield, and Ming Xu. 2010. "Comparative performance of PPPs and traditional procurement in Australia." *Construction Management and Economics* 28, no. 4: 345-359.
- Reeves, Eoin, Dónal Palcic, Darragh Flannery, and R. Richard Geddes. 2017. "The determinants of tendering periods for PPP procurement in the UK: an empirical analysis." *Applied Economics* 49, no. 11: 1071-1082.
- Reynaers, Anne-Marie, and Stephan Grimmelikhuijsen. 2015. "Transparency in public–private partnerships: Not so bad after all?." *Public Administration* 93, no. 3. 609-626.
- Rhodes, Roderick Arthur William. 1996. "The new governance: governing without government." *Political Studies* 44, no. 4: 652-667.
- Rihoux, Benoît, and Charles C. Ragin. 2008. *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques*. Vol. 51. Sage Publications.
- Ross, Thomas W., and Jing Yan. 2015. "Comparing public–private partnerships and traditional public procurement: Efficiency vs. flexibility." *Journal of Comparative Policy Analysis: Research and Practice* 17, no. 5: 448-466.
- Salamon, Lester M., and Odus V. Elliott. 2002. *The tools of government: A guide to the new governance*. Oxford University Press.
- Scott, W. Richard, and John W. Meyer. 1994. *Institutional environments and organizations: Structural complexity and individualism*. Sage.
- Scott, W. Richard, Raymond E. Levitt, and Ryan J. Orr, eds. 2011. *Global projects: Institutional and political challenges*. Cambridge University Press.
- Sheth, Jagdish N., and Rajendra S. Sisodia. 2002b. "Competitive markets and the rule of three." *Ivey Business Journal* 67, no. 1.
- Sheth, Jagdish, and Rajendra Sisodia. 2002a. *The rule of three: Surviving and thriving in competitive markets*. Simon and Schuster.
- Shirley, Mary M. 2005. "Institutions and Development." In *Handbook of New Institutional Economics*, edited by Claude Menard and Mary M. Shirley, 611-638. Boston, MA: Springer.
- Shukla, Shyamala., Syed Zaidi, and Richard Innes. 2015. "Role of Fairness Auditor in PPP Procurement." WBIPPP Webinar Series: Transparency and Accountability in Public-Private Partnerships.

- Siemiatycki, Matti. 2013. "Is there a distinctive Canadian PPP Model? Reflections on Twenty Years of Practice." Paper presented at the *Second CBS-Sauder-Monash PPP Conference*, Vancouver, BC, 13–14 June.
- Soeipto, Raden Murwantara, and Koen Verhoest. 2018. "Contract stability in European road infrastructure PPPs: how does governmental PPP support contribute to preventing contract renegotiation?." *Public Management Review*: 1-20.
- South, Andrew J., Raymond E. Levitt, and G. P. M. R. Dewulf. 2015. "Dynamic stakeholder networks and the governance of PPPs." In *Proceedings of the 2nd International Conference on Public-Private Partnerships*.
- Spiller, Pablo T. 2011. "Basic Economic Principles of Infrastructure Liberalization: A Transaction Cost Perspective." In *International Handbook of Network Industries: The Liberalization of Infrastructure*, edited by Matthias Finger and Rolf W. Künneke, 11–25. Edward Edgar Publishing.
- Suchman, Mark C. 1995. "Managing Legitimacy: Strategic and Institutional Approaches." *Academy of Management Review* 20, no. 3: 571-610.
- Suchman, Mark C. 1995a. "Localism and globalism in institutional analysis." In *The Institutional Construction of Organizations: International and Longitudinal Studies*, edited by W. Richard Scott and Soren Christensen, 39-63. Sage.
- Suchman, Mark C. 1995b. "Managing legitimacy: Strategic and institutional approaches." *Academy of Management Review* 20, no. 3: 571-610.
- Surowiecki, James. 2016, April 18. "System Overload." *The New Yorker*.
- Teisman, Geert R., and Erik-Hans Klijn. 2002. "Partnership arrangements: governmental rhetoric or governance scheme?." *Public Administration Review* 62, no. 2: 197-205.
- Transport for America. 2018. *State Transportation Funding: The states successfully raising new transportation revenue*. Washington, DC: Transport for America
- Tvarnø, Christina D. 2006. "Denmark: Public-Private Partnerships from a Danish Perspective." *Public Procurement Law Review* 15: 98-108.
- Van den Hurk, Martijn, Lena Brogaard, Veiko Lember, Ole Helby Petersen, and Petr Witz. 2015. "National varieties of Public–Private Partnerships (PPPs): A comparative analysis of PPP-supporting units in 19 European countries." *Journal of Comparative Policy Analysis: Research and Practice* 18, no. 1: 1-20.

- Van Gossum, Peter, Bas Arts, and Kris Verheyen. 2010. "From "Smart Regulation" to "Regulatory Arrangements"." *Policy Sciences* 43, no. 3: 245-261.
- Verhoest, Koen, Nunzia Carbonara, Veiko Lember, Ole Helby Petersen, Walter Scherrer, and Martijn Van den Hurk. 2013. "Public Private Partnerships in Transport: Trends & Theory P3T3." Discussion Papers part I, COST.
- Verhoest, Koen, Ole Helby Petersen, Walter Scherrer, and Raden Murwantara Soecipto. 2015. "How do governments support the development of public private partnerships? Measuring and comparing PPP governmental support in 20 European countries." *Transport Reviews* 35, no. 2: 118-139.
- Vining, Aidan R., Anthony E. Boardman, and Finn Poschmann. 2005. "Public-private partnerships in the US and Canada: "There are no free lunches"." *Journal of Comparative Policy Analysis: Research and Practice* 7, no. 3: 199-220.
- Wang, Huanming, Wei Xiong, Guangdong Wu, and Dajian Zhu. 2018. "Public-private partnership in Public Administration discipline: a literature review." *Public Management Review* 20, no. 2: 293-316
- Wankuan, Zhang, Yang Yongheng, and Wang Youqiang. 2010. "An Empirical Study on Key Factors Influencing the Performance of Public-Private Partnerships (PPP) in Some Transitional Countries." *Journal of Public Management* 3: 16.
- Warsen, Rianne, José Nederhand, Erik Hans Klijn, Sanne Grotenbreg, and Joop Koppenjan. 2018. "What makes public-private partnerships work? Survey research into the outcomes and the quality of cooperation in PPPs." *Public Management Review*: 1-21.
- Wettenhall, Roger. 2003. "The rhetoric and reality of public-private partnerships." *Public Organization Review* 3, no. 1: 77-107.
- Wettenhall, Roger. 2005. "The Public-Private Interface: Surveying the History." In *The Challenge of Public-Private Partnerships: Learning from International Experience*, edited by Graeme Hodge and Carsten Greve, 22-43. Cheltenham, UK: Edward Elgar.
- Whetsell, Travis A., and Patricia M. Shields. 2015. "The dynamics of positivism in the study of public administration: A brief intellectual history and reappraisal." *Administration & Society* 47, no. 4: 416-446.
- Wibowo, Andreas, and Hans Wilhelm Alfen. 2015. "Government-led critical success factors in PPP infrastructure development." *Built Environment Project and Asset Management* 5, no. 1: 121-134.

- Willems, Tom. 2014. "Democratic accountability in public–private partnerships: The curious case of Flemish school infrastructure." *Public Administration* 92, no. 2: 340-358.
- Williamson, Oliver E. 1981. "The Economics of Organization: The Transaction Cost Approach." *American Journal of Sociology* 87, no. 3: 548-577.
- World Bank and DFID. 2009. "Good Governance In Public-Private Partnerships: A Resource Guide for Practitioners." The World Bank & Department for International Development of the United Kingdom (DFID).
- World Bank. 2007. "Public-Private Partnership Units: Lessons for their Design and Use in Infrastructure." Washington, DC: World Bank.
- World Bank. 2017a. *Benchmarking Public-Private Partnerships Procurement 2017: Assessing Government Capability to Prepare, Procure, and Manage PPPs*. Washington, DC: International Bank for Reconstruction and Development/World Bank.
- World Bank. 2017b. *Public Private Partnerships Reference Guide: Version 3*. Washington, DC: International Bank for Reconstruction and Development/World Bank.
- World Bank. 2018. *Procuring Infrastructure Public-Private Partnerships Report 2018: Assessing Government Capability to Prepare, Procure, and Manage PPPs*. Washington, DC: International Bank for Reconstruction and Development/World Bank.
- Yang, Yongheng, Yilin Hou, and Youqiang Wang. 2013. "On the development of public–private partnerships in transitional economies: An explanatory framework." *Public Administration Review* 73, no. 2: 301-310.
- Yescombe, Edward R. 2011. *Public-private partnerships: principles of policy and finance*. Butterworth-Heinemann.
- Yin, Robert K. 2017. *Case Study Research and Applications: Design and Methods*. Sage Publications.
- Zeckhauser, Richard J., and John W. Pratt, eds. 1985. *Principals and agents: The structure of business*. Boston: Harvard Business School Press.
- Zhang, Xueqing. 2005. "Critical success factors for public–private partnerships in infrastructure development." *Journal of Construction Engineering and Management* 131, no. 1: 3-14.

Zucker, Lynne G. 1987. "Institutional theories of organization." *Annual Review of Sociology* 13, no. 1: 443-464.

APPENDIX: CODING PROTOCOL

This appendix provides more a detailed illustration of the coding procedures used in the analysis of mature PPP market performance. The following exposition details how the condition of *political and social will* was coded based on indicators found in the EIU Infrascopes Index. Coding for the country of Columbia is used as an example.

CODING THE SET OF COUNTRIES WITH POLITICAL AND SOCIAL WILL FOR PPPs

The condition of *political and social will* consists of three underlying metrics:

- (1) PPP prioritization (measured by the existence of a national infrastructure plan and PPP prioritization in the national infrastructure plan);
- (2) Political will for PPPs (measured by high level support and bipartisan support); and
- (3) Attitudes toward PPPs (measured by opposition).

Table 5 illustrates the procedure for scoring the condition.

Table 5: Example of Coding Protocol for Political and Social Will

Political & Social Will	Columbia
	83
PPP Prioritization	Avg. → 100
Existence of a national infrastructure plan	100
PPP prioritization in national infrastructure plan	100
Political Will	Avg. → 100
High-level political support for PPPs	100
Bipartisan or multi-party support for PPPs	100
Social Will	→ 50
Attitudes towards PPPs: opposition to PPPs	50

As shown in the table, the sub indicators are grouped by relevance and averaged together to produce an overall score of PPP *political and social will* in each country. Once a normalized score from 0-100 is generated for the condition, the value is calibrated within a four-value scheme using the numerical values 0 (nascent), 0.4 (emerging), 0.6 (moderately developed), and 1 (mature). These numerical values dictate whether a country is “fully out,” “more out than in,” “more in than out,” or “fully in”

the condition. A similar process was conducted for the other conditions used in this analysis.