The government's forced intervention in the ecological Public-Private Partnership project from the perspective of enterprises

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Abstract. Through the research method of questionnaire survey, the project uses principal component analysis and factor analysis to analyze the acceptance of the government's forced intervention. By identifying the risks of thirteen ecological PPP projects such as breakthrough technology risks, this paper summarizes the thirteen risk factors into six main factors. According to the information contained in the six main factors, combined with the actual situation in China, it provides a reference for the establishment of PPP contracts.

1. Introduction

At present, there is a lack of systematic analysis and quantitative research on the government's intervention in ecological PPP projects from the perspective of enterprises. Environmental protection has great potential for both public and private investors. Their implementation needs not only during the planning period but also between the two sectors[1]. Since 2003, China has been promoting the public and private partnership (PPP) procurement model in the field of waste energy incineration[2], effectively reducing and managing the risks of future PPP waste energy incineration projects, and formulating fair concession agreements and benefiting private investors. Some predecessors are more inclined to consider the government's risk sharing ratio from the government's perspective[3]. However, in the risk bearing aspect, the private sector has relatively weak aftermarket information asymmetry. Through the adoption of supervision and incentive measures, the effective risk in PPP is effectively transferred [4]. The public sector supports and helps PPP in a variety of ways: capital allocation; proportional debt guarantees; debt base; credit guaranteed finance and equity investments. The standard risk analysis model (the NPV risk tool supported by Monte Carlo simulation) helps government agencies and public institutions identify the most influential factors and consider the corresponding mitigation strategies [5]. Referring to the limitations of the PPP relationship on the law and its own nature, the relationship between the favorable laws and PPP is weak [6]. Public utilities PPP contracts assume that the government should be risk-neutral, but will bring huge risk-taking costs for agents [7]. If we build an easy-to-understand framework for markets, project cash flows, and ecosystems around PPP, we will understand public-private partnerships in the context of better infrastructure projects [8]. Through the analysis of international successful cases of renewable energy PPP practice, the key contributing to reducing the risk of specific renewable energy projects is identified [9]. The change of institutional arrangements in China must be consistent with the introduction of PPP. PPP's performance is closely related to its institutional environment [10]. Existing research has focused on infrastructure and high-risk industries, and how to reduce government risks. It
ignores the direct cause of government intervention and lacks the specific analysis of industry characteristics from the perspective of enterprises.

The purpose of this project is to improve the risk management model of related enterprises by analyzing the risk factors of government forcible intervention under ecological PPP projects. By combining the method of case analysis and quantitative research to identify the factors that induce the government to intervene the ecological PPP project strongly, we can further enrich and improve the risk management and decision-making theory of the related PPP projects, and make the related enterprises better guarantee the interests of the PPP model.

2. Research methods

Through the previous literature survey, the risk of thirteen characteristics of the ecological PPP project was identified, and a questionnaire was designed to investigate the attitude of the enterprise to the government intervention when these risk factors occurred. According to the rike11’s scale, the questionnaire divides the attitude of the enterprise into five grades, that is, the 1 level is very inconsistent, the 2 level is relatively incompatible, the 3 level is indifferent, the 4 level is more hopeful, and the 5 is very hopeful. Questionnaire survey was conducted by e-mail and paper questionnaire. The object of the survey is at least one of the business practitioners, banks and other financial institutions, related consultations, research institutions, and so on, which have participated in the PPP project of ecological construction and environmental protection. A total of 60 questionnaires were issued in this survey, and 51 were recovered. The recovery rate was 85%. The effective questionnaire was 40, the effective questionnaire rate was 78.5%, and the 11 invalid questionnaires were mainly leaky, and the answers were completely unsatisfied with the research requirements.

3. Conclusion

3.1. Reliability Analysis

In this study, SPSS22.0 was used to verify the reliability of Cronbach. The final reliability coefficient was 0.716, indicating that the results of this survey have good reliability.

| Table 1. Reliability statistics |
|-----------------------------|
| Name of Cronbach         | Number of items |
| 0.716                      | 13              |

3.2. Validity Analysis

In this paper, Kaiser-Meyer-Olkin (KMO) and Bartlett's spherical test method in SPSS22.0 were used for validity test. In this study, the KMO value was 0.623, and the Bartlett's spherical test showed a statistically significant level of Sig <0.001.

| Table 2. KMO and Bartlett Accreditation |
|----------------------------------------|
| Kaiser-Meyer-Olkin measures sampling suitability. | 0.623 |
| Bartlett's spherical check | About chi square | 162.583 |
| df                      | 78             |
| Significance            | 0.000          |

3.3. Principal Component Analysis

In this study, the 13 key risks of government involvement obtained from the questionnaire survey are of great significance to the risk management of PPP projects in China. These key risks are interrelated, covering all aspects of risk management related information, thus constituting the overall risk. These information reflect the weaknesses and advantages of the current PPP project risk management in
China, and provide effective suggestions for risk management. Through the analysis of this method, we can better identify the causal relationship between risk and different risk groups, and divide the variables of relatively independent risk groups.

Table 3. Communalities

|                                | Start | Retrieve |
|--------------------------------|-------|----------|
| Environmental and social risks | 1.000 | .887     |
| Design risk                    | 1.000 | .838     |
| Construction risk              | 1.000 | .889     |
| Completion (including delays and cost overruns) risks | 1.000 | .822     |
| Performance price risk         | 1.000 | .834     |
| Resource or investment risk    | 1.000 | .731     |
| Demand risk                    | 1.000 | .917     |
| Maintenance risk               | 1.000 | .839     |
| Force majeure risk             | 1.000 | .803     |
| Regulatory legal change risk   | 1.000 | .921     |
| Strategic risk                 | 1.000 | .720     |
| Early termination (including any compensation) risk | 1.000 | .750     |

3.4. Factor Analysis
The correlation coefficient matrix between key risks is analyzed, the correlation between key risks is found, and factor analysis is used to simplify the reduction of dimensionality, and the 13 key risks are replaced by a few comprehensive factors that contain most of the original information.

Table 4. Component score coefficient matrix

|                                | 1    | 2    | 3    | 4    | 5    | 6    |
|--------------------------------|------|------|------|------|------|------|
| Environmental and social risks | .267 | -.075| -.511| -.191| .221 | .130 |
| Design risk                    | .062 | .453 | -.165| .070 | .056 | .275 |
| Construction risk              | -.019| -.101| .568 | -.179| .111 | .063 |
| Completion (including delays and cost overruns) risks | .349 | -.045| -.110| -.012| .013 | -.037|
| Performance price risk         | .088 | .025 | .289 | -.013| .022 | .155 |
| Resource or investment risk    | .295 | -.41 | .055 | -.128| -.015| -.072|
| Demand risk                    | -.082| .039 | .052 | .104 | .787 | -.500|
| Maintenance risk               | -.121| .069 | -.061| .599 | .000 | -.009|
| Force majeure risk             | .047 | -.423| -.001| -.019| .068 | .047 |
| Regulatory legal change risk   | -.089| .056 | .075 | -.039| -.055| .813 |
| Strategic risk                 | .059 | .305 | .012 | -.275| .219 | -.204|
| Breakthrough technology risk   | .463 | .085 | -.349| -.123| -.151| -.069|
Early termination (including any compensation) risk | .077 | -.111 | .042 | .416 | .252 | -.141

In the component matrix, the typical representative quantity of each factor is not outstanding, and its meaning is not clear, which makes it difficult to explain and lose meaning. So this article turns to the common factor. The so-called common factor rotation is essentially the redistribution of information carried by the factor. In order to be more explicit and explicit, we cancel the small coefficient below 0.4.

Table 5. Rotating element matrix

| Element | 1 | 2 | 3 | 4 | 5 | 6 |
|---------|---|---|---|---|---|---|
| Completion (including delays and cost overruns) risks | .851 |
| Breakthrough technology risk | .826 |
| Resource or investment risk | .771 |
| Performance price risk | .689 |
| Force majeure risk | -.861 |
| Design risk | .816 |
| Strategic risk | .615 |
| Construction risk | .814 |
| Environmental and social risks | -.712 |
| Maintenance risk | .883 |
| Early termination (including any compensation) risk | .781 |
| Demand risk | .952 |
| Regulatory legal change risk | .957 |

The analysis of the key risks included by the 6 main factors can be divided into six categories: (1) the risk encountered in the construction period of the enterprise; (2) the enterprise's own planning risks; (3) the risk of the industry change (4) the risk of the business period of the enterprise; (5) the government shares the risk; (6) the risk of the force majeure shared by (6).

For the PPP project, the initial end and operation period of the construction period is the high risk period of [11], so the franchise agreement has been particularly emphasizing the construction risk and is borne by the social capital. His results of the data analysis show that most of the enterprises maintain a neutral state for the government intervention found in the construction period. In the international experience, the concession agreements include the limited rights to extend the date of completion, the right to terminate the project and the right to intervene, which is not consistent with
the output. The economic cost of the company will affect the evaluation of value for money and reduce the economic efficiency of the project. So once again, government intervention is completely feasible and compliant, but it is not worth the money. In the water environment control class PPP project, the government takes into consideration the reasonable standards, gives the reasonable water flow situation to the enterprise, and makes the enterprise reach the reasonable income expectation. As for the emerging PPP market such as China, due to the lack of relevant market or historical market data, the contract calculation is very complicated. For the intervention of the government, the enterprise has a more active attitude to seek a positive solution or claim compensation to ensure the enterprise's own certain profit demand.

The risk shared by the government and the share of the risk of force majeure are also one of the most critical risks, such as the close relationship between water environmental governance and public health supervision, and the amendments to the law by the previous Legislature are likely to have an impact on the water industry. This effect is likely to be asymmetrical. When this kind of risk occurs, the government and social capital are needed to cooperate to discuss and solve it. Therefore, enterprises also hold a positive attitude towards government intervention.

For governments, contracts usually provide minimal functionality / enforcement guidelines, while the private sector provides innovation and efficiency in detailed design. So in this part, most of the enterprises have very low satisfaction with the government intervention, especially the decision layer that does not want to intervene in their own decision-making level, and more expect to recover the work through self-regulation negotiation and improve the design.

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