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# PROBLEM ANALYSIS AND SUGGESTION FOR CHINESE HIGHWAY PROJECTS FINANCED BY STATE CORPORATIONS

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**ABSTRACT:** In China, road had been developed with fiscal budget until 1988. From then on highway projects were allowed to be built via the use of loan by state corporations. Although foreign companies are permitted to invest in highway projects since 1995 and domestic private companies are also encouraged to fund for highway projects since 2001, most of highway projects in China have been developed and managed by state corporations.

In practice, problems occurred in many highway projects financed by state corporations. The paper explored and classified these problems by case studies. These problems mainly focuses on defective project planning and improper government intervention, which include: inaccurate traffic volume forecast and premature construction, lack of reasonable toll pricing and adjustment mechanism, lack of planning of reasonable toll duration, excessive government obligation, lack of strict financial supervision of toll revenue, lack of effective administrative supervision, direct authorization of concession right to state company and inexperience of regulation on concessionary projects.

The investigation revealed that the basic reason of these highway projects lies on the imperfect current administration system of highway projects in China, i.e., the executive and supervisory of development and operation of highway projects has not been separated clearly. Therefore, the authors propose that the imperfect legal framework shall be also amended and the government shall separate the affiliation between the competent highway authorities and state highway corporation.

**KEYWORDS:** China, Highway Project, State Corporation

## 1. BACKGROUND

### 1.1 Insufficient fiscal fund for highway projects

The construction cost of expressway is estimated to be approximately CNY 35 million in China (Five 2004). From 2000 to 2005, the total demand of construction fund of highway is predicted be CNY 784.6 billion; however, the governmental fund budget of highway construction is expected to be only CNY 175.9. The gap of construction fund shall be CNY 608.7 billion, which accounts for 77.58% of

the necessary construction fund (Five 2004).

### 1.2 Introduction of project financing for state highway companies

Since the current fiscal budget is unable to meet such a large amount of fund demand for highway construction, governments have to withdraw from direct investment, construction management, and operation of partial highway projects. It is necessary for government to seek other financing methods to

satisfy the necessary construction of highway projects.

Since 1988 the central government has stipulated that the highway projects (including high level highways (Level 2 or above), large size bridges and tunnels) that have been built or rebuilt via the use of loan by state corporations may impose toll on passing vehicle to reimburse the highway project loan under the approval of the competent provincial government (MOT 1988). Since 1998, all ownerships of companies are encouraged to raise the development fund of highway projects based on its predicted operation revenue, e.g. toll income, which shall recoup its development funds (NPC 1998).

Therefore, the project financing method may be introduced by state corporations for highway development. Local governments may establish specific highway companies and permit them to charge toll on passage vehicle. The toll revenue of highway projects may be used as the guarantee for state corporations to obtain funds by issuing bond and borrowing loan.

### **1.3 Advantages of state highway companies in project financing**

Although foreign companies are permitted to invest in highway projects since 1995 and domestic private companies are also encouraged to fund for highway projects since 2001, most of highway projects have been developed by local state corporations, for which have more advantages than private companies to finance for concessionary highway projects for the following reasons:

- ① Local state corporations may obtain implicit guarantee of the local government to raise construction funds for highway projects mainly through the security issuance and loan borrowing.
- ② Highway projects don't concern high technique so much as those projects in the

sector of power, water purification and treatment, and waste treatment.

- ③ Highway projects involve the troublesome procurement of land usufruct (urban land ownership remains with government and suburban and rural land ownership remains with villager committee). However, local state corporations are easy to get government assistance in handling of such issue.
- ④ By introducing project financing for state corporations, local governments not only legally shun the prohibition that local governments are forbidden to issue bonds or borrow loans, but also overcome the deficiency of highway development funds and still maintain administrative control of highways.

### **1.4 Research purpose**

In practice, problems occurred in many highway projects financed by state corporations. The paper shall explore and classify these problems by case studies. The reason of these problems shall be also investigated through the analysis of current administration system of highway projects in China. Finally the suggestion shall be provided for the improvement of highway project management.

## **2. THE 5<sup>th</sup> BEIJING RING HIGHWAY PROJECT**

The 5<sup>th</sup> Beijing Ring Highway Project and the nonprofit highway project in Guangdong province shall be used as the examples to introduce the problems and analyze the reason of these problems of toll highway projects financed by state corporations.

### **2.1 The Beijing Capital Highway Development Corporation**

The Beijing Capital Highway Development

Corporation was officially established on September 16, 1999, and its superior authority shifted from the Beijing Municipal Transportation Bureau to the Beijing Municipal Government (Yuan 2004). On the same day the deputy executive of Beijing Municipal Transportation Bureau (BMTB), Mr. Yuxi Bi, was appointed as its chairman of board of director—the same administrative rank as the chief executive of the Beijing Municipal Transportation Bureau. The establishment of the Beijing Capital Highway Development Corporation was considered as the breakthrough of the investment and financing regime of urban infrastructure and the reform of enterprise management regime in Beijing.

The Beijing Capital Highway Development Corporation was charged with the responsibility of design, construction, operation, financing and debt repayment of highway projects in Beijing (Yuan 2004). Decision of major highway projects undertaken by the Beijing Capital Highway Development Corporation was directly submitted to the Beijing Municipal Government instead of the Beijing Municipal Transportation Bureau for approval.

### Financing

With the intention of raising money the Beijing Capital Highway Development Corporation once planned to issue stock publicly in a stock exchange, however, the intention was stopped by the listing requirement that the company must have been in business for three years or more and have made profits for the past three consecutive years (NPC 1999).

By the end of 2001 The Beijing Capital Highway Development Corporation had signed loan contract of more than CNY 14 billion with the Industrial and Commercial Bank of China via project financing method. The Beijing Capital Highway Development Corporation offered Highway bond of CNY 1.5

billion on May 29, 2002, which is the first public offer of bond to raise fund for the purpose of infrastructure construction.

### Construction

The length of complete and newly initiated highway reached 100 kilometers respectively in Beijing, which approximately equaled to the total length of previous 14 years. The construction of highway in Beijing was expedited in 2002. It showed that with adequate financing capacity the highway company could develop projects far more quickly.

The Beijing Capital Highway Development Corporation sponsored the 5<sup>th</sup> Beijing Ring Highway Project, which is summarized in Table 1. The Beijing Capital Highway Development Corporation successful raised necessary development fund of 5<sup>th</sup> Beijing Ring Highway Project by project financing. However, the project still encountered problems.

**Table 1 Brief introduction of the 5<sup>th</sup> Beijing Ring Highway Project**

Project	The 5 <sup>th</sup> Beijing Ring Highway
Project sponsor	The Beijing Capital Highway Development Corporation
Length	98.58 km
Technical indicator	2 direction, 6 track, 100km/h
Total investment budget	CNY 13.64 billion
Bank Loan	CNY 11.63 billion
Commencement date	November 2000
Duration	3 years (Nov 2001 – Nov 2004)
Average daily traffic volume	117 thousand vehicles

### 2.2 Problem introduction of the 5<sup>th</sup> Beijing Ring Highway Project

#### Easy financing under low ratio of equity to debt

The lower the ratio of equity to debt is, the riskier the project is. The ratio of equity to debt in the 5<sup>th</sup> Beijing Ring Highway Project is

approximately 15/85, which is much lower compared with the minimum requirement of 25/75 for foreign concessionaires (SPC 1995). In general condition, such a low ratio of equity to debt causes difficulty for project financing. However, the Beijing Capital Highway Development Corporation gained loan easily.

### **Increased construction cost**

For winning bids a number of construction companies offered kickback, which was finally offset by using inferior construction material. Such practice negatively impact project function and quality to a certain extent. For example, construction contractors used the inferior bitumen to save construction cost, which inevitably decrease highway lifecycle (Bi 2005). At the completion of construction, the defective works had been accepted under the solicitude of Bi, the chief of Beijing Capital Highway Development Corporation. In the procurement of signal lamp, though the offer of signal lamp was several times of market price the bidder won the bid under the Bi's solicitude (It 2004).

Because punctual operation is political task and early operation of projects is beneficial for concessionaire to gain profits, the defective works was rectified quickly. The 5<sup>th</sup> Beijing Ring Highway opened to traffic as scheduled.

### **Low toll revenue**

Based on the prediction that the daily toll revenue was CNY 1.2 million, at the end of 30 years of operation, the Beijing Capital Highway Development Corporation could recover the investment in the 5<sup>th</sup> Beijing Ring Highway and earn surplus revenue. However, since the 5<sup>th</sup> Beijing Ring Highway was completed and put into operation on November 1, 2003, the actual daily toll revenue was only approximate CNY 0.15 million, one eighth of

the expected operation revenue according to the statistics taken by the Beijing Capital Highway Development Corporation (Yuan 2004).

### **Annulment of highway toll**

The levy of toll on users of the 5<sup>th</sup> Beijing Ring Highway was improperly annulled by the Beijing Municipal Government only after two months of operation on January 1, 2004 (Significant 2004). The Beijing Municipal Government unreasonably took over the responsibility of debt repayment which should be undertaken by the Beijing Capital Highway Development Corporation, and would pay it back by the fiscal revenue of Beijing government (Yuan 2004).

## **2.3 Reason analysis of project problems**

### **Lack of effective administrative supervision**

Bi resorted to the disclosure of the maximum budget for awarding contract to bidders as a means to gain kickback, i.e., bribes. By this way Bi had took bribe of more CNY 2 million (Bi 2005). Since November 2002, the commencement of construction of the 5<sup>th</sup> Beijing Ring Highway, Bi had been impeached many times by the failed bidders of projects for suspecting him of taking bribes. However, the bidding process was not suspected and inquired and he still kept his position. Until April 2004, he was officially confined to the designated place to confess his illegal behavior (It 2004). By the way, this confinement is different from arrestment executed by policeman; instead, it is a discipline punishment executed by the discipline commission of the Chinese Communist Party and only awarded to senior fellows of Chinese Communist Party before being impeached of guilty and arrestment. Bi was finally sentenced to death penalty for taking bribe and embezzling state capital. However, the execution was reprieved for two years.

Not only did corruption occur in the 5<sup>th</sup> Beijing

Ring Highway Project, Up to now, 16 executives of province-level transportation bureau in 10 provinces (or provincial administrative regions), i.e. approximate one third of 31 provinces in the mainland of China, have been arrested, inspected, or sentenced for economic crime committed during their administration of highway project construction (Bi 2005).

### **Lack of reasonable toll pricing and adjustment mechanism**

Based on the prediction that the daily toll revenue was CNY 1.2 million, at the end of 30 years of operation, the Beijing Capital Highway Development Corporation could recover the investment in the 5<sup>th</sup> Beijing Ring Highway and earn surplus revenue.

During the two months of operation as from November 1, 2003, the actual daily toll revenue of the 5<sup>th</sup> Beijing Ring Highway was only approximate CNY 0.15 million, one eighth of the expected operation revenue. The reason may be the inaccurate prediction of demand on traffic volume or high toll fee.

Following the toll annulment on January 1, 2004, the daily traffic flow reached 117092 vehicles on the first day of free passage (Significant 2004). This result manifested that that the toll price was higher than the expected one and the Beijing Capital Highway Development Corporation had not prepared the toll pricing and adjustment mechanism.

### **Excessive government obligation**

Though the capital structure of the 5<sup>th</sup> Beijing Ring Highway Project was unreasonable and the ratio of equity to debt was low, the Beijing Capital Highway Development Corporation gained project loan. The reason is that the investor of 5<sup>th</sup> Beijing Ring Highway Project is the Beijing Municipal Government, which provided the implicit credit

guarantee of loan for the project and thus involves the Beijing Municipal Government in the entire debt payment obligation. In addition, the Beijing Municipal Government arbitrarily annulled the toll right of 5<sup>th</sup> Beijing Ring Highway Project and directly took over the 5<sup>th</sup> Beijing Ring Highway Project. This means that Beijing Municipal Government undertook all obligation of the 5<sup>th</sup> Beijing Ring Highway Project.

### **Inexperience of regulation on concessionary projects**

Even though the average daily revenue is lower than the expected one, such lower revenue only occurred in two months of operation, which is a short period compared with the 30 years of concessionary term. The Beijing Municipal Government may suggest the Beijing Capital Highway Development Corporation to lower the toll price and may even provide necessary subsidy for the 5<sup>th</sup> highway. However, the Beijing Municipal Government arbitrarily annulled the toll right of the Beijing Capital Highway Development Corporation and directly took over the operation of the 5<sup>th</sup> Beijing Ring Highway Project. Such a practice discloses that government resorted to the administrative means to manage infrastructure projects. This also exposes that government lacks of experience and theory to manage the concessionary projects sponsored by state corporations to a certain extent.

### **Direct authorization of concession right to state corporation**

The Beijing Municipal Government directly awarded the 30 years of concessionary operation right of the 5<sup>th</sup> Beijing Ring Highway Project to the Beijing Capital Highway Development Corporation. The lack of competitive selection of concessionaire had led to increased construction cost and poor operation performance.

### **3 TOLL HIGHWAYS FINANCED BY STATE CORPORATIONS IN GUANGDONG PROVINCE**

#### **3.1 Problems introduction**

The Guangdong Province is the first province to develop tollways in China. This practice of financing highways by franchised operation has been popularized all over China. The relevant departments of Guangdong Province Government investigated 74 tollbooths (i.e., tollways), which are financed and operated by state corporations affiliated to the Guangdong Government.

#### **High operation and maintenance cost**

The investigation showed that the operation and maintenance cost is unreasonably high. For example, the total maintenance cost and overhead of Huaxi Tollbooth of Guihua Tollway reached CNY 63.72 million, accounting for 74.95% of the total toll revenue of CNY 63.71 million. In another case, the monthly salary of toll collector in Jiangsu Province was approximate CNY 8 thousand, 4 times of the average salary of state-owned transportation companies in Jiangsu Province. Both these facts manifest that the cost control is loose in the operation state of toll highways

#### **Long toll period**

The investigation of Guangdong Province Government also reveals that the predicted loan repayment period of 33 nonprofit tollbooths exceeds 30 years based on the factual loan repayments in 2004, among which, the predicted loan repayment period of 6 tollbooths exceed 100 years. The predicated loan repayment period of Heyuan-Jiangmian Tollbooth even reaches 756 years (Xiang 2005). This fact shows that the management of nonprofit tollbooth financed by local state corporations is poor.

#### **3.2 Reason analysis**

The author summarizes the three main reasons of these tollway projects:

#### **Inaccurate traffic volume forecast and premature construction**

The toll revenue of some tollbooths was too low to reimburse construction loan within the planned periods, which originated in inaccurate traffic volume forecast and premature construction. For example, because the traffic volume of many highway projects in Guangxi Municipal Region was so inadequate that the toll revenue was too low to repay loan interest. The Guangxi Municipal Government had to raise approximate CNY 200 million every year to disburse annual loan interest.

#### **Lack of planning of reasonable toll duration**

The Announcement of Toll Period of Highway Tollbooth (Xiang 2005) stated that the detailed scheme of certain tollway projects had not been prepared in 2005 regarding the transfer of toll highways from state corporations to government. If the debt of toll highway cannot be repaid within the prescribed period, the toll period shall be extended. In this case, the users of the highway shall have to pay the additional cost.

#### **Lack of strict financial supervision of toll revenue**

The toll revenue of some tollbooths was appropriated for other purpose other than the loan reimbursement. For example, the revenue of Huaxi Tollbooth at Shaoguan City, Guangdong Province was CNY 4.65 million last year, however, the real loan repayment was only CNY 0.42 million, accounting for 9% of total annual revenue. The revenue of Heyuan-Jiangmian Tollbooth was CNY 6.49 million, however, the real loan repayment was only CNY 0.31 million, accounting for 9% of total annual revenue. These phenomena reveal that there

is no effective financial supervision system of toll highway projects financed by state corporations.

#### 4. DIRECT REASON OF HIGHWAY PROJECT PROBLEMS

By the study of two cases the author uncovers the negative influencing factors which caused poor performance of toll highway projects financed by state corporations. These negative factors caused excessive project cost. Table 2 summarizes the project performance and negative influencing factors. The occurrence of negative influencing factors in the planning stage of concessionary tollway projects reveals that the tollway projects had not been well planned.

#### 5. BASIC REASON ANALYSIS OF HIGHWAY PROJECT PROBLEMS

The administration system of highway projects financed by state corporations (shown in Fig. 1) varies from the traditional project administration system of infrastructure projects invested by

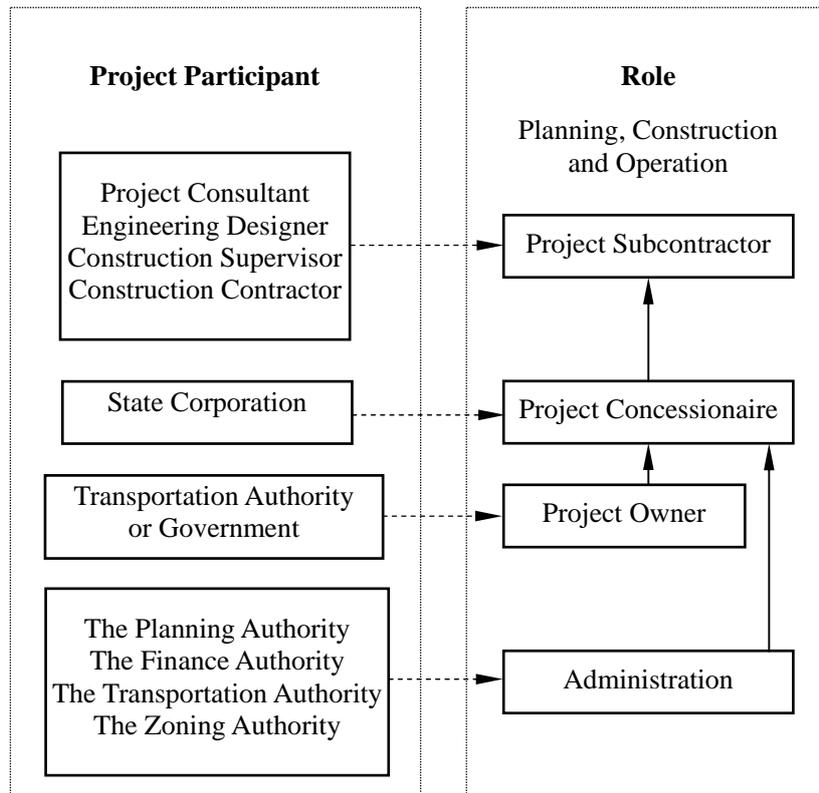
government (Du and Watanabe 2005). The management of highway projects financed by state corporations not only involves planning and construction, but also includes operation and maintenance. The roles of project participants in highways financed by state corporations thus differ from those in highways funded by government.

- ① The twofold role of planning authority, i.e. administration and owner's representative has changes to the sole role of administration.
- ② The role of state corporations has changed into the owner's representative, fund raiser and concessionaire.

The implementation and approval procedure of infrastructure projects invested by government applies to the highway projects financed by state corporations except that the investment program and budget shall be prepared and decided by state corporations (BMG 1999). In addition, toll price shall be approved by local price authority (MOT 1988, MOT, SPC, and MOF 1994, NPC1998, NPC 2004, SC 2004).

**Table 2 Negative factors and performance of highway projects financed by local state companies**

Phase of project	Type of tasks	Negative influencing factors
Project proposal Feasibility study	Traffic service planning	Unreasonable traffic volume forecast
	Government obligation	Excessive financial responsibility Unreasonable taking-over of debt payment liability
	Revenue planning	Lack of reasonable toll pricing and adjustment mechanism Lack of planning of toll term
	Financial planning	Lower ratio of equity to debt Lack of financial independence
Construction	Selection method of concessionaire and contractors	Direct authorization of concessionary right to state company Corruption in the selection of construction contractors
Construction	Government supervision	Ineffective supervision of construction
Operation		Ineffective supervision of operation Arbitrary annulment of highway toll
	<b>Type of problem</b>	<b>Project performance</b>
Construction	Cost and progress	Punctual completion of construction Increased construction cost
Operation	Cost	Unreasonable high operation and maintenance cost Low toll revenue



Dashed line denotes role line and solid line denotes control line

**Fig. 1 Role of participants in tollway project financed by state corporations in China**

Though the examination and approval procedure for projects with the investment of state corporations seems strict (Du and Watanabe 2005), corruption still aroused in the implementation process. The frequent occurrence of corruption cases disclosed the illegal power renting or deal of power for money was grave in infrastructure sector. This manifested that the current administration and supervision system of state highway project companies is imperfect inherently.

By careful review and analysis of effective legal documents of highway projects, the author found that the current legal framework permit the local transportation authorities to directly establish and manage state highway corporations which are directly under their direct administration since 1988 (MOT 1988, NPC 2004 and SC 2004). In such case,

the executing and monitoring power of development and operation of toll highway projects was not separated. This imperfection in legal regulation may lead to ineffective supervision of local transportation authority, imperfect planning and poor performance of state highway corporations, which has been proved by the occurrence of negative factors listed in Table 2. On the other hand, local transportation authorities supervise the state highway projects invested in by them may results in the unfair treatment of local transportation authorities between state highway projects and private highway projects.

Another defect of current legal framework is that local transportation authorities are allowed to directly award franchise to the highway project corporations established and financed by them since 1988 (MOT 1988, NPC 2004 and SC 2004c). It is

legitimate for the Beijing Transportation Bureau to directly award the 5th Beijing Ring Highway Project to the Beijing Capital Highway Development Corporation. However, the direct award of franchise instead of competitive selection of concessionaire may result in careless project planning, ineffective and inefficient selection of concessionaire, which may cause troublesome project implementation consequently, such as the case of 5th Beijing Ring Highway Project.

## **6. IMPROVEMENT MEASURES FOR HIGHWAY PROJECTS**

The specific project planning shall be conducted, which mainly include traffic service planning, construction and operation planning, financial planning, project obligation division between government and project company, and government supervision planning. The key successful issues in the project planning include the feasible project planning and the reasonable obligation division between government and project companies. The project planning model of concessionary infrastructure projects shall be established in the later chapter.

The imperfect legal framework must be amended to prevent the failure of government supervision of toll highway projects and the unfair treatment of local transportation authorities between state highway projects and private highway projects. Competitive selection of concessionaires for toll highway projects shall be adopted instead of direct authorization of project concessionaires to state corporations and the objective selection criteria of project concessionaire shall be established.

The government shall reform its management system of state corporations. One measure is to separate the affiliation between the competent highway authorities and state highway corporation and put state highway corporations under the

jurisdiction of independent state asset management and supervision agencies. Other effective measures for regulating state corporations include compulsory information announcement and report to legislature. Since people are the nominal owner of state assets including public facilities, they shall have the right to know the real business directly and supervise the operation of state corporations through the standing committee of people's congress. The relation of a state corporation to the standing committee of people's congress is the similar to the relation of a listed company to the board of directors and stockholders. Therefore, a state corporation shall regularly disclose its financial and business situations. For example, the financial accounting report shall be publicized every half year of each fiscal year (NPC 1999). A state corporation shall also report to the standing committee of people's congress and answer the queries raised by congressmen.

## **CONCLUSION**

Because of inadequate fiscal budget for infrastructure projects, local governments began to withdraw gradually from direct investment and management of infrastructure projects and transferred the responsibility of financing and repayment of infrastructure projects to state corporations.

The case studies showed that the poor operation performance could occur in the tollway projects financed by state corporations because of the defective project planning and improper government intervention. The negative influencing factors include inaccurate traffic volume forecast and premature construction, lack of reasonable toll pricing and adjustment mechanism, lack of planning of reasonable toll duration, excessive government obligation, lack of strict financial supervision of toll revenue, lack of effective administrative supervision,

direct authorization of concession right to state company and inexperience of regulation on concessionary projects.

In order to improve the performance of tollway projects, government shall put more effort on the planning and implementation supervision of toll highway projects. The imperfect legal framework shall be also amended and the government shall separate the affiliation between the competent highway authorities and state highway corporation. In addition, local government authorities shall train their staff to be familiar with the planning and supervision of toll highway projects or employ outside consultants. The highway projects shall be opened to the private sector to utilize its innovative management experience and theory as well as advanced technique and technology.

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