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RESEARCH ARTICLE

# Factors Influencing the Private Involvement in Urban Rail Public-Private Partnership Projects in China

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## Abstract

Private investors have been encouraged to participate in the development and operation of urban rail projects in China through Public-Private Partnerships (PPPs), given the fact that subnational governments are suffering from urgent development demands and severe fiscal pressure. However, there is no formal assessment to determine the private involvement in a PPP project. This problem is particularly critical in the sector of urban rail, in which the huge investment cannot rely on the private sector alone. This study hence aimed to uncover and identify the influencing factors. Multiple research methods, including content analysis, case study and focus group discussion were adopted to achieve the research purpose. Seven types of influencing factors were identified, including project financial model, government fiscal commitment, risk allocation, public accountability, efficiency considerations, policy and regulations, and organisational marketing strategies. The findings add to the current knowledge base by uncovering the drivers behind private involvement in a PPP project. They are also beneficial for industry practitioners as a basis/checklist to determine the private involvement.

## Keywords

Private involvement, procurement, public private partnership, urban rail

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## Introduction

The continuous economic growth in China has resulted in an immense demand for infrastructure, thereby leading to a proactive attitude by the central government in promoting private involvement and investment in the infrastructure development (Cheng et al., 2016). The new generation of Chinese political leaders have reinforced this trend since March 2013. At the executive meeting of the State Council on July 31, 2013, Premier Keqiang Li stated that the government would continue to support private investment. The central government also claimed to further widen the market access of public services to eligible private investors with sound credit. This is evident from “Opinions of the State Council on Strengthening Urban Infrastructure Construction” on 6 September 2013, “Guidance for Government Purchases of Public Services from Social Organizations” on 26 September 2013, and “Regulations on Urban Drainage and Sewage Treatment” by State Council on 2 October 2013. Since the start of 2014, which was considered one of the very important years for Public Private Partnership (PPP) in China, the Ministry of Finance (MOF) and National Development and Reform Commission (NDRC) have been extraordinarily active in promoting and leading the development of PPP. In December 2014, the MOF issued several important documents including “Operational Guidelines for PPPs (Trial Implementation)” and “Guidelines for PPP Contract (Trial Implementation)”. At the same time, the NDRC also published their version of operational guidelines and contract guidelines. These newly issued regulations show the ongoing positive attitude of the central government. More private involvement in infrastructure development in China via PPP mode is therefore expected (Cheng et al., 2016).

In accordance with China’s 13th Five-Year Plan (Xinhuanet, 2016) China will increase the government’s focus on innovation – with more emphasis on infrastructure development to respond to the rising urbanisation. The government is expected to continuously promote the development of public transportation to relieve traffic jams and enhance mobility for urban commuters. Urban rail transportation is one of the priorities. It was claimed that the central government will build 3,000 kilometres of new urban rail lines during the 13th Five-Year Plan (Xinhuanet, 2016). Thus, private investment is undoubtedly strongly encouraged in the development of urban rail projects, which could be seen in several recent projects such as Beijing Metro Lines 14 and 16 (Si et al., 2015).

However, unlike other public facilities such as toll roads or power plants, one of the major characteristics of urban rail projects is the huge investment, which makes it impossible for the expected revenues to cover total project costs, thereby creating a financial gap. The financial gap needs to be closed with funds from the public or private sectors. Given the fact that the private investors are looking for a reasonable rate of return from participating in a PPP project, the public sector hence must inject a large share of investment to attract private investors (Sharma et al., 2010). In most cases, both the public and private sectors need to invest in an urban rail PPP project. Although effective partnerships are developed from shared interests, responsibilities, and resources (Ke et al., 2010), there is potential for conflicts of interests. To improve delivery of urban rail PPP projects and protect public interests, this paper discusses the issue of private involvement with the aim of identifying the most relevant factors influencing the private involvement.

## Literature review

### PPP PRACTICE AND RESEARCH IN CHINA

PPPs were firstly introduced in China through the Shajiao B power plant project in Guangdong province (Cheng et al., 2016). After 1996, several state-approved pilot

Build-Operate-Transfer (BOT) projects were awarded to promote BOT on a larger scale. Thereafter, the involvement of private investors in infrastructure development grew rapidly, but faded out gradually at the end of the 1990s due to the Financial Crisis in Asia. Along with the continued rapid economic growth in China at the start of the 21st century, the shortage of infrastructure imposed budgetary pressures on subnational governments and led to the second boom of private investment. In addition, the clear encouraging message from the central government since late 2013 caused another boom of private investment in public projects after 2014 (Cheng et al., 2016).

In conjunction with the development and adoption of PPP modality in China, there is increasing interest in the topic of PPPs in China, but Chinese academics appear to be less active in publishing PPP papers in international journals (Zhang et al., 2016). One of the potential reasons may be the language (Ke et al., 2009; Zhang et al., 2016). A statistical analysis of PPP publications by Ke et al. (2009), posits that Tsinghua University and Southeast University are the most active institutions in pursuing PPP research. PPP papers published around 2000 can be categorised into three groups namely “risk”, “procurement” and “financial”. New ideas and topics have been introduced in the latest publications, including: (a) investment environment; (b) procurement; (c) economics viability; (d) financial package; (e) risk allocation and management; (f) governance issues; and (g) other integration research (Ke et al., 2009). Nevertheless, an increasing number of Chinese academic journals have published papers on PPP. The research topics have switched from a pure construction perspective to a combination of topics on finance, law, public administration, construction, and management. Current research topics published in Chinese academic journals include: (a) selection of financing models; (b) optimisation of financial structure; (c) risk allocation and management; (d) regulatory and institutional frameworks; (e) behaviours of both sectors; (f) determination of concession period; (g) contract structure and key clauses; (h) evaluation of private partners; (i) performance indicators; and (j) price mechanism (Zhang et al., 2016).

### PPP RESEARCH IN URBAN RAIL TRANSPORTATION IN CHINA

Publications on the topic of urban rail transportation published by international scholars in international journals have been frequently seen. In the early 1990s, several research teams examined the possible financing modalities for urban rail construction, such as Hayashi (1989), Simpson (1990) and Wilmoth (1990). The involvement of government organisations, regional organisations and academic organisations is also worth highlighting. Examples include Infrastructure Finance Working Group (IFWG) (2012) in Australia, Mandri-Perrott and Menzies (2010) in the World Bank, and technical assistant reports from Asian Development Bank (2010).

However, it is rare to read academic articles in international journals on the topic of PPP in urban rail transportation in China, especially published by researchers from Mainland China. Yuan et al. (2010) identified 15 driving factors associated with PPP projects in metropolitan transportation systems from the perspective of Chinese public sector; de Jong et al. (2010) studies seven urban rail PPP projects in five large metropolitan areas in China; Roumboutsos, Liu and Wilkinson (2013) evaluated the experience of PPPs in China’s urban rail development with the focus on critical factors impacting on the project viability based on a case study of Beijing Metro Line 4; Chang (2013) also studied the Beijing Metro Line 4 to illustrate benefits, costs, opportunities and risks in PPPs in China, and he later studied the Beijing metro financing sustainability to demonstrate how subnational governments finance the investment in metro systems (Chang, 2014).

Conversely, there is great coverage in the Chinese academic journals about PPPs in the urban rail sector. Practitioners like Hao, Wang and Ding (2012), Tian and Ren (2011) and Wang (2006) in the sector are proactive to share their first-hand experience and perspectives. Comparison analyses of different finance models in urban rail projects in different countries or cities and introduction of a PPP project are the most popular topics, such as Hao and Li (2009) and Zhang, Lin and Dong (2007). Other popular topics include pricing policy (Wang, 2004), risk allocation and management (Wang et al. 2011), decision making (Liang and Wang, 2012), and public involvement (Zheng, Chen and Xin, 2009). It is worth noting that there may be a limitation on research methodology in many Chinese journal papers. These publications are in the form of tacit knowledge such as intuitive experience, specific arrangements in one single project, and existing practices in the sector. The potential problem is that some of the current findings are associated with specific conditions. These findings can be described as “know-how”, which is the characteristic of practitioners, who act, make a judgement and so forth without explicitly reflecting on the principle or rules involved. A careful design of research methodology should be adopted and described.

### PRIVATE INVOLVEMENT IN PPP

As explained in the Introduction section, the huge investment in an urban rail project cannot rely on the private sector alone, which then requires public fiscal exposure. It is hence a critical question of how to determine the private involvement. Unfortunately, there are few research efforts to handle this issue. Sharma et al. (2010) presented a structured approach to determine the debt–equity investment between public and private sectors in PPP projects, which considered financial factors alone. Jasiukevičius and Vasiliauskaitė (2012) formed a procedural model to evaluate the requirements for private sector’s involvement in the delivery of public services, which is practical and focuses more on “how” than “why”. Albalade, Bel and Geddes (2013) found that risk associated with cost recovery and relative cost of labour are key factors explaining the extent of private involvement.

Publications that consider the targets or rules limiting fiscal exposure could provide a valuable reference to the research question in this paper to some extent. For instances, Irwin (2007) described an approach for governments to control spending commitments in PPPs; Peru’s Legislative Decree No.1012 (which approves the Framework Law for PPP and its regulations) also states that the present value of total fiscal commitments to PPPs shall not exceed 7% of GDP (Peru Ministry of Economics and Finance, 2008); Liu and Pradelli (2012) provided another alternative, that is, to incorporate limits on PPP commitments within other fiscal targets like public debt. However, the above publications or government documents discussing the limits for fiscal exposure are mainly suitable in the situation where the private sector can undertake the PPP project financially, while the public sector is looking for some extent of involvement to achieve the best project performance.

### KNOWLEDGE GAP

The initial literature review indicates that it is not clear how to determine private involvement in urban rail PPP projects where the expected revenues are not able to cover total project costs. This study was thus undertaken to uncover and identify the factors influencing private involvement in urban rail PPP projects in China.

The term “private involvement” in this paper has twofold definitions. First, it refers to the share of investment (including both debt and equity) by the private sector, following Sharma

et al. (2010). In China, subnational governments particularly value this meaning, especially the share of initial investment by the private sector. Second, it also denotes a more comprehensive concept including responsibilities, obligations and risks undertaken, as well as resources and skills committed to a project by the private sector, following Jasiukevičius and Vasiliauskaitė (2012).

## Research method

As shown in Figure 1, multiple research methods, including content analysis, case study and focus group discussion were adopted to achieve the research purpose, to avoid a common fault in many Chinese publications which lack a well-designed research methodology (Zhang et al., 2016).

Content analysis was conducted to obtain an overview of possible factors that could influence private involvement. The data were gathered from relevant published literature including textbooks, research reports, journal articles and conference papers. As indicated in the Literature Review section, publications such as Jasiukevičius and Vasiliauskaitė (2012), Sharma et al. (2010), and Decorla-Souza et al. (2013) that consider the limits of fiscal exposure or other topics could have reference value, although they do not directly study the research question, i.e. how to determine the private involvement in PPPs. The proposed findings from this step could be formed up as a basis for the following steps. However, the factors obtained from this step are not necessarily applicable to urban rail projects.

In the second stage, the case study approach was employed. Yin (2003) states case studies are generally preferred for explanatory research, to deal with operational links needing to be traced over time, rather than mere frequencies or incidence. An in-depth case study was hence conducted to identify a preliminary list of influencing factors specifically for urban rail projects. Beijing Metro Line 4 was selected as the case to study because it has been frequently published in academic journals and more importantly two of the authors were directly involved in this project. The primary data would be analysed to identify the influencing factors.

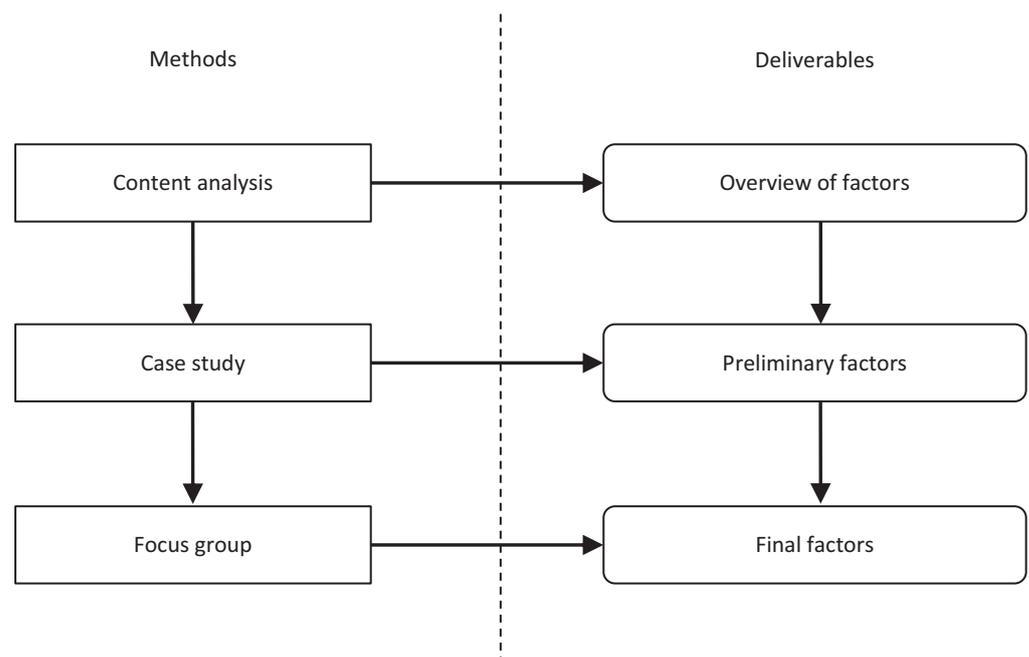


Figure 1 Research framework for this study

To ensure that preliminary factors are not particular to the selected case only, a focus group meeting was conducted to collect in-depth understandings of invited experts. The focus group was adopted for validation of the preliminary list of factors. Edmunds (2000) suggests focus groups are best used when the best evaluation comes from letting the target customers view the concept directly. Therefore, a convenience sampling was adopted to select this group of experts who have worked at an organisation with direct involvement in the development and management of urban rail projects.

## Content analysis

As explained above, private involvement is defined as the share of investment, responsibilities, obligations, risks, resources, and skills committed to the project by the private sector. A comprehensive literature review was conducted to understand the overview of influencing factors. Table 1 shows a summary of the analysis of this literature.

Table 1 Influencing factors from published literature

	Project financial variables	Risk allocation	Government fiscal commitment	Public accountability	Efficiency considerations	Policy & regulations	Organisational marketing strategies
Albalate, Bel and Geddes (2013)	√	√	√				√
Chang (2013)	√	√	√	√	√	√	
de Jong et al. (2010)	√		√			√	√
Decorla-Souza et al. (2013)	√	√	√	√	√	√	
Jasiukevičius and Vasiliauskaitė (2012)	√		√	√		√	
Ke, Ling and Zou,							√
Roumboutsos, Liu and Wilkinson (2013)	√	√	√		√		
Sharma et al. (2010)	√		√				
Yuan et al. (2010)	√	√	√				

From the content analysis, seven types of factors influencing private involvement were identified. For each factor identified, the frequency of use in the literature was recorded to indicate researcher's relative state of awareness of the factor. Among these factors, project financial variables and government fiscal commitment are the major types of factors identified.

## Case study

### INTRODUCTION OF BEIJING METRO LINE 4

To accelerate the development of urban rail in Beijing for the 2008 Olympics, Beijing Infrastructure Investment Corporation (BIIC) decided to adopt PPP in the Metro Line 4 project. Hong Kong MTR Corporation holds 49% of the joint venture company, and Chinese companies - Beijing Capital Group and BIIC - hold 49% and 2% respectively (Chang, 2013; Yuan et al., 2010). The joint venture company signed the concession agreement for a term of 30 years with Beijing Municipal Government in February 2005.

Beijing Metro Line 4 is 28 km long with projected costs of RMB 15.3 billion (around AUD 2.9 billion as per the exchange rate on 02 March 2017). The project was started in August 2004 and completed in September 2009 (Chang, 2013).

### PRIVATE INVOLVEMENT

As the private sector cannot finance an urban rail PPP project alone, the project financing was divided into two parts for this project (Chang, 2013; Roumboutsos, Liu and Wilkinson, 2013). Part A is the building of infrastructure with an estimated RMB 10.7 billion (70% of total investment), which was financed by the public sector. Part B includes the rolling stock purchases with an estimated investment of RMB 4.6 billion (30% of total investment) that was financed by the private party. The private sector would rent Part A from the public, operate the whole system for 30 years, and then transfer the ownership of Part B at no additional cost.

The private sector is responsible for the design, finance and construction of Part B, service operation of Metro Line 4, maintenance and necessary updates of Parts A and B, and business operation in stations. The private sector needs to undertake four major costs, including initial investment of Part B, operational cost, annual rental fee of Part A, and taxes (Chang, 2013). On the other hand, they would receive all the operational revenues from metro fares, advertisements, and other businesses in stations.

One of the obligations of the private sector in this project is to control cost. Although there were no cost savings in the purchase of rolling stock using the PPP model, costs were reduced in the financial treatment of acquisition and during operation (Chang, 2013). The private sector is also required to provide a higher level of service. This is proved to be true by a survey conducted by McKinsey and Beijing MTR that indicates a much higher consumer satisfaction than other metro lines in Beijing (Chang, 2013).

Most risks related to commissioning, operation, and maintenance were transferred to the private sector, whilst the government undertook or shared risks which were beyond the control of the private sector (Roumboutsos, Liu and Wilkinson, 2013). For instance, the public sector shared the construction risk by dividing it into two parts and undertaking Part A with riskier civil works; the government also used shadow patronage, that is a means to compensate the private partner, against the risk of lower ridership than projected.

## INFLUENCING FACTORS

The case study shows that the seven types of factors did influence private involvement in the Beijing Metro Line 4 project. Some sub-factors were also identified through the case study as shown in the following:

- Project financial variables
  - Construction cost
  - Financial cost
  - Maintenance and operation cost
  - Electricity tariff
  - Insurance cost
  - Labour cost
  - Ridership
  - Metro fare
  - Business revenues
- Risk allocation
  - Capability to control risks
  - Comparative position in negotiation
  - Causer and sufferer of risks
  - Risk premium
  - Government incentives
- Government fiscal commitment
  - Initial investment
  - Ongoing payment
  - Overall fiscal budget and balance
- Public accountability
  - Requirements for overseeing PPPs
  - Requirements for public accountability
- Efficiency considerations
  - Efficiency of public sector
  - Efficiency of private sector
- Policy & regulations
- Organisational marketing strategies

## Focus group meeting

To ensure that the preliminary list of factors could be applicable to general urban rail projects in China rather than Beijing Metro Line 4 only, a focus group meeting was thereafter carried out on 12 September 2014 with the aim of validating the influencing factors. Focus group meeting is a convenient and effective way to collect adequate information from a reasonable number of participants compared with the traditional one-to-one interview technique (Edmunds, 2000). The criteria for the selection of focus group participants is that they must have been involved in the development and operation of urban rail projects. Convenience sampling was adopted. The second author is working in the public company that is responsible for the development and operation of urban rail projects in Beijing. Invitations were sent to the partners in their past projects. After much persuasion, 18 experts attended the focus group meeting. Table 2 shows the background of these participants.

Table 2 Information of focus group participants

Categorisation		Number	Percentage
Roles in the urban rail projects	Government	3	16.7%
	Operator	3	16.7%
	Contractor	6	33.3%
	Consultant	6	33.3%
Position in organisation	Top-level manager	5	27.8%
	Middle-level manager	10	55.5%
	Low-level manager	3	16.7%
Number of years of work experience	More than 10 years	8	44.4%
	6 - 10 years	7	38.9%
	3 - 5 years	3	16.7%

The participants were firstly given an introductory presentation about the research background, research questions, research methodology, literature review, case study, preliminary influencing factors, objectives and arrangement of the focus group. The participants were then arranged into three groups based on their backgrounds, i.e. “government and operator”, “contractor” and “consultant”. A team member facilitator led each group of participants and took responsibility for initiating a discussion within the group regarding predefined questions. The questions were based on preliminary influencing factors. The discussions lasted approximately an hour for each group. The facilitators summarised their discussion on behalf of their groups of participants, to conclusively check if there were any significant difference in perspectives from different groups.

The participants generally agreed with the preliminary list of influencing factors. One of the comments from the focus group meeting is that project financial variables are quantitative factors, which are used to calculate the share of private investment based on a reasonable return on investment. All quantitative variables related to the project financial model would have an impact on the calculation results of private investment. The sub-factors under project financial variables identified through the case study either have significant or insignificant variables in the sensitivity analysis. However, all of them may not be applicable to other urban rail projects. A more accurate solution is to use the project financial model as an influencing factor rather than using financial variables.

Another important message from the focus group discussion is that the factor of risk allocation could be twofold: determination of risk allocation and implementation of risk allocation in the contract. The first implication is to determine the risks to be allocated to each sector, and the other is to determine how to implement the risk allocation in term of contract clauses.

## Discussion

### PROJECT FINANCIAL MODEL

To make an urban rail project attractive to private investors, the public sector would contribute part of the investment. This is the reason the project financial model is one of the factors

influencing private involvement, particularly the share required of private investment. The influence of project financial model is straightforward and has been well reported in the literature such as Sharma et al. (2010). In the sector of urban rail, there is generally a minimum investment by the public sector, and therefore a maximum investment by the private sector, to achieve a reasonable rate of investment return. In the case of Beijing Metro Line 4, the private sector is responsible for the financing of Part B (30% of total initial investment).

As indicated in the focus group meeting, the financial model would be regarded being one influencing factor. Compared to traditional procurement methods, the involvement of private sector in a PPP project brings many changes to the financial model, such as an increase in participation/procurement cost and a reduction of total project cost including financial service cost, operational cost, labour cost due to less employment positions, among others. (Chan et al., 2009; Chan et al., 2010). Once an expected return on investment is assumed, the share of private investment would be available through the financial model.

### GOVERNMENT FISCAL COMMITMENT

Three sub-factors, initial investment, ongoing payment and overall fiscal budget and balance, were identified in this study. Among them, initial investment and ongoing payment by the public sector are included in the project financial model. Taking Beijing Metro Line 4 for instance, the government was committed to the financing of Part A (70% of total initial investment), so that the share of investment by the private would be acceptable. Overall fiscal budget and balance is the fundamental factor that determines the government's capability for initial investment and ongoing payment, thereby influencing the share of private investment.

As indicated by Chan et al. (2009), the drivers for adopting PPPs rated higher by respondents in China were economy-related drivers, especially from the viewpoint of subnational governments. In a recent review of PPP applications in China by Cheng et al. (2016), it is shown that the central and subnational governments are suffering huge debts of RMB 12.38 Trillion and RMB 17.89 Trillion. Chinese government pinned hopes on the PPPs to ease the severe pressure. However, this proactive attitude of subnational governments to some extent increases the difficulty of accurately assessing its actual financial capacity, given the fact that the draft value for money assessment framework, issued by the MOF in Dec 2015, was not mature enough to ensure that PPP is the most appropriate option, and there is no formal process for deciding the type and extent of government support for PPPs (Cheng et al., 2016). Hence it is important to carefully understand subnational governments' overall fiscal budget and balance, estimate its capacity for initial investment and ongoing payment, and then calculate the share of private investment through the project financial model.

### RISK ALLOCATION

The arrangement to share or undertake risks by the private sector is included in the definition of private involvement in this study. It is thus easy to understand that risk allocation is one of the important factors. Risk allocation has been commonly seen in recent publications, such as Heravi and Hajihosseini (2012), Jin (2009), Jin (2011), Jin and Doloi (2008).

A general principle is that each risk should be allocated to the party best able to manage it at the least cost (Cooper et al., 2005). Such ability to manage risks may include whether the party can foresee the risk, whether the party can assess the possible magnitude of consequences of the risk, whether the party can control the chance of risk occurring, whether the party can

manage the risk if it occurs, and whether the party can sustain the consequences if the risk occurs (Lam et al., 2007). When both parties have a similar level of risk capacity, the risk may be assumed by a party that would like to pursue the risk premium or have a weaker negotiating position.

The response in the focus group meeting indicated the task of risk allocation is not only the determination of risk allocation but also the implementation of risk allocation in the contract. As a part of a risk management strategy, risk allocation is commonly defined through the contractual documents (Lam et al., 2007). A contract can thus be considered as a trade-off between the contractor's price for undertaking the work and his willingness to accept risks (Flanagan and Norman, 1993). This reflects the impact of the factor "risk premium". Therefore, the most important part of the contract related to risk allocation would be the design of tariff structure and payment mechanism. It is also worth noting that causer and sufferer of risks should be considered. A party is not supposed to request a premium when undertaking a risk that is fully caused by itself.

Government incentives are another important factor influencing private involvement in term of risk allocation. The influence could be seen in both allocating risks and defining risk allocation in the contract. Taking Beijiao Sewage Treatment Plant for instance (Xu, Yeung and Jiang, 2014), the government shared the operating revenue risk by guaranteeing a minimum amount of water supply, of 70% of the designed water amount. If the actual amount of water supply is lower than 70%, the government will pay the sewage treatment fee at 70% of the designed amount. However, the government incentives must be carefully evaluated, as inappropriate guarantees offered by the government are regarded as one of the root causes of PPP projects' failure in China (Xu, Yeung and Jiang, 2014).

## PUBLIC ACCOUNTABILITY

Theoretically speaking, PPPs do change the dynamics of public accountability by involving private partners in government decision making and program delivery (Forrer et al., 2010). The terms and conditions of private involvement deserve scrutiny and understanding by public officials, as private partners join a PPP project for different reasons than governments such as pursuing profits (Chan et al., 2009; Decorla-Souza et al., 2013). PPPs present problems for public sector accountability because the government remains responsible for services that it does not deliver (Shaoul, Stafford and Stapleton, 2012).

Corporate governance in the private sector has some extent of overlaps in the two elements of public accountability, i.e. structures of internal governance and external accountability (Shaoul, Stafford and Stapleton, 2012; Smith, Mather and Skelcher, 2006). In the structures of internal governance, both the public and private sectors concentrate on the membership of Management Board and its sub-committees, while the public sector should introduce notions of corporate governance by disclosure (Shaoul, Stafford and Stapleton, 2012). In term of external accountability, there is a need for multi-dimensional external reporting that covers: use and stewardship of resources; quality of services; financial probity; and financial control over public monies, whether held in the public or private sectors (Shaoul, Stafford and Stapleton, 2012). However, the use of private sector reporting standards may not provide sufficient information for external accountability.

In the sector of urban rail projects, accountability requirements are more complicated than many other sectors such as toll roads and power plants, in which a vertical hierarchy can be the principal method of controlling and overseeing. In an urban rail, PPP project, the horizontal

relationship between the public and private sectors would cause many contemporary challenges, because government responsibilities are shared with the private partners. Therefore, it is important to determine the private involvement and design a reasonable disclosure and reporting framework for the PPP project company to meet the requirements for overseeing PPPs by the public sector and for public accountability.

### EFFICIENCY CONSIDERATIONS

The concept of adopting PPPs to improve the efficiency in delivering public services is in fact not fresh in many countries such as Australia (Infrastructure Australia, 2008), but not given sufficient attention in China yet (Chan et al., 2009; Cheng et al., 2016). Under the severe fiscal pressure, the major driving force for most subnational governments to choose PPPs over traditional procurement is still economy-related (Chan et al., 2009). Nevertheless, as a straightforward principle, tasks that the private sector has a more efficient capability in should be allocated to it. The difference in the efficiency of public and private sectors is, therefore, an influencing factor, which does not directly determine the private involvement but has an impact on the allocation of responsibilities.

### POLICY AND REGULATIONS

Law and regulatory framework for PPPs are immature and still evolving (Cheng et al., 2016). There is no PPP law at the national level yet. Current PPP regulations lack strong legal force. They were issued by the State Council or its ministries or by provincial and municipal governments considering their own responsibilities, and hence lack completeness or compatibility (Cheng et al., 2016).

Overall, the private investors are encouraged to participate in infrastructure development. According to “Several Opinions of the State Council on Encouraging and Guiding the Healthy Development of Private Investment” issued in 2010, the private sector is allowed to invest not only in previously allowed road, bridge, power, water supply, wastewater treatment and waste disposal, but also in railways, water conservation, petroleum and gas related activities, telecommunication, land control, exploration and development of mineral resources, policy-related housing, medical industry, education, social warfare service, and national defence related science and technology industries. However, there is no formal process for deciding the type and extent of government support for PPPs, nor private involvement.

There are some regulations that may influence private involvement to some extent. Taking Beijing for instance, Beijing Municipal Commission of Development and Reform (BMCDR) (2013) prescribes a concession period of 30 years and an expected return on investment of 8% for private investors. A reasonable share of private investment could be calculated using these prescribed economic conditions. Another example would be the possible consequences caused by the different PPP related governmental documents. In the recently published Guidelines for PPP Contract issued by the MOF, it is stated that the public sector cannot hold a share of 50% or more in the PPP project company, or hold the de facto dominance in governance.

### ORGANISATIONAL MARKETING STRATEGIES

China is receiving a feverish demand for PPPs and has had a boom of PPP opportunities since 2014 (Cheng et al., 2016). It is hence important for the private sector to maintain a good relationship with the subnational governments, and a good record of accomplishment of past performance, to grasp a share of the PPP market. Ke, Ling and Zou, (2015) claimed that

organisational marketing strategies towards relational contracting have a positive impact on project outcomes, especially client satisfaction and relationship quality among contracting parties. In other words, different organisational marketing strategies could lead to different decisions on private involvement in a PPP project. Private investors may actively participate in a notable project and choose to undertake more responsibilities with the purpose of entering the market or advertising their advantages, such as in the case of Beijing National Stadium (Liu, Zhao and Wang, 2010). Similarly, in the Beijing Metro Line 4, Hong Kong MTR Corporation also considered the project as a benchmark project to enter the urban rail market in mainland China.

## Conclusions

This paper has looked at the factors that influence private involvement in urban rail PPP projects in China. The term of private involvement does not only refer to the share of investment by the private sector but also denotes a more comprehensive concept including responsibilities, obligations and risks undertaken, as well as resources and skills committed to a project by the private sector. Multiple research methods, including content analysis, case study and focus group meeting were adopted in this study to identify the influencing factors. Seven types of influencing factors were identified, including project financial model, government fiscal commitment, risk allocation, public accountability, efficiency considerations, policy and regulations, and organisational marketing strategies. An explanation of how these factors influence private involvement in an urban rail PPP project was also presented.

The findings add to the current knowledge base by uncovering the drivers behind private sector involvement in a PPP project. They are also beneficial for industry practitioners as a basis/checklist to determine the private involvement. Although the study scope is limited to urban rail projects in this paper, the findings can be generally applicable to other infrastructure sectors. The management implication is that designing a deal structure in a PPP project should consider all the influencing factors identified. Delivering an infrastructure project via PPPs is not to merely engage the private sector as much as possible.

In future studies, a procedural framework to determine optimal private involvement in an urban rail PPP project in China can be developed which considers the identified influencing factors in this paper. For instance, the proposed framework of optimal private involvement formation can firstly start from an assessment of whether to deliver the urban rail project via PPP. In the following stages, the public and private sectors can determine the risk allocation and calculate the amount and type of private investment under the conditions of organisational marketing strategies, and policy and regulations. The requirements for public accountability and efficiency consideration can then be validated to ensure that private involvement in an urban rail project would not become detrimental to public interests.

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