

RISK TRANSFER IN PUBLIC PRIVATE PARTNERSHIPS: LESSONS LEARNT FROM THE WASTE WATER TREATMENT SECTOR

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ABSTRACT

The transfer of risks is considered to be vital for the successful implementation of public private partnership (PPP) projects. However, not all risk can be transferred to the private sector and governments have to retain some of the risks. It is generally understood that the party with higher degree of control over the risk is responsible for bearing the risk. However, transferring certain risks to the private sector does not always result in efficient management due to opportunism especially when there is information asymmetry between parties. Based on a two case study of PPP waste water projects in China and Australia, this research takes a principal agent theory (PAT) approach and presents the rationale for understanding which risks can be transferred to the private sector and which risks should be retained by the government. Through the analysis of the two cases, some major risks in the waste water treatment sectors are highlighted and these risks are discussed from the government's perspective so that they can be allocated efficiently.

Keywords: Principal agent theory (PAT), public private partnerships (PPPs), risk transfer, waste water treatment plant (WWTP).

INTRODUCTION

PPP are long-term arrangements where risks are transferred to the private sector, for which they are financially compensated (Wibowo and Mohamed, 2008). It is evident from previous studies that the private sector is better at managing risks compared to the public sector. So in theory, allowing the private sector to manage the risks should result in lower project costs mainly because private sector is profit driven which makes them better at managing the risks at a lower (Hayford and Partner, 2006). However, when risks are of high magnitudes and beyond their influence, the private sector will not be willing to bear the risk at a

low price, even though they are better suited to manage those risks. In this case the government has to bear some of these risks. However, as the public sectors are not as sophisticated in managing risks, allocating some of the risks to the government do not always result in efficient risk allocation(Quiggin, 2005).

So how can governments design contracts that allow the right amount of risks to be transferred to the private sector? Before attempting to answer the question, firstly, it is important to discuss the relationship between the public and the private sector in PPP contracts. Though PPPs are defined as partnerships, some aspects of PPPs show that it doesn't sit within the traditional norms of partnerships where the two partners work together in achieving the same goals and where the profits as well as risks are shared. The relationship is more of that of a principal and an agent where information asymmetry and opportunism are present.

According to Jin and Zhang (2011) risks in PPPs are not always allocated to the party best able to manage them, but to the party least able to refuse them. When governments are too keen to attract private investment via PPPs, it is generally the private sector that has more influence during risk negotiations. In addition, once the contracts are signed, the lack of ex post competition as well as high costs associated with changing the contract may result in even higher bargaining power of the private sector. This in turn, can create a private monopoly, which might lead to reduced efficiency or quality (Fourie and Burger, 2000). In fact, English and Guthrie (2003) have established the strong position of the private sector in Australian PPPs when it comes to risk negotiations. In China too, private companies have managed to extract rents in the form of subsidies and guarantees from the governments and transferring the risks back to the public sector(Wang, 2006).

Designing institutions for economic agents based upon the principal agent relationship in a world of imperfect competition has been an important aspect of modern economics (Demsetz, 2002). Credibility is always an issue when the private sector is involved (Posner, 2002) and PAT assumes that there will always be information asymmetry between the principal and the agent (Eisenhardt, 1989). Information asymmetry and opportunism are the core issues in a principal agent relationship which further leads to two problems that are highlighted; adverse selection and moral hazard. Adverse selection problem is associated with the principal hiring an agent who is not the most suitable and moral hazard deals with agent not performing the way the principal wants.

According to literature, there are three main philosophies on how the principal agent relation can be structured in order to achieve the best outcome for the principal. The first is through competition (Fama, 1980), the second, via vertical integration(Grossman and Hart, 1986) and the

third, by providing incentives (Laffont and Martimort, 2002) Shirley and Menard (2002) analysed PPPs specifically in water sector in Latin America and Africa where they find three important conditions for the success relating to contracts and governance:

- i. Reducing information asymmetry through competition and monitoring
- ii. Providing incentives through tariff policy, penalties and risk and reward assignments
- iii. Providing credible commitments through enforcement of contracts.

METHODOLOGY

Based on the review presented above, we analyse how risks can be transferred using the three parameters: 1) competition, 2) monitoring and 3) incentives. A case study method was adopted for examining these parameters in PPP WWTP projects.

The first case study was conducted in China and the second was done in Australia. The two cases are fairly different in terms of their size, scope and structure. Since the two projects are located in two different countries, the risks associated with the projects are also different. However, both these projects fall under the PPP category and there are lessons that could be learnt from these projects in regards to risk transfer. The PPP projects were selected based on availability of suitable projects at the time of the study and as such are not to be interpreted as representative of the PPPs in WWTP projects.

Case study in China: Nanjing TOT WWTP

The WWTP serves a population of 760 thousand people and is the second largest plant in Nanjing. The plant has a capacity treat 300,000 cubic meters of waste water daily. The project was approved in 2006 and was the first successful project in Nanjing's public water reform plan that used the transfer operate transfer (TOT) model. The operating and property rights were transferred to Golden State Environment Co., a U.S based company, for 30 years.

Case study in Australia: Ballarat North WWTP

The project is a design build operate (DBO) contract and was signed in 2006 between Central Highland Water, a public water authority and United Water, a private consortium. The project was financed by the public sector and the contract term for operation was 15 years. The operation began in May 2008 and the WWTP serves one third of Ballarat's population (approximately 15,000 people) plus industries. The treatment capacity of the WWTP is around 8.4 ML/day.

TENDERING STAGE

In the Nanjing TOT, investors were invited to bid for the unit price of waste water treatment and the operating rights transfer price was set at a fixed amount of RMB 500 million (U.S \$ 65.79 million). Ten private sectors companies were selected for the final bidding. Selection of the winning tender was based on the proposal for operation, financial strengths, operational experience and most importantly, the service price. The local government employed third party consultants to assist them with bidding and negotiation process. At the time, the waste water treatment price in Nanjing was RMB 1.15/ ton. Golden State Environment won a bid price of RMB 0.70/ton. The project company owned 100% of the project paying 30% for the project from its own equity and the remaining 70% through loans. The private company was required to provide the bank guarantees as well as performance and maintenance bonds. They were also required to insure all the project facilities at their own cost. This allowed financing, operation and maintenance risks to be transferred to the private sector.

The Ballarat North WWTP had 8 expressions of interest and three were shortlisted. The winning bidder was United Water, which is owned by Veolia Water. Expressions of interests were conducted which determined the capability of bidders and the selection criteria was based on the capacity of what the bidders proposed and the certainty that it would work in terms of the delivery method as well as the operating method for the next 15 years. The time frames for the proposed delivery, capability in terms of future development and upgrading and the operating price were other criteria for the selecting the winning bidder. The CAPEX in the project was around AUD 35 million and OPEX is around AUD 2 million/year. Risks negotiations were mostly around risks that would affect the private sector's service fees and the limits of liability. Commercial risks, termination arrangements and environment protection authority (EPA) approval process were the concerns presented by the private sector. Industrial relation was a risk both didn't want to take. Some of these risks that remained unresolved during negotiations which were split and government shared some aspect of those risks. A value for money (VFM) test using the public sector comparator was conducted and the price of risk and how they would be managed by the private sector were considered prior to bidder selection.

EX POST MONITORING FOR INFORMATION

Though, both the projects were very outcome oriented, monitoring played an important role in making sure risks were transferred. In Ballarat North WWTP, information provision mechanisms were put upfront in the contract which allowed random check by the public sector and regular progress reports and financial statements were to be provided to the

public sector. In the Ballarat project, the government department even conducted their own research regarding the private company's financial health.

Monitoring for information was vital in the Nanjing TOT as well. Apart from the routine reports and financial statements that provided information to the public sector, there is a mechanism in the contract allowing the public sector to conduct yearly inspections and a major inspection of the plant every 5 years.

The quality and quantity of both the influent and effluent water is strictly monitored by both parties in the Chinese WWTP. They followed strict standards where the government is responsible for the quality of influent water and the SPV is responsible for the effluent water standards. If the standards are not met, the party responsible is required to pay for damages.

PROVIDING INCENTIVES FOR RISK TRANSFER

In both cases, the public sector provided some positive incentives to the private sector by bearing some risks. In China, all the start-up risks were borne by the public sector which the government is better at controlling. It included being responsible for delays caused due to legal approvals and permits and pre-existing conditions of the project.

Since the Australian case study involved construction of the facility, pre-existing site conditions turned out to be a major risk for the public sector, as they were responsible for bearing some aspects of those risks. Pre-existing contamination and ground conditions were of particular concern to the public sector. The other major risks for design, construction and operation were transferred to the private sector.

During operations, both government sectors in the two case studies, allowed a price adjustment formula for increasing the service fees paid to the private sector. In the Chinese case, the demand risk was allocated to the government. The government guaranteed the supply amount of influent water to be treated and when the treatment load increased, the government would be responsible for the extension of the project. Similarly, in the case of Australia, if the influent water volume and flow was beyond the nominated capacity, it would be the government's responsibility to expand the plant. In fact, as mentioned earlier, capacity to upgrade was one of the key criteria for bidder selection in Ballarat WWTP.

The main difference between the two projects was, in the Australian case, risks were put up front in the tender documents stating clearly which party was responsible for bearing the risk as a result of the VFM tests that determined the price of risks and how they would be managed by the

private sector. However, in China, there were several risks that were unresolved in terms of their allocation in the contract and were left incomplete (to be open for negotiations).

Penalties functioned in both the WWTPs for making sure the risks were transferred. Not meeting the required output specifications, would result in deductions of 20 to 40 % from monthly service payments in Ballarat North WWTP. If six penalties occur due to non-performance within a two year period, the contract is cancelled. This provided a strong incentive for the private company to perform well. In case of EPA fines are imposed to the government for not meeting quality standards, the private company is required to reimburse all of the costs to the government.

As specified in the Nanjing TOT, not meeting standards in regards to operational output of the plant would result in a fine of 0.005% of the total project transfer cost for every day until the issue is resolved. This could either be deducted from the service fees or from the performance bonds. However, if an operation risk eventuates due to issues arising from the government's side, the private sector should be compensated by the government. In case the WWTP isn't maintained as specified, the private sector would serve a penalty of 0.003% of the total project transfer cost for every day until the issue is resolved. This would be deducted from the maintenance bonds which the private company is required to pay yearly until and after the project has been handed back to the government. The maintenance bond increases every year from the last four years of the PPP arrangement to make sure that by the time the project is handed back to the government, the plant is in a good condition.

CONCLUSIONS

The two case studies have illustrated how the government transferred risks to the private sector through competition, monitoring and incentives in public private partnerships (PPPs) in the waste water treatment plant (WWTP) projects. It was shown how ex ante competition allowed the private sector to invest more of their own equity in the Chinese waste water treatment plant (WWTP) and bid lower than the current market price. In the Australian case, value for money (VFM) tests allowed the public sector to review how private company priced the risks allowing the risks to be contracted up front. Monitoring played a major role in both projects for obtaining information regarding output levels as well as the financial health of the projects and sanctioning inspections and random checks reduced the risk of false information to the government. Sharing some risks concerning demand and price adjustments, the private sector was offered with some positive incentives. However, firm penalties were used to motivate private companies to perform at the level the government wanted in terms of operation and maintenance by making

sure that the risks that were transferred, were managed efficiently by the private sector.

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