



Foreignness in public–private partnerships: The case of project finance investments

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Abstract

The literature on public–private partnerships (PPPs) has begun to identify critical success factors associated with PPP performance. However, despite the international nature of PPPs, the literature has not considered the performance implications of the foreignness of the private sector firm that manages the PPP and its associated infrastructure project. This is a particularly intriguing issue for PPPs, given that the private sector firm is chosen through a bidding process by the host government to lead the project – making the relationship between foreignness and performance potentially endogenous. Our findings suggest that foreignness may have a detrimental effect on project completion time, but not the probability of project completion. Furthermore, the scale and scope of the project moderate the effect of foreignness on project performance. Our findings suggest that governments and policy makers should be mindful that the participation of foreign private sector firms has nuanced implications for local economies and stakeholders impacted by PPPs.

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INTRODUCTION

As governments address the need for infrastructure development, they have increasingly sought private sector involvement in the form of public–private partnerships (PPPs) (Cheung, Chan, & Kajewski, 2012; Grimsey & Lewis, 2002; Osei-Kyei & Chan, 2015). PPPs are collaborative arrangements between a government and private sector firm and are often used to finance, construct and operate large and complex infrastructure and industrial projects, such as toll roads, bridges, power plants, waste management facilities and telecommunication systems. PPPs allow governments to share the operational and financial risks involved with infrastructure development with other parties (Osei-Kyei & Chan, 2015). Underscoring the large and growing importance of PPPs, the Organization for Economic Co-Operation and Development (OECD) has estimated that global demand for infrastructure development, much of which will be conducted through PPPs, will reach \$71 trillion by 2030.

Due to their importance in the realm of public policy and the increasing interest shown in them by other entities, including the

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media and environmental groups, PPPs have begun to gain more scholarly evaluation in recent years (Mahoney, McGahan, & Pitelis, 2009; Quelin, Kivieniece, & Lazzarini, 2017; Sawant, 2010; Poliakova, Riddle & Cummings, 2019). One major stream of research on PPPs has focused on identifying 'critical success factors' (CSFs) associated with PPP performance (Ke, Wang, Chan, & Cheung, 2009; Osei-Kyei & Chan, 2015; Tang, Shen, & Cheng, 2010). Chief among the CSFs are the technical skills of the private sector firm, such as project management experience, design and engineering capabilities, and environmental and safety expertise (Cabral, 2017; Tang et al., 2010). Given that PPPs are complex undertakings, the literature has mostly argued that the technical skills of the private sector firm are what drive the performance of PPPs (Zhang, 2005; Kwak, Chin & Ibbs, 2009).

We extend this line of inquiry by considering the fact that private sector firms' skills and expertise must be leveraged in the complex context of the international business environment (cf., Ashraf, Ahmadsimab, & Pinske, 2017). For example, the private sector firm that the government chooses to manage the PPP may be from the host country or it may be from another country. Indeed, the number of PPPs led by foreign private sector firms increased by over 200% from the 1990s to the global financial crisis in 2007 (PFI, 2014). Yet, the literature on PPPs has not considered whether the private sector firm is foreign (or local) is a CSF. This is a problematic gap in the literature given that international business research recognizes that foreignness impacts performance and thus the foreignness of the private sector firm may benefit *or* harm the performance of the PPP (Newenham-Kahindi & Stevens, 2018; Edman, 2016; Hymer, 1960; Shi & Hoskisson, 2012). On the one hand, foreign firms may be at a disadvantage because they are less rooted in the local institutional environment (Eden & Miller, 2001; Mezas, 2002; Miller & Parkhe, 2002; Zaheer, 1995; Zaheer & Mosakowski, 1997). Alternatively, foreign firms may be at an advantage because dissimilarity breeds certain benefits, such as innovation, preferential treatment or enhanced R&D capabilities (Huang & Tang, 2018; Shi & Hoskisson, 2012; Un, 2011).

The performance effects of foreignness appear to be especially unclear in a PPP context from the perspective of extant research. In most cases of foreign direct investment (FDI), the *firm* selects the market or country of entry. PPPs differ from the typical FDI context, however, because the *host*

government explicitly chooses the private sector firm to enter the country and lead the project through an extensive request for proposal (RFP) process. In the evaluation process, the technical capabilities of the private sector firm are paramount because they must meet or exceed the specific requirements of the infrastructure project. Thus, when a private sector firm leads a PPP investment, it is because it has been explicitly identified and chosen for CSFs such as its outstanding knowledge and capabilities. Given these unique circumstances, it is unclear whether foreignness will be a hindrance or a benefit in a PPP setting. Which will prevail: the foreign firm's disadvantages due to unfamiliarity with the environment or its advantages due to its significant skills and capabilities? Thus, the purpose of this paper is to address the following research question: in a PPP context, will a project led by a foreign private sector firm perform better or worse than a project led by a local private sector firm?

Our study seeks to make several contributions of value to researchers, governments and policy makers. First, we shed light on the ambiguous relationship between a private sector firm's foreignness and performance in a PPP context. By considering whether a firm's foreignness is a CSF, our study addresses the call to further examine and understand how the context of the global environment affects PPP outcomes (cf., Babatunde, Opawole, & Akinsiku, 2012; Chan, Lam, Chan, Cheung, & Ke, 2010). Second, we consider the moderating role of project-level factors and the unique dilemmas that they pose to PPP performance. Specifically, we theorize that the scale and scope of the infrastructure project create liabilities that foreign private sector firms may face as they navigate the host country's environment. Our findings reveal that foreignness has different performance effects, which may reveal important boundary conditions regarding the influence of foreignness on performance. Finally, we consider the fact that PPP performance must be evaluated in contrast to other forms of private sector investment where the firm has autonomy about which country it chooses to enter. In the PPP context, firms are chosen by another entity (i.e., the government). This suggests that the success or failure of PPPs is likely to be endogenous. In our empirics, we account for the fact that the selection of a private sector firm to manage a PPP and the subsequent performance of the PPP are distinct and yet intertwined issues. Thus, we move the PPP literature forward by



correcting for the endogeneity that is inherent in the performance of PPPs.

We start by reviewing the salient literature on PPPs. We then examine the theoretical rationales that may lead to the performance effects of foreignness in the context of PPPs. We develop hypotheses and test them using a sample of project finance investments, the primary funding mechanisms for PPPs, over an 18-year period, across ten industries and multiple home and host countries. Our findings suggest that in order to explain and predict the impact of foreignness on PPP performance, it is necessary to consider not only firms' technical skills but also their ability to navigate the local environment and its stakeholder groups – a capability that is inherently enmeshed with the national origins of the firm. Moreover, we find that a project's scale and scope can shape the effect of foreignness on PPP performance. We conclude with a discussion of the implications of our study and avenues for future research.

BACKGROUND LITERATURE

PPPs seek involvement from the private sector to construct infrastructure assets that historically have been financed solely with public funds and operated on a non-profit basis. Traditionally, governments would design and finance an infrastructure asset and then hire a third party to construct the asset. Next, the government would operate the facility or contract out the operation of the facility. Through PPPs, however, governments shift more of the risk and responsibility of the infrastructure project to the private sector in an effort to reduce costs, enhance innovation, and improve operating efficiencies. The primary goal of PPPs is to combine the resources and capabilities of the public and private sector and allocate risks appropriately to construct an asset that benefits all PPP stakeholders.

Aside from financial capital and risk allocation, one chief benefit of PPPs for the government is that the private sector firm provides operational skills and expertise to the construction of the infrastructure asset (Finnerty, 2013; Kolk, Van Tulder, & Kostwinder, 2008; Yescombe, 2002). Government processes and routines can be rigid and bureaucratic, and thus more time-consuming relative to those in the private sector. Further, governments may suffer from inadequate internal resources compared to the private sector. Hence, private sector participation can help overcome the operating inefficiencies and scarce resources that

characterize many public entities. However, governments need to select the optimal private sector firm to fully capitalize on the benefits of a PPP.

CSFs of PPPs

Empirical research on PPPs often focuses on the factors that lead to PPP success. Most frequently, scholars in this domain point to a plethora of CSFs including innovative project design, joint project planning, flexible financing, partner commitment and efficient procurement processes (Kwak, Chih, & Ibbs, 2009; Li, Akintoye, Edwards, & Hardcastle, 2005; Yuan, Zeng, Skibniewski, & Li, 2009). Drawing from agency theory (Jensen & Meckling, 1976), other scholars point to governance as a key mechanism for PPP success. Good governance practices, such as accountability, transparency, trust and equal participation reduce monitoring costs and thus, contribute to the long term effectiveness of PPPs (Bloomfield, 2006; Bovaird, 2004; Forrer, Kee, Newcomer, & Boyer, 2010; Van Gestel, Voets, & Verhoest, 2012).

Absent from the discussion of CSFs, however, is a significant recognition and evaluation of the international context in which PPPs operate. Current trends suggest that many PPPs in the future will be conducted between parties that cross national borders. This is due to the fact that increasing levels of global economic integration necessitates cross-border trade and logistics (cf., Davis & Friske, 2013; Gereffi, 2019; Henderson & McGloin, 2004), thus making the issue of foreign participation in PPPs particularly relevant for scholars and practitioners. One of the primary avenues of foreign participation for PPPs relates to the foreignness of the private sector firm that leads the infrastructure project. Yet, despite the many CSFs examined by extant research on PPPs, the literature has yet to empirically explore whether the performance of PPPs is affected by whether the private sector firm involved is foreign or local.

CONCEPTUAL DEVELOPMENT

Performance Effects of Foreign Private Sector Firms in PPPs

Hymer (1960) conceptualized the disadvantages faced by a firm when doing business abroad that are not faced by local firms. Foreign firms face disadvantages for a number of reasons, including a lack of familiarity and knowledge about the host country environment (Eden & Miller, 2004;

Petersen & Pedersen, 2002) and a lack of embeddedness that creates friction when interacting with local stakeholders (Luo, Shenkar, & Nyaw, 2002; Zaheer, 2002; Stevens & Shenkar, 2012). Additionally, existing research suggests that foreign firms have more difficulty identifying and knowing the preferences of key actors in the government compared to local firms (Holburn & Zelner, 2010). Scholars have found evidence of the disadvantages of foreignness in product markets (Miller & Parkhe, 2002; Zaheer, 1995; Zaheer & Mosakowski, 1997), capital markets (Bell, Filatotchev, & Rasheed, 2012) and in the context of labor lawsuits (Mezias, 2002). In the context of infrastructure projects, we expect that the disadvantages of foreignness may develop for multiple reasons. Unlike other forms of FDI (such as the creation of a wholly-owned subsidiary), PPPs may involve more reliance on local implementers. Hence, disadvantages may develop due to the foreign firm's inability to identify and collaborate effectively with local contractors and suppliers of construction supplies and materials. Disadvantages may also develop because the foreign firm may have difficulty building trust (cf., Couper, Reuber & Prashantham, 2019) and communicating cross-culturally with the local labor force and local implementers (i.e., local contractors, advisors and suppliers).

However, we argue that the unique characteristics of PPPs – namely that the host government chooses the firm to lead the project due to its firm-specific resources, skills and capabilities – results in the neutralization of the inherent disadvantages of foreignness that such a firm may face. In the PPP selection process, host governments grant infrastructure projects to a winning firm to build and operate the facility within its sovereign borders (Yescombe, 2002). In essence, the selection process is designed to yield a firm with excellent skills, resources and capabilities. Therefore, if a foreign firm is chosen as a result of a thorough evaluation process, its expertise and skills should nullify the liabilities associated with being unfamiliar with the host environment. For example, foreign firms may use their high quality human resources to reduce potential litigation in the local market and thus neutralize the disadvantages of foreignness (cf., Mezias, 2002) or use their reputation to garner support from the local media and advocacy groups and mitigate the disadvantages of foreignness (Vidaver-Cohen, Gomez, & Colwell, 2015). Thus, although foreign firms face multiple challenges

not faced by local firms, we predict that, in the context of PPPs, a foreign firm's skills and resources will offset any liabilities of foreignness they face – placing them on equal footing with a local firm such that neither foreignness nor localness is a CSF. Hence:

Hypothesis 1: Foreignness will have no impact on the performance of project finance investments.

Moderating Effects: Project Scale and Scope

Although we predict that neither foreignness nor localness will serve as a CSF, all else equal, we believe that this neutral relationship will change depending on boundary conditions. Specifically, we expect that attributes of the project finance investments – namely, their scale or their scope – may tip the scales and make a firm's foreign status salient as a CSF. We begin by examining the moderating effect of project scale followed by the effect of project scope.

Project Scale

We expect that the incentives for a successful project will be overwhelmed by factors that cause larger projects to intensify the disadvantages of foreignness. Larger projects require more resources and skills due to their increased scale and complexity (Kostova & Roth, 2003). Larger projects also necessitate forming and concurrently managing a larger number and more interdependent set of relationships with the host government and other constituents. With a larger number of resources and relationships to create and manage, complexity increases and foreignness becomes a disadvantage due to the foreign firm's difficulty with becoming embedded in the local network to form and fully leverage ties (Nahapiet & Ghoshal, 1998). For this reason, and despite the foreign firm's considerable technical skills and knowledge, the process of successfully managing a complex set of relationships, developing trust and exchanging knowledge will likely be overwhelming and more challenging for foreign-led infrastructure projects. We expect this to result in worse performance relative to projects led by local firms, which will be better embedded and not affected by cultural or institutional differences. Thus, we hypothesize:

Hypothesis 2: With increasing size of the project finance investment, foreignness has a negative effect on project performance.



Project Scope

In addition to their size, infrastructure projects differ in terms of their scope. In this study, project scope refers to the scope of the activities after construction has been completed. Broadly speaking, project finance investments are categorized as self-managed projects (i.e., build-own-operate, or BOO) or transferred projects (i.e., build-own-operate-transfer, BOOT, or build-operate-transfer, BOT). In the case of self-managed projects, the project company or special purpose vehicle (which are owned by the private sector firm) that builds the bridge, power plant, or other asset is also responsible for operating and maintaining the asset after construction is completed. However, in the case of transferred projects, the role of the project company usually ends with the building of the asset or shortly thereafter, and the asset's operation and maintenance is then handed over to a third party – more often than not, a local public entity (Finnerty, 2013). Thus, project finance investments vary in the terms of which entity will finally carry out the operation and maintenance of the asset after construction is complete. If a project company transfers operational rights (i.e., a BOOT or BOT project), even though this represents lesser project scope, we expect it will face greater challenges in creating a successful project for the following reasons.

Just as building a project involves more than just building a physical asset, *transferring* one requires more than just handing over an instruction manual. A hand-off to another entity requires the codification and transfer of relevant information to the subsequent owner and operator of the constructed asset. Given the complex nature of these projects, the process of codifying and transferring knowledge and information to other parties about how to effectively run the asset is no small undertaking. Further, the transfer process involves training that requires the participation of both the builder and the operator to whom the asset maintenance would be transferred, necessitating the formation of deeper ties and relationship-building (Nahapiet & Ghoshal, 1998). The information codification and transfer process between the entities may be subject to inconsistencies and inaccuracies due to the cognitive limitations of both sets of management teams (March & Simon, 1958). Further, the codification and transfer process is subject to the capacity of the eventual owner and operator to work together to combine and exchange knowledge (Cohen & Levinthal, 1990).

These are challenges and additional complexities inherent in transferred projects that will be faced by foreign or locally-led projects. However, in the case of a foreign firm, we expect these additional issues to be further complicated by the fact that the foreign private sector firm and the operator firm (a local public or private entity) will likely encounter significant institutional, cultural, and linguistic differences due to their different national origins (Orr & Scott, 2008; Shenkar, Luo, & Yehekel, 2008). Such differences may translate into constraints in communication and the exchange of knowledge (Hitt, Lee, & Yucel, 2002; Nahapiet & Ghoshal, 1998). The transfer of an infrastructure project is difficult enough when both the builder and the operator are from the same background. When they are from different countries, the knowledge transfer and interpretation challenges multiply, which we expect to result in poorer project performance. Thus, we hypothesize:

Hypothesis 3: For transferred project finance investments (relative to self-managed project finance investments), foreignness has a negative impact on project performance.

METHODOLOGY

We tested our hypotheses on a sample of project finance investments, which are the primary means through which many PPPs are financed, and which are often described as a “nexus of contracts” because of the intricate web of arrangements between private sector firms, global financial institutions, host governments, contractors and suppliers (Finnerty, 2013; Yescombe, 2002). Thus, project finance investments are contracts that are broad in scope, complex and involve a large number of stakeholders. The life of a project finance investment begins when a government chooses a firm¹ to construct an asset, such as a bridge or a pipeline. That firm, which may be local or foreign, then creates a separate legal entity known as a project company (or special purpose vehicle) and takes an equity stake in that company. Global financial institutions, such as the World Bank and export-import organizations, fund the project company primarily with debt and thus bear the majority of the risk of non-repayment. The private sector firm typically funds the balance of the capital needed to finance the project company with its own equity.

We obtained the project finance investment data from Project Finance International (PFI), a Thomson Reuters database that contains worldwide

information on project finance investments (e.g., Sawant, 2010; Stevens & Dykes, 2013; Vaaler, 2008). PFI reports detailed information on project finance investments across the entire life cycle of the investment. Our sample of project finance investments spans 38 host countries, 50 home countries, and 10 industries over the time period 1985–2003. The host countries include both developed and developing countries, and span all continents except Antarctica. The 10 industries consist of power, telecommunications, oil and gas, leisure and property, mining, transportation, waste, water and sewer, agriculture, and petrochemicals. This broad sample of host countries, home countries, industries and years not only gives our findings generalizability but also helps to minimize the sample selection biases that may arise with a smaller set of countries or industries.

Dependent Variables

Profitability ratios such as ROA or ROE are less appropriate as measures of project performance because, in many cases, the infrastructure projects are meant to provide a public service rather than to maximize profitability for the private sector firm. Thus, we focus instead on the issues of *whether* the project was completed and *how long* it took to complete the project as measures of project performance. These issues are salient to the private sector firm (whose return on investment relies on successfully completing the project and doing so in a timely manner), the government (which desires the economic and political advantages of successful and timely completion), and the general public (which benefits from being able to use or receive the benefits of the completed highway, power plant, etc.). For example, the Luas Light Rail System in Dublin, Ireland was a PPP between Dublin and Transdev (a French private sector firm) that was delayed by one year. This delay postponed the transportation development of Dublin, slowed economic returns for Transdev and weakened the credibility of local government actors who supported the project. The Hàm Thuận hydroelectric power station in Vietnam was a PPP between the Vietnamese government and a Japanese private sector firm that was completed in 2001. The successful completion of this project created fresh-water supplies and water regulation in the southern region of Vietnam, and drove the Vietnamese government to engage in further economic development in the surrounding area. Had this project not been completed, the economic and human

development benefits of the power station would not have materialized.

Likelihood of Project Completion

We measured the likelihood of completion based on whether or not a started project was actually completed. However, it is difficult to tell whether ‘unfinished’ projects that were started toward the end of our data range are unfinished because the project was abandoned as a failure or whether the project is unfinished because it is still ongoing. Thus, we needed to use an earlier data cutoff that would give us confidence that unfinished projects were indeed failed projects. Because the average completion time of the projects in our sample is approximately two years, and our dataset includes projects started through the end of 2003, we used only projects that were announced in 2001 or earlier to test our hypotheses.

Project Completion Time

We measured completion time as the number of days between the project announcement date and the project completion date. This allows us to capture the possible effects of foreignness at all stages of a PPP: the ‘preliminary’ stage between project announcement and the start of construction, the phase when the project is actively constructed, and the post-construction phase when the project is being readied for transfer to a local actor in the case of BOT/BOOT projects.

Independent Variables

Foreignness

We used a dichotomous coding system to measure whether a project firm is foreign-owned or locally-owned. We based our measure on the geographic location of the project under construction and the geographic headquarters of the private sector firm that led the project. We coded project finance investments led by a foreign-owned private sector firm with a 1 and project finance investments led by a locally-owned private sector firm with a 0.

Project Scale (Project Size)

The project cost reflects the scale of the project finance investment in millions of U.S. dollars.

Project Scope (Transferred vs. Self-managed Project)

Several types of project finance investments exist with respect to whether the constructed asset is ultimately operated by the project company that built it or transferred to a local public entity



(Yescombe, 2002). Self-managed projects are projects in which the ownership of the constructed asset remains with the project company throughout its life, representing greater project scope from the perspective of the project company. With transferred project finance investments, the foreign or locally-owned project company builds the asset, owns and operates it for a certain period of time and then transfers ownership of the asset to another entity, representing small project scope. We coded self-managed projects with a 0 and transferred projects with a 1.

Control Variables

We considered several potentially salient control variables that might be related to the focal variables of interest in our study, including controls at the project, firm, industry and country level of analysis (Bernerth & Aguinis, 2016). We included the following variables as controls in our models to rule out alternative explanations for our findings and increase our confidence about interpreting the relationships of interest.

Project Debt

We controlled for the financial structure of the project finance investment. Project finance investments are primarily funded with debt (Finnerty, 2013). We measured this variable based on the project's percentage of financing secured with debt. Projects with less debt may have more free cash flow that allows them to acquire resources that may impact project success.

Prior Experience of the Private Sector Firm

A firm investing in a project company may have had prior experience with a project finance investment in another country prior to the focal project. This experience may have provided the firm with the knowledge and skills necessary to complete a project investment in the focal country and/or to complete the project more quickly (Davidson, 1980; Emden, Yaprak, & Cavusgil, 2005; Shaver, Mitchell, & Yeung, 1997). We measured the firm's level of prior experience by counting the number of prior project finance investments in which the focal firm was involved (Stevens & Dykes, 2013). This measure captures the project company's experience across all industries and countries in the ten years prior to the start of the focal project. Given the mean length of a project is approximately two years, a ten-year window measure of prior experience is appropriate because it is backward looking,

but it also captures relatively recent experience. Our results are also robust to using a five-year window for experience.

GDP Per Capita of the Host Country

Our dependent variables are likely to be influenced by characteristics associated with the economic conditions of the host country in which the project firm operates. For instance, countries with stronger economic conditions may have the resources and expertise within their national borders to hasten the completion of infrastructure projects (North, 1990; Porter, 1990). We use host country gross domestic product (GDP) per capita one year prior to the announcement of the focal project as a measure of the host country's economic development.

Project Industry Dummies

Project finance investments occur in many different industries – any of which may significantly impact a project's likelihood of completion and completion time. Thus, we used industry dummies to allow for the possibility that unobserved characteristics associated with industry (e.g., technical complexity) could be driving project performance.

Analysis & Econometric Specification

We focus on understanding how foreignness of the private sector firm, and the role of moderators, impact likelihood of project completion and project completion time. However, it is critical to recognize that foreignness in and of itself is a choice variable and thus endogenously determined. That is, the choice to award the contract to a foreign firm may have been inherently driven by certain other factors. We correct for this possible selection bias by using a two-stage Heckman correction. In the first stage, we determine the likelihood of a foreign firm being selected by using a probit model. In the second stage, we use likelihood of project completion and project completion time as the dependent variables. All variables included in the second stage are included in the first stage, with the instrumental variable being the additional input in determining the choice of foreign firm. We used whether the firm that led the infrastructure project is a publicly-traded company (or not) as the instrumental variable to predict completion time and the likelihood of project completion. Governments are likely to have access to more information for publicly-traded firms than private firms. The implication is that publicly-

traded firms can be more easily vetted during the RFP process, which reduces the possibility of adverse selection. Given the detrimental impact of information asymmetry in partner selection (Shen & Reuer, 2005), we expect that a firm's public or private status should be particularly important with respect to foreign firms. Thus, we expect that the publicly-traded variable would be correlated with the first stage dependent variable (i.e., foreignness) but not with the second stage dependent variables (i.e., likelihood of completion and completion time).

We generated the predicted probability of foreignness of the project firm and determined the hazard of non-selection (Hamilton & Nickerson, 2003; Shaver, 1998). The inverse mills ratio, across all models in our analysis, was significant for probability of completion, indicating that selection was indeed an issue in determining the impact of foreignness on completion likelihood but not on completion time.

Our econometric specification is as follows:

$$\text{Performance} = \beta'x + \delta \cdot \text{foreignness} + \beta_1\lambda + \eta,$$

where vector x includes an intercept constant and all other drivers of performance and

$$\lambda = \phi(\gamma'w)/\Phi(\gamma'w) \quad \text{if Foreignness} = 1,$$

$$\lambda = -\phi(\gamma'w)/\{1 - \Phi(\gamma'w)\} \quad \text{if Foreignness} = 0$$

Table 1 is the correlation table and descriptive statistics. Approximately 30% of our observations involved projects led by foreign-owned project companies, while the remaining 70% involved locally-owned project companies. The average completion time of the projects was approximately 2.5 years and 26% of the projects that were announced were completed (vs. not completed). The average size of the projects was approximately \$6 million and about one-third of the projects were transferred or were BOT projects (vs. BOO projects). Tables 2 and 3 show the two-stage Heckman results predicting likelihood of completion and project completion time, respectively. Our results indicate that the instrumental variable is positive and significant in Models 1 and 7, suggesting that whether the private sector firm is publicly-traded (or not) does influence the selection of a foreign private sector, which provides affirmation of the strength of the instrument. We include the inverse mills ratio in subsequent models to correct for the

Table 1 Correlation table

| Variable | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|-------------------------|----------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|
| 1. Project size | 6.03 | 24.51 | | | | | | | | | | | | | | | | |
| 2. Transferred project | 0.34 | 0.47 | -0.01 | | | | | | | | | | | | | | | |
| 3. Project debt | 0.78 | 0.21 | -0.06 | 0.02 | | | | | | | | | | | | | | |
| 4. Prior experience | 1.15 | 3.50 | -0.01 | 0.01 | 0.03 | | | | | | | | | | | | | |
| 5. Host GDP per capita | 14662.85 | 12646.77 | -0.02 | 0.03 | 0.25 | 0.13 | | | | | | | | | | | | |
| 6. Leisure and property | 0.09 | 0.29 | -0.03 | 0.23 | 0.09 | -0.07 | 0.17 | | | | | | | | | | | |
| 7. Mining | 0.07 | 0.25 | -0.03 | 0.11 | -0.12 | -0.08 | -0.08 | -0.08 | | | | | | | | | | |
| 8. Oil and gas | 0.09 | 0.28 | 0.01 | 0.08 | 0.07 | 0.01 | -0.01 | -0.10 | -0.08 | | | | | | | | | |
| 9. Petrochemicals | 0.04 | 0.18 | 0.01 | 0.11 | -0.01 | -0.01 | -0.11 | -0.06 | -0.05 | -0.06 | | | | | | | | |
| 10. Power | 0.41 | 0.49 | 0.03 | 0.02 | 0.00 | 0.24 | 0.21 | -0.26 | -0.23 | -0.26 | -0.16 | | | | | | | |
| 11. Telecommunications | 0.08 | 0.27 | 0.02 | -0.09 | 0.02 | -0.06 | -0.13 | -0.09 | -0.08 | -0.09 | -0.06 | -0.24 | | | | | | |
| 12. Transportation | 0.15 | 0.36 | 0.00 | 0.22 | 0.02 | -0.10 | -0.13 | -0.13 | -0.11 | -0.13 | -0.08 | -0.30 | -0.13 | | | | | |
| 13. Waste | 0.01 | 0.09 | -0.01 | -0.03 | 0.06 | 0.02 | 0.02 | -0.02 | -0.02 | -0.02 | 0.01 | 0.07 | 0.03 | 0.21 | | | | |
| 14. Water and sewer | 0.03 | 0.17 | -0.02 | 0.13 | 0.03 | -0.05 | -0.09 | -0.05 | -0.04 | -0.05 | -0.03 | -0.14 | -0.05 | -0.05 | -0.02 | | | |
| 15. Foreignness | 0.30 | 0.46 | -0.02 | 0.01 | -0.16 | 0.08 | -0.30 | -0.12 | 0.11 | 0.00 | 0.00 | 0.02 | 0.09 | -0.06 | -0.01 | 0.03 | | |
| 16. Prob. of completion | 0.26 | 0.44 | -0.05 | -0.07 | -0.05 | 0.01 | 0.07 | -0.04 | 0.02 | -0.07 | 0.01 | 0.01 | 0.12 | -0.04 | -0.01 | -0.05 | 0.02 | |
| 17. Completion time | 936.05 | 721.07 | 0.19 | -0.01 | -0.18 | -0.11 | -0.19 | -0.00 | 0.11 | 0.02 | 0.11 | -0.01 | -0.20 | 0.12 | 0.02 | 0.00 | 0.13 | -0.75 |

All correlations greater than ± 0.06 are significant at $p < 0.05$.

Table 2 Two-stage Heckman results predicting probability of completion with standard errors clustered by host country

| Model | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------|
| Foreignness | | | - 0.26 (0.24) | - 0.33 (0.26) | - 0.29 (0.24) | - 0.35 (0.26) |
| Foreignness × project size | | | | - 0.03 (0.04) | | - 0.02 (0.04) |
| Foreignness × transferred project | | | | | - 1.09* (0.49) | - 1.07* (0.50) |
| Project size | - 0.03* (0.02) | - 0.02 [†] (0.02) | - 0.02 [†] (0.02) | - 0.02 [†] (0.02) | - 0.02 [†] (0.01) | - 0.02* (0.05) |
| Transferred project | - 0.52 [†] (0.28) | - 0.67* (0.29) | - 0.67* (0.29) | - 0.66* (0.29) | - 0.60* (0.28) | - 0.60* (0.28) |
| Project debt | - 0.83 (0.64) | - 0.46 (0.64) | - 0.48 (0.64) | - 0.47 (0.63) | - 0.54 (0.64) | - 0.54 (0.63) |
| Prior experience (10 years) | - 0.01 (0.06) | - 0.02 (0.07) | - 0.02 (0.07) | - 0.02 (0.07) | - 0.01 (0.07) | - 0.02 (0.07) |
| Host GDP pc ($t - 1$) | 0.00 [†] (0.00) | 0.00* (0.00) | 0.00* (0.00) | 0.00* (0.00) | 0.00* (0.00) | 0.00* (0.00) |
| Publicly traded | 0.39 [†] (0.22) | | | | | |
| Inverse mills ratio | | - 1.15* (0.56) | - 1.25* (0.58) | - 1.28* (0.58) | - 1.16* (0.59) | - 1.19* (0.59) |
| Industry dummies | ^a | ^a | ^a | ^a | ^a | ^a |
| Constant | 0.74 [†] (0.46) | 1.50** (0.57) | 1.73** (0.60) | 1.78** (0.60) | 1.72** (0.58) | 1.75** (0.58) |
| Pseudo R^2 | 0.037 | 0.038 | 0.040 | 0.041 | 0.049 | 0.050 |

Two-tailed tests, robust standard errors are in parentheses. The standard errors are next to the coefficients. NB: in the first stage (Model 1), the dependent variable is foreignness.

$n = 493$, [†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

^a These controls are included in all models, but the results are not shown for the sake of parsimony.

Table 3 Two-stage Heckman results predicting project completion time with standard errors clustered by host country

| Model | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------------------------|------------------|----------------------|----------------------------|----------------------|------------------------------|----------------------|
| Foreignness | | | 136.59 (99.21) | 288.93* (110.70) | 204.22 [†] (123.33) | 344.44* (138.06) |
| Foreignness × project size | | | | 57.71* (23.81) | | 55.30* (24.70) |
| Foreignness × transferred project | | | | | 482.29 (295.33) | 441.08 (269.60) |
| Project size | - 0.004 (0.004) | 24.74 (15.09) | 25.09 [†] (15.18) | 31.42** (8.99) | 24.22 (14.77) | 30.36* (9.23) |
| Transferred project | 0.18 (0.15) | - 122.83 (184.50) | - 101.82 (187.01) | - 119.30 (173.48) | - 75.61 (151.18) | - 94.60 (143.18) |
| Project debt | - 0.44 (0.33) | - 226.24 (249.69) | - 244.99 (250.40) | - 256.82 (232.15) | - 256.75 (254.67) | - 267.08 (237.09) |
| Prior experience (10 years) | 0.02 (0.03) | - 28.41* (12.00) | - 26.83* (12.38) | - 25.25* (12.13) | - 27.12* (11.86) | - 25.57* (11.68) |
| Host GDP pc ($t - 1$) | - 0.00*** (0.00) | - 0.002 (0.01) | - 0.001 (0.01) | - 0.001 (0.01) | - 0.00 (0.01) | 0.00 (0.01) |
| Publicly-traded | 0.53*** (0.10) | | | | | |
| Inverse mills ratio | | - 394.00 (252.90) | - 329.62 (249.14) | - 340.40 (229.90) | - 333.57 (248.75) | - 343.50 (229.58) |
| Industry dummies | ^a | ^a | ^a | ^a | ^a | ^a |
| Constant | 0.20 (0.30) | 1,353.56*** (214.45) | 1,234.59*** (260.36) | 1,213.91*** (240.31) | 1,218.36*** (253.91) | 1,199.92*** (237.11) |
| R^2 | | 0.218 | 0.229 | 0.263 | 0.247 | 0.273 |
| Pseudo R^2 | 0.16 | | | | | |

Two-tailed tests, robust standard errors are in parentheses. The standard errors are next to the coefficients. NB: in the first stage (Model 7), the dependent variable is foreignness.

$n = 235$, [†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

^a These controls are included in all models, but the results are not shown for the sake of parsimony.

selection bias of foreign companies in determining the likelihood of completion and completion time. We cluster standard errors using a project’s host country in order to account for changes in the host country that, while unobserved, may influence the completion time and likelihood of completion of projects conducted in that country. All observations are at the project level. All variance inflation factors were below the 10-point cut-off (Cohen, Cohen, West, & Aiken, 2003), indicating that multicollinearity was not an issue. We centered all independent variables before creating the interaction terms to reduce the possibility of multicollinearity (Cohen et al., 2003).

RESULTS

Models 1 and 7 present the first stage of our Heckman model for our two dependent variables. Models 3 and 9 present the controls and the main effect of foreignness (Hypothesis 1). Models 4 and 10 show the interaction of project scale (project size) and foreignness (Hypothesis 2). Models 5 and 11 present the interaction of project scope (transferred project) and foreignness (Hypothesis 3). Finally, Models 6 and 12 are the full models with all hypothesized effects included. Because Models 6 and 12 test all of our hypothesized relationships concurrently, we base the interpretation of our results on these models.

First, we hypothesized that foreignness would have no impact on project performance (Hypothesis 1). That is, we expect the coefficient of foreignness to be non-significant, which is what we find in Model 6. Meaning, foreignness has no impact on the likelihood of project completion.

However, foreignness is positive and significant in Model 12 ($b = 344.44, p < 0.05$), which suggests that project finance investments led by a foreign-owned firm are completed more slowly than projects led by a locally-owned firm, controlling for important project, firm, industry, and country level factors. Therefore, we find partial support for Hypothesis 1 – foreignness appears to have no effect as it relates to the likelihood of project completion. However, the challenges faced by a foreign-owned project company in achieving faster completion time appear to be significantly greater than those of a locally-owned project company.

Second, we hypothesized that the greater the scale of the project, the greater its influence on the impact of foreignness on project performance (Hypothesis 2). Model 6 shows no statistically significant interaction between foreignness and project size. Therefore, Hypothesis 2 is not supported for the likelihood of project completion. However, we expect the coefficient of the interaction of project size and foreignness to be positive and significant for completion time, which is what we find in Model 12 ($b = 55.30, p < 0.05$). This means that the greater the scale of the project, the longer it will take foreign private sector firms to complete the PPP vis-à-vis local firms. Therefore, Hypothesis 2 is supported for project completion time.

Figure 1 demonstrates the impact of project size on project completion time for foreign-owned project companies as well as locally-owned project companies. Consistent with our hypothesis, Figure 1 indicates that, for the entire range of project size in our data, foreign-owned project companies have a consistently longer completion time relative to locally-owned project companies. The unequal

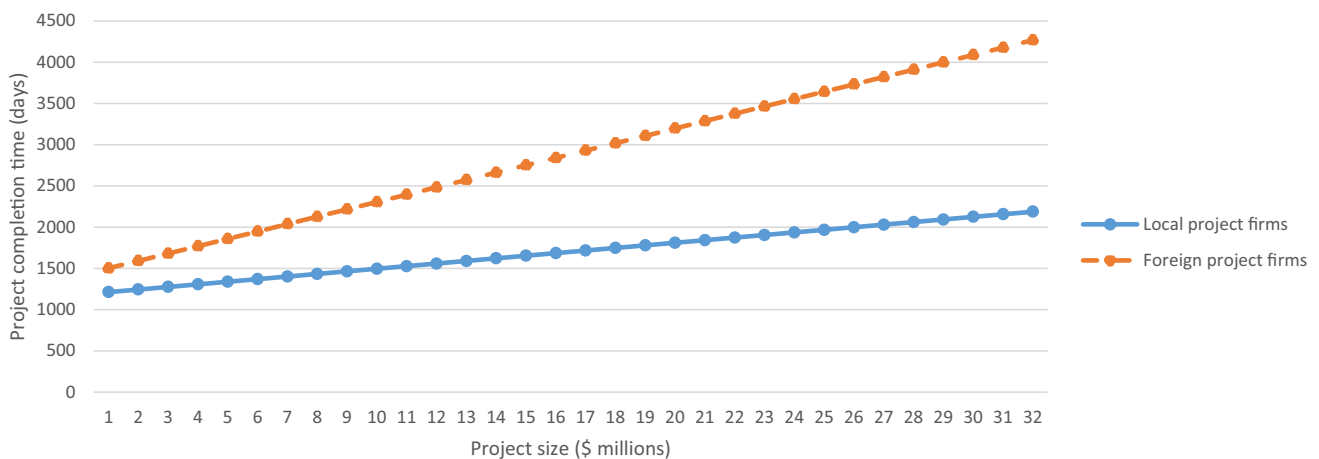


Figure 1 Moderating influence of project size on the impact of foreignness on project completion time.



slope of the two lines indicates the varying influence of project size for project companies that are foreign-owned versus those that are locally-owned. Specifically, a one standard deviation increase in project size results in a 107.1% increase in completion time for foreign-owned project companies, while a one standard deviation increase in project size results in only a 54.9% increase in completion time for locally-owned project companies.

Third, we hypothesized that project scope would affect foreignness such that for transferred projects, the impact of foreignness on project performance is exacerbated relative to self-managed projects (Hypothesis 3). That is, we expect the coefficient of the interaction of transferred project and foreignness to be negative and significant for the probability of completion, which is what we find in Model 6 ($b = -1.70$, $p < 0.05$). This means that, for foreign-led transferred projects, there is a greater likelihood that the infrastructure project will not be completed. Therefore, Hypothesis 3 is supported for the probability of project completion. For foreign-owned projects, a transferred project is 4.88% less likely to be completed relative to a project where no transfer is involved. On the other hand, for locally-owned projects, a transferred project is 2% less likely to be completed relative to a project where no transfer is involved. However, Model 12 shows no statistically significant interaction between foreignness and project scope. Therefore, Hypothesis 3 is not supported for completion time.

DISCUSSION

The purpose of our study was to evaluate the role of foreignness in the context of project finance investments, which are the primary funding instrument for PPPs. To the best of our knowledge, our study represents the first test of the relationship between foreignness and PPP performance. PPPs represent a unique and important context from the perspective of the foreignness literature because a host government has selected a private sector firm – be it foreign or local – to lead the infrastructure project. This characteristic allowed us to explore whether foreignness is truly an advantage or disadvantage in the context of PPPs. Our arguments and findings highlight an important source of performance heterogeneity that prior literature in the domain of PPPs had largely neglected: whether the project company is foreign-owned or locally-owned.

Collectively, our findings suggest that foreignness impacts PPP performance in a nuanced

manner. Specifically, we find that foreignness appears to have a direct effect in terms of project completion time, but not for the probability of project completion. In addition, we found that the project-level attributes of scale and scope serve as important moderators that further our understanding of *why* the foreignness effects may vary widely (Denk, Kaufmann, & Roesch, 2012). Specifically, our results show that the size of the infrastructure project moderates the effect of foreignness on project completion time. Our findings suggest that certain types of projects associated with a foreign firm can become so large that they hinder the outcomes of the project, which negatively impacts all infrastructure project stakeholders. Restated, our results suggest the foreign firms may achieve better outcomes by investing in smaller infrastructure projects, especially when project completion time is the key outcome of interest. Our findings also suggest that there may be a role for other project- or firm-level characteristics that future research could explore. Such attributes may include product or contract attributes, which may explain the heterogeneity of foreignness effects on performance for the same firm, industry and country.

In recognizing and correcting for the inherent endogenous choice of the government selecting a foreign firm, our work builds on prior work (Shaver, 1998), and thus recognizes that the antecedent of foreignness (i.e., entering the foreign market) itself is a strategic choice variable. The foreignness literature has not typically considered that an investment made by a local firm or a foreign firm might not be exogenously determined, irrespective of whether or not the host government has influence over this process. To the best of our knowledge, this is the first paper to consider the endogeneity of foreignness, and to find that foreignness is a disadvantage for foreign firms in some respects (i.e., with respect to project completion time) but not others (i.e., the likelihood of completing the project) after correcting for this issue. Future research may also want to consider that the foreignness of the private sector firm may endogenously influence other aspects of the infrastructure project in addition to performance, such as the project announcement date. For example, foreign-led infrastructure projects may intrinsically tend to be announced later than locally-led projects if local governments are more reluctant to announce partnerships with foreign entities. On the other hand, foreign-led projects may be announced more quickly if there is an advantage of foreignness,

such as increased legitimacy (Edman, 2016; Stevens, Xie, & Peng, 2016).

We recognize that foreignness is a complex construct. Our conceptualization of foreignness follows existing research (Mezias, 2002; Miller & Parkhe, 2002; Nachum, 2010). Nevertheless, we believe that our study can serve as a jumping-off point for future research that explores more subtle aspects of foreignness. For example, future research could examine the interactive effects of home and host country differences on PPP outcomes (e.g., the interaction between the level of economic development of a project firm's home and host country). Moreover, the historical relationship between the countries involved in the PPP (cf., Makino & Tsang, 2011), as well as the institutional distance between the countries involved in the PPP (cf., Bae & Salomon, 2010), present additional ways that "foreignness" may be conceptualized. Finally, existing work suggests that foreignness is an attribute that firms can actively manage (Edman, 2016; Newenham-Kahindi & Stevens, 2018), and thus foreignness may be subject to greater firm-level variance than we have accounted for in our study. While beyond the scope of this paper, we agree that unpacking foreignness to look at the role of managerial discretion, specific country-of-origin effects, and the role of institutional or cultural distance (Kostova et al., 2019) is likely a fruitful area for future research.

Implications for Practice

Our findings have implications for policy-makers, governments and global institutions involved in PPPs. Despite their intent to improve public welfare and stimulate economic development, and despite support from global financial institutions, infrastructure projects are often rife with poor performance outcomes, such as construction delays, poor financial returns, budget overruns and unmet expectations (Esty, 2002; Flyvbjerg, Bruzelius, & Rothengatter, 2003). Host governments should be mindful that, all else equal, foreign-led project firms may take a longer time to complete a project than a locally-led one. However, this does not mean that governments and multilateral institutions should automatically choose a local firm for a PPP. For example, locally-owned project companies may complete their projects faster than foreign-owned project companies, but the projects led by foreign-owned project companies may be of higher quality than projects led by locally-owned project companies, meaning that governments may

sometimes face a trade-off between the timeliness versus the quality of the infrastructure project depending upon which type of private sector firm is involved in the PPP. While it is beyond the scope of the present paper to verify these possible trade-offs, future research should explore the relationship between not just foreignness and project *completion* but also that between foreignness and project *quality*.

Similarly, the findings regarding the size of the infrastructure project suggest that governments and PPP stakeholders must recognize that larger projects may be needed based on a country's infrastructure demands. However, PPP stakeholders should expect larger infrastructure projects to have longer completion times, particularly if they involve a foreign firm as the private sector partner. By understanding and managing timeframe expectations up front, PPP stakeholders are more likely to achieve mutually satisfying outcomes. Moreover, the government and other host country stakeholders might find value in making a strong effort to help a foreign-owned project company develop social capital and social network ties in order to complete larger projects in as timely a manner as possible.

The findings regarding the scope of the infrastructure project suggest that project scope could also affect the performance expectations of PPP stakeholders, depending on whether the private sector firm is a local firm or foreign firm. While BOT/BOOT projects may allow host governments to control and benefit economically from the infrastructure project over the long term, the need to transfer knowledge to another entity hinders the likelihood of project completion, particularly when a foreign-owned project company is involved.

Finally, as noted earlier in the paper, successful PPPs require a wide plethora of factors (Chan et al., 2010; Zhang, 2005). However, our work highlights the fact that governments need national institutions that can negotiate and monitor the performance of PPPs. National institutions, such as banks, legal systems, the media and community groups, can provide the logistical, financial, regulatory and social support and oversight that PPPs need. More importantly, national institutions can support governments and policy-makers in monitoring and governing PPPs. For instance, the media can draw attention to any infrastructure project that shows evidence of malfeasance or misconduct that could harm the environment or the interest of PPP stakeholders.



Limitations

Our paper has several limitations. Due to data limitations, we were unable to evaluate the influence of other stakeholders involved in the PPPs. Other stakeholders, such as global financial institutions (e.g., the World Bank, International Finance Corporation, etc.) have the ability to influence the formation and outcomes of PPPs and project finance because of their financial involvement. Also, our sample is confined to projects that occurred before the world financial crisis that started in 2007. Economic and political conditions during and after the crisis may yield different infrastructure project outcomes.

We recognize that many facets of prior experience may be relevant to foreignness, likelihood of completion and project completion time (Petersen & Pedersen, 2002). Due to data limitations, our analysis controls only for the firm's prior experience with project finance investments (Stevens & Dykes, 2013). The firm's prior experience with other types of cooperative arrangements in the home or host country, as well as the firm's prior political or internationalization experience, may also be relevant for our context. Future research may want to examine the influence of experience heterogeneity on the part of the firm and/or the host government in PPPs and project finance investments.

CONCLUSION

Governments need infrastructure development to support their economies. Indeed, PPPs are a significant means for governments to stimulate economic growth, spur entrepreneurial activity and promote human advancement (Elburz, Nijkamp, & Pels, 2017). Therefore, the study of PPPs and their

primary financial arrangement, project finance investments, is an important area of study for policy-makers, governments, private sector firms and other stakeholders. Moreover, from a scholarly perspective, PPPs are at the nexus of the tension regarding the use of private funds to pursue public interests. Thus, for management, public policy and international business scholars, PPPs are ripe for additional inquiry regarding how, when and why firms and public entities can manage this tension.

We believe that our study points to ways in which firms and governments can co-construct infrastructure projects in a productive manner. Ultimately, all PPP stakeholders want infrastructure development to achieve its intended purpose in a timely and effective manner. By being aware of potential pitfalls and developing strategies for overcoming them, we hope that this study aids the performance of these important, but intricately complex, forms of investment from the standpoint of project companies, investors, governments, and other important stakeholders in society.

NOTE

¹PPP may also involve a consortium of firms. In this study, however, we focus on PPPs with a single private sector firm that is the primary equity investor in the infrastructure project. We do this to be parsimonious and to better isolate the effect of firm-level attributes (such as foreignness) on PPP performance, which would become considerably more complicated in the case of a PPP led by multiple private sector firms.

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