

Research Article

Infrastructure of PPP Mode in Chinese-with Beijing Metro Line as an example

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Abstract: Public infrastructure has obvious public welfare, social than economic benefits, in the same time, the construction of the huge initial investment alone operating income during the irreparable. Therefore, it is necessary to introduce market competition mechanism in the construction of public infrastructure, and broaden the financing channels and the development of a wide range of investors. Private enterprises to participate in the construction of public infrastructure is a good way, it can effectively alleviate the shortage of construction funds situation.

Keywords: PPP mode Infrastructure Beijing Metro Line.

PPP MODEL**Situation Study in abroad**

PPP originated in the United Kingdom, from the development of PFI (Private Finance Initiative). It means "private financing" and translated as "private finance initiative" in our country .UNDP believes PPP should include an informal dialogue between government officials and local community organizations. Canadian PPP Committee let PPP is defined as cooperation between the public and private sectors in order to better meet the needs of the public, through appropriate mechanisms combine the advantages of both sides formed. On this basis, the Commission will PPP divided into three categories: traditional contracting projects, with concurrency management projects and cooperative projects [1].

PPP model for foreign concept to define the focus of partnership, emphasizing between PPP mode among the public and private sector partnerships. This guide will help the Government from the provider of the project participants and supervisors become, but also help to stimulate the enthusiasm of the private sector. But the classification of PPP model is not uniform in foreign, there are different classification criteria in varying degrees of cross-application and concepts.

Research state in China

Li Xiuhui, PPP is a new and improved mode of financing, which is also more complex forms of organization. Wang Li Regulations will be considered

as the whole process of PPP project financing, and that during this period the government and the private sector should assume a shared responsibility and risk. Domestic classification of PPP model is mainly taken Wang Hao approach, through the PPP model is divided into qualitative analysis class outsourcing, franchising and privatization category .

PPP mode connotation

PPP model is the public sector and the private sector to set up the project company, the public sector to provide policy support, while private sector is responsible for investment in construction and operations and management.

First, the government departments to work more later reference projects. The second is the private sector involved in the project earlier [2].

INFRASTRUCTURE**The meaning of infrastructure**

Infrastructure can be divided into two categories: One is the economic infrastructure, also known as productive infrastructure, including railways, bridges, highways, tunnels, power, ports, airports and so on; The second is social infrastructure, including culture, education, health care and other systems. In accordance with the area, the infrastructure can be divided into rural infrastructure and urban infrastructure. Infrastructure described in this article mainly refers to urban infrastructure.

Feature of infrastructure

(1) Infrastructure with external characteristics

Positive externalities in product and service infrastructure provided not only direct purchasers can be enjoyed, and would have a positive impact on the surrounding area. At the same time, the foundation of society will bring negative externalities, For example, like the residents of the surrounding area will give the construction of the station, rails, etc. bring noise pollution.

(2) Infrastructure has a monopoly

Infrastructure monopoly is mainly due to its basic network is often a natural monopoly, Such as water supply system in the water, post and telecommunications network lines, energy systems in the power supply network and gas supply network.

(3)The construction of infrastructure facilities is advanced

Compared with the construction of other facilities, the construction of infrastructure in the timing of the need for appropriate lead, For example, in urban construction and development process requires the laying of pipelines and the construction of the road together, infrastructure have a long life cycle, at the same time, after the completion of its ability to provide products and services at every turn for decades, can not be extended and remodeled at any time .

(4)The amount of investment in infrastructure construction is large, and the term of recovery is long

Infrastructure projects are often large-scale projects, supporting the strong, making the required investment from a few billion, as many as tens of billions, or even hundreds of billions. Beijing Metro Line 4, for example, the initial investment amount to more than 15 billion. Although the initial cost of infrastructure investment is great, but once the profitability, you can get long-term stable cash inflows.

CASE STUDY - TAKING THE PPP PROJECT OF BEIJING METRO LINE 4 AS AN EXAMPLE

Project Overview

Beijing Metro Line 4 is the backbone of the Beijing rail transit network and the main line connecting the urban north-south, Haidian District On River Bridge Station, along the way through the densely populated Fengtai, Xicheng and Haidian three city, after Tsinghua University, Peking University, Zhongguancun, Xidan and Yuanmingyuan, Summer Palace and other attractions Is a very distinctive subway lines.

Line 4 full length of 28. 2 km, located 24 sites (including a ground station), a depot, a parking lot. Project started construction in late 2003, officially opened in 2009, the line logo for the green, the current average daily traffic of about 1.3 million passengers.

The average construction cost per kilometer of Beijing's underground railway is 520 million yuan. According to the development plan of Beijing's urban rail transit, the total length of four new lines currently under construction or proposed is 104 kilometers, and the total investment is about 50 billion yuan. In addition, the then Beijing subway mode of operation to take a typical "state-owned" model, the ownership of the subway owned by the Government, the Government is responsible for investment in the construction of the MTR and related operations. Under this model, Beijing has subsidized about 1.1 billion yuan for the lines that have been built and used each year. It is estimated that after the four lines are put into operation in the future, the subsidy will be about 3 billion yuan every year. So that after 2008, the annual subsidy of the Beijing municipal government up to 40 billion yuan, this high investment costs and subsidies for the Government is already overwhelmed. In order to solve the financial bottleneck, in reference to many countries and regions in the subway investment and financing and operating mode, based on the Beijing municipal government decided to use PPP model construction of Beijing Metro Line 4, This is China's first Chinese-foreign cooperative franchise urban rail transit project, this project for the promotion of this model to explore a path and experience [3].

Case study

At the beginning of February 2005, the Beijing Municipal Government and the Consortium formed by the Hong Kong Railway Company Limited (MTR) and Beijing Capital Group Limited (the first of its kind) agreed on the terms of the concession agreement and initialed the " Beijing Metro Line 4 franchise agreement. "June 1, 2006 Line 4 PPP Project Company Beijing Jinggang MTR Co., Ltd. was incorporated and signed the "Beijing Metro Line 4 Franchise Agreement" with the Beijing Municipal Communications Commission on behalf of the Beijing Municipal Government. In accordance with the design and planning, Beijing Metro Line 4 project total investment of about 15.3 billion, The whole project is divided into A, B two parts of the construction project, which A part of the main cave, track and other civil works, This part of the larger amount of funds required, the amount of investment of about 10.7 billion yuan, accounting for 70% of the total investment, By the establishment of the 4 line company is responsible for investment in construction and enjoy their ownership; Part B is mainly for vehicles, signals and other electrical and mechanical equipment investment and construction, investment of about 4.6 billion, accounting for 30% of the total investment, This part of the first consortium formed by the MTR Corporation Limited Beijing Metro Line 4 franchise project company Beijing-Beijing-Hong Kong Metro Co., Ltd. is responsible for investment and construction. At the same time, A, B part of this

division, but also have the nature of the rail traffic considerations. In general, the rail transit project has both charitable and operational characteristics. For the public welfare, from the economic responsibility, must be borne by the government; for businessability, can be invested by social investors in construction and operation and management. China Development Bank participated in the financing of the project and fully committed to the financing of the project. In accordance with the design of PPP financing program, the Government does not need to subsidize the operation of line 4, only to bear the civil part of the investment debt service, financing program greatly reduced the financial pressure of the municipal government [4].

After completion of Line 4, Jinggang MTR Corporation leased Part A project facilities from Line 4 in accordance with the concession agreement and the Asset Lease Agreement with Line 4 Company. Beijing MTR Corporation is responsible for the maintenance, updating, in-station commercial operation and the operation and management of Line 4 in all the facilities (including A and B). The MTRC is rewarded by fares and commercial operating income. After the expiration of the franchise, the A part of line 4 to return to line 4 company, part B intact, free of charge transferred to the Beijing municipal government.

REFERENCE SIGNIFICANCE

The PPP project of Beijing Metro Line 4 is the first successful market-oriented financing project in China's urban rail transit area. It has promoted the rapidly development and system reform process of Beijing rail transit. Its successful experience has provided the PPP mode for China's infrastructure [5].

The project negotiations and signing

April in 2006, after more than two years of time the two sides more than rounds of hard negotiations, "franchise agreement" formally signed. From the negotiations, which lasted more than two years, it was actually a mutual game between the two sides on their respective responsibilities, rights, interests, obligations, prices, return on investment, default and punishment and withdrawal mechanism. That this stage is the PPP model is currently in China the key to the smooth implementation.

① Basic situation. In the fourth line project, the Beijing Municipal Government in accordance with the "franchise agreement" provides that during the project construction period will supervise the fourth line of the company to ensure that the civil part of the timely completion of the quality and supervision of the franchisee mechanical and electrical equipment part of the building. If the concessionaire violates its obligations under the Franchise Agreement, the municipal government has the right to impose sanctions, including the recovery of the concession. At

the same time, the municipal government should also fulfill its obligations under the Franchise Agreement and bear the responsibility. So, whether the "franchise agreement" to negotiate a consensus, is the key to successful cooperation between the two sides.

② The determination of several basic indicators. Basic economic and technical indicators, project construction content, construction standards, duration.

③ Franchise period. The concession period is divided into the construction period and the franchise period. Construction period from the "concession agreement" signed after the formal agreement to officially start the day before the operation. Franchise period is divided into trial operation period and the official operation period, since the trial operation date, the franchise period of 30 years.

④ Return on investment. Under the Concession Agreement, the concessionaire obtains a reasonable return on investment by recovering the investment from passenger service fare receipts and commercial revenues. According to the estimation, the IRR of this project is 7% to 8%, the internal rate of return on equity is about 10%, and the investment recovery period is 16 years.

The focus of negotiations

Risk-sharing mechanism design is the biggest focus of negotiations. As the project does not set the government subsidy policy, the passenger flow and fare along the project are the main source of the project income and an important prerequisite for the success of the project, and the passenger flow forecast of the rail transit project is more difficult and controversial. Therefore, in order to achieve objective, fair and accurate, Beijing Infrastructure Investment Corporation and social investors have jointly engaged MVA, a well-known international passenger adviser, to carry out the third party's fair forecast independently, and reached consensus with the social investors on the prediction of traffic volume in rounds of repeated negotiations. The most difficult part of the negotiations is how to establish such a mechanism of risk and revenue symmetry, That is to create a basic condition for investors, that is, through cost savings, strengthen management can achieve a reasonable return on the conditions, But this is only a necessary condition, not a sufficient condition; The other is how to set a restrictive terms to avoid excessive and low traffic problems. Otherwise the design of the PPP mode of operation will fail.

Followed by the compensation mechanism, including compensation and termination compensation fares. First is temporary suspension, Such as the face of war or terrorist attacks and other events, and therefore

need to temporarily close the MTR, which caused the loss of fare income should be how to compensate, Second, when the traffic volume is less than the expected traffic, the MTR does not go on and the need for the Government to recover; Or investors here breach of contract, the Government asked to recover the franchise, but also appropriate compensation. This series of issues, the need for repeated research and negotiations.

How to determine the franchise period about the two sides of the responsibility, power, interests and other issues. As the two sides from their respective interests point of view, this will inevitably produce a lot of controversy and differences in these areas. In order to achieve a win-win overall objective. Beijing Municipal Government clearly recognized that the introduction of PPP model, in addition to make up for lack of government construction funds, there is an important reason is to solve the problem of stock asset efficiency. If the government and the original state-owned enterprises continue to loss of the vicious cycle model to continue the construction and operation of the rail transit line, then the stock of assets continues to increase, the government burden is growing (assuming the government subsidy per year 500 million subway operating companies Yuan, and the implementation of PPP, the savings of 10 million, then the government is certainly willing to do this). For PPP's point of view, the profits are not relying on government support, not by high fares, but by providing modern management and services to reduce costs and attract more customers to achieve. This is also the most difficult to grasp and the risk of the project is to be established in the full market assessment, measurement, demonstration basis, the two sides reached a basic consensus and determine a mutually acceptable, reasonable and operational program, which is the two sides signed basis.

Experience summary

①The project preparation and project selection is the basis for the successful implementation of PPP

Since the PPP model is different from the traditional project financing model, the conditions for attracting social capital must be taken into consideration when selecting projects, which means that the project must be commercial and profitable. Therefore, the city government to determine the project mainly to consider three factors: First, through a comprehensive analysis and comparison of political, economic, technical and traffic conditions of the four selected projects; Second, through the full understanding and comparison of global qualified rail transit construction, operation and management of investors experience, reputation, financial strength and financing capacity, based on the conditions set tender SPC; Thirdly, due to the huge investment cost of subway project construction, in particular, the sedimentation cost is high in the future operation of civil works. In order to attract social capital

investment, the construction investment of the project is divided into A part (civil part) and B part (vehicle And automatic fare collection system, etc.), the investment is small, with some of the B part of the business out of the use of PPP model construction, operating lease A part.

②Engaging in intermediary service agencies for professional advice and guidance is an auxiliary to the success of the project is also an important condition.

③"Franchise Agreement" and "Asset Lease Agreement" terms of the design and the contract is an important condition for the successful signing of the project.

Although the negotiations of the two agreements lasted about two years of hard negotiations, but the negotiations are actually a compromise between the two sides of a process, Main experience and experience, First, the drafting of the agreement had been domestic and foreign experts and repeated demonstration, and fully consider the two sides to achieve the basic objectives, risks, compensation and their rights and obligations, etc. The second is to take into account the project in the franchise period the government does not subsidize the conditions set. The return of investors, the repayment of bank debts and the delivery of rents have led to the finalization of a more rational risk-sharing, compensation mechanism and mutually agreed framework agreements on liability, rights and interests.

As the PPP model in China's urban rail transit project is the first time. Both the government and the SPC lack the experience and expertise to hire professional consultants and can use their expertise to help the government and SPC achieve faster, more efficient and more professional completion of some of the technical issues.

Beijing Metro Line 4 is the first rail transit project in China to adopt the PPP financing model. It has created a precedent for the adoption of the PPP model in rail transit in China, which effectively relieved the government's financial pressure and introduced a competitive mechanism to improve the operation and management of the MTR. The emergence of the Beijing-Hong Kong subway for the Beijing urban rail transport has brought a "catfish", the introduction of a competitive mechanism to speed up the Beijing rail transport operation and management system reform. To achieve separation of government and enterprises, to promote the transformation of government functions, making the government better able to serve the public interests of the people, and promote the transformation of government functions.

At present, China has entered the rapid development stage of urbanization, urban infrastructure

construction will be more and more financial needs, infrastructure construction supply shortage of contradictions will become increasingly prominent. PPP infrastructure is a good choice because it has obvious public-spirited characteristics. Although the Beijing Metro Line 4, for example, but China's future PPP model infrastructure projects in the laws and regulations, pricing mechanisms, financing obstacles and so there is urgent need to improve.

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