

Case Study on Securitization of PPP of Beijing Capital Co.Ltd. Stock in China

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Abstract: *In recent years, the China Securities Regulatory Commission and the National Development and Reform Commission have launched a large number of PPP project policies and notices, and local governments have also built a large number of local public infrastructure via the PPP model. China's PPP project has entered the golden period of development. However, under the background of the rise of PPP mode, China's social capital participation has gradually declined. Regulatory Commission and the National Development and Reform Commission issued the 2698 document at the end of 2016. Subsequently, In March 2017, CITIC Securities assisted the first stock of the company's PPP project securitization and successfully listed in the Shanghai Stock Exchange, indicating that China's PPP project asset securitization has gradually developed. Based on this, this paper hopes to carry out some practical and theoretical significance for the development of China's PPP project in the field of public facilities through a profound analysis of the first implementation of the PPP project asset securitization case, the first set up of the stock water treatment PPP project securitization.*

Keywords: PPP (Public-Private Partners); Asset-backed securities; Sewage treatment; Comparative analysis

1. Introduction

In his research, Jonathan P. (2009) pointed out that at present, governments all over the world are facing a dilemma, which is constrained by their own financial situation, the lack of government investment in infrastructure, and the slow progress and inefficient operation of government-funded infrastructure projects. In conclusion, PPP model has many advantages that government infrastructure projects need urgently, including complete pre-design, clear implementation nodes and related monitoring procedures, and different markets, different projects will present different results. Spackman (2011) in his research, the PPP model of public and private parties to participate in the operation of the project in which mode is conducive to improving the efficiency of project operation, improve social efficiency; and by controlling the degree of participation of social capital to achieve the overall improvement of project income and distribution of fairness.

The study of PPP model in China started late, and many scholars have different research directions on PPP model, and the practical operation is still in the exploratory stage. Wan Dongjun and Wang Yaowu (2010) pointed out in their research that small towns in China are facing the predicament of lack of funds when they are carrying out infrastructure construction which is crucial to their development, and PPP model is a good medicine for small towns to broaden the sources of construction funds and solve their own development problems. The application status and development prospects of PPP mode in town are analyzed. The PPP mode suitable for small town infrastructure construction is designed. The financing environment, participation mode, cooperation mechanism, supervision mechanism and evaluation mechanism are expounded in detail. Meng Chun and Gao Wei (2014) analyzed the similarities and differences behind the PPP model by sorting

out several countries with more mature development, and concluded that the success of the PPP project needs to be achieved in several aspects: the government vigorously supports and guarantees the implementation of incentive model for all parties involved, the PPP participants reasonable risk distribution, in operation. Professional support and perfect legal environment in the process.

Asset securitization started early in Western countries, has experienced more than 30 years of development, especially after the subprime mortgage crisis in 2008, from the practice to wind control, each link has been relatively detailed and complete. In his research, W. Alexander Roeve (1998) pointed out the reasons why asset securitization is favored by the market, that is, compared with traditional financing methods such as bank loans, corporate debt, asset securitization has: low financing costs, increased liquidity, through off-balance-sheet financing operations to reduce the ratio of assets to liabilities, and so on. Financing mode requires relatively few information disclosed by enterprises. Schwarcz (2002) pointed out in his research that in the practice of asset securitization, the division of the underlying assets or non-liquidity underlying assets with poor liquidity in securitization can realize the risk division between the underlying assets and other assets owned by the original equity holders, and this operation has great cost-effectiveness.

In his research, Xiao Lin (2003) put forward a tentative plan on the asset securitization of infrastructure from the perspective of financing decision-making and risk control, and put forward a series of operational ideas on the asset securitization of hydropower and coal fee income rights. Xu Dong (2010) analyzed the impact of asset securitization on financial statements, and concluded that asset securitization is the sponsor's purpose of financing by selling future income, which is essentially different from the financing

method of obtaining funds through their own credit level. In the process of asset securitization, the sponsor sells the asset to SPV and obtains the capital, which can be considered that the asset is no longer on the original balance sheet.

2. Case Description

1) The composition of basic assets

The basic asset of the sewage treatment of the Initial Share Company is the revenue right of the sewage treatment fee held by the Initial Share Company on the date of the establishment of the Special Plan and transferred to the administrator CITIC Securities for a specified period in the future. Specific period refers to February 1st to January 31st next year. According to the asset support specifications of the first share sewage treatment PPP project, the basic assets involve six sewage treatment plants and belong to six franchise projects of four original owners.

2) The main body of participation.

- Primitive Equity Owner: The so-called Primitive Equity Owner refers to the initial owner of the underlying assets. This case is based on
- Fundamental assets are the right to collect fees and profits from the four subsidiaries of the Initial Share, so the original rights and interests
- People are the four sewage disposal subsidiaries of the company.
- Issuer Manager: in this case, the issuer is in line with the manager. The so-called managers provide intermediary services for investors. The plan statement for the first joint-stock sewage treatment PPP project case shows that the manager is Citic Securities Co., Ltd.
- Asset service institution: asset service institution is the manager of securitisation basic assets. Its main responsibilitiesBy collecting the cash flow generated by the underlying assets, keeping the funds and transferring them after maturityTo the trustee, ensure that the full amount of funds is transferred to the corresponding

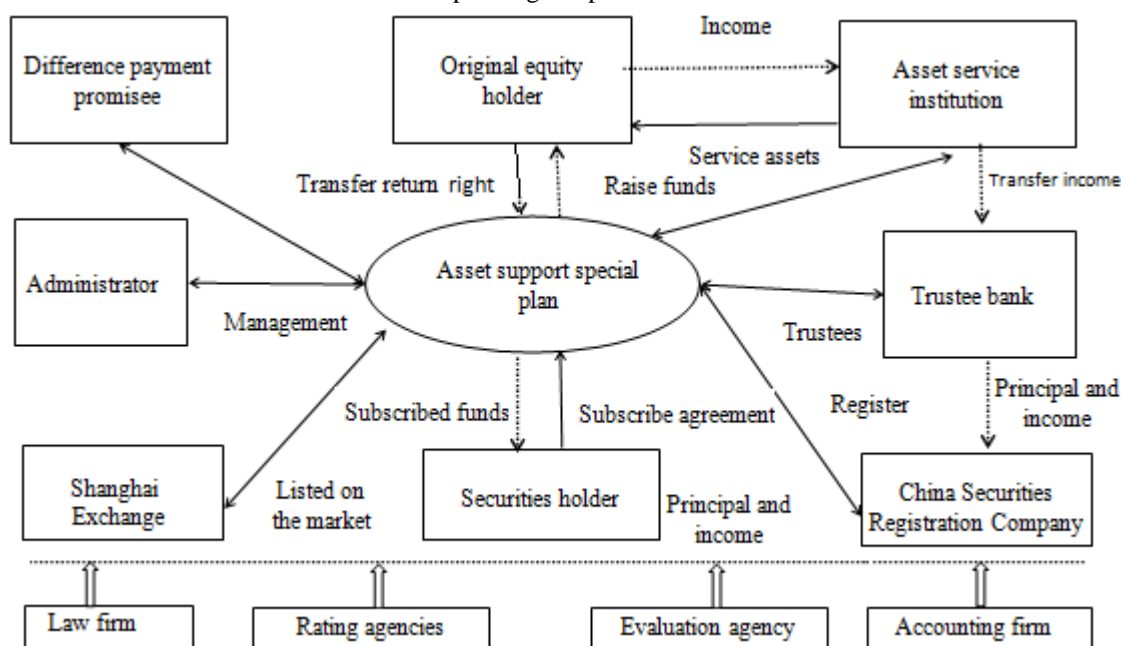
account in time. According to the service agreement issued in the prospectus. Now Beijing is the first Limited by Share Ltd to serve as an asset service institution.

- Difference payment undertaking
- Repurchase and redemption promisor: As a way of upgrading, the difference payment commitment refers to the balance of the initial shares of the promisor after the special plan termination date, when CITIC Securities, the administrator after the liquidation plan, finds that the special planned assets are still insufficient to cover the funds required for all priority asset-backed securities. Forehead and make up for yourself. The difference payment undertaking and liquidity support institutions are Beijing's first Limited by Share Ltd itself.
- Custodian: custodian refers to the operating body of custody funds. Trusteeship in accordance with the prospectus
- The trustee of the special plan is the head office of CITIC Bank.
- Supervising Banks: According to the plan specification, it is understood that the supervising bank is the Beijing Guanhu International Branch of CITIC Bank.
- Credit rating agencies: the credit rating agency refers to the China integrity securities assessment Co., Ltd.
- Accounting Firms: the same as accounting firms (special general partnership).
- Investors (holders of asset-backed securities): Any holder of asset-backed securities, including priority asset-backed securities holders and secondary asset-backed securities holders.

3) Transaction structure and operation process

Trading structure

The following is the transaction structure chart of the first PPP project of stock sewage treatment asset securitization, in which the solid line represents the legal relationship between each other, and the dotted line represents the transformation path of cash flow.



Operation process

a) Preparation stage

- Building asset pools and special purpose vehicles.

In February 2017, the Initial Share identified the basic assets as the proceeds of sewage treatment from Linyi Initiative, Borui, Yinan Initiative, Liangshan Initiative and Tancheng Initiative in March, June, September and December of each year from the beginning of the planning until the next 18 years. These sewage treatment and water treatment companies are in the process of expansion and have a 30-year franchise. Assets and liabilities are good and stable and full cash flow. These basic assets are organized into an asset pool. CITIC Securities, as a special purpose vehicle SPV for managers to set up asset support programs, is prepared to purchase the right to return on basic assets in a specific period in the future after raising funds.

- Setting up an account

Firstly, CITIC Securities and Initial Shares set up six accounts, namely, the original equity payer's collection account, the fund collection account, the reserve account for repurchase and redemption, the supervision account, the fund raising account and the special plan account.

- Credit enhancement and credit rating

In order to further promote the smooth implementation of the special program, this case uses credit upgrade and rating and other ways, on the one hand, it can improve the credibility of basic assets, introduce investors to participate in it, on the other hand, it can reduce the initial equity fund-raising costs. There are two ways to enhance the credit of Initial Shares: external upgrading and internal upgrading. The external upgrading means that Beijing Initial Shares Company Limited undertakes the supplementary obligation and liquidity support to the balance; while the internal upgrading relies on the design of the asset pool itself and the excess cash flow coverage, giving priority to the beneficiary certificates of this special project. Level two and secondary. At the same time, the cash flow for the next 18 years is analyzed and tested. The cash flow is predicted to reach 2.8 billion yuan, far exceeding the financing of 530 million yuan, which guarantees the planning.

b) The specific process of capital and securities operation

- Issuance of securities

After the credit enhancement, CITIC Securities begins to sell securities on the stock exchange. Investors will sign a subscription agreement with their managers before investing to obtain asset-backed securities. And the funds to be subscribed are managed by CITIC Securities, the manager. Finally CITIC Securities successfully raised the required funds.

- Transfer of underlying assets

According to the asset trading agreement signed, CITIC Securities will issue specific payment instructions to the custodian, telling the custodian that CITIC Bank will

transfer the raised funds to the account designated by the initial share, thus realizing the transfer of basic assets.

- Late protection and supervision

According to the agreement, the four subsidiaries of the original shareholder's initiative share still hold the obligation to ensure the continuity of sewage treatment on the basis of the basic assets. The supervisory bank CITIC Bank supervises the sewage treatment fees belonging to the basic assets of the special project according to the supervision agreement, so as to ensure the safety of the funds. CITIC Securities manages the special planned assets, and the custodian, CITIC Bank, manages the planned assets. The parent company's initial shares assume the obligation to make up the difference, and undertake the repurchase and reserve redemption of the initial water 04 to the initial water 18.

- Late cash flow allocation

According to the previous agreement, CITIC Securities will issue allocation requirements to the custodian CITIC Bank. In accordance with the directive CITIC Bank set aside the full amount to pay the current priority asset-backed securities principal and the current securities income in turn. After payment, if the current priority asset-backed securities are found to be distributed according to the expected end, all the remaining funds in the account will be allocated to investors in the sub-asset-backed securities.

4) Risk isolation means

Through the arrangement of transaction structure, CITIC Securities has partially isolated the cash flow related to basic assets from other cash flows of original equity holders by setting up fund collection account, original equity payer's account and special plan account. On each revenue pooling day, the Initial Share acts as an asset servicer in the collection accounts of its four subsidiaries. All other accounts other than the basic assets recovery account and the collection account are transferred to the fund collection account. In every one. Before the cash flow transfer, the Beijing Initiative Company transfers all the funds in the fund collection account into the special plan account according to the relevant agreement. Therefore, the cash flow from the basic assets of each income collection date will be collected to the first capital stock. In a fund collection account, a specific time is assigned to a special plan account, so it is set up and converted through multiple accounts. To a large extent, it reduces the risk of cash flow confusion.

The funds in the special plan account are completely independent of the plan manager, the original owner, the custodian and other relevant parties to the special plan. Therefore, a certain risk segregation has been formed. However, it should be noted that several sewage treatment plant projects were previously signed BOT and TOT mode, and according to the sewage treatment concession financing mode, if the case of the first shares of the four subsidiaries within the period of bankruptcy, as a state-owned enterprise, Beijing Initiative Co., Ltd. should be rectified. As a SPV,

CITIC Securities is difficult to control the rights and interests of sewage treatment, so there is no real risk isolation objectively.

5) Credit enhancement

a) Internal enhancement mode

1. Priority / sub arrangement

The special plan will be the principal and interest repayment order hierarchical design, pioneering shares learn from a lot of asset securitization projects to achieve internal credit promotion. Priority asset-backed securities and subordinate asset-backed securities are classified according to different income characteristics and risks. In terms of the order of interest repayment, the priority stock asset-backed securities are superior to the secondary asset-backed securities.

2.Excess cash flow coverage

In addition to grading design, the initial shares also used the excess cash flow to cover this way. According to the results of the credit rating, the cash inflows generated by each period of basic assets are far higher than the current priority asset-backed securities payment. Subsequently, the initial shares were tested under stress, and the results showed that the coverage multiple of priority asset-backed securities payments was greater than 1.2 under various assumptions and backgrounds, so this approach was again prioritized internally. Asset backed securities provide sufficient credit support.

b)External enhancement mode

1.Provide full liquidity support.

As a liquidity support institution, Initial Shares need to ensure the full recovery of the underlying assets transferred to the fund pooling account; in order to ensure the stable operation of the subsidiaries of the Initial Company during the period of existence, avoid the cash flow shortage or insufficiency caused by the transfer of the underlying assets recovery or any other reasons and affect its continued operation. When this happens, full support will be given to the original equity holders in terms of funds, management and operation during the period of the special plan, so as to ensure the continued and stable operation of the original equity holders during the period of the special plan.

2.Setting up a difference payment undertaking.

Balance Payment Commitment means that after the special plan termination date, when the manager CITIC Securities finds that the special plan assets are still insufficient to pay the funds needed for all the priority asset-backed securities, the balance will be paid by the promisor's initial shares to make up the remaining balance. It should be noted that in this case, the difference payment undertaking is the first company to create itself.

3.The initial stock repurchase and redemption commitment.

In this plan, the initial shares of the initial water 04 to the initial water 18 asset-backed securities every three years can be repurchased or redeemed. Accurately, the holder of priority asset-backed securities can choose to sell back the share of the priority asset-backed securities held after the

fourth period to the initial share in part or in whole. Summing up the above credit enhancement methods, we can find that the special program lacks some of its own credit enhancement methods to provide guarantees, such as the initial shares themselves to provide adequate guarantees. Substituted by excess cash flow coverage and liquidity support, we can find that the PPP project asset securitization has a more unique way of credit enhancement.

3. Case analysis

The analysis of financing motivation.

(1) From the perspective of industry and company

1.Industry driven requirements

For a long time, China's water industry is a capital intensive industry. Water Service Company needs to invest a lot of money to purchase equipment, build new waterworks and lay pipelines. With the expansion of urbanization and industrialization, the pressure of sewage treatment plants is gradually increasing. The existing sewage treatment capacity can no longer meet the requirements of social production for sewage treatment. Therefore, during the 13th Five-Year Plan period, the NDRC and the Ministry of Housing and Construction put forward higher requirements for the scale and rate of sewage treatment. Water companies need to further increase investment in sewage treatment facilities and supporting pipeline network construction to meet the requirements of industry development.

At the same time, a large number of sewage disposal plants in the sewage treatment plant are directly discharged into nature. Since 2016, more than 140 environmental protection policies have been promulgated, including environmental protection tax, ecological civilization construction, monitoring and supervision of vertical management and so on. On this basis, the pioneering shares rely on the "new environmental protection law" to actively explore the market, and strive to promote the standardization of sewage treatment project construction and management control system, strive for more financing channels to reduce financing costs. Since 2015, the company has won 20 PPP projects with an investment of up to 16 billion yuan. The projects involve different fields such as village sewage and municipal water supply and drainage. The first share PPP securitization project belongs to the first single PPP project asset securitization in the exchange market. This new financing model can get more subsidies and attention, which provides a good solution to the current financing channel dilemma.

2. Business transformation and expansion needs

As one of the ten leading environmental protection enterprises in China. Initial joint-stock companies mainly concentrated on the comprehensive environmental business of sewage treatment and ecological treatment in villages and towns. In 2010, the company launched solid waste business and began collecting and burning garbage. Subsequently, the first successful acquisition of New Zealand's largest solid waste disposal company, to bring a lot of benefits to

the company. Solid waste business has become an important performance growth point of first pioneering stock. According to the company's strategic plan, the first pioneering stock will continue to expand its strategy in the field of solid waste in the future. Next, the company's solid waste business will continue to expand and enhance professionalism.

At the same time, Pioneer began to actively expand industrial waste water business and other environmental protection industry emerging business, gradually improve the company's environmental protection industry chain. The scope of business has gradually expanded from traditional water treatment to comprehensive urban environmental management services with ecological environment as the core, such as river management, water environment management and sponge city construction. Different from the traditional sewage treatment business, industrial wastewater treatment technology includes chemical and papermaking classification, technical treatment means are diverse, the operation is more difficult. In 2016, Beijing Initial Shares sought cooperation with Membrane Technologies by participating in the creation of directional additional issuance of environmental protection technology shares. It can be found that in recent years, while ensuring the stable operation of various traditional businesses, the company has created a number of long-term development potential of environmental protection business development new ways and new models. Therefore, in the context of business transformation and scale expansion, the large demand for capital is inevitable a trend, how to solve the shortage of funds has become an urgent problem to be solved for the initial shares.

(2) analysis from financial statements

1. Long-term capital liabilities are high.

From 2013 to 2016, the total amount of non-current liabilities and liabilities of Initial Shares continued to grow, in line with the company's recent development. In terms of revenue, the initial stake increased from \$4.2 billion in 2013 to \$7.9 billion in 2016, but net profit decreased from \$840 million to \$640 million. The main reason is that the scale of debt financing guided by new investment projects under the environmental protection law continues to expand, increasing financial costs. In terms of liabilities, the total amount of the company's liabilities continues to increase every year. This paper holds that the company's liabilities will continue to grow in the future.

By the end of 2016, the total value of the initial equity liabilities was 26 billion yuan, including 10.7 billion yuan of current liabilities and 15.2 billion yuan of non-current liabilities. Among them, short-term loans are 1 billion 1 million yuan and long-term loans are 11 billion 241 million yuan. Careful observation found that since 2013, the initial stock asset-liability ratio has risen slightly, reached a peak in 2014, and then declined slightly. According to the comparative analysis of the company's industry, by 2016, the average asset-liability ratio of the environmental protection industry was 51.4%, and the company's

asset-liability ratio was slightly higher. In terms of short-term solvency, the mobile ratio increased from 1.29 in 2013 to 1.69. Therefore, the company's short-term debt in the operating income range, but long-term facing certain financial and debt pressures, need to control the level of leverage. Initial shares need to reduce the ratio of assets and liabilities and rationalize the level of the company's assets and liabilities structure through the construction of new financing channels.

2. Insufficient financing channels

Before the plan is implemented, the financing of the initial shares is mainly in the following three modes.

1) Stock Financing

In April 2000, the Beijing Initial Joint Stock Company issued 300 million RMB common shares, raising nearly 2.7 billion yuan. Initial shares use clear positioning through these funds, and gradually expand the company to 19 provinces in the country, business scale and industry status has increased significantly. In January 2015, the first private equity issue of 210 million common stocks was raised to 2 billion 50 million. In March 2017, just before the project was listed, the initial shares were again privately offered on the Shanghai Stock Exchange. The privately offered shares were not more than 10 institutional investors, not more than 4.5 billion yuan, investing in three water supply projects and four sewage treatment projects. It can be found that the capital is seeking a lot of capital to expand its business.

2) Bond Financing

By the end of 2016, the company actively expanded its financing methods. Among them, the initial share bond financing scale totals 13.1 billion yuan and the balance totals 57 billion yuan, including general short-term financing bonds, ultra-short-term financing bonds, medium-term bills, general corporate bonds and overseas RMB bonds. Most of these bonds are better than market interest rates. As shown in the following table. If the company through the bond refinancing will continue to increase the medium-term and long-term capital costs, financing channels remain single, asset-liability structure is difficult to optimize, difficult to long-term sustainability.

3) Credit Financing

In 2015, Pioneer shares signed a strategic cooperation agreement with the Industrial Bank, which provides 13 billion yuan in credit lines to the Pioneer shares by installments. The fund mainly helps the initial shares to construct a three-dimensional service network including headquarters, first-level branches and second-level branches. In the first half of 2016, the company received a credit line of 3.25 billion yuan, and the initial shares of maturing bank loans were repaid on schedule. For startups, short-term solvency will further increase if banks are sought to provide short-term loans of less than five years. If banks provide for long-term loans over five years, financing costs will be close to 5% based on the latest bank lending rate in 2017, and the initial shares will need to compensate the Societe Generale for loans over the next period of time.

It is noteworthy that after the planned issuance, the initial shares in the exchange for the first time private green corporate bonds, coupon rate of 5.5%. The scale of issue is 1 billion yuan. In addition to this project, Pioneer shares have successfully issued the first PPP project securitization products and green bond products, we can find that Pioneer shares are actively expanding financing channels for the transformation of enterprises.

Two. Analysis of basic assets

(1) Characteristics of basic assets

The basic asset of the first joint-stock sewage treatment PPP project is the revenue right of the sewage treatment fees of its four subsidiaries. Unlike the general asset securitization initial stock sewage treatment PPP project four subsidiaries have signed a franchise agreement, its basic assets and franchise has a direct relationship. As the franchise agreement has strict requirements on the transferee, the first share sewage treatment PPP project separates the profit right from the franchise for securitization. The right of operation and management is still handed over to the original equity holders to start up a stock subsidiary company for operation management. This article thinks that this is the most unique part of the foundation assets of the PPP project.

According to the documents issued by the SFC, the basic assets of the initial share sewage treatment PPP project should be considered: 1. precisely and clearly defined in law; 2. not within the scope of the negative list of the Ministry of Finance; 3. stable cash flow during the execution of the plan; 4. in accordance with the compliance of the Ministry of Finance PPP project; 5. transferable. 6. no other mortgage pledge rights are attached. Facts have proved that the initial shares do not meet the fourth requirements. Foundation assets of Initial Share belong to PPP stock items before 2014, and all the items entered Treasury Treasury Treasury are reviewed after 2014. The compliance of PPP projects of Initial Share Company is still in doubt. At the same time, No. 55 does emphasize that the securitization of PPP projects in China needs to enter the PPP project of the Ministry of finance. Therefore, the basic assets of the PPP project of the first joint stock water treatment project are not entirely in line with the requirements.

(2) Pricing analysis of basic assets

The asset pool of basic assets refers to a kind of asset portfolio composed of basic assets that generate cash flow in the future. The asset pool referred to in this paper is a combination of the revenue rights of the sewage treatment fees generated by the four subsidiaries of the Initial Stock Company in the next 18 years.

According to the PIP specification, the three elements of basic asset pricing are sewage treatment price, sewage treatment quantity and water fee recovery rate. On the price of sewage treatment, the franchise agreement stipulates the price of sewage treatment and price adjustment mechanism; on the quantity of sewage treatment, it stipulates the quantity of guaranteed bottom water. When the quantity of water is lower than the quantity of guaranteed bottom water,

the amount of guaranteed bottom water is settled. When the quantity of guaranteed bottom water exceeds the quantity of guaranteed bottom water, the water fee is settled according to the formula stipulated in the franchise. In terms of water recovery rate, the formula is $\text{water recovery rate} = x / 100\%$.

In the specific measurement, the paper first predicts the cash flow of the basic assets on each collection day after the establishment of the special plan in the static situation. Secondly, assuming other conditions remain unchanged, the cash flow of each collection day is forecasted under the condition that the sewage treatment volume is not higher than the guaranteed bottom water volume and the sewage treatment volume is increased by 2% in three years.

According to the final credit rating report issued by Sino-Credit, the basic assets of the initial joint-stock subsidiary company can generate stable and sustained cash flow income over the next 18 years. The total cash flow forecast income is 2 billion 800 million yuan, far higher than the total amount of 530 million yuan.

In this calculation, the actual water quantity of Zhongyinan Pioneer Company and Liangshan Pioneer Company is lower than the guaranteed water quantity, and the guaranteed water quantity is calculated according to the calculation rules. If we want to ensure the accuracy of the calculation, we need to have a proper and accurate estimate of the bottom water. What needs to be added is that it is difficult to guarantee a 2% increase in the discharge of sewage treatment plants every three years, because a number of initial joint-stock companies are currently under construction, before also because of the impact of the Huaihe River and pipeline network, sewage treatment plant output is far from meeting the requirements, the initial share PPP project securitization in the cash flow forecast of basic assets. There are risks.

Three. Analysis of securitized products

(1) Analysis of product structure design

The total scale of the initial stock sewage treatment securitization products reached 530 million yuan, of which the financing amount of priority and secondary income vouchers were 500 million yuan and 0.3 billion yuan respectively. Priority income certificates have 18 securities products, with a period beginning from 2017 and ending in 2035. The benefit of secondary income vouchers for the entire project operation period is not clearly indicated after the priority vouchers are paid.

Compared with the securitized products whose basic assets are green resource income rights, the initial shares have their own characteristics in terms of products and deadlines. In terms of product structure, Pioneer shares borrowed the characteristics of the previous sewage treatment asset securitization projects using priority and secondary hierarchical design model, and the issuance amount gradually increased with the development of time. Subordinate vouchers accounted for only 5.66%, which was roughly the same as the previous asset securitization

projects for sewage treatment issued on the Shanghai and Shenzhen stock exchanges. For example, Nanjing Public Holding Sewage Treatment Asset Securitization and Taixing Binjiang Sewage Treatment Asset Securitization are two typical projects issued by Shanghai and Shenzhen Exchange. Subordinate securities account for 6.02% and 7.41% respectively. These cases are maintained by the company itself as the holder of subordinate securities to protect the priority securities. However, due to the low proportion of subordinate securities, the degree of protection is relatively limited.

In terms of the time limit, the project financing lasted as long as 18 years, which is consistent with the financing period of PPP project, which is too different from the Nanjing Public Holding Sewage Treatment Asset Securitization and the Taixing Binjiang Sewage Treatment Asset Securitization. The terms of the two products are 6 years, and two projects have been successfully liquidated according to the latest data. In contrast, the term of the Initial Share Asset Support Program is as long as 18 years in order to reach agreement with the PPP project, which is an innovation of the model and is the demand of the development of the PPP project combined with the asset securitization model.

(2) Pricing Analysis of securities

The pricing of securitized products for the first share sewage treatment PPP project consists of two parts: priority and secondary product pricing. Priority product interest rates are fixed, using 3.70% and 3.98% in the first and second phases, and maintaining at 4.60% in the latter. It is paid every 3 months. The issue rate of secondary products has not been clearly pointed out. The overall cost of the first sewage PPP project ABS is 4.55%. Additionally, the capital cost of the initial stock sewage treatment Securitization Product issuance is about 4.7% on average. According to the benchmark interest rate for loans over five years issued by the banking sector in 2007, the benchmark interest rate for products over five years was 4.90%. Since PPP projects received a 10% discount on the cost of loans from banks, the decline was 4.41% after 10%. It can be found that the price of the initial stock sewage treatment securitization products is a little higher than that of bank loans, but considering the 18-year period involved, the capital cost is repaid in 18 phases, and the short-term repayment pressure is apportioned.

Four. Participants' analysis

As the first batch of PPP securitization projects in the Shanghai Stock Exchange of China, the first share sewage treatment PPP securitization project and the Nanjing Public Holding Sewage Treatment Asset Securitization project have many similarities, so this paper next carries on the comparative analysis to the two projects participants, and then discusses the characteristics of the first share participants.

There are many similarities between the two projects, for

example, the plan managers and the main underwriters have chosen CITIC Securities Co., Ltd. and the Shanghai Jintiancheng Law Firm are the law firms of the two choices. At the same time, the two projects have chosen the credit rating agencies in China. Estimate the company. It can be said that Pioneer shares in the main structure of participation in the choice of reference to the Nanjing Public Holdings sewage treatment. Initial shares at different points raise funds for the parent company by allowing its four water subsidiaries to act as original equity holders, using the operation of their underlying assets. The Nanjing public holding group only raises funds through its own basic assets operation.

At present, there are three kinds of SPV in China: SPT, SPE and SPC. Because SPC has not clearly indicated in our country's law, there are obstacles and shortcomings in its real bankruptcy risk isolation. The special asset support program belonging to the SPE has a good effect of bankruptcy isolation because it signs a sale contract with the original equity holders. In the initial project of securitization of stock sewage disposal income rights, SPE is the special purpose vehicle, and the securities firm implements the special plan to become SPE. Throughout the process, CITIC Securities hopes to set up a special program (SPV) to achieve the complete separation of basic assets from the four subsidiaries of the start-up company, so as to truly sell the so-called basic assets.

It should be noted that the basic asset of the initial share mentioned above is the right to collect fees from its four subsidiaries. This right of collect fees is a subordinate right arising from the franchise. Because the franchise right is not allowed to transfer between private parties at will, it must be strictly examined by the local government. Approval was passed. The share rights of the initial shares belonging to the franchise have not been transferred.

Second, the franchise contract was signed before 2014. In the contract, the local government will ask the parent company to terminate the operation of the PPP project and recover its management right in advance if the operator fails or the external environment changes, and the parent company will pay some compensation for the project itself. This situation led to the initial joint-stock sewage treatment PPP project did not really achieve effective bankruptcy isolation.

Therefore, it can be found that there are some defects in the bankruptcy isolation system in the PPP project which is the first stock sewage treatment securitization.

Credit enhancement and rating analysis

(1) Credit enhancement analysis

In terms of credit enhancement, there are many ways of securing PPP projects. By comparing with the special sewage treatment plan of Nanjing Public Holding Company, the credit enhancement of PPP project of sewage treatment securitization is analyzed.

The PPP securitization project of the first share sewage treatment has made some progress and improvements compared with the Nanjing Water Service in the way of credit upgrade, and the internal rating has increased the principal excess coverage. In terms of external ratings, the startup has added a liquidity support mechanism. Once there is insufficient payment in each issue, it can guarantee the insufficient funds that may be caused by accidents through other income. It is noteworthy that this external rating is similar to the first three other PPP projects securitization, no third-party guarantee. There is a certain risk in such product design, because both the differential payment and the liquidity support are undertaken by the credit-adding agent. The credit risk of the credit-adding agent is directly caused by the recognition degree of the product. The anti-risk ability and profitability of the sewage treatment PPP project of the subsidiary of the first stock company are easily neglected. .

(2)Credit rating analysis

In terms of the number and the object of the rating, the first share selected a credit rating company, Zhongxin Securities Evaluation Co., Ltd. In terms of rating frequency, according to the requirements of the plan specifications, the integrity securities evaluation companies need to track the whole special plan every six months, and also need to rating the special plan from time to time. In terms of rating content, it is necessary to consider the changes of basic assets, transaction structure, repayment of current securities, cash flow operation and stress test results, as well as the credit analysis of basic assets and original equity holders. If the adverse factors are found to result in a rating below AA+, the special plan will be suspended. Therefore, the number of ratings is higher and the rating scale is stricter. However, there are some shortcomings in the rating mechanism.

First of all, the special program lasts for 18 years. In such a long period of time, the credit rating of priority asset-backed securities is only to make an initial judgment on the possibility of repayment of the principal of the initial stock priority asset-backed securities. It is difficult to adjust the rating in time. Furthermore, four of the first four PPP securitization projects and the second PPP listed securitization projects belong to the AA + rating results, and five of the rating results are AAA. If something goes wrong during the course of the business, it is likely to result in a credit rating downgrade, and special programs that are downgraded to below AA + will be forced to stop. This is too harsh for the first single PPP securitization project, and it will also touch on the interests of investors. Thirdly, in terms of fee-earning rights assets, there are defects in the current credit rating agencies' evaluation system in terms of the quality of basic assets and the operational capacity of asset service agencies, which makes the first share PPP asset securitization project need strong guarantee to achieve high rating, in fact, the first share PPP project securitization foundation. The cash flow stability of assets is high, and the repayment party is more decentralized subsidiaries, the actual credit risk is low. Therefore, the rating mechanism

needs to be improved. In addition, the PPP project securitization of the main credit instruments are still limited, compared with the overseas market CDS, bond insurance and other market-oriented credit instruments in China's domestic securitization field is still lacking.

In a word, the PPP project securitization of Initial Share adopts a different way of credit rating and upgrading from the previous fee-earning rights asset securitization business, and the way of credit upgrading and rating is constantly upgraded. Although there are still some risks and shortcomings, but the special plan actively try new upgrading methods, generally speaking, more successful.

4. Suggestion

1) Strengthen the top-level design of law.

The State Development and Reform Commission (NDRC) and the Ministry of Finance jointly legislate and promote PPP in the regulatory body. The unclear functions often lead to functional disorders. This paper argues that our country has not yet classified its specific functions. Therefore, first of all, we should legislate clearly the PPP regulatory functions of various departments, for example, the NDRC is required to be responsible for the approval of PPP projects, and the Ministry of Finance is required to examine the process cooperation mode of financial expenditure on PPP projects. At the same time, a relatively independent regulatory body should be established to ensure that PPP projects are clearly and effectively supervised. Then, a number of systems need to be improved and clarified after research and analysis, including the following aspects: First, there are doubts about the bankruptcy isolation of SPV in PPP project asset securitization in China, in which the right of management is difficult to transfer with the right of income, leading to the PPP project asset securitization can not really be broken. Production isolation. Secondly, as the legitimacy of the financial subsidy is still questioned, the current listed projects are carried out through user-paid projects, and the four cases belong to asset-backed special projects, PPP project type is serious simplification. Therefore, in terms of project income sources, we can try to expand PPP securitization projects to the gap between financial subsidies and feasibility model. In the aspect of issuance, we gradually try to convert PPP securitization products from private offering to public offering, and strengthen the liquidity of products. Third, although China's current PPP project asset securitization trading structure in various forms, such as double SPV structure and PPP-REITs special structure securitization products successfully issued in the stock exchange, but there is not enough corresponding regulatory documents to support. Therefore, in order to promote the rapid development of PPP project asset securitization, on the one hand to establish a unified issuance and trading rules, on the other hand to establish the integrity of the entire link of the various types of subject files, do a good job of continuous management, to establish a good and orderly market.

2) Improve capital market mechanism construction

All along, the trading mechanism of China's capital market has been developing slowly, and the PPP project asset securitization will be PPP project and asset securitization two financing methods, the key lies in the liquidity of the secondary market to solve the problem of PPP project exit.

- Increasing and standardizing the securitisation products trading platform of PPP projects. At present, asset securitization of PPP projects in China only trades in the Shanghai and Shenzhen Stock Exchange, private equity quotation and inter-bank bond market, and PPP project securitization products are not fully standardized. We can learn from the standardized classification of corporate bonds and create a diversified market platform. Trading on multiple platforms, such as fixed income and bulk trading systems and exchanges, increases liquidity.
- Opening the market access of securitisation products for PPP projects. In the case of asset securitization of the first PPP project, the private placement system is adopted, with limited overall investors. Considering the future development of PPP securitization projects in China, the issue of PPP project securitization needs to be transformed from private placement to public placement, so that more individual investors can participate in solving the problem of insufficient liquidity and difficult exit of PPP project securitization.

3) Strengthen risk supervision and distribution

Like other financial products, there are many risks in securitisation of PPP projects. Facing these risks, we first need to establish a management system of PPP mode financial risk supervision. In the future, the all-round and whole-process supervision system is an important prerequisite to effectively prevent the risks of PPP projects. Therefore, it is necessary to establish the whole-process and all-round risk supervision system of PPP model and clarify the process in accordance with the feasibility study, procurement compliance supervision, financing risk supervision, operation risk supervision and termination supervision. The main body of supervision and corresponding responsibilities. Secondly, in the actual operation process, the risk of PPP project company and SPV is segregated by setting up a number of capital accounts for bankruptcy isolation design. At the same time, in order to avoid excessive risk transfer, it is necessary to build a diversified way of credit to reasonably distribute the risk so that the participants can reasonably bear the corresponding risk.

4) Enrich basic product types

Securities Regulatory Commission document 55 proposed that sewage treatment industry and environmental protection industry began to carry out PPP project securitization. According to the first and second approved PPP securitization projects, it was found that the basic assets of highway and sewage treatment fee income rights accounted for nearly 80%. In order to promote the development of PPP project securitization, the scope of basic assets should be expanded and more types of basic assets should be involved.

It is noteworthy that the basic asset requirement stipulated in the current document is the PPP project income right 2 years after the construction and operation. Therefore, most of the PPP projects in China are stock projects, but most of them are under construction. With the intensification of PPP project auditing, the compliance of PPP projects in China will be gradually strengthened. In the future, the restrictions on incremental PPP projects during development and construction should be relaxed.

5) Attracting medium and long-term institutional investors

Although PPP securitization has added a new investment channel to fund investors, the current investment target is mainly for short-term returns, lacking real medium-term and long-term investors. In this paper, firstly, according to the PPP project, we design an asset securitization product which involves the whole cycle of PPP project, and guide the social security fund, insurance fund and pension investors to participate in the value investment of PPP project securitization. Secondly, it is suggested that the regulatory authorities should lower the access standards of some investors, learn from the experience of the United States in introducing PPP funds, absorb market funds including PPP funds to invest in PPP securitization projects, and establish a sustainable and diversified investor structure. Thirdly, some preferential policies can be added to enhance the enthusiasm of investors to participate in the investment of PPP securitization products, such as commercial banks to reduce the proportion of capital investment in PPP asset securitization products, insurance companies to PPP asset securitization products to increase the recognition of repayment ratio.

6) Promote the development of assessment and evaluation institutions

According to the above, there are some risks in the operation of PPP project asset securitization. This paper argues that upgrading and rating agencies need to actively develop new evaluation methods, including qualitative analysis and quantitative analysis, on the basis of learning foreign evaluation techniques.

In the credit enhancement market, some market-oriented credit enhancement tools such as credit default swaps and bond insurance are added to optimize the credit rating system. This is because, on the one hand, CDS and bond insurance in foreign WBS mode have played a very high role in upgrading the development of asset securitization, on the other hand, these two tools are highly standardized and have begun to circulate and transfer in China's secondary market.

In the aspect of credit rating market, firstly, according to the requirement of China's policy on asset securitization of PPP projects, a reasonable PPP project rating mechanism is created to accelerate the pricing mechanism of ABS of PPP projects and promote the development of asset securitization pricing of PPP projects in China. Second, learn from international experience. Nowadays, the specialization of

third-party evaluation will become a trend of development. The development of foreign third-party evaluation is mainly based on the organization and specialization of experts. Therefore, the third-party evaluation agencies should be integrated and standardized, and the evaluation ability and professional standards of the evaluation agencies should be strengthened to ensure the stable operation of the whole special program.

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