

## **The Impact of Local Governments on the Asset Securitization of PPP Projects: An Empirical Study Based on Fuzzy-Set Qualitative Comparative Analysis**

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### **ABSTRACT**

*The asset securitization of Public-Private Partnership (PPP) projects is an effective solution to address the issues of financing difficulties, poor liquidity, and imperfect exit mechanisms in PPP projects, thereby promoting the implementation and development of regional PPP projects. As an important participant in PPP projects, this study examines the role of local governments from the government's perspective. By collecting information on the issuance of PPP project asset securitization in 30 provinces of China and using Qualitative Comparative Analysis (QCA), this paper analyzes the configurational patterns of PPP project asset securitization to explore the financing models and provide qualitative and quantitative references for the development of PPP projects.*

**Keywords:** PPP asset securitization; configurational analysis; qualitative comparative study

### **1. Introduction**

To accelerate infrastructure investment, construction, and operation while mobilizing the liquidity and participation of social capital, the Public-Private Partnership (PPP) model has been gradually implemented in various regions of China. The "Notice on Promoting the Use of Public-Private Partnership Model" issued in 2014 laid the initial foundation for the PPP model. In simple terms, the PPP model combines government and social capital to jointly engage in public infrastructure construction and public service provision, sharing benefits and risks through a long-term cooperative and coordinated model. The PPP model effectively alleviates the financial pressure on the government by addressing the large capital requirements and significant fiscal expenditures associated with public infrastructure construction. With the continuous advancement of urbanization in China, the number of implemented PPP projects has increased. However, PPP projects, which are primarily public construction or infrastructure projects,

involve large investments, long construction periods, and long return periods. Social capital invested in PPP projects is occupied for extended periods, making exit difficult and severely inhibiting liquidity. This has led to the emergence of PPP asset securitization.

Asset securitization refers to the process of "supporting the issuance of securities in the capital market through the cash flow generated by assets, and separating and reorganizing the returns and risks of the assets." Specifically, the asset securitization of PPP projects can promote the circulation and utilization efficiency of funds. By securitizing PPP project assets, the original rights holder can transfer the future cash flow benefits to investors, thereby obtaining immediate cash inflows. This not only improves the efficiency of fund usage but also helps the original rights holder to reinvest or develop other businesses. Additionally, the asset securitization of PPP projects can expand the scale and channels of financing. Through securitization, PPP projects can attract more investors, including individual and institutional investors. This not only increases the scale of financing but also diversifies the financing channels. Different investors have different investment preferences and risk tolerance levels, and therefore, diversified financing channels can better meet the financing needs of PPP projects. In summary, the asset securitization of PPP projects plays a positive role in promoting fund circulation, expanding the scale of financing, and broadening financing channels, which helps to promote the development of PPP projects and improve the efficiency and quality of public service supply.

Currently, a total of 43 PPP project corporate asset-backed bonds have been issued in China, with a total issuance scale reaching 41.616 billion yuan. However, in the national PPP comprehensive information platform project management library, there are 10,338 projects with a total amount of 1,678.19 billion yuan. It can be seen that although the practical application of PPP project asset securitization in China has developed, the overall securitization rate is low, and the issuance scale is relatively small. Despite the effective resolution of financing difficulties, capital liquidity insufficiency, and imperfect exit mechanisms by PPP project asset securitization, which is a highly potential financing direction, this project is an extremely complex and highly systemically related work. The academic community currently lacks a rational and clear understanding of its development path. Most existing literature studies this from the perspective of social capital, focusing on PPP project asset securitization product spread pricing, project risk control, and risk resolution of PPP project asset securitization from an auditing perspective in practice. As an important participant in PPP projects, local governments play a significant role, from the initial planning of the project to subsequent operation and control, with the "presence" of local governments visible throughout. According to data from the China Asset Securitization Analysis Network, among the existing 43 issued securitization projects, there is a significant difference in the proportion of each province. Sichuan Province has the highest number of PPP project securitization issuances with a total of 6 items, followed by Hubei and Shandong provinces with

3 items each. Some provinces also have securitization project issuances. However, Henan and Jiangxi, which have a high level and number of PPP landing projects in the Ministry of Finance's PPP project database (843 and 558 projects respectively), higher than Sichuan's 551 projects, have no securitization project issuances. All 31 provinces in China have PPP projects implemented, but only 17 provinces have actually issued PPP asset securitization products. What are the multiple reasons behind these provincial differences? What role do local governments play in this process?

This study will explore the issuance differences of PPP asset securitization products in various regions and the multiple antecedent factors behind them. For complex problems involving multiple antecedent variables, known as "multiple conjunctural causation," a combinatorial approach is adopted to explore the configurational patterns of PPP project asset securitization in each province from an overall perspective. Configurational pattern analysis is mainly based on causal complexity, exploring multi-dimensional characteristic clusters through the membership relations of sets. Currently, Qualitative Comparative Analysis (QCA) based on set theory has become a new method and tool for configurational pattern analysis and exploring complex causal relationships. Therefore, this study will use the QCA method to explore the different configurational patterns and result patterns of PPP project securities products issued in each province. As an effective solution to the low landing rate, poor liquidity, and incomplete exit mechanisms of PPP projects, this study aims to deeply explore the logical differences behind the regional differences, the intrinsic mechanisms of project models, and provide theoretical support for local governments in financing PPP projects.

## **2. Existing Research and Model Construction**

The current research on the influencing factors of PPP asset securitization mainly focuses on the general overview of various influencing paths. Lu Ying (2019) summarized five key influencing factors of PPP project asset securitization through questionnaires and the Analytic Hierarchy Process (AHP), which are the underlying assets, policy regulations, risk control, operational procedures, and investment value. It was also pointed out that the PPP-related laws and regulations, government fulfillment willingness and financial capacity, transparent approval procedures, and information disclosure are among the most important factors affecting PPP asset securitization. Robert (2014) used a structural equation model to identify factors such as the quality of underlying assets, the credit of the original rights holder, the rationality of securities design, and the maturity of relative institutions that affect the issuance of PPP project asset securitization. There are few studies specifically from the government's perspective on the issuance of PPP asset securitization. Referring to the current academic analysis of the status quo of PPP project asset securitization and financing contract theory, several factors affecting the issuance of PPP project asset securitization by local governments have been summarized.

## **2.1 Local Government Fiscal Capacity**

Asset securitization refers to the process of converting assets that lack liquidity but can generate predictable and stable cash flows into securities that can be sold and circulated in the financial market through certain structural arrangements, separating and reorganizing the risks and returns of the assets. The cash flow of the underlying assets is the main source of bond repayment, so the stability of the cash flow of the underlying assets is crucial for bond issuance. Most PPP projects in China are securitized based on toll revenue rights, and the charging mechanisms of PPP projects are mainly divided into three categories: government payment, user payment, and viability gap funding. User payment refers to consumers directly paying for public products and related services, and the project company obtains revenue by providing services. Under this model, the underlying assets are the revenue rights enjoyed by the project company for providing services. Government payment means that the government directly purchases public product services, and the underlying assets are the fiscal subsidies provided by the government for the public service products accepted by the project company. Viability gap funding is a PPP model that combines user payment and government payment. Under this model, when user payment is insufficient to meet the profit requirements of social capital, the government will compensate for the profit gap through fiscal subsidies, capital investment, and other means to ensure the good operation of PPP projects. Viability gap funding provides a certain risk guarantee for social capital, reduces investment risks, and helps attract more social capital to participate in PPP projects. Therefore, viability gap funding has important application value in PPP projects. It can be seen that, regardless of the payment model, the financial support of the local government is one of the most significant influencing factors on the cash flow of the underlying assets. Therefore, when conducting asset securitization of PPP projects, it is necessary to reasonably assess the fiscal capacity of the project's local government to ensure that the government has the financial capacity during the existence of the asset securitization product. In summary, the fiscal capacity of the local government is an important indicator to measure whether securitization can be carried out.

## **2.2 Local Government Credit Level**

Sun Hankang (2019) pointed out that local governments have strong decision-making power and authority in local infrastructure construction. However, some local governments have breached contracts after signing PPP project agreements, or new plans have had a negative impact on ongoing PPP projects, affecting their returns. This has led to significant policy uncertainty for PPP projects. For example, the Hangzhou Bay Sea-crossing Bridge and the Xinyuan Minjiang Fourth Bridge PPP projects were removed from the project library due to local government decision-making errors or unfulfilled commitments. Therefore, the credit of the local government where the project is located is an important factor to consider in the asset securitization process

of PPP projects. Whether the local government can fulfill its obligations as stipulated in the contract, provide sufficient fiscal subsidies, and maintain price stability when conditions for price adjustment are met, all directly relate to the smooth construction and stable operation of the PPP project. A good government fulfillment ability helps enterprises obtain reasonable financing and thus achieve the effective exit of social capital. Therefore, in PPP projects, cooperation with the government is crucial, and its fulfillment ability should be fully assessed. Hence, the credit level of the local government is an important condition to be included as an antecedent variable.

### **2.3 Local Government Organizational Capacity**

Ma Jian (2020) believes that the local government is an important leading party in the implementation and operation of PPP projects. In the operation process, there will inevitably be emergencies and disputes. How the local government fairly and reasonably handles problems and resolves disputes will play an indelible role in the stable operation of PPP projects. Similarly, the local government's ability and efficiency in handling affairs will also be more clearly demonstrated in the issuance of asset securitization products: effective and timely review and evaluation, fair and transparent procedures, and efficient and smooth government cooperation will all be important assessment factors in the asset securitization process. Li Xiaobin (2022) used structural equation and questionnaire survey methods for empirical analysis and found that the reliability dimension of government fulfillment guarantees, the realizability dimension of projects, and the effectiveness dimension of credit enhancement measures all have a positive promoting effect on the financiability of PPP projects. Therefore, the organizational capacity of the local government is included as an antecedent variable in the study.

### **2.4 Local Government PPP Project Experience**

Currently, China is still in the initial stage of PPP project asset securitization, and the issued securitization products are mostly exploratory. Therefore, local governments, social capital parties, and investors have a limited understanding of PPP project asset securitization and are unclear about its operating model and principles. For local governments, the lack of project experience also makes it difficult to provide effective support and assistance in the process of product securitization issuance, which greatly affects the issuance efficiency of PPP asset securitization. Luo Yu (2017), based on data from 2,485 PPP infrastructure projects in "Belt and Road" neighboring countries from 2002 to 2013, confirmed that countries with successful experience have a higher probability of success when conducting PPP projects, while those with failed experiences have the opposite effect. This indicates that in adopting the PPP model, projects with successful experience are more likely to obtain government support and guarantees, thereby reducing investment risks and uncertainties and increasing the success rate of the project. It also shows that the successful experience of local governments in PPP projects can effectively

reflect the region's ability to handle PPP projects, which is more conducive to the development of the project and subsequent asset securitization.

## **2.5 Local Government Policy Support**

China's PPP asset securitization work began in 2016 when the National Development and Reform Commission and the China Securities Regulatory Commission jointly issued the "Notice on Promoting the Asset Securitization of Public-Private Partnership Projects in Traditional Infrastructure Fields." Since then, the asset securitization of PPP projects in China has been launched, and local governments have successively issued various documents to implement central instructions. As a country governed by the rule of law, the introduction of various laws and regulations is not only a boost to the asset securitization of PPP projects but also a standardization of their practical application. Yin Yaling (2021) pointed out that the improvement of related laws and regulations has also increased the number of PPP projects that meet the conditions for asset securitization issuance, thereby opening up a broad prospect for the development of PPP project asset securitization.

## **2.6 Marketization Degree**

The degree of marketization is an important reflection of the vigorous development of enterprise economy and also an important benchmark for government credibility. The stronger the degree of marketization, the higher the objective requirements for the government's spirit of contract, legal concept, and law-abiding behavior. The degree of marketization also affects the development level of the financial market. A mature financial market can provide a stable market platform for the transaction and circulation of securities and can reduce the cost of social capital raising funds, providing indispensable assistance for asset securitization. Therefore, the degree of marketization constitutes an important antecedent variable for PPP asset securitization.

## **3. Research Design**

### **3.1 Research Method**

The Fuzzy-Set Qualitative Comparative Analysis (fsQCA) method is selected to explore the differences in PPP project asset securitization among provinces. fsQCA is a comprehensive research method that combines case orientation and variable orientation. Based on set theory and using Boolean algorithms, it explores how different combinations of antecedent conditions lead to observable changes in the result variable. Combining the advantages of quantitative and case analysis research, the fsQCA method provides a new path for exploring complex causal combinations. This study uses the fsQCA method to investigate how local governments influence the path configurations of PPP project asset securitization, mainly based on the following points:

(1) fsQCA does not require a high sample size, typically ranging from 10 to 62, making it very practical for small and medium-sized studies. This study takes 30 provinces, autonomous regions, and municipalities (excluding Tibet, Taiwan, Hong Kong, and Macau) in China as research objects, covering a wide range of regions and local governments, providing a rich data basis for in-depth understanding of the impact of different local governments on PPP project asset securitization. By employing the QCA method to conduct an in-depth study on how local governments influence the configurational paths of PPP project asset securitization, it is possible to reveal the intrinsic connections between the policies and practices of different local governments. This, in turn, provides valuable insights for policymakers and businesses, promoting the healthy development of PPP project asset securitization. This study explores the impact of multiple antecedent conditions of local governments on PPP project asset securitization, which is suitable for the fsQCA method to explore the impact of multiple antecedent variables on the result.

(2) This study emphasizes the combination effect of different influencing factors, where different reason configurations form different results, and different reasons also interact with each other. For regression analysis, it is difficult to achieve the research effect. In contrast, fsQCA deepens the holistic research perspective and is a powerful tool for exploring the interactive relationships loaded between various antecedent conditions.

### **3.2 Variable Setting and Data Sources**

This study focuses on the reasons for the differences in the issuance of PPP project asset securitization among provinces. Therefore, whether each province has issued PPP project asset securitization products is the result variable of this study. If a province has issued PPP project asset securitization products, it is recorded as 1; otherwise, it is recorded as 0. The data are sourced from the National Government and Social Capital Cooperation (PPP) Comprehensive Information Platform Project Management Library and the China Asset Securitization Analysis Network, with data collected up to the end of 2022.

#### **(1) Local Government Fiscal Capacity**

PPP projects fall under local government public fiscal expenditures, and therefore, the local general public budget revenue can effectively measure the government's fiscal capacity. Due to the different scales of municipalities directly under the central government and provinces, the per capita local general public budget revenue level is used as the measurement value. The per capita local general public budget revenue is calculated as the local general public budget revenue divided by the number of prefecture-level cities in the province. The data are sourced from the "China Statistical Yearbook 2021" on the general public fiscal budget revenue of each region.

## (2) Local Government Credit Level

Administrative litigation, as an effective response of citizens to improper administrative actions by local governments, can effectively reflect problems in the governance process of local governments. As mentioned earlier, unreasonable decisions and unfulfilled promises by local governments are major risks in the asset securitization of PPP projects. Through administrative litigation, these issues can be revealed, prompting local governments to formulate policies more prudently and ensuring the smooth progress of PPP project asset securitization. Therefore, the number of administrative litigation cases in the region is chosen as a reasonable measure of the local government's credit level. The data are sourced from the "China Law Yearbook 2021."

## (3) Local Government Organizational Capacity

It is generally difficult to measure government organizational capacity. Some scholars have pointed out that, based on scale effects and externalities, larger government and population scales usually imply stronger government organizational capacities. The population scale is typically measured by the total permanent resident population. This study uses the population scale data from the "China Statistical Yearbook 2021" for each province, municipality directly under the central government, and autonomous region as the indicator for this antecedent condition.

## (4) Local Government PPP Project Experience

Based on the National Government and Social Capital Cooperation (PPP) Comprehensive Information Platform Project Management Library, the number of projects already in the library for each province is used as a measure of the local government's existing experience with PPP projects, with data up to the end of 2022.

## (5) Local Government Policy Support

The policy support degree of PPP (public-private cooperation) by local governments refers to the relevant policy documents issued by each province to promote the development of the PPP model. These policy documents include local regulatory documents, local files, and administrative permit approvals, aimed at providing policy support and guidance for PPP projects. "PKU Law" is one of the most comprehensive legal and regulatory information platforms in China, collecting a large number of local government PPP policy documents. The platform's data collection is timely, the collection channels are formal, and the content has been strictly proofread, ensuring the accuracy and reliability of the data. By analyzing these policy documents, we can understand the policy inclinations and support levels of each province towards the PPP model, thereby assessing the feasibility of PPP projects in the region. The policy support degree of the local government is one of the important factors for the successful



implementation of PPP projects and has important reference value for investors and project initiators. The data selected for this study are from before 2022, and subsequent laws and regulations are not included in the consideration.

(6) Marketization Degree

This study uses the provincial marketization total index score from the "China Provincial Marketization Index Report (2021)" compiled by Wang Xiaolu, Fan Gang, and Hu Lipeng. This report objectively and fairly evaluates the marketization reform achievements of each province and is trusted by many scholars. Therefore, this study selects the index score as the measure of the marketization degree of each province.

**3.3 Data Calibration**

According to the information provided, the fsQCA method requires data calibration processing to transform numerical variables into set membership scores. Typically, the direct calibration method uses the 3/4, 1/2, and 1/4 quantiles of the sample data to set anchor points, which represent full membership, crossover points, and partial membership, respectively. Based on this information, the anchor points for the result variable and antecedent variables in this study are set as shown in Table 1.

**Table 1 Variable Calibration Anchor Points**

Variable		anchor points		
		Full Membership	Crossover Point	Partial Membership
antecedent variables	Fiscal Capacity	4171459	1876278	1412643
	Credit Level	7708.5	4773	2701
	Organizational Capacity	6433.5	3930	2204.5
	Project Experience	480.5	378	118.5
	Policy Support	46	30	14.5

	Marketization Degree	10.467	9.638	7.881
outcome variable	Whether to Issue Asset Securitization Products	1	0	

**4. Empirical Analysis**

**4.1 Necessity Analysis**

According to the fsQCA method, before the standardized analysis of condition configurations, it is necessary to conduct a necessity test for each single antecedent variable, analyzing its consistency and coverage. Consistency refers to the proportion of cases that achieve the observed result among those that meet the condition variable. Coverage refers to the proportion of cases that meet this condition among all cases that achieve a specific result. When the consistency level is greater than 0.9, it indicates that the antecedent variable is a necessary condition for the occurrence of the result variable, meaning that this result will inevitably be present when this antecedent condition exists. Table 2 shows the necessity test for single antecedent variables.

**Table 2 Necessity Analysis of Antecedent Variables**

Antecedent Condition	consistency	coverage
Fiscal Capacity	0.580588	0.690693
Credit Level	0.715882	0.754448
Organizational Capacity	0.622353	0.726648
Project Experience	0.637706	0.699826
Policy Support	0.570647	0.629485
Marketization Degree	0.642412	0.704535

As shown in Table 2, the consistency levels of these six antecedent conditions are all below 0.9 and above 0.5, indicating that these conditions do not constitute necessary conditions but are important conditions that significantly influence the asset securitization of PPP projects by local

governments.

#### 4.2 Sufficiency Analysis

After completing the necessity test, according to the principles of the fsQCA method, the next step is the core content—sufficiency analysis of condition configurations. This process is carried out based on the data collected previously and the conclusions drawn from the necessity test, constructing a truth table. The case frequency threshold and the original consistency threshold are determined based on the sample size. Following Ragin's suggestion, this study chooses an original consistency threshold of 0.8 and a case frequency threshold of 1, excluding data below the threshold to construct the truth table.

Following the above settings, after standardization analysis, three types of solutions are derived: complex solutions, intermediate solutions, and parsimonious solutions. It is generally believed that the intermediate solution is more in line with actual research experience, and most fsQCA method studies mainly focus on the intermediate solution. At the same time, since the parsimonious solution includes all logical remainders, it will logically affect the results, so the parsimonious solution is combined with the intermediate solution for analysis. In the solution configuration, conditions that appear in both the intermediate solution and the parsimonious solution are called core conditions, while those that exist only in the intermediate solution but not in the parsimonious solution are called peripheral conditions. By analyzing the intermediate solution configuration, four groups of PPP project asset securitization configurations with a consistency level greater than the 0.8 threshold are derived, as shown in Table 4. The results show that these four paths have an overall consistency of 0.813959, which is higher than the 0.8 threshold standard recognized by most scholars, indicating that the condition combinations included in this solution have a relatively ideal persuasiveness for the result variable. The overall coverage is 0.574176, which is higher than the 0.5 threshold, indicating that it can explain a large number of research cases.

**Table 3 Configuration Results**

Configuration	M1	M2	M3	M4
Fiscal Capacity	•	⊗	•	•
Credit Level	•	⊗	⊗	•
Organizational Capacity		⊗	•	•

Project Experience	⊗	●	●	●
Policy Support	⊗	⊗	●	●
Marketization Degree	●	⊗	⊗	●
Consistency	0.829243	0.814961	0.844445	0.81338
Coverage	0.188824	0.121765	0.0670588	0.331824
Unique Coverage	0.134118	0.0911765	0.0129412	0.257706
Total Consistency	0.813959			
Total Coverage	0.574176			

Note: ● indicates the presence of the condition variable, ⊗ indicates the absence of the condition variable; a large circle indicates a core presence, and a small circle indicates a peripheral presence.

### 4.3 Configuration Analysis

Summarizing the above four path configurations, they can be roughly divided into four categories: Fiscal and Market Support Type (M1); Experience Assistance Type (M2); Fiscal and Organizational Guarantee Type (M3); and Balanced Development Type (M4). These four types are the main condition combinations from the perspective of local governments that promote the issuance of asset securitization products for PPP projects, and this study focuses on analyzing these four categories.

#### (1) Fiscal and Market Support Type (M1)

In this configuration, the local government's fiscal capacity and the degree of marketization in the region are the core conditions, while other conditions have less impact. The possibility of this type existing is relatively high, with a consistency level of 0.8813. The coverage is 0.188824, which can explain about 20% of the case numbers, with typical cases being Beijing, Shanghai, and Chongqing. As introduced earlier, asset securitization is supported by the cash flow of the underlying assets, and the main payment modes of PPP projects are related to government fiscal support, such as government payment mode and viability gap funding. When the local fiscal level is too weak, PPP projects lack stable cash flow support, making it difficult to issue

securities. On the contrary, a high level of local fiscal capacity is an important manifestation of the project's ability to fulfill its obligations. A stable fiscal level also gives investors and original rights holders confidence and assurance, accelerating the liquidity of project funds through asset securitization, effectively realizing capital exit, and improving asset utilization efficiency. Securities issuance, as a financing channel in the capital market, largely depends on the vitality and development level of the securities market. Abundant securities investors, complete market trading mechanisms, and efficient and smooth trading platforms will provide great assistance for the issuance, sale, and trading of securities. Moreover, these two aspects complement each other; an efficient and orderly trading market also indirectly reflects the degree of marketization and economic development level of the region, which in turn promotes the increase in regional tax revenue, thereby reflecting in the general fiscal budget revenue. For example, regions like Beijing, Shanghai, and Chongqing, relying on their good regional fiscal capacity and relatively developed capital markets, have successfully issued PPP project asset securitization products.

### (2) Experience Assistance Type (M2)

From the second configuration, it can be seen that the economic development level of the region is not a necessary condition for the issuance of PPP project asset securitization. In this configuration, the experience in PPP projects is reflected as the core condition, and the other conditions are all missing. The consistency level of this type also reaches 0.814961, indicating a high probability of existence in reality, with typical cases being Yunnan Province and the Xinjiang Autonomous Region. As provinces with insufficient development levels in the northwest and southwest, conditions such as fiscal revenue, degree of marketization, and regional population scale are all inadequate. Relying on the experience in PPP projects, they have successfully issued PPP project asset securitization products. Sufficient project experience means a better understanding of the operating model and principles of PPP projects. In the process of project securitization issuance, experience is used as a guide, with cases as pioneers, to boldly and steadily move forward, and even in the absence of external conditions, breakthroughs can be made in securitization issuance.

### (3) Fiscal and Organizational Guarantee Type (M3)

Similar to the first configuration, the regional fiscal capacity remains a core condition in the process of PPP asset securitization. However, different from the first type, in regions lacking a good degree of marketization, the successful issuance of PPP asset securitization products is also possible with the auxiliary guarantee of other conditions. The consistency level of this type is 0.844445, indicating a high possibility of existence in reality, but the coverage is not high, with an original coverage of 0.0670588, that is, it can explain about 7% of the results in the cases, with typical cases being Hebei Province. In this configuration, due to the lack of marketization

conditions, the regional organizational capacity, project experience, and policy support have a significant supporting role. The local government's organizational capacity in PPP project asset securitization is mainly reflected in the efficient process of the local government in infrastructure and supporting work. Securities issuance is not achieved overnight; the entire process requires the perfect and systematic cooperation of the regional government. Similarly, policy support also reflects the region's recognition and support attitude towards PPP asset securitization, providing strong support for asset securitization at the level of system design. From this type, the multi-path nature of PPP asset securitization can be seen more clearly. A single factor is not the decisive condition for the issuance of asset securitization. Different combinations of antecedent conditions, playing the connections and cooperation between each factor, can produce an effect greater than the sum of their parts, rather than being limited to the existence or non-existence of a single condition.

#### (4) Balanced Development Type (M4)

In this type, all conditions are involved, but the dominant position is occupied by the three antecedent conditions of fiscal capacity, credit level, and organizational capacity, with the remaining project experience, policy support, and marketization degree as auxiliary conditions. The consistency level of this type is 0.81338, which is relatively high. In terms of coverage, the original coverage reaches 0.331824, and the unique coverage is also 0.25776, indicating that it can explain about 30% of the case numbers. There are also many typical cases, mainly including Zhejiang, Shandong, Jiangsu, and Sichuan provinces. This type effectively illustrates the important role of the regional government's fiscal support, credit guarantee, and service cooperation in the process of PPP project asset securitization. Stable project cash flow, reliable government credit, and complete supporting procedures reflect the high support of the regional government in handling securitization issuance issues, which is also the most practical and effective way for the issuance of PPP project asset securitization.

### **5. Research Implications**

This study uses the fsQCA method to investigate the impact of six variables—fiscal capacity, credit level, organizational capacity, project experience, policy support, and marketization degree—and their combinations on the issuance of PPP project asset securitization. Four condition paths are summarized, and the analysis of these paths leads to the following conclusions and implications:

(1) A stable project cash flow is the direct basis for the issuance of asset securitization, and the general public fiscal support capacity of the regional government has a direct impact. The government's credit level and organizational capacity are also important influencing factors.

Proper project planning, rational decision-making, and scientific decision-making are key to establishing a high-credit government. Optimizing administrative levels, enhancing service capabilities, creating efficient processes, and building a harmonious and powerful service-oriented government image are manifestations of good organizational capacity.

(2) PPP project experience plays a significant role in the issuance of securitization. Strengthening the learning of project experience, clarifying the intrinsic mechanism and operating logic of the PPP model, promoting demonstration cases, and promoting mutual learning among regions to facilitate the implementation of PPP projects can provide more reference samples and possibilities for asset securitization.

(3) Enhancing the degree of marketization and improving the financial market supporting mechanisms. Securities products, as favorites in the financial market, cannot be separated from a fair, and well-regulated financial market. Creating a good market environment and providing a complete trading platform for investors and social capital parties is also an important way to promote asset securitization work.

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