WHEN ARE PUBLIC-PRIVATE PARTNERSHIPS NOT AN APPROPRIATE GOVERNANCE STRUCTURE? CASE STUDY EVIDENCE

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ABSTRACT

While the higher efficiency due to better pooling of resources is largely emphasized in Public-Private Partnerships (PPPs), the impacts of transaction costs embedded in PPPs are often understated. In fact, excessively high transaction costs could render PPPs an inferior alternative for providing public infrastructures/services. In literature, there are some studies examining the intrinsic types and sources of transaction costs embedded in different governance structures for providing public infrastructures. Specifically, two major sources of transaction costs in PPPs have been suggested, namely, the principal-principal problems and hold-up/renegotiation problems. This paper uses case study method to empirically examine the hypotheses concerning the transaction cost contingencies and whether PPPs are appropriate as a governance structure. The two cases are the Channel Tunnel project and the Taiwan High Speed Rail project, two of the largest and, yet, the most problematic and controversial PPP projects in the world.

1. Introduction

Public-Private Partnerships (PPPs) have developed as one of the most popular governance structures to deliver public infrastructures/services, by which the effectiveness and efficiency are claimed to be achieved more easily than by traditional delivery approaches and governance (Bettignies and Ross 2004). Unfortunately, while the higher efficiency due to better pooling of resources is largely emphasized in PPPs, the impacts of transaction costs embedded in PPPs are often understated. In fact, the high transaction costs could render PPPs an inferior alternative for providing public infrastructures/services. Although an ideal governance structure should improve the production efficiency and, at the same time, economize on the relevant transaction costs, different governance mechanisms often present different trade-offs between benefits and costs. Nevertheless, choosing from the alternative schemes of project deliveries entails careful evaluation of the comparative tradeoffs between transaction costs and internal capabilities or benefits. Therefore, it is critical to study when and why PPPs may not be an appropriate governance structure for public infrastructures.

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In terms of governance structure, PPPs can be considered an alliance between the government and private parties, which is governed by a long-term concession/contract agreed by two major joint partners, the PPP concession firm and the government. From the resource-based view, the use of PPPs can be explained by the rationale for alliances as argued by Das and Teng (2000) that value-creation potential of resources can be obtained when the resources are appropriately pooled together. The partnering parties share, exchange and aggregate their own valuable resources with each other in order to seek synergy and improve efficiency and effectiveness. However, from the transaction costs perspective, there might be distinctive and sometimes substantial transaction costs embedded in PPP alliances because (1) PPP projects are often public service/facility oriented, (2) project finance is typically used in PPPs, and (3) one of the partners is government. These differences contribute to many problems which may cause significant transaction costs. These transaction costs include those that can be observably identified and measured and those that are hidden, not easily assessed. The hidden transaction costs may significantly undermine the expected benefits and sometimes cause disastrous impacts on the society. Specifically, Ho and Tsui (2009) argue that there are two major sources of transaction costs in PPPs, namely, the principal-principal problems mainly caused by unbalanced profit structure and the hold-up problems mainly caused by government's soft budget constraints. Based on Ho and Tsui (2009), this paper derives two hypotheses concerning when PPPs are not appropriate as a governance structure, and empirically examines the hypotheses by studying two of the world's largest PPP cases, the Channel Tunnel project and Taiwan High Speed Rail project.

We test and evaluate the proposed hypotheses using case study research, a suitable method for examine a contemporary phenomenon in its real-life context and obtaining context-dependent knowledge (Yin 1981). Through the case studies, how the principal-principal conflicts and hold-up problems affect the performance of PPP projects were explored. We collected the empirical data from primary source archive including project contracts, official records, financial statements, court decisions, and other governmental rulings. Secondary source materials that include journal articles and corporate correspondence were used as well. Evidence from various sources of data corroborated each other and, thus, established the internal validity. The two studied projects were selected because they shared some critical characteristics: (1) the Build-Operate-Transfer (BOT) model was applied, (2) these two mega projects involved high construction costs, high business risks, and high public interests, (3) when the concession was awarded, the related institutional environments and financial markets were inexperienced and immature for adopting PPPs, and (4) during the operation period, both projects ran into financial difficulties.

The rest of this paper is structured as follows. Section 2 explicates the significant sources of transaction costs which may cause the failure of PPP projects. Two hypotheses were developed. Section 3 and section 4 study the Channel Tunnel project and Taiwan High Speed Rail project, respectively, and perform within-case studies. Section 5 conducts cross-cases analysis and evaluates the hypotheses through both within-case and cross-cases analyses. Section 6 draws conclusions.

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2. Transaction Cost View of PPPs and the Hypotheses

2.1. Unbalanced Profit Structure and Principal-Principal Problems

Principal-principal problems refer to the interest conflicts between the firm's controlling shareholders and minority shareholders. The controlling principal who appoints the major directors of board and top managers of the firm might exploit their private information and dominant positions to appropriate from minority shareholders. The problems generally result from business group structures, concentrated ownership, and weak legal protection of minority shareholders, etc (Young et al. 2008). Unfortunately, principal-principal conflicts seem to be embedded in PPPs due to the profit structures of PPPs, even if the projects are undertaken in developed countries. The forms of appropriation may include below-market value asset transfers to the private holdings of the controlling shareholders and corporate expenditures on non-value creating assets for the private consumption of controlling principal, etc.

In PPPs, the sources of the promoters' investment returns will not only come from the returns of equity investments in the concessionaire, but also from the construction and operation contracts since the promoters would often act as the *major* contractors for construction and operation. Therefore, the promoters, being the controlling principal, will aim to maximize the overall value of the combined pool of profit components. In other words, the profit structure of promoters is inconsistent with that of the passive shareholders of concession firms.

An unbalanced profit structure underlying PPPs gives the controlling principal the incentives of opportunism. The ownership structure of PPPs further gives the controlling principal the capability to exploit private information in seeking appropriable rents from passive investors. The controlling principal may benefit from manipulating the construction contract prices and clauses and, as a result, the minority shareholders, subject to severe information asymmetry, will suffer from losses in equity returns. As such, principal-principal conflicts may seriously impair the financial situation and performance of the project and lead to significant transaction costs in PPPs.

Hypothesis 1: *When the profit structure of a project is prone to be unbalanced, PPPs may not be an appropriate governance structure due to principal-principal problems.*

2.2. Soft Budget Constraints and Hold-up Problems

The phenomenon of soft budget constraints was first studied in the context of transitional socialist economies, in which firms were always bailed out by government from financial difficulties with refinance or other forms of subsidies. Thus, it is said to have soft budget constraints when firms in the event of financial failure can always expect to be bailed out (Kornai, Maskin et al. 2003). Among the variety of motives for the government to bail out poor projects, some deserve to be explicated here: First, in order to avoid economic spillover effects, very often, government is left few choices but to rescue the failing enterprise where the enterprise is often deemed "too important to fail." Second, it might be prohibitively costly to liquidate some poor projects; for instance, a large scale project can be "too big to fail."

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The problems of soft budget constraints lie in its ex ante effects on the behavior of the firm, that is, the expectation of the capability to hold-up government and renegotiate. The firm will then use less costly efforts in operation, make aggressive investments (Schaffer 1989) or bid opportunistically. As a result, the softness of budge constraints may result in aggravate opportunism and subsequent economic inefficiency (Ho 2006). In PPPs, the projects are usually for serving the public and have significant influences on public interests. Thus, failures of these projects may also result in chain reactions of bankruptcies, mass redundancies, and political shock. As such, government may prefer to rescue the concessionaire ex post via various means such as reducing project's liabilities, increasing service charges, granting subsidies, and lengthening the contract duration, etc.

Therefore, PPP governance has the tendency to create soft budget constraints and, consequently, cause substantial transaction costs from hold-up problems. In particular, the high opportunity costs of replacing the incumbent concession firm, even in the early stage of a concession, are one of the major causes that hold up the government for renegotiation. This explains why, as we observed in practice, government is so easy to open the door for renegotiation once the contract is awarded and so reluctant to enforce the concession contract when government has the right to terminate the concession. Therefore, we propose the second hypothesis as follows.

Hypothesis 2: *When the government is subject to soft budget constraints, PPPs may not be an appropriate governance structure due to the hold-up problems.*

3. Within-Case Analysis of Channel Tunnel

3.1. Project Background

Channel Tunnel is one of the largest privately financed infrastructure projects in the world. As a result of expenditure cut on public projects and the depression of the construction market in the U.K. during the late 1970s and early 1980s, the development of the Channel fixed-link and its financing scheme were importance issues in the U.K. during the early 1980s. The British government decided that the project should be financed by private parties and developed in BOT scheme. The *Treaty of Canterbury* signed by U.K. and French governments on February 12, 1986 provided that, "The Channel fixed link shall be financed without recourse to government funds or to government guarantees of a financial or commercial nature."

3.2. The Tendering and Construction of the Project

In April 1985, developers were solicited to submit proposals for a fixed-link channel crossing. In January 1986, the project was awarded to Channel Tunnel Group/France-Manche (CTG/FM), who had started to structure Eurotunnel in early 1986 in readiness for flotation. The concession agreement was entered into between Eurotunnel and both governments on 14 March 1986. Subsequently, Eurotunnel awarded the single contract to design and build the Channel Tunnel to TransManche Link (TML), the construction consortium, whose executives sat on and controlled the board of Eurotunnel. TML was formed by France and the UK's ten major contractors, who were the major founders of CTG/FM and later withdrew from the CTG/FM due to government policies. At this moment, Eurotunnel existed only on paper without acquiring its own autonomy. The

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client of the contract could be deemed as weak or even absent. There was no strong representative of the future shareholders to negotiate such a critical contract at arm's length with the contractors. The terms and conditions were unfavorable to Eurotunnel and the project (Genus 1997; Grant 1997).

Although withdrawn from the Eurotunnel as shareholders, the founder construction companies had controlled Eurotunnel until October 1986. As required by the investment institutions, TML must give up the control of Eurotunnel and permit an independent majority on its board in order to avoid the conflict of interests. This seemed to have avoided the problem that the contractor of the project was also the major shareholders of Eurotunnel. However, this was nearly eight months after the award of the concession to CTG/FM and five months after TML was awarded the construction contract. The seed of contention had been sowed from the outset.

The project was completed with one year delay. The formal estimated construction cost shown in the 1987 shareholder prospectus was £4.8 billion, including financing and other indirect costs. The actual overall construction cost on Channel Tunnel's completion was about £10.5 billion, nearly twice the estimate.

3.3. Financial Distresses and Restructuring

Due to the spiraling construction costs and the overly optimistic traffic forecasts, Eurotunnel has been faced with financial difficulties since the very first year of operation. In 1995, approximately £8 billion was in bank loans, and the interest burden was about £2 million a day. Moreover, the Channel Tunnel faced strong competition and potential price wars from ferry and airline companies. The overall shortfall in traffic volume, the escalation of construction costs and the price reductions as a result of the competitive battle altogether led to Eurotunnel's financial difficulties (Anguera 2006).

On 14 September 1995, Eurotunnel announced a moratorium on the repayment of its junior debt which comprised the bulk of its nearly £8 billion in outstanding debt. This action initiated the debt restructuring process. The restructuring package with the French Court's intervention in negotiation was eventually achieved and agreed among the company, shareholders, and creditors.

After the 1995 restructuring, Eurotunnel still continued to struggle with financial difficulties due to the high level of outstanding debts. Thus, the second financial restructuring took place. On 11 July 2006, Eurotunnel sought legal protection of the Commercial Court of Paris pursuant to the French law "procédure de sauvegarde." With the assistance of the court-appointed representatives, the creditors, suppliers and bond holders voted in favor of the restructuring plan proposed by Eurotunnel.

3.4. Within-Case Analysis

From the perspective of project profit structure, the unbalanced profit structure and the subsequent principal-principal problems had caused significant transaction costs for the project and government. The construction companies that formed TML were the original major promoters of the Channel Tunnel project. They virtually were the controlling principals during the initial stages of project and sought their main returns from the construction of Channel Tunnel, rather from its operation. Although Eurotunnel later acted to distance itself from this core group of founder shareholders, it nevertheless let a single contract for the design and construction of the Tunnel to its founders in the new

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guise of TML. The absence of a clear owner of the project from the outset gave rise to the conflicts of interest and principal-principal problems. Although the two main shareholders, the construction firms and the banks, had quite incongruent interests and should have naturally competed with each other, Eurotunnel was in the control of TML when both parties entered into the construction contract. As a result, according to Holliday et al. (1991), incomplete contractual documents and the "fast-track" design, dominated by TML, contributed to sources of many significant claims over the lump sum contract prices. The future shareholders' interests and the operation of the project were in lack of adequate protection. The occurrence of the excessive transaction costs in the Channel Tunnel project exactly matched the syndromes of the principal-principal problems caused by the unbalanced profit structure.

From the perspective of the softness of budget constraints, the U.K. and French governments committed themselves to hard budget constraints by effecting the legal document, the Treaty of Canterbury, at the beginning of the privately financed project. Thus, any attempt to break the commitment would have induced political condemnation. The concessionaire had little chance to hold the government up and extract subsidies from government. Thus, during the courses of the two financial restructurings, there were no direct and substantial subsidies extended from the government to Eurotunnel in order to bail the project out of financial difficulties. Although all of the shareholders, creditors, bondholders, and suppliers of Eurotunnel suffered huge losses or dilutions from the financial restructurings, the governments were able to maintain the incentive mechanism of PPP scheme and prevent the government from being hold-up. Efficiency can be achieved only when the ex-ante expectation of hold-up opportunities becomes remote. However, the hard budget constraints did not seem to be capable of reducing the aforementioned impacts of principal-principal problems.

4. Within-Case Analysis of Taiwan High Speed Rail

4.1. Project Background

The Taiwan High Speed Rail (THSR) project is the largest transportation infrastructure in Taiwan and also one of the largest PPP projects in the world. The concession period is 35 years. The high speed rail connects Taiwan's major cities from north end to south end by running trains up to 300 km/hour through the 345 kilometers route. The capital structure of the THSRC was originally targeted at 30% equity and 70% debt ratio, and was later revised to 25%: 75% equity and debt ratios. Using almost seven years, Taiwan High Speed Rail was completed in January 2007, with a 14 month delay. The actual total costs of the project upon completion were about $17.3 billion, including $3.2 billion costs committed by government and $14.1 billion invested by private parties, taking accounts of $1.7 billion cost overruns.

4.2. The Tendering and Construction of the Project and the Crises Encountered

There were only two alliance teams competing for the project, Taiwan High Speed Rail Alliance (THSRA) and China High Speed Rail Alliance (CHSRA). Since the technical concerns were limited due to the technology maturity, the competition was focused on the financial issues. In their financial proposal, CHSRA requested government to invest $4.6 billion to make the project financially viable. On the other hand, THSRA requested zero

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additional government investment, and further promised that the government may receive at least $3.2 billion royalty-like payback from the project operation revenue. Finally, the project was awarded to THSRA in September 1997. The financial projection of THSRA immediately received criticism for being overly optimistic.

The first crisis faced by the Taiwan High Speed Rail Corporation (THSRC), the concession firm, was the inability to obtain the debt financing of $10 billion after winning the concession. In this project, the private promoters did not utilize the international debt markets for financing partly because Taiwan government to subsidize the loan interest by a rate far below the market. However, since the THSR was the first PPP mega project in Taiwan, the banks had no faith in financing the project at a below market fair rate without government's "full" debt guarantees. At last, a trilateral agreement was entered into among the government, THSRC, and the syndicate bank, which provided that the government shall assume the outstanding debt in the event that the concession agreement is terminated [for any causes]. Among the $10 billion of debt financing, $8.6 billion came from government owned/controlled banking systems and only $1.4 billion belonged to private commercial banks. Note that in this event the Prime Minister Mr. Hsiao explicitly expressed his attitude toward the project that "the project is not allowed to fail" and "government will do everything to support the project."

The second crisis concerned the raising of equity. According to the concession contract, the total amount of equity to be raised was $4 billion and the timetable for equity raising was specified in the debt financing contract. The fulfillment of the timetable was a prerequisite for withdrawing funds from the loan credit facility. For the following seven years before project completion, the THSR constantly had difficulties fulfilling the equity requirement. The inability to raise sufficient equity had caused the crisis of the THSRC's breach of the concession contract. The major reason of the crisis was because the market had substantial doubt on the project profitability and regarded that the THSRC's financial proposal was too optimistic. Note that the doubt on the project profitability could also be seen from the initial shareholders' reluctance and refusal of investing more equity later on although they had the capacity to do so. As a result, a couple rounds of renegotiation took place and finally the banks had to accept the THSRC's proposal to reduce the total equity amount to $3.3 billion.

Taiwan government played a crucial role in bailing out the THSRC from the equity raising crisis. The government was criticized of having the government owned/controlled enterprises (GOEs) make substantial equity investment in the THSRC. However, the last equity investment of $0.23 billion by the government controlled non-profit organizations in September 2005 caused one of the most serious criticisms for government's unjustifiable aids and failure in monitoring the project. During this equity raising crisis, the government announced again that "government is determined to ensure the completion of the high speed rail." As discussed previously, for projects that are too important or too big to fail, government will often suffer from the soft budget constraints. In fact, the government's "September 2005 equity investment" was later determined by the court that it was illegal for this non-profit organization to make the equity investment. Up to date, the total passive equity investment by GOEs, government controlled non-profit organizations, and government owned banks was about 37.4% of total equity, while initial equity invested by the promoters was only about 28.5% of total shares.

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The third crisis was the cost overrun. Around one year before the project completion, only three months after the government's "September 2005 equity investment," the THSRC announced that the total cost overrun was estimated to be $1.7 billion or so due to the estimated one year schedule delay and construction cost overrun. Due to the serious political impact of previous government illegal equity investment, the government had ruled out the possibility of providing any equity investment or liability guarantees. For the first time, the government formally announced that the government would make plans to takeover the project if the THSRC could not raise either equity or debt to finance the additional capital needs. After the government took the "hard" position on the budget constraint, the THSRC could no longer hold up to renegotiate and, thus, decided to supplement the capital gap through debt financing, even though it was a daunting task for the THSRC to obtain another $2 billion debt at this stage to supplement the capital needs for cost overruns.

4.3. Financial Distresses

THSRC has been facing financial difficulties since the commencement of operation in 2007 due to the overly optimistic forecast of market demands. The actual operational revenues met only less than half of the forecast. As a result, the revenue could not cover the operating costs and expenses. In 2008, THSRC generated $0.7 billion in revenue, while the total costs and expenses amounted to about $1.47 billion, including depreciation and amortized expenses $0.58 billion and interest expenses $0.53 billion. Until the end of 2008, THSRC had suffered from an accumulative loss of equity in the amount of $2.05 billion, more than 60% of the total equity amount. According to the concession contract, THSRC shall maintain its equity/debt ratio above 25% at the end of each fiscal year. In fact, THSRC could not have complied with such requirement since the year 2003. By the end of the year 2008, the equity/debt ratio had dropped to 6.96% and THSRC had no capability to fill the financial gap, which had obviously constituted the material breach of the concession contract. Notwithstanding, the government continued to tolerate the breach of contract. As of January 2010, the government was still determined to bail out the project and kept lending its hands to the concessionaire. Government's current plan is to help THSRC obtain a new loan to repay the old one.

4.4. Within-Case Analysis

From the perspective of project profit structure, the original promoters/shareholders controlled the whole procurement of the construction in the amount of $14.1 billion while only $0.89 billion were injected by the original investors in the equity of THSRC. Therefore, given such unbalanced profit structure, the controlling investors naturally had the incentives to overly estimate the traffic demands to win the concession, recoup their investment, and let the passive stakeholders suffer the losses during the operation period. In fact, the promoters were seriously criticized that they had recovered most of their investments from the undertaking of the construction contracts of the project.

From the perspective of soft budget constraints, taking over the project by government involves substantial costs because of the original debt guarantee provided by the government for the first syndicate loan. If the concession contract is early terminated, the government must assume the outstanding amount of the first syndicate loan, around $8.45 billion according to THSRC's annual report of 2008. As a result, the government

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was subject to soft budget constraints and intended to grant subsidies to THSRC in expectation of turning the situation around and delaying the project's insolvency.

5. Overall Evaluation of the Hypotheses

First, the two cases demonstrated a clear pattern how transaction costs were incurred through opportunistic bidding behaviors. When the promoters identified rent seeking opportunities due to government's soft budget constraints or project's unbalanced profit structure, they would bid very aggressively using overly optimistic financial projection so as to win the project. In both cases, the actual traffic demands during operation were only half of the original estimates in their bids and the projects were both delayed by a year or so. Since the projects were awarded to the firms with the most unrealistic forecasts, they soon faced financial difficulties either during the construction phase or in the early stage of operation. The opportunistic promoters/principals would have made excess profits during the courses of government rescues and/or undertaking the project's major contracts. The failure of the projects and the inefficient project execution created substantial transaction costs to the governments.

Second, the principal-principal problems due to an unbalanced profit structure happened to both projects and contributed to the project failures. We found that the two projects exhibited similar project characteristics that had led to unbalanced profit structure in PPPs. In both cases, the projects were unique and the first of their kinds in the country. Consequently, the information asymmetry between government/public and constructors was considerable and created excess construction profits and the incentives for the constructors to become the controlling promoters. In addition, since the projects scales were so big that investments from passive shareholders were needed, the constructor-promoters could limit their equity investments to relatively smaller proportions. As a result, the two projects were prone to highly unbalanced profit structures, which then led to principal-principal problems and subsequent project failures and transaction costs.

Third, the two PPP projects also exhibited some characteristics that might cause governments to be soft on budget constraints. For example, since the two projects were the largest PPP projects in the world, the political and economical impacts of project failures could be extremely high. However, in the more matured institutional environments such as the UK and France, the inefficiency caused by soft budget constraints was well recognized and the public had very limited tolerance toward soft budget constraints. Thus, in Channel Tunnel project, the governments made it explicit that the budget constraints were strictly hard. In developing countries such as Taiwan, the budget constraints tended to be soft and, as expected, the hold-up problems were common in PPPs.

From the above cross-cases analysis and the two within-case analyses, the two hypotheses proposed in this paper are reasonably supported. From the perspective of principal-principal problems, the two cases show the unbalanced profit structure contributed the controlling principals/promoters' opportunistic behaviors, which caused project failures and subsequent transaction costs. As predicted by hypothesis one, PPPs were not appropriate in the two cases as their governance structure. From the perspective of hold-up problems, the second hypothesis is reasonably supported by two facts. First, the UK and French governments had to explicitly bind them into hard budget constraints.

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Second, the soft budget constraints of Taiwan government had caused the hold-up problems right after the project awarding and incurred substantial transaction costs not only in bailing out the project but also in encouraging future PPP promoters' opportunistic behaviors.

6. Conclusions

In this paper, we take the view of transaction cost economics and argue that the use of PPPs as a governance structure is contingent on project characteristics and institutional environments. Particularly, it is hypothesized that the principal-principal problems caused by unbalanced profit structure and the hold-up problems caused by soft budget constraints will result in significant transaction costs and render PPPs an inferior governance structure. Based on the case studies of Channel Tunnel project and Taiwan High Speed Rail project, the two hypotheses are reasonably supported.

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