

FINANCIAL ISSUES IN PUBLIC PRIVATE PARTNERSHIPS

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Public-Private Partnerships (PPPs) have gained significant importance in academia, government, and the construction industry over the last three decades. As a result, numerous studies have been published on the topic. These studies investigate various issues associated with PPP projects such as the length of the concession period, the selection of the private consortium, and the laws, rules and regulations that govern PPP implementation. However, there is a lack of systematic overview about issues with particular attention to financial aspects. This paper presents the outcome of a literature review that has been conducted to collect information about financial issues encountered in PPP implementation. This review included a total of 33 papers published in major journals and conference proceedings in the construction field in the last 25 years. At the end of the review, it was possible to identify a set of 19 financial issues that were grouped into five categories, namely (1) financing system, (2) financial market, (3) transaction costs and delays, (4) the public agency, and (5) the private consortium. The choice of focusing on this theme was prompted by the fact that the other issues (i.e., social, legal, and political) are all linked to financial issues. The identification of the salient issues related to financial aspects in PPPs is expected to contribute to the state-of-art in PPP research and implementation as it can pave the way to an empirical investigation that can in turn lead to a streamlining of the PPP processes throughout the world.

Keywords: Project delivery/financing systems, Financial factors, Financial viability, PPP project management, Infrastructure, Construction industry.

1 INTRODUCTION

Public Private Partnerships (PPPs) have emerged as one of the major delivery/financial mechanism for infrastructure projects since their inception. They are born from the idea of letting the private sector into the infrastructure market to alleviate the demands on public money problems (Li and Akintoye 2003). Put simply, thanks to a PPP contract, a public agency, i.e., a local or a central government, gives to a private consortium the provision of a public service or public utility, by entering into an agreement governing the long-term obligations of the parties. In particular, the private party bears the responsibility for financing and building the necessary infrastructure, and operating, managing and maintaining the service. A common mistake is to mix up PPPs and simple concessions and it should be mentioned that much of the literature does not explain the difference between these two mechanisms. In simple concessions,

the private party pays the public agency for the right to operate the asset. In this way the transfer of risk to the private partner is generally higher than that of a PPP agreement (OECD 2010).

If a PPP contract is properly built and managed, it can provide many benefits to both sectors. On the one hand, public agencies can alleviate the financial burden on their own funds, transfer risks to the private sector, and obtain a higher value for money thanks to the contribution of the private consortium's expertise. On the other hand, the private sector can enter an expanding market for infrastructure projects where government involvement is reduced and taking advantage of opportunities to earn profits (Algarni *et al.* 2007).

However, since the inception of PPPs, projects have revealed several problems due to the complex aspects of the arrangement, including numerous interrelationships between social, political and legal risks, and unfavorable and uncertain commercial conditions. The objective of the research presented in this paper is to investigate the financial issues that may occur over the entire life-cycle of a PPP project because financial issues constitute a control point that can prevent the occurrence of several problems of different nature. For example, Soomro and Zhang (2015) show that financial problems may trigger a slow and obstructed project progress, create social and legal complications, and cause the concessionaire's insolvency and/or the cancellation of the concession. Therefore, this paper identifies the mostly discussed financial issues in the literature.

2 RESEARCH METHODOLOGY

The academic community has developed a vast body of knowledge about PPPs. A systematic analysis of articles published is undertaken in this paragraph. Following Al-Sharif and Kaka's method (2004), a search was conducted using the "title/abstract/keyword" field on the search engine "ASCE library" considering in the selection the top-ten construction journals listed in Chau's ranking (1997). Search keywords included public-private partnership, private finance initiative, PPP, PFI, financial management. In addition, conference proceedings were reviewed for a total of 33 papers over the last 25 years.

The number of PPP studies that strictly deal with financial issues is limited. Some of the studies focus on legal, economic, and political/social obstacles (Li *et al.* 2005, Chan *et al.* 2010, Hwang *et al.* 2013). Given that the literature offers many studies that investigate critical success and best value contributing factors, the search method was extended to cover articles that mention financial issues as success/failure factors. For example, Zhang (2005) found that a "creative financial package" is a critical success factor for a PPP project. Tiong *et al.* (1997), Zhang (2005), and Yuan *et al.* (2012) identified another critical success factor in a strong financial commitment of the private consortium. The financial issues were thus identified by surveying not only papers where the main focus is financial issues in PPPs, but also papers that explore success/failure factors in PPPs.

3 FINANCIAL ISSUES

A total of nineteen issues were identified in the literature review. Some of these issues share similar themes; hence the five macrocategories were defined in the following

way: (a) unattractive financing system, (b) adverse financial market, (c) high transaction costs and delays, (d) financial weakness of the public agency, and (e) financial weakness of the private consortium.

(a) UNATTRACTIVE FINANCING SYSTEM

- (1) **Inappropriate financial analysis:** This problem occurs when inputs, such as demand forecasts, technical feasibility, and cost estimates, are not available or detailed enough. If the financial performance of the project over its life is not evaluated properly, the possibility to achieve the best value for money is jeopardized (Zhang 2005, Yuan *et al.* 2012, Tang *et al.* 2013, Xie *et al.* 2013).
- (2) **Unappealing financial package:** A financial package should be based on appropriate cost (e.g. tariff, water rate, or energy change costs), minimal financial risks to stakeholders, minimal burden on debt-servicing capacity of project revenue, and creative thinking (e.g., opening up additional markets within the same project). An unappealing package could necessitate lengthy and troublesome negotiations and delays in project progress with a reduction of the lenders' attraction. (Zhang 2005, Jefferis 2006, Yuan *et al.* 2012, Tang *et al.* 2013).
- (3) **Weak commercial arrangement:** This issue occurs when the contract payment mechanism, the financial arrangements, the sources of loans, and the sources of stand-by financing facilities for possible eventualities are not formulated in a clear way (Zhang 2005, Tang *et al.* 2013).
- (4) **Unfair concession period:** Public agencies want a shorter period in order to take possession of the asset as soon as the debt is repaid. Private consortia want a longer period for earning more revenues. The concession period has to be fair in order to protect the interests of both the public agency and the private consortium (Tiong *et al.* 1997, Zhang 2005, Xie *et al.* 2013).
- (5) **Inappropriate equity to debt ratio:** A low equity to debt ratio reveals the vulnerability of the private consortium to manage financial issues. On the other side, a high ratio implies a strong commitment in terms of risks for the private parties (Zhang 2005).
- (6) **Level of tolls or tariffs:** For public agencies, high tolls or tariffs means high service/product costs; for private consortia, low tolls or tariffs means low revenues (Tiong *et al.* 1997, Zhang 2005, Xie *et al.* 2013).
- (7) **Lack of appropriate toll/tariff adjustment mechanisms:** Given the long-term nature of a PPP contract, changes, such as economic growth, price elasticity and user behavior, could occur over years. Therefore, an inappropriate and inflexible toll/tariff mechanism makes it difficult for a private consortium to recover its investments (Zhang 2005, Yuan *et al.* 2012).
- (8) **Net present value of toll/tariff revenues in the concession period:** A high net present value of toll/tariff represents an issue for public agencies because it implies a high total cost for using the services or products of the asset. A low

net present value of toll/tariff is an indication of a low cash intake for private consortia (Zhang 2005).

- (9) **Inadequate total investment schedule:** Knowing the evolution of total investment over the concession period can help the stakeholders to assess the status and the strength of the financing mechanisms (Zhang 2005, Yuan *et al.* 2012).

(b) ADVERSE FINANCIAL MARKET

- (10) **High and variable interest rates:** A high rate of interest increases project costs and financial risks (Tiong *et al.* 1997, Zhang 2005, Hwang *et al.* 2013).
- (11) **Low rate of return and restriction on the cap:** A low rate of return and a restriction on the cap indicate low profitability, with the effect of discouraging the investors (Tiong *et al.* 1997, Zhang 2005).
- (12) **Weak local financing and high financial service charges:** This factor weighs on the cash flow of the project and its feasibility. Indeed stable local financing could prevent foreign currency risks, e.g., convertibility and fluctuation in interest/exchange rates (Tiong *et al.* 1997, Li *et al.* 2005, Zhang 2005, Chan *et al.* 2010, Yuan *et al.* 2012).

(c) HIGH TRANSACTION COSTS AND DELAYS

- (13) **High transaction cost:** The transaction costs of PPPs arise because of complex contract negotiations, legal, financial, and technical advisory, for organizing the procurement phase, and for monitoring and managing the contract over the life-cycle of a project. High transaction cost may damage PPP benefits and not achieve the best value for money. (Li *et al.* 2005, Zhang 2005, Corbett and Smith 2006, Chan *et al.* 2010, Hwang *et al.* 2013).
- (14) **Long delay in reaching financial closure and long time in construction period:** Obstacles in reaching financial closure increase costs in the bid phase. Delay in construction duration increases project development costs (Li *et al.* 2005, Zhang 2005, Corbett and Smith 2006, Chan *et al.* 2010, Hwang *et al.* 2013, Tang *et al.* 2013).

(d) FINANCIAL WEAKNESS OF THE PUBLIC AGENCY

- (15) **Weak financial commitment of the public agency:** Limited financial participation on the part of a public agency discourages a private consortium because it could be read like a lack of interest (Tiong *et al.* 1997, Li *et al.* 2005, Zhang 2005, Yuan *et al.* 2012, Hwang *et al.* 2013).
- (16) **Corruption and bribery:** This factor may result in dangerous compromises with negative effects on the project (Li *et al.* 2005, Hwang *et al.* 2013).
- (17) **No government control on tolls/tariffs:** The government has to monitor and regulate the tolls/tariffs in order to prevent public opposition with consequent high political costs (Zhang 2005).

(e) FINANCIAL WEAKNESS OF THE PRIVATE CONSORTIUM

- (18) **Weak financial commitment of the private consortium:** Limited financial contribution on the part of the private consortium may damage project progress because the private consortium may not be able to solve possible problems with appropriate funds (Tiong *et al.* 1997, Li *et al.* 2005, Zhang 2005, Yuan *et al.* 2012, Hwang *et al.* 2013).
- (19) **Weak financial standing of the private consortium:** A weak financial standing on the part of a private consortium has heavy consequences such as a higher commercial risk, and higher interest rates on borrowed funds (Li *et al.* 2005, Zhang 2005, Corbett and Smith 2006, Jefferies 2006, Hwang *et al.* 2013, Tang *et al.* 2013).

4 CONCLUSION

Since a PPP project involves multiple factors of different nature, it is not possible to investigate all of them in great depth. This paper presents the state-of-art in PPP research about financial issues, a critical factor in the success/failure of a PPP.

The research presented in this paper involves a review of the literature. A total of 19 financial issues were identified and were organized in five macrocategories that include the strength of the financing system, the stability of financial markets, the level of transaction costs and delays, and the financial strength of the stakeholders. Decision-makers in public agencies and private consortia should carefully analyze these issues in order to understand if a PPP project is appealing to both parties.

References

- Al-Sharif, F., and Kaka, A., PFI/PPP topic coverage in construction journals." *Proc., 20th Annual ARCOM Conference*, Vol. 1, 711–719, Heriot Watt University, Edinburgh, Scotland, U.K., 2004.
- Algarni, A. M., Arditi, D., and Polat, G., Build-Operate-Transfer in Infrastructure Projects in the United States, *Journal of Construction Engineering and Management*, 133(10), 728–735, 2007.
- Chan, A. P. C., Lam, P. T. I., Chan, D. W. M., Cheung, E., and Ke, Y., Potential Obstacles to Successful Implementation of Public-Private Partnerships in Beijing and the Hong Kong Special Administrative Region, *Journal of Management in Engineering*, 26(1), 30-40, 2010.
- Chau, K. W., The ranking of construction management journals, *Construction Management and Economics*, 15(4), 387–398, 1997.
- Corbett, P., and Smith, R., An analysis of the success of the private finance initiative as the government's preferred procurement route, *Proc., Accelerating Excellence in the Built Environment Conf.*, Birmingham, U.K., 2006.
- Hwang, B. G., Zhao, X., and Gay, M. J. S., Public private partnership projects in Singapore: Factors, critical risks and preferred risk allocation from the perspective of contractors, *International Journal of Project Management*, 31(3), 424–433, 2013.
- Jefferies, M., Critical success factors of public private sector partnerships: A case study of the Sydney SuperDome, *Engineering, Construction and Architectural Management*, 13(5), 451-462, 2006.
- Li, B., Akintoye, A., Edwards, P. J., and Hardcastle, C., Perceptions of positive and negative factors influencing the attractiveness of PPP/PFI procurement for construction projects in the U.K.: Findings from a questionnaire survey, *Engineering Construction and Architectural Management*, 12(2), 125–148, 2005.

- Li, B., and Akintoye, A., An Overview of public-private partnership, in *Public-Private Partnerships: Managing risks and opportunities*, A. Akintoye, M. Beck & C. Hardcastle (eds), Oxford, 3-30, 2003.
- OECD, *Dedicated Public-Private Partnership Units: a survey of institutional and governance structure*, 32, 2010.
- Soomro, M., and Zhang, X., Roles of Private-Sector Partners in Transportation Public-Private Partnership Failures, *Journal of Management in Engineering*, 10.1061/(ASCE)ME.1943-5479.0000263, 2015.
- Tang, L., Shen, Q., Skitmore, M., and Cheng, E., Ranked Critical Factors in PPP Briefings, *Journal of Management in Engineering*, 29(2), 164–171, 2013.
- Tiong, R. L. K., and Alum, J., Final Negotiation in Competitive BOT Tender, *Journal of Construction Engineering and Management*, 123(1), 6-10, 1997.
- Xie, J. and Ng, S. T., Multiobjective Bayesian Network Model for Public-Private Partnership Decision Support, *Journal of Construction Engineering and Management*, 139(9), 1069–1081, 2013.
- Yuan, J., Wang, C., Skibniewski, M., and Li, Q., Developing Key Performance Indicators for Public-Private Partnership Projects: Questionnaire Survey and Analysis, *Journal of Management in Engineering*, 28(3), 252–264, 2012.
- Zhang, X., Concessionaire's Financial Capability in Developing Build-Operate-Transfer Type Infrastructure Projects, *Journal of Construction Engineering and Management*, 131(10), 1054–1064, 2005.