



Public-Private Partnerships, Capital Infrastructure Project Investments and Infrastructure Finance

Public Policy for
the 21st Century

Jane Beckett-Camarata

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About the Author

Dr Beckett-Camarata teaches in the Penn State Harrisburg PhD and Master's program in public administration. Her finance teaching interests include public-private partnerships, government revenue systems, public financial management, budgeting, capital budgeting, infrastructure finance, cost accounting, and governmental accounting and managerial accounting. Dr Beckett-Camarata was a recipient of a Lilly Foundation Scholar Award for the advancement of teaching excellence. She has taught university courses in Russia and was a Fulbright Scholar at Kharhiv National University in Kharkiv, Ukraine, where she taught economic development finance. While at the University of North Wales, Bangor, Wales, she researched the impact of the European Union on bank regulation.

Dr Beckett-Camarata has authored many articles and book chapters. Her work has been published in the *Public Productivity and Management Review*, *Journal of Budgeting, Accounting and Financial Management*, *Municipal Finance Journal*, *International Journal of Public Administration*, *American Review of Public Administration*, *Journal of Business Research*, *Handbook of Public Sector Economics and Handbook of Globalization*, and *Governance and Public Administration*. She was the recipient of the Baruch College, CUNY distinguished Municipal Leadership and Finance Award, which funded her 2005 summer research on changes in New York City's pension fund infrastructure during fiscal crisis.

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She serves as an expert reviewer for the Government Finance Officers Association and as an expert witness for the US Federal Court System in government budgeting. She also serves on the editorial board of several academic journals.

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Dr Beckett-Camarata received a PhD in public policy and administration from Virginia Commonwealth University (1998); Master of Public Administration from the American University (1989); and Bachelor of Science degree with a concentration in Finance from Syracuse University (1983).

Introduction

This book examines the use of Public–Private Partnerships (PPPs) in the context of capital infrastructure investment and infrastructure finance policy implementation. The decision to use PPPs should be framed and considered within the context of infrastructure finance policy, especially for Emerging Market Economies. In this regard, the use of PPPs can be seen more broadly as an efficient and effective public policy tool.

Governments worldwide are becoming increasingly more dependent on infrastructure finance policy to implement capital improvements planning. They typically identify one or more financing options in their infrastructure finance policy, including the use of PPPs and concomitant capital infrastructure investment. PPPs are a form of institutional arrangement between the public and private sectors (Hodge & Greve, 2016) for increased private sector involvement in the delivery of capital infrastructure. PPPs may be among the best option for delivering a completed capital infrastructure, especially with complex capital infrastructure involving more than basic construction and financing (Gross, 2018). Long-term Infrastructure Finance Policy should be the basis for capital infrastructure investment, capital improvements planning and financing and acquisition (Beckett-Camarata, 2019), and to achieve capital infrastructure finance policy goals. To date, there has been insufficient recognition of the importance of Infrastructure Finance Policy and capital improvement planning in identifying potential uses of PPPs (Beckett-Camarata, 2019). This lack of recognition is because the Infrastructure Finance Policy implementation phase includes a number of complex steps including comprehensive and strategic planning, capital needs assessment, project cost estimation, project priority ranking, and capital improvements planning (Bunch, 2013; Marlowe, Rivenbark, & Vogt, 2009; Millar, 1988; Srithongrun, 2018; Steiss, 2005; Vogt, 2004). Although much is written on various aspects of PPPs, this book is important because it integrates Infrastructure Finance Policy, the selection of PPPs to finance and deliver an infrastructure capital project as a policy option, and a unified and comprehensive Capital Management and Budgeting system to manage the PPP from a public policy planning and implementation perspective.

Thus, this book introduces a new lens to look at Infrastructure Finance Policy as a policy instrument with which to achieve long-term national and subnational finance policy objectives. It incorporates the identification, selection, implementation, and evaluation of PPPs within the framework of strategic infrastructure finance policy objectives and the capital improvements planning process. The

book is unique in that it introduces the need to implement and evaluate the adoption of PPPs within the context of long-term capital investment and capital improvements planning and as a critical aspect of effective long-term infrastructure finance policy. With the incorporation of new market-oriented approaches to infrastructure finance policy decision-making in the public sector, there is a greater emphasis on economy and efficiency in order to deliver public services at the lowest cost (Osborne, 2002). However, additionally, there is a critical need to implement and evaluate the effectiveness of Infrastructure Finance Policy implementation. Governments may choose to finance some or all capital infrastructure investment and also use private sector expertise and efficiency (The World Bank, 2018a, 2018b) through PPPs to finance and deliver capital infrastructure.

Part 1

Overview of Public–Private Partnerships as Public Policy

The role of capital infrastructure as a positive contribution to government economic growth and quality of life is a well-known fact. For a long time, many governments were able to adequately finance capital infrastructure, although they were not able to meet total need and demand. Beginning in the 1970s, escalating during the 1990s energy crises, and even more pronounced in the 2008 global financial crisis, many countries, and especially emerging economies, were not able to sufficiently finance new capital infrastructure and/or repair or replace existing capital infrastructure. Increasing demographic changes and demands for new capital infrastructure exacerbated the existing imbalance between demand and supply, especially in developing countries. Also, government responses to growing fiscal crises led to budget cuts, deferral of capital infrastructure maintenance, and under-investment in new capital infrastructure. The decrease in quality of capital infrastructure such as roads and bridges, are evidence of inadequate funding for maintenance of existing capital infrastructure, building new or replacing existing capital infrastructure, resulting in the stunting of economic growth and the deterioration of the quality of life. Consequently, few countries can adequately finance ongoing capital infrastructure needs and demands without private sector involvement through some form of PPP, as an infrastructure finance policy option. On its own, the private sector will either under invest in capital infrastructure or fail to invest in capital infrastructure that are not socially optimal (Helm, Wardlaw, & Caldecott 2009) or a clear, low-risk profit partner.

As a result of this greater government need for private sector partnership in delivering certain capital infrastructure, governments increasingly must now work ever more closely with the private sector (Silvestre & Arujo, 2012). Consequently, many governments are becoming even more dependent on the private sector in the implementation of public policies (Wang et al., 2018) such as Infrastructure Finance Policy. This is especially critical for capital infrastructure investment since it is the foundation of a government's economic activity (Kumari & Sharma, 2016). The basic functions of a country are dependent on adequate capital infrastructure to provide essential services.

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Chapter 1

Overview of Public–Private Partnerships

Public–private partnerships (PPPs) are defined as a range of long-term, formal technical, operational, and financial contractual partnership arrangements between government and the private sector in which the private sector has more participation in capital asset delivery than traditional non-PPP Design-Bid-Build (DBB).

Traditional government capital infrastructure delivery involves the government contracting for and overseeing all aspects of design, construction, operation, and financing, with the private sector involved in a limited, defined manner. Traditional non-PPP government contracting approach to providing capital infrastructure such as highways is known as DBB. It is primarily a government capital asset delivery form, where the subnational government pays for the capital asset with some combination of its own funds, federal government funds, and financing (debt) that is ultimately repaid by revenue from taxes and/or user fees, such as toll revenue in the case of Concessions form of PPP (see page 4 for definition). When traditional capital infrastructure financing is available, a government entity either designs the capital infrastructure in-house or contracts with a private contractor to design it. If a private contractor is used, selection is normally based on the lowest-cost, private contractor bid. The private contractor then delivers the Design phase of the capital infrastructure project. A different private contractor is then secured in a separate bid to build the capital infrastructure such as a highway in the next phase, with the government delivering Operation and Maintenance or it may secure another contract for Operation and Maintenance. Under this type of DBB contract, private contractors have only a limited amount of risk. For example, they can pass-on to the government organization any increase in costs resulting from unforeseen changes in the contract scope. This characteristic of the traditional basic DBB contract increases probability that the private contractor will exceed the contract bid price since they can pass costs on to the government in the next phase of the infrastructure capital project. The government keeps a high degree of control over the capital infrastructure, such as the highway, during its useful life.

The use of a PPP form of capital infrastructure financing and delivery, such as a basic Design-Build (DB), provides for more private sector involvement in financing and delivering capital infrastructure and involves contract bid.

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Generally, the private sector finances, designs, and builds the capital asset in one contract bid in the case of a new capital infrastructure delivery. If it involves an existing capital infrastructure that requires construction, the private sector bids for the Operation and Maintenance under one contract, with government financing.

The PPP contractual arrangement to deliver the capital infrastructure can take many forms and different levels of private sector involvement in financing and constructing government-owned capital infrastructure. The long-term PPP contractual relationships are between the government and the private sector, usually a private contractor, may be up to 25–30 years (Hodge, 2014; Hodge & Greve, 2016) or longer in the case of Concession form of PPP (see page 13 for definition). The long-term contractual relationship may also be between a government and a nonprofit entity such as in the case of some service Concession form of PPP agreements, but these are not considered PPPs.

There are many definitions of PPPs (Roehrich, Lewis, & Michael, 2014), and there is variation in the contractual relationship and in the implementation of PPP contracts. This variation in contractual relationship and execution of PPP contracts is especially true in forms of PPP involving separation of capital infrastructure ownership and in identification and separation of risk between the public and private contractors (Roehrich et al., 2014), and depends on the PPP form and partnership contractual relationship. PPPs are defined based on a public–private capital infrastructure financing and delivery continuum (as discussed on page 10), with either more government involvement in delivery or more private contractor involvement in the financing and delivery of capital infrastructure or service based on the location on the continuum. One of the most basic PPP forms is one where the private partner agrees to design and build capital infrastructure on behalf of the public partner to provide capital goods or services for which the public partner is ultimately accountable.

In a PPP contractual arrangement, the public partner enters into the PPP agreement to (1) finance and deliver a capital infrastructure project for which taxpayer resources may not be available in the capital improvement plan (CIP)/current capital budget, (2) reduce construction or service costs through private sector efficiencies, (3) control the timing of capital expenditures, or (4) a combination of these purposes (DiNapoli, 2014).

1.1 Rationale for Public–Private Partnerships as Infrastructure Finance Policy Option

Government capital infrastructure is typically delivered within a standard government procurement process governed by law and regulation in all phases of capital infrastructure construction, such as design, construction, operation, and maintenance. In this standard procurement process, the government owns the infrastructure, but separately contracts for each phase of the capital project, often with different private contractors.

During a traditional capital infrastructure procurement process, government contracts with several private contractors: a private contractor to supply the infrastructure design, and then builds the infrastructure based on the design (which can come from a separate contractor), and then operates and maintains the infrastructure, or goes through a different government procurement process for the operation and maintenance phase. The unique characteristic of a capital infrastructure PPP is that the government enters into only one long-term contract with only one private contractor, as opposed to several different arrangements with multiple private contractors in a traditional non-PPP, government-financed capital infrastructure delivery. The partnership is more efficient for both the government and the private sector. The long-term nature of the PPP contractual relationship allows both partners to be able to plan, budget for, and commit long-term resources to deliver the capital infrastructure.

In a PPP contractual arrangement, the government normally retains ownership of the capital infrastructure. Still, the private contractor is given a much more significant role in capital infrastructure delivery and management, compared to the standard procurement process. In a PPP form of Build-Operate-Maintain, for example, the government contracts with one private contractor to build capital infrastructure and then to operate and maintain the infrastructure for a given number of years in exchange for a revenue stream during the life of the contract, using either user fees or availability payments. In the traditional capital procurement system, the government contracts with many different private contractors, whereas in the PPP, the government is directly contracting with one private contractor, who, in turn, is responsible for completing the capital project. Because the private contractor is fully responsible for delivering the capital infrastructure in PPP, including any cost overruns, the private contractor is more motivated to minimize costs than would the private contractor under the traditional procurement system (Vining & Boardman, 2008).

In addition to private contractor motivation to minimize costs, governments provide more varied core service activities than a private contractor. Governments may have less specialized capital infrastructure delivery expertise in the relevant capital infrastructure activity. The rationale for the government to use PPPs in capital infrastructure delivery is that the private contractor [depending on the private contractor, capital infrastructure delivery, and the financing arrangement] generally can deliver capital infrastructure more efficiently and at a lower cost (Vining & Boardman, 1999). Private contractors have more significant economies of scale and scope typically because the capital infrastructure construction activities private contractors perform are more narrowly focused than core general government activities, which are more complex and more extensive. Also, the private contractor may have more in-depth expertise in certain types of capital construction and operation than the government. The private partner, in some cases, maybe global in scope and thus able to deliver infrastructure internationally rather than only country specific. Governments can benefit by using the private partner's skills and thereby obtaining cost and efficiency gains by partnering with the private partner for the construction and/or management of capital infrastructure (OCED, 2015).

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Private contractors, in general, and the PPP capital infrastructure private contractor–partner in particular, are more motivated to maximize profits, as noted above. The private contractor tends to have more efficient capital infrastructure operations and less bureaucratic rules and regulations in the process to deliver a capital infrastructure than the government, such as written, less complex procurement policies and highly skilled procurement expertise. The efficiencies are evident in such dynamic and fluid capital construction situations as there is greater flexibility in contract renegotiation (Vining & Boardman, 2005), for example. Also, the private contractor may have lower employee salary and benefit costs than the public sector (Dosi & Moretto, 2013). Large government capital infrastructure projects frequently cost more than originally budgeted because they are not able to duplicate private contractor efficiencies (Ansar, Flyvberg, Budzier, & Lunn, 2016).

The capital infrastructure cost difference is greater for small local governments [and for developing and emerging market economies], especially for design and construction (Vining & Boardman, 1992) forms of PPPs. As an example, in the case of developing and emerging market economies, such as Albania, securing increased capital infrastructure investment is critical to ensuring that economic growth is commensurate with social needs. The Organization for Economic Cooperation and Development (OECD) has estimated that total global capital infrastructure investment requirements will be 71 trillion USD or about 31.5% of annual world GDP from 2007 to 2030 (Klepsvik, Emery, Finn, & Bernhard, 2014). Governments in these developing and emerging economies cannot afford to finance the closing of these large and growing capital infrastructure gaps solely through tax revenues and grants (Klepsvik et al. 2014). Some mature economies also cannot afford to finance their significant capital infrastructure gaps as well, because of years of underinvestment and tight budgets. Long-term private participation in capital infrastructure provision can help reduce both short-term and long-term financial pressure on government operating and capital budgets.

Because of the need to fill large and growing capital infrastructure gaps, governments may choose to use PPPs for financing and delivery of new construction of physical and social capital infrastructure such as roads, bridges, tunnels, railways, harbors, airports, tramways, subways, irrigation networks, dams and canals, water pipelines, water purification and treatment plants, potable water supply, power lines, power plants, distribution networks, oil and gas pipelines, sanitation and sewage facilities, health and housing services, urban services, communications, and telecommunications networks. These large types of capital infrastructure typically require the involvement of some type of PPP contract arrangement. PPPs are also used by the government to modify, rehabilitate, or expand existing extensive government capital infrastructure or to monetize underperforming capital infrastructure and provide the government budget with additional capital. In that case, the revenue from the government's transferring its inherent right to operate a capital infrastructure (i.e., Concession) must be sufficient to justify the future loss of the infrastructure's ongoing user fee revenue (Uddin & Zack, 2016) to the contracting government.

The phases of a capital infrastructure project usually are comprised of large capital expenditures, often exceeding hundreds of millions of dollars (Newman & Perl, 2014), spread over several years. Depending on the form of PPP contractual arrangement, the government guarantees, either to pay for the capital infrastructure construction or at the other end of the continuum, to allow the private sector contractor to collect fees from users such as in a Concession partnership.

1.2 Role of Infrastructure Finance Policy in Infrastructure Delivery

As PPPs have become an increasingly important option in delivering capital infrastructure, and as governments have become more dependent on the private sector to finance capital infrastructure, the focus has become the government's Infrastructure Finance Policy. Infrastructure Finance Policy focuses the decision to either finance a capital infrastructure through the traditional government-financing (using tax exempt bonds, for example) as a policy option or to deliver a capital infrastructure through a PPP (Huge & Jones, 2015).

The Infrastructure Finance Policy choice of a PPP option is (1) to have a more efficient and effective overall capital planning, management, and budgeting program, (2) to provide capital improvements on time and within capital budget, (3) to more effectively manage the use of long-term debt, provide for more enhanced public value, and (4) to provide a better balance between traditional means of funding government capital improvements (long-term debt, equity financing, and capital reserves).

While there are capital infrastructure private partnership investment opportunities available on a global level, private investors in government capital infrastructure often do not fully take advantage of these opportunities, usually because of weak government Infrastructure Finance Policy (Klepsvik et al. 2014). Capital infrastructure investment can pose specific risks to private investors, even under normal circumstances. The choice of using of one single private partner through a PPP arrangement with government under an Infrastructure Finance Policy is a relatively recent basis for capital infrastructure financing and delivery in many countries. Some countries do not have either the necessary basic capital infrastructure in-house contacting expertise for choosing a PPP or experience and capacity to manage the inherent risks involved in complex PPPs. In that case, they need to include training in PPP contract negotiation and implementation as part of their PPP policy. A well-developed Infrastructure Finance Policy can provide a basis to increase the quality and quantity of private investment in infrastructure (Klepsvik et al., 2014) because it spells out the government policy priorities.

At both the national and subnational levels, the link between public Infrastructure Finance Policy and regulatory and institutional frameworks is a basis for mitigating risk and attracting and maintaining private investment in public capital infrastructure. This connection between policy and its institutional frameworks is making public capital infrastructure financing and delivery more attractive for both PPPs and private investment based on the

government policy goals of improving government service delivery through both efficiency and effectiveness, facilitating investor access to government land, and setting a level-playing field between government capital infrastructure financing and delivery, private contractors, and private investors. Infrastructure finance policy is implemented through well-developed capital infrastructure plans such as National Infrastructure Plans (such as Mauritius National Plan) or Master Plans at the subnational level. These plans articulate investor protections, formal institutional systems for contract dispute resolution, and clarity concerning circumstances under which contracts are renegotiated (Klepsvik et al., 2014).

1.3 Public–Private Partnership Relationships and Public Policy

PPPs involve a combination of both public and private control of rights over property, such as infrastructure or financial residuals, depending on the form of partnership. This combination of public–private control over property rights can significantly increase the complexity of the public–private partner relationship (Weimer & Vining, 2017) throughout the life of the contract. The more widely dispersed the ownership control of a given capital infrastructure, the higher the transaction costs of government effectively monitoring the agents who manage the PPP (Baker, 2016; Weimer & Vining, 2017). The higher transaction cost is especially true regarding the advanced PPP Concession form, which tends to be extraordinarily complex. The division of ownership of property rights in certain more advanced forms of PPPs such as Concessions is more pronounced and complexity increases in part because of the long contract period. This is the case because ownership rights are differentiated, with the government owning the capital infrastructure, but the private partner owning shares of the revenue that the capital infrastructure generates in Concession PPPs.

Clarity of ownership of property control is essential in the context of PPP contract negotiating and monitoring. The clarity of ownership is necessary because of potential capital infrastructure contract problems due to the ambiguity public–private partner ownership rights in some partnerships such as Concessions, and the resulting complexity in those public–private contractual relationships. The contract complexity stemming from ambiguity in ownership rights further opens the door and provides the opportunity for one of the partners to take advantage of the lack of clarity, and shifts risk and benefits more to their position. PPP ownership control are likely to be even more ambiguous because of risks of unanticipated events such as natural disasters that may result in damage to capital infrastructure, inconsistent economic circumstances that change the number of revenue streams or unforeseen technological transformations that reduces costs or renders certain capital infrastructure obsolete (Weimer & Vining, 2017). The need to identify potential PPP contract uncertainties that may also arise in PPP contracting is critical because such lack of clarity can invite opportunistic behavior, especially on the part of the private partner (Weimer & Vining, 2017). This split ownership of infrastructure and division of property