

Research on Investors' Rational Income and Its Fiscal Policy in PPP

Projects

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Abstract: With reference to the establishment of special tax policies and preferential systems for extraterritorial PPP projects, China should increase the reasonableness of PPP project tax policy incentives to protect investors' reasonable returns; at the same time, it should effectively support and implement one-off, temporary tax incentives for PPP project characteristics. Policies, and the strengthening of the PPP project tax policy and other fiscal policies and public policy coordination, and improve the effectiveness and function of the policy.t.

Keywords: Projects of Public-Private Partnership; Private Investors; Mechanism of Return to Investment.

1. INTRODUCTION

Currently, China is in the period of rapid development of urbanization, and perfecting infrastructural construction is an important means to promote the urbanization and economic growth. Usually, the construction of the infrastructure is characterized with the large investments, the long term, the comparatively higher risks and the higher operating costs, and its products and services have the characteristics of public welfare and regional natural monopoly. Most of the construction is administrated and managed by the governmental departments. Since the 1970s and 1980s, more and more countries and regions have become to realize the problem that the governmental dominance on the construction and operation of the infrastructure would result into the excessively heavy burden for the government to keep operation. Actually, with the rapid development of our national economy, the construction of the infrastructure also faces the heavy capital pressure, but the traditional financing mode that is dominated by the government can't fulfill the needs.

In the third plenary session of the 18th CPC Central Committee, it was clearly figured out that the relationship between the government and the market should be properly dealt with, the transformation of governmental functions should be sped up, and the market should be allowed to play a decisive role in the allocation of resources. The reforms of investment and financing system should be deepened, the social capitals should be allowed to take part in the investment and operation of the urban infrastructure through the mode of franchising and so on, and the modern financial system should be formed. Under such backgrounds, the mode of the project

of the public-private partnership (PPP) was forcefully promoted. In the PPP project, win-win can be reached between public departments and private ones, for both sides can fully exert its advantages, further take the most advantage of the resources, and at the same time make up for the shortage of capitals in the governmental departments. In addition, in the PPP Project, the cost can also be saved, the ration of fund utilization can be increased, and the constructive efficiency and even the operational efficiency can be increased.

In fact, in the project of public-private partnership, it is decisive to establish the reasonable return to the private investor's investment. The reasonable return to investment can not only attract the participation of social capitals but also effectively control the financial risks (Liu, 2016). The return of investment refers to the main achieved payment through the participation of social capitals into the projective construction of public goods, mainly including the public's payment to the usage of public goods and governmental subsidy and so on. Zhu Jianyuan and Wang Hailing regarded that the PPP project should ensure that the social capital reached the reasonable rate of return. If the reasonable rate of return that is reached by the social capital in the PPP project is too low, the enthusiasm of the social capital in participation will be decreased. If the reasonable rate of return that is reached by the social capital in the PPP project is too high, the quality of services or public goods will be decreased. Reasonable rate of return of the social capitals is the main factor for the smooth operation of the PPP project. On this basis, the thesis analyzed the current established plans of the return to the private investors' investments in our nation, and by integrating international experience, it established the mechanism of reasonable return to private investors' investment and provided policies and advises.

2. THE SIGNIFICANCE OF ESTABLISHING GUIDING LINE OF THE REASONABLE RETURN TO PRIVATE INVESTORS IN THE PPP PROJECT

2.1 Fully Considering Consumers' Affordability and Protecting Their Legal Rights

Both excessively high and excessively low return to private investors will directly influence the public's enjoyment of the welfare from public goods or services. In economically backward areas, the establishment of excessively high return to investment will result into the comparatively higher prices of public goods or services, and the low-income population may not enjoy the products or services that are provided in the PPP Project. Excessively low return to investment will also influence the public's usage of products or services. The main reason is that although the excessively low return to investment decreases the costs for the public to use products or services, private corporations will also control their costs in investments, resulting into the decreasing of the quality of public services or products, and finally leading to the decreasing of the public consumers' degree of satisfaction to products or services. Thus, the establishment of the guiding line of the reasonable return to private investors in the PPP project directly influences the prices and qualities of public goods or services. Under the situation of fully considering the public consumers' affordability, establishing reasonable guiding line to return to investment will further protect the consumers' legal rights.

2.2 Providing Clear Guidance to Decision-Makers and Protecting Investors' Legal Rights

Private investors' ends in participating into the PPP project is to achieve the reasonable return to investment that is the significant safeguard to the smooth performance of the PPP project. If the clear mechanism of reasonable return and subsidy is established, when the investors are impacted by the political factor and the economical factor and so on, they can demand the government to provide financial subsidy of appropriate quota according to the contract. The clear guiding line of return to investment is "a bill of assurance" to the private investors, not only relieving the investors' worries about their disadvantages in cooperating with the government, but also increasing their enthusiasm in participating into the construction and operation of the project. It can be concluded that establishing the guiding line of the reasonable return to the private investors can provide clear guidance to the private investors and protect their legal rights.

2.3 Properly Controlling Financial Bearing Capacity and Guarding Against Financial Risks

In the PPP project, the governmental departments and the private investors shoulder the responsibility and risks of the project together, and provide reasonable financial subsidy to private investors. When the governmental departments provide corresponding policies of subsidy to the private investors, if they make too many promises to the private investors, they may shoulder financial losses. When the governmental departments can't fulfill their promises of reasonable returns, there will appear the phenomenon that the confidence to the promises of the government will be lost in the market. Therefore, through the strict feasibility study to the project, the governmental departments can establish reasonable rate of return to investment for the private investors, encourage private investors to participate into projects and to manage and operate projects more prudently, reduce the financial inputs of the government, and at the same time lower the financial risks that are faced by the government because of the private investors' improper management and corporate bankruptcy.

3. THE MECHANISM OF THE REASONABLE RETURN TO THE PRIVATE INVESTORS AND ITS OPTIMIZED SPACE IN THE CONSTRUCTION AND OPERATION OF OUR NATIONAL PPP PROJECT

3.1 The Mechanism of the Reasonable Return to the Private Investors in the Construction and Operation of Our National PPP Project

Currently, the mechanism of return to investment in the PPP project of our nation is established according to the principle of Operational Guidelines for the Models of Cooperation between Government and Social Capital (A Trial Version): "In the mechanism of return in the PPP project, the funds of social capitals in achieving return to investment mainly originate from such modes of payments as the users' payments, the gap subsidy of feasibility and the governmental payments." [16] In the Guidelines for the Demonstration of the Fiscal Bearing Capacity of the Cooperated Project between the Government and Social Capitals, it is figured out that "the reasonable rate of profits in the PPP project should be based on the interest rate of the mid-term and long-term loans in commercial banks as the criterion, with a full consideration

of different situations of availability payment, payment of application amounts and payment of performance and so on to be determined in combination of such factors as risks.”[17]Take an example of Chongqing Municipal, in the Notice Issued by People's Government of Chongqing Municipal on the Reforming Implementation Program of Chongqing's PPP Investment and Financing Mode, it is regulated that the private investor's cost of capital occupancy and interests should be combined to be calculated, in principle the reasonable rate of profits should refer to the benchmark rate of the loaning interest of the banks in the corresponding period, and for projects with a longer constructive circle, the price limit may be appropriately raised and determined through the mode of bidding.

The investing rate of return in the PPP project of our nation can be determined according to the service price of the PPP project in the bidding. In the PPP project with the private investor determined through the public bidding, the investing rate of return is usually checked and ratified by the prices of goods and services in the PPP project that are determined in the bidding. The way of determining the prices of public goods and services through bidding can compress the fake highness of the price through competition, limiting the private investors' return to the extent of profitability instead of sudden huge profits. However, in reality, in order to increase the possibility of winning the bidding, the private investors will lower their bidding prices, as a result of which the profiting level is decreased to the investor's receivable lowest extent.

3.2 The Optimized Space for the Mechanism of the Reasonable Return to the Private Investors in the Construction and Operation of Our National PPP Project

The policy of return to investment in the PPP project is still unclear in China. Judging from the intensity and contents of the policies issued by such departments as the Ministry of Finance and National Development and Reform Commission, the nation determines to forcefully develop the PPP projects and encourage the entering of social capitals with a clear train of thoughts. However, each policy only expresses to guarantee the private investor's reasonable return without any concrete implementing steps or enforceable policies. The direction of the policies determined by the national ministries has already been clear, and most of the policies are just frames without any guidance to the rules of the implementation in practice. It results into the phenomenon that most of the private investors choose to wait on the sidelines instead of rashly participating into the PPP projects.

In the Guidelines for the Demonstration of the Fiscal Bearing Capacity of the Cooperated Project between the Government and Social Capitals that was issued by the Ministry of Finance, it is figured out that “the reasonable rate of profits of the PPP project should be based on the interest rate of the mid-term and long-term loans in commercial banks as the criterion, with a full consideration of different situations of availability payment, payment of application amounts and payment of performance and so on to be determined in combination of such factors as risks.” However, if the level of the interests of the long-term loan in commercial banks is taken as the criterion, the established rate of return to investment will be excessively low. The PPP project is different to the traditional one in its long term. For it has a comparatively higher technological risks, the government will not guarantee its debts, and the

profits of the project are also comparatively more uncertain. In the national regulations, the government is forbidden to promise fixed gains of investment to the private investors of the PPP project. When the project is excluded from the guaranteeing platform of the governmental departments, the return of profits can only be determined by their own operative situation in the later period. In this process, there are many uncertain factors. If the rate of return to investment is only determined by the interest rate of the mid-term and long-term loans, the rate of return will be comparatively lower to the private investors, resulting into the investors' lowering of the investing costs, their achieving profits by decreasing the quality of the provided public goods or services, or even the bankruptcy of the company in the project and the repurchasing by the governmental departments, which will be against the original intention of reducing the government's fiscal pressure through the PPP projects.

In the PPP project, the private investor's reasonable rate of return is determined by bidding for the prices of public goods or services. Nevertheless, without clarifying the private investor's line of reasonable return, there will be many uncertain factors in the bidding process. First, in order to winning the bid, some private investors will compete in the mode of purposely lowering the bidding price; when they winning the bid, they will take the opportunity to raise prices in disguised forms with excuses. If they failed in raising the price, they will either reduce their costs for investments or delay in the process of construction. For the project is related to the offering of public products or services, usually the government will fulfill the investors' demands so as to prevent the delay or suspend of the project. Then, the government will be put into the negative situation, and it will shoulder financial risks to some extent. Second, in the life circle of the PPP project, the change of the prices of the public goods or services lacks profitability, which will lead to the higher uncertainty in the return to the private investors' long-term investments. Last, in the process of the new type of national urbanization, the governmental department of each place has a comparatively more urgent demand for such public goods as infrastructure. Under the situation of incomplete development of the PPP project, the existence of such phenomena as the unclear bidding theme and the uncertain bidding documents will lead to the situation of the imbalance of rights and responsibility as well as unfulfilled promises in the government.

In fact, without the reasonable guiding line to the private investor's reasonable return, it is quite difficult for the implementation of the corresponding fiscal policies of the nation. In order to promote the smooth implementation of the PPP project, the government of each place actively issued corresponding supporting policies and provided proper awards to the companies according to the results of their performances. However, without the reasonable guiding line of return to investment, it is quite difficult to determine the standards for the assessment of the performances of the PPP project. The investor's costs for investments in the early phase will be uncertain, and the costs for investments will be considered from the investor's perspective. Then, the subsidy that is offered by the government will also be uncertain. If the government provides excessively much fiscal subsidy, it will have to shoulder the fiscal pressure; if the government provides excessively little fiscal subsidy, the private investor's interests and even

the quality of the products or services that are enjoyed by the public will be influenced. Therefore, it is necessary to optimize the mechanism of reasonable return to the private investor in the PPP project of our nation.

4. THE MECHANISMS OF THE REASONABLE RETURN TO THE PRIVATE INVESTOR IN THE PPP PROJECTS OF CORRESPONDING COUNTRIES ALL AROUND THE WORLD

4.1 Britain

Internationally, Britain was the country that practiced the construction of infrastructure through the PPP mode in a comparatively earlier period. In 1990, due to the economic declining in Britain, the public expenditure of the government daily increased. In 1992, Britain put forward the plan of private financing for the first time. Generally speaking, the PPP project in Britain could be classified into two categories: the plan of the private financing (namely, PFI and PF2) and the franchising. The main difference between the two projects lied in the payers. The payer of the former one was the government while the payer of the latter one was the users. In the project with the plan of private financing, the costs were unchangeable, the operational period was comparatively longer, and the private investor's return to investments was mainly formed by fixed payments and payments for performances under the influence of rate of inflation (XieZongbo, 2016)

Take the industry of water-supplying services in Britain as an example, its return to investment was related to the prices of products or services, and Britain took the method of limiting the max price to establish the fee scale of the water company. The max price that was limited by the government could not only compensate for the costs for the investments in the project but also effectively increase the quality of the produced services. The British government established the reasonable return to investments for the private investors of the water company, creating excellent conditions for the long-term management of the company and lowering the investors' main risks (Xiao Chengzhi, 2016). For the reason that the calculation through the method of limiting the max price was based on the costs and profits of the objectives of the project, as long as the actual operating efficiency of the water company exceeded the objectives, the company would receive the return to investment that exceeded the limitation of the max price (Wu Qiong, 2005). Thus, it can be concluded that the method of limiting the max price is a kind of encouraging means to the excellent operation of the water company.

4.2 France

In France, there has been a history of hundreds of years in the development of the project of public-private partnership. The earliest project of public-private partnership can be traced back to 1782. It was the watery company that was constructed by the Perrier brothers of France. It was since 2001 that France has formally introduced the PPP mode. In the PPP project of France, the private investor's reasonable return can be determined by such factors as the price of the public products, the rate of profits of the banks and the rate of inflation.

Take the water industry of France as an example, in the water company, the price was formed according to the costs and the profits, on the basis of the bidding prices, under comprehensive consideration of such factors as labors, payments for debts, maintenance fees, interests of the banks, operational and administrative fees and fees for transforming equipment, and by offering application to the relevant governmental departments, finally determined under the discussions of the public hearing and each party (Zhou Haojia, 2016). This mode not only had comparatively better flexibility but also can balance the interests of the public and the private sides. In the adjustment of the price of the water, the national economy and people's livelihood was the most significant problem to be considered, so the rate of inflation, the expectation of inflation and the maximization of social benefits are the significant factors to be considered in the process of regulation and control (Pei Junwei and Wang Jie, 2016).

4.3 South Africa

Generally speaking, in South Africa, PPP project referred to the cooperative relationship that was registered in the Ministry of Finance and ratified. The PPP mode was considered as the contractual agreement between the public departments and the private investors, and the private investors shouldered the possible operational risks in finance and technology in the PPP project and the financing construction, administration and profiting of the project (Jia Kang, 2015). In the industry of transportation of South Africa, the governmental departments made the promise in relation to the PPP project that during the operational period when the passenger capacity couldn't reach the one in the feasibility report, it would provide subsidy to the private investors, and the limited max price could be adjusted according to the index of the consumption price (Song Jian, 2012). The reasonable return to the private investors in the PPP project in the industry of transportation of South Africa was mainly constructed by the users' payments and the governmental subsidy.

4.4 The Enlightenment of International Experience to China

The PPP projects of Britain, France and South Africa have developed to the perfect extent, the experience of which is worthy to be used for reference. In order to ensure that the private investors can receive reasonable return to investment in the operational period, according to the distribution of risks and interests, the governmental departments should establish the prices of the public products or services in corresponding PPP projects, and the prices should be determined through the mode of public bidding. The main factors that influence the return to the investment into the project are such ones as the interest rate of the bank, the rate of inflation and the social average rate of profits and so on. Therefore, in the study of the means of determining the return to the investment in the PPP project of our nation, the factors of the interest rate of the national debts, the social average rate of profits, the rates of profits of the quoted companies of the same industry and the lending rate of the banks in the same period should be considered in combination with the actual situation of our nation (Yang Zhihong and Qiu Kai, 2016).

5. THE MAIN FACTORS AND THE MODEL TO ESTABLISH THE GUIDING LINE OF THE REASONABLE RETURN TO THE PRIVATE INVESTORS OF THE PPP PROJECT IN OUR NATION

5.1 The Main Factors to Establish the Guiding Line of the Reasonable Return to the Private Investors in the PPP Project in Our Nation

In the PPP project, the government should fulfill its own responsibility and realize its functions, while the private investors should receive reasonable return and realize their commercial values. Then, the public consumers can also enjoy public goods or services of high qualities so as to enhance the qualities of their lives. In the PPP project, the core issue is to establish the reasonable return to the private investor so as to avoid the contradiction of the disposition of income in the project. The contents and structure of the PPP project are quite complex, and there are many factors to be considered in establishing the line of reasonable return to the private investor. In this thesis, the follow six main factors for consideration are to be introduced: First, one of the main factors for consideration is the riskless rate. It refers to the investment into the assets without the credit risk and the market risk, namely, the interest rate of national debt, the due date of which is the period of investment. Generally, such factors as the depositing rate of banks, the supplying and demanding situation of social funds and the status of governmental credibility can be considered as the main aspects in influencing the rate of national debts (Ding Zhiguo and so on, 2016).

Internationally, the level of the interest rate of the national debt is mainly influenced by two factors: the governmental expectation to the future and the degree of inflation. In China, the rate of national debt is mainly determined by the average level of the rate of various kinds of financial securities, and the alternation of the rate of the national debt is in accordance with the altering tendency of the rate of the financial securities. When the rate of financial security rises, the rate of financial debt will also rise, and vice versa. In general, the rate of national debt is based on the loaning rate of banks to the extent of a little higher but not excessively higher than the depositing rate of the same period. There is no exception, for the governmental credibility is higher than any credibility of securities. When the governmental credibility is high, the rate of national debt will be lower than the average rate of the financial market; when the governmental credibility is low, the rate of national debt will be slightly higher than the average rate of the financial market. Moreover, when the social funds are affluent, the rate of national debt will be low. In the converse situation, it will be slightly higher.

Establishing the rate of reasonable return to the private investor of the PPP project according to the rate of national debt can ensure the private investor's basic profits, guaranteeing that the investor's profits from the invested costs in the operational period of the project can be higher than the fixed profits of investing into the market of finance and security or depositing into the bank.

Second, another main factor for consideration is the social average rate of interests. It refers to the average profiting level of an industry in the society. It can be calculate by firstly deducting the payment for the constant capital and the value of commercial labors from the surplus value

of the social production and then dividing the calculated result by industry capital and the capital for trading purpose. The specific formula is as followed:

The social average rate of interests = $\frac{\text{The total sum of social value} - (\text{The payment for the constant capital} + \text{The value of commercial labors})}{\text{The sum of the industry capital} + \text{The sum of the capital for trading purpose}}$

The formation of the social average rate can largely reduce the gap of incomes among industries due to human factors, and the investors can rely more on their own actual strength instead of choosing an industry to realize the value of investment. In the past, for the existence of the large gap of the rate of interests in different industries, the choosing of industries for investment was quite influential to the return of interests. With the constantly optimization of economic development, after the formation of social average rate of interests, some investors can make expectations to the return of their invested projects according to the average rate of interests.

Taking advantage of social average rate of interests to determine the reasonable return to the private investors can avoid the private investors' hesitations in investing to the industry of the PPP project. Due to the long period of the PPP project, there will be risks in different stages of the whole life period, while taking advantage of the stability and predictability of the social average rate of interests can ensure the stability of private investors' reasonable return so as to further promote the smooth completion of the PPP project.

Third, another main factor for consideration is the rate of interests of the quoted companies of the same industry. The rate of interests of the quoted companies refers to the operational situation of the company in a period. It is not only the main basis for the company's main leaders to make decisions but also the main index to evaluate the operational performance of the company. The rate of interests of the quoted company is not unchangeable, and the main factors that influence the alternation of the rate of interests of the company mainly include the rate of surplus value, the turnover speed of capitals and the savings of the constant capitals. If other conditions remain unchanged, the higher the rate of surplus value is, the rate of interests of the company will be, and vice versa. Taking the rate of interests of the quoted companies of the same industry as an important factor to determine the reasonable return in the PPP project will effectively ensure that the private investor's return in the PPP project of its industry is limited to the extent of profiting instead of suddenly huge profiting.

Fourth, another main factor for consideration is the loaning rate of the banks in the same period. Its alternation can sensitively reflect supplying and demanding situation of funds in the financial market so that it is the significant basis for the financial organizations to adjust the scale of assets and liabilities. Taking advantage of the loaning rate of the banks in the same period to calculate the rate of the reasonable return to the private investors can reduce the risks of a comparatively larger change in the rate of return to investment. When the rate of return to investment changes within a certain extent, the risks will be shouldered by the private investors, and finally both the prices and the qualities of the public goods or services that are provided in the PPP project will be influenced. Thus, influencing the rate of return to investment with the loaning rate of the banks in the same period can ensure the efficient operation of the PPP project

and the providing of high-qualified products or services (GuHaibing and so on, 2006; Li Shouhua and so on, 2009).

Fifth, another main factor for consideration is the opportunity cost of investment. It refers to the phenomenon that the investor invests the limited funds to other investing projects for profits instead of the PPP project. The investor always hopes to get the best investing chance so as to achieve the highest economic interests with the limited funds. Thus, the benchmark interests of the project must be higher than its opportunity cost. The opportunity cost refers to the phenomenon of giving up the highest value of some other things for the achievement of a certain thing. It can also be understood as the phenomenon that the cost opportunity of the decision is the one of the highest value in the discarded options when only one option can be chosen among many plans. It also refers to the manufacturer's behavior of investing the same productive factors into other industries to achieve the highest interests (Zhang Huijie, 2008).

Sixth, the last main factor for consideration is the rate of subsidy to risks. In the life period of the whole project, along with the construction, production and operation of the future project, both the internal and external economic environment will change unexpectedly, so the incomes and expenditures of the project may be different from the originally expected ones. Disadvantageous changes may bring risks to the decision of investment. In order to compensate for the possible losses of risk, the investors should consider out a suitable rate of subsidy to risks. Only when the subsidy to risks is fulfilled will they be willing to invest (Liu Xiaojun, 2007).

5.2 The Construction of the Models of the Guiding Line of the Reasonable Return to the Private Investors in the PPP Project in Our Nation

Weighted Average Capital Cost Method (WACC) is mainly used to comprehensively explore the structure of capital and the cost of funds in the PPP project. The cost of construction in the PPP project is estimated through the mode of weighted average so as to get the guiding line of the reasonable return to the private investors in the PPP project. However, for it is difficult to achieve the data in the aspect of the rate of interests of the equity capital through the WACC, the estimation of the rate of interests of the equity capital can only be achieved through the Capital Assets Pricing Model (CAPM). Thus, in the construction of the model for the rate of return to the private investors' investments, we applied the two models of CAPM and WACC. In the following parts, the author will make a detailed analysis of the model.

First, the model of the Weighted Average Cost of Capital mainly refers to the average figure of the paid cost or expense when the funds are achieved through various channels in the constructive process of the PPP project. WACC will be influenced not only by the structure of funds in the construction of the PPP project but also by the cost of capital in different financing channels. Generally speaking, in calculating the Weighted Average Capital Cost, the weighted average value is usually expressed according to the ratio of different financing forms in the construction of PPP projects in the water industry. The specific formula is as follows:

$$I = \sum_{j=1}^n K_j * W_j$$

In the above formula, I refers to the WACC of the PPP project, K_j refers to the cost of capital of the No. J kind of financing mode, and W_j refers to the proportion of the funds that is achieved through the No. J kind of financing mode over the total funds. In the actual operation of the PPP project, the funds for the project generally originate through various modes, such as the long-term credit funds, the short-term credit funds, the securities of fixed gains and the securities of equity. It is because of the existence of the large difference in the proportion of the different forms of financing funds in the financing of different PPP projects that the structure of capital of the PPP project is formed. For the gains of corporate funds belong to all the investors that provide funds to the corporation, this gain should be the expected total gain that is weighted by the respective contribution of shareholders and creditors, and the cost of capital of the corporation should be the weighted average of each cost of the financing source. In order to simplify the model, generally it is supposed that the financing structure of the PPP project mainly includes two kinds of origins of funds: the debt capital (D) and the equity fund (E). Combined with the model of Weighted Average Capital Cost, the financing cost of the PPP project in the water industry can be expressed as follows:

$$WACC = I_d \times \frac{D}{D+E} + I_e (1 - T) \times \frac{E}{D+E}$$

In the above formula, WACC refers to the weighted average capital cost when it is financed through debts and equity in the PPP project, I_e refers to the rate of unit cost of the after-tax equity capital in the financing of the PPP project, and I_d refers to the rate of unit cost of the pre-tax equity capital in the financing of the PPP project, T refers to the tax rate, E refer to the total amount of the equity capital, and D refers to the total amount of the debenture capital.

Second, the debt capitals of the PPP project of the water industry mainly include the long-term and short-term loans (L) and the debenture financing (D), and the debt costs of these two parts are mainly from the gains that are demanded to be received by the creditor when providing funds. Here, we suppose the cost of the long-term and short-term loans (L) as the cost of loaning (IL) and the cost of the debenture financing (D) as the cost of debenture (ID). Among them, the cost of loaning (IL) is the interests that should be paid in the loaning process. It is a fixed figure. The cost of debenture (ID) is the cost that was produced in the process of issuing debentures. Usually, it is not a fixed figure.

The determining of the cost of debenture (ID) usually happens in the following two situations: Firstly, the debentures that are issued by the corporation are undue, and they are still publicly traded on the bond market. Secondly, by issuing new debentures, the corporation matches other debentures of the same residual period. Under these two kinds of situations, the cost of debenture or the rate of return in maturity can be estimated in combination with the formula in assessment of the value of the debentures:

$$B = \frac{C \times F}{(1+I_B)_1} + \frac{C \times F}{(1+I_B)_2} + \frac{C \times F}{(1+I_B)_3} + \dots + \frac{C \times F}{(1+I_B)_N} + \frac{F}{(1+I_B)_N}$$

In the above formula, B refers to the issuing price of the debentures, C refers to the annual rate of interests of the debentures, F refers to the face value of the debentures, I refers to the cost of debentures or the rate of interests in maturity, and N refers to the period of maturity.

In addition, it is difficult to directly get the cost of equity capital which should be calculated through the model of fixing the price for the property. Currently, the generally used model to measure the cost of equity capital is the Capital Assets Pricing Model (CAPM), and the formula for calculation is as follows:

$$I = I_f + \beta_e \times (I_m - I_f)$$

In the above formula, I refers to the rate of return of the equity capital, I_m refers to the expected rate of return on the market, I_f refers to the risk-free interest rate, and β_e refers to the systematical risk of the equity capital. Generally speaking, the expected rate of return on the market (I_m) is expressed through the average rate of return on the stock market, for example, CSI 300 or Shanghai Stock Exchange Index and so on. The risk-free interest rate is the lowest level of rate of return that can be achieved by the investor of the minimum interests, often expressed by the rate of return of the national debt. To some extent, it is difficult to estimate the systematical risks of the equity capital β_e , so the Modigliani Miller Models and the Capital Assets Pricing Model can be applied in the calculation.

The Capital Assets Pricing Model (CAPM) can be used to calculate the cost of equity capital in the rate of return to investment in the PPP project. The model mainly analyzes that when the financing is performed through the mode of equity in the PPP project, its expected cost equals the sum of the risk-free rate of return on the financial market and the index of the systematical risks that multiplies the risk-free premium on the average marketing return of the project.

Based on the above mentioned three kinds of models, from the perspective of the private investor's cost in the PPP project, we can get the guiding line of the reasonable return to the private investors in the PPP project of our nation.

5.3 Empirical Analysis to the Guiding Line of the Reasonable Return to the Private Investors of the PPP Project with Water Industry As an Example

Due to the large differences among the guiding lines of the reasonable return to the private investors in the PPP projects of different industries, in this part of analysis, the author will mainly make empirical analysis with the data of the PPP project of water industry. First, the author selected the data of the benchmark rates of depositing in the banks from 2003 to 2016, applied the average value of the entire interval as the measuring index of the risk-free rate, and got a specific value of 3.75%. Second, we took advantage of the index of the stock market to measure the expected market rate of return. We mainly selected the composite indexes of Shanghai Stock Exchange from 2003 to 2016 and got the expected market rate (I_m) of return as 12.89%. Based on the data of the stock market of the water industry, it can be calculated that the index of systematical risks (β_e) of the water industry was 1.04. Substituting the three pricing factors into the CAPM model, we can get the financing cost of issuing equity securities in the financing of the PPP project of water project:

$$R_e = I_f + \beta_e \times (I_m - I_f) = 3.75\% + 1.04 \times (12.89\% - 3.75\%) = 13.26\%$$

With a further combination of the WACC model and the CAPM model, we can reach the result of the guiding line of the reasonable return to the private investor in the PPP project of the water industry of our nation:

$$\begin{aligned} WACC &= I_d \times \frac{D}{D + E} + I_e(1 - T) \times \frac{E}{D + E} \\ &= 13.26\% \times 25\% + 6.01\% \times (1 - 25\%) = 7.82\% \end{aligned}$$

Therefore, the guiding line of the reasonable return to the private investor in the PPP project of the water industry was 7.82%.

6. POLICIES AND SUGGESTIONS

The rate of return to investment in the PPP project not only influences the private investor's enthusiasm in joining into and constructing the PPP project but also provides references to some extent to the checking of the governmental departments on the characteristics of the public goods. Thus, on the basis of the analyzed conclusion of the reasonable rate of return to the investment in the PPP project, we can offer policies and suggestions to the reasonable mechanism of return to investment in the PPP project respectively from the perspective of the private investor and the governmental departments.

First, the governmental departments should guide the reasonable rate of return to investment in the PPP project, ensuring that the reasonable rate of return to investment should be limited within the reasonable extent. Generally, there is a "negatively correlated" relationship between the private investor's reasonable rate of return to investment and the social welfare that is brought by the infrastructure of the PPP project. When the private investor's reasonable rate of return to investment is excessively high, the private investor will overly pursue the profits in the operation of the PPP project, damaging the nature of the public goods of the infrastructure. Thus, the governmental departments should provide monitoring and guidance to the reasonable rate of return to investment in the PPP project. They should not only maintain the private investors' interests in the PPP project but also ensure the quality of the infrastructural services in the construction of the PPP project. As is calculated and estimated in this thesis, the level of the reasonable rate of return to investment in the PPP project of the water industry of our nation is 7.82%. In order to ensure the nature of public goods of the infrastructural services in the PPP project and prevent the overpricing of the infrastructure services, the governmental departments should directly establish guidance to the infrastructural services to reasonably limit the private investor's overly profiting.

Second, the CAPM model and the WACC model should be used to determine the guiding line of the reasonable rate of return to the investment in the PPP project. In this thesis, the method of estimating and calculating the reasonable rate of return to investment in the PPP project

through the CAPM model and the WACC model was introduced in details, and the result indicated that the model can be smoothly applied in the estimation of the reasonable rate of return to investment in the PPP project. In the empirical analysis, we only introduced the factor of inflation to consider the determining of the reasonable rate of return to investment in the PPP project of different levels of rates of inflation. Actually, when the whole macroeconomic environment change, the reasonable rate of return to investment in the PPP project can be dynamically adjusted in reference to the introduction of the factor of the rate of inflation into the factor of macroeconomic environment. Under such kind of pricing mechanism, the problem of delay of the pricing model can be effectively avoided in the static pricing model. Once monitoring that the reasonable rate of return to investment in the PPP project of the water industry exceeds the reasonable extent, the governmental departments can adjust the reasonable rate of return to investment through the adjustment and control of the influential factors of the reasonable rate of return to investment.

Third, the disclosure of the information of the private investor's reasonable rate of return to investment should be further optimized. The governmental departments of our nation have issued relevant policies to guide the benchmark rate of return to investment in the PPP project, and these documents of policies provide significant references to the consultation and negotiation of the rate of return to investment in the PPP contracts. However, the reasonable rate of return to investment in specific PPP projects can't be simply generalized. In the determining of the private investor's reasonable rate of return to investment, the mechanism for the competition in the market should also be introduced to promote the construction of the infrastructures.

Actually, the reasonable rate of return to investment in different types of PPP projects are different. Even if in the PPP projects of the same kind, if the chosen PPP operational modes are different, if the investing and financing policies provided by the government are different, or the risks shouldered by the private investors are different, the reasonable rate of return to investment should also be different. Thus, in determining the private investor's reasonable rate of return to investment in the specific PPP project, the public and fair mechanism of market competition should also be introduced.

REFERENCES

- [1] Wei, Liu. Theoretical Explanation of PPP Mode and Its Practical Examples [J]. *Reform*, 2015(1):78-89.
- [2] Jianyuan Zhu & Hailing Wang. Some thoughts on the Cooperative Mode between Government and Social Capitals [J]. *Administration Reform*, 2015(6):79-83.
- [3] Zongbo, Xie. Experience and Enlightenments of the PPP Model Application in UK [J]. *China State Finance*, 2016(11):62-63.
- [4] Chengzhi, Xiao. A Comparative Analysis of the Development Paths of the PPP Models between China and Britain [J]. *Southwest Finance*, 2016(12):44-48.
- [5] Haojia, Zhou. International experience of PPP Development [J]. *China State Finance*,

- 2016(4):79-81.
- [6] Junwei Pei & Wang Jie. Partnership contract in PPP of France [J]. China Government Procurement, 2016(7).
- [7] Kang, Jia. International Experience and Enlightenment of the PPP Model (1) [J]. Economy, 2015(16):9-9.
- [8] Qiong, Wu. An Exploration of the Application of the Financing Mode in the PPP Project of China [M]. Dongbei University of Finance and Economics, 2005.
- [9] Jian Song. A Research on the Decision Path of the Project of PPP Model of Overseas Railways [J]. Construction Economy, 2012(6).
- [10] Zhihong, Yang & Kai Qiu. International Experience and Enlightenment of the PPP Model in Financial support [J]. China State Finance, 2016(7):43-44.
- [11] Zhiguo, Ding, Yingtao, Geng&Zhaohui Tan. A Study on the Dynamic Characteristics of the Term Structure of the Interest Rate of the National Debt in China's Market [J]. Statistical Research. 2016 (1).
- [12] HaibingGu, Hongyan, Shi and Wei, Liu. A Structural Analysis of the Loan Interest Rate of Banks in China [J]. Academic Research, 2006 (3).
- [13] Shouhua, Li, Songshan, Lan and Zhijun, Xie. A study on the Pricing Mechanism of the Rate of Loan Interest of Commercial Banks [J], Finance Economy, 2009(2).
- [14] Huijie, Zhang. A Study on the Method of Calculating the Financial Benchmark Rate of Return of the Development Project of Commercial Housing [D]. Xi'an: Xi'an University of Architecture and Technology, 2008.
- [15] Xiaojun, Liu. Engineering Economics [M]. Xi'an: China Building Industry Press, 2007.
- [16] Operational Guidelines for the Models of Cooperation between Government and Social Capital (A Trial Version) Finance [2014] no. 113, website: [http:// jrs.mof. gov. cn/zhengwuxinxi/zhengcefabu/201412/t20141204_1162965.html](http://jrs.mof.gov.cn/zhengwuxinxi/zhengcefabu/201412/t20141204_1162965.html).
- [17] Guidelines for the Demonstration of the Fiscal Bearing Capacity of the Cooperated Project between the Government and Social Capitals Finance [2015] no. 21, website: [http:// jrs.mof.gov.cn/zhengwuxinxi/zhengcefabu/201504/t20150414_1216615.html](http://jrs.mof.gov.cn/zhengwuxinxi/zhengcefabu/201504/t20150414_1216615.html).