

Research on Local Government Moral Hazard and Central Government Contract Incentives in the Process of National Coordination of Basic Pension Insurance

Zhiying Liu, Yaru Feng

Center for Social Security Studies of Wuhan University, Wuhan, Hubei, 430072, China

Abstract

The Fifth Plenary Session of the 19th Central Committee mentioned that “realizing the national overall plan for basic old-age insurance” is one of the important contents of improving the social security system. This article analyzes the possible moral hazards of local governments in the national overall planning of basic pension insurance, and on this basis, studies how the central government encourages local governments to cooperate with the overall planning through contractual arrangements. The research shows that under the situation of information asymmetry, the central government has a principal-agent problem in the overall planning of basic pension insurance, and the central government’s contractual arrangements should adopt marginal incentives; under the situation of information symmetrical, overall planning can achieve the optimal level of welfare. The government’s contractual arrangements should adopt fixed remuneration. This article proposes to promote the national overall planning of basic pension insurance from the aspects of the division of powers and responsibilities of the central and local governments, information acquisition, assessment rewards and punishments, and transitional measures.

Keywords: *Basic endowment insurance, National overall planning, Central and local government, Moral hazard, Contract incentives*

I . Introduction

The level of economic development varies among regions in my country, and the sustainability level of basic pension insurance funds varies greatly among different regions. With the aging of the population and the increase in liquidity, the problem of uneven pension payment pressure among regions has become increasingly prominent, and the problem of inadequate pension income and even bottoming of the accumulated balance has appeared in many places. Given the low willingness of the population to give birth, the prolonged life expectancy of the population, and the imbalance of regional development, the problem of population aging and scale mobility will continue to exist, and the pressure of pension payment will continue to increase in the context of the economic slowdown. my country's basic pension insurance fund implements the provincial-level overall planning method of “pooling and accounting”, but the problem of the imbalance of inter-provincial basic pension insurance funds is difficult to solve by itself. National overall planning of basic pensions, as the highest level of overall planning, is currently the main way to solve the problem of imbalances in pension income and expenditure between regions.

“Providing support for the elderly” is an important aspect of ensuring people's livelihood. Realizing the national overall pension plan and adjusting the pressure of inter-provincial pension payment is one of the important contents of my country's social security system. In 2010, the “Social Insurance Law” stipulated for the first time that “basic pension insurance funds shall be gradually implemented as a whole nationwide”; in 2017, the 19th National Congress of the Communist Party of China reiterated “Achieving a nationwide overall plan for pension insurance as soon as possible”; in 2018, the State Council implemented the establishment of a central adjustment system for endowment insurance funds, stepping out endowment insurance The first step in national coordination; the Fifth Plenary Session of the 19th Central Committee of the Communist Party of China in 2020 once again mentioned “to achieve national coordination of basic pension insurance.” Although the national overall planning of pension insurance has been under government planning, it has not been realized due to many practical reasons. One of the important reasons is that there are differences of interest between the central government and local

governments, and local governments are prone to moral hazards. Therefore, how to coordinate the interests of the central and local governments and encourage local governments to actively cooperate with the overall planning work is an important part of promoting the national overall planning of basic endowment insurance.

II. Literature Review

The national overall planning of basic pension insurance is one of the important measures to improve the social security system. The national overall planning is of positive significance, such as income redistribution effects[1], inter-provincial coordination and mutual aid[2], and safeguarding the rights of floating population[3], Sharing of development results [4] and so on. Scholars have reached a consensus on the implementation of the national pooling of pension insurance. Shen Yan et al. [5] (2015) pointed out that national overall planning should be accelerated. Zheng Gongcheng [6] (2015) pointed out that regional division makes the endowment insurance system regionalized, and national overall planning is necessary.

The national pension insurance plan has been under planning since it was put forward in 2010, and there are many obstacles to the implementation of the plan. Pang Fengxi et al. [7] (2016) believe that the ambiguity of the central fiscal responsibility and its affordability is the key constraint. Han Keqing [8] (2018) proposed that the obstacles to the national overall planning of endowment insurance mainly include institutional relations, local protection, and departmental interests. Liu Hongwei et al. [9] (2020) analyzed the obstacles in the benefits, policies, management, technology, and risks of the current national overall plan for pension insurance.

In recent years, the realization of national co-ordination of pension insurance has been mentioned by the central government many times, and the focus of discussion by scholars has mostly focused on specific implementation paths and countermeasures. Qi Haipeng et al. [10] (2016) pointed out that it is necessary to start to promote the overall planning process in terms of financial power, vertical management, and reform of social security fees. Zhu Hengpeng et al. [11] (2020) established a social security revenue and expenditure dynamic contract model, and analyzed that improving the level of social security coordination can achieve the sub-optimal results of social welfare by improving the information symmetry of the higher-level government. Zhao Renjie et al. [12] (2020) believe that the coordination work must be transferred to the taxation department to establish an incentive and compatibility mechanism between the central and local governments.

In summary, scholars have carried out in-depth research on the necessity, obstacles, and implementation paths of implementing the basic pension insurance nationwide. Most of them pointed out that the conflict of interest between the central and local governments is one of the main obstacles. Few studies have focused on the moral hazard issues that may arise when local governments implement the national pension insurance policy. The central government should play a leading role in the overall planning of basic pension insurance[13] and encourage local governments to cooperate with the central government to complete the national overall planning. Therefore, based on the moral hazard issues that local governments may generate in the national overall planning of endowment insurance, this article establishes a central-district contract model, focusing on incentive compatible design and the impact of information efficiency, and analyzes how to solve the problem of local government interest protection, providing basic endowment insurance for the whole country. Coordinate suggestions and suggestions.

III. The Moral Hazard of Local Governments in the National Overall Planning of Basic Endowment Insurance

A. Local Powers Are Not Clear, Distorting Policy Effects

The divergence of interests between the central government and local governments is mainly due to the inconsistency of financial power and power of affairs. The 2010 “Social Insurance Law” proposed the national overall planning of basic pension insurance funds, and the financial power was transferred to the central government, but the central government's powers were not clarified. This has led to the lack of standardization of

the common powers of the central and local governments, and the uncertainty of the local autonomous discretion. When the responsibility of the central government is not clear, there will be issues such as political prevarication. The inconsistency of power and financial power makes provinces with surplus funds resist the overall planning work, and provinces with fund gaps have a psychological dependence on the overall planning work, which distorts the effect of policy implementation.

B. Differences in Provincial Systems Can Easily Lead to Moral Hazard Issues, Which Are Not Conducive to Balanced Regional Development

The endowment insurance systems of all provinces across the country will basically achieve provincial overall planning by the end of 2020, but there are big differences in the level of economic development between provinces and the methods of payment and calculation of endowment insurance. In the process of national co-ordination of pension insurance, local governments with surplus pension balances considered that the balance would eventually be turned over to the central government, which is prone to moral hazard issues. The specific manifestation is: by reducing the payment benchmark and fee rate, the surplus advantage is converted into favorable conditions for attracting enterprises and capital agglomeration promote the economic development of the region. In the process of national overall planning, differences in the provincial system tend to form a hotbed of arbitrage, leading to the moral hazard problem of local governments with surplus pensions, which may exacerbate the imbalance of regional development.

C. The Local False Report on the Number of Pension Recipients is Not Conducive to the Financial Balance of the System

The “social pooling” part of the current pensions adopts the “pay-as-you-go system”. This revenue and expenditure model will increase the possibility of moral hazard for local governments as the level of pooling increases. As social insurance premiums are levied by taxation, there is asymmetric information between the central and local governments in pension expenditures, and local governments are prone to moral hazard problems. The specific manifestations are: local governments are no longer responsible for the income and expenditure of pension insurance, and there will be false reporting of pensions. The situation of the number of recipients. The pension fund gap caused by the moral hazard of local governments will eventually need to be filled by the central finance, which is not conducive to the financial balance of the system

IV. Analysis of the Contract Model of the National Overall Plan for the Basic Pension Insurance

The primary reason for moral hazard in the national overall planning of pension insurance is that the central government has conflicts of interest, which is mainly manifested in the separation of pension insurance power and financial power from the local government to the central government, and the local government has a moral hazard problem out of the maintenance of its own interests. . Based on this, this paper constructs a contract model for the national overall planning of basic endowment insurance in order to analyze the coordination and cooperation between the local government (provincial government) and the central government in the national overall planning of endowment insurance.

Jia Hongbo [14] pointed out that the local government, as the central government’s agency, has an administrative contractual relationship between the two parties. At present, the national-level social security unified service information system has not been established. In terms of national pension support, the central government's cooperation with local governments may have information asymmetry, which provides conditions for local governments to generate moral hazards. Therefore, the basic idea of the model is: considering that there may be information asymmetry, in order to control moral hazard, it is necessary to determine whether there is a principal-agent relationship between the central government and the government through contract incentive design to ensure that the local government can coordinate the work Cooperate with the implementation strength.

A. Model Setting

Introduce the cost and output function of local government to coordinate the work. To simplify the analysis, it is assumed that each province cooperates with the central government's overall planning, and the policy output effect of the expenditure distribution plan formulation and implementation is a monotonic increasing function of the degree of coordination:

$$R(e) = \alpha e + \theta$$

Where e is the degree of coordination of the local government to the central overall planning policy, distributed in a continuous interval; α is the performance coefficient of the local government in accordance with the spirit of overall planning and mutual aid to cooperate with the central overall planning work, and $\alpha > 0$; θ is the mean value is 0, and the variance is The random normal distribution of σ represents the degree of risk of the local government in the coordination and coordination of endowment insurance. Therefore, the local government output expectation is: $E(R) = \alpha e$.

Assume that the cost function of local government cooperation is:

$$C(e) = \frac{1}{2} \beta e^2$$

Among them, β is the cost coefficient of the degree of coordination of local government work, and $\beta > 0$. This function is an increasing function of marginal cost and conforms to the general law of cost.

In the national overall planning of endowment insurance, the central government needs to encourage local governments to actively cooperate with the implementation of the overall planning through contract design. The national pooling of pension insurance is a policy implemented by the central government across the country to adjust the surplus and deficiencies of pension funds. Therefore, it can be considered that the central government's attitude towards possible risks in the policy is neutral, and local governments have a risk aversion attitude[15]. Therefore, the central government's payment function for local governments' cooperation is set as a linear incentive function:

$$W(e) = W(R(e)) = m + n\alpha e$$

Among them, m is the fixed income of the local government, and n is the incentive coefficient of the central government's cooperation with the local government.

Taking into account the different risk attitudes among governments, the central government's national overall plan will coordinate the income and expenditure of pensions, aiming to play the role of pension mutual aid, assuming that the central government does not have risk costs; but local governments, especially in areas with surplus pensions Since the government will eventually hand over its vested interests to the central government, it will have a risk aversion psychology, which in turn needs to consider the cost of risks borne by the local government. According to Arrow's research results, the risk cost assumed by the local government in coordination with the overall planning work is set to $H = \frac{1}{2} \rho n^2 \sigma^2$, ρ is the absolute risk aversion degree, and due to the risk aversion attribute of the local government, it is set to $\rho > 0$. Therefore, in the overall planning work, the income Z of the central government and the income D of the local government in coordination with the overall planning work are expressed as follows:

$$Z = R(e) - W(R(e))$$

$$D=W(R(e))-C(e)-H$$

B. Central Land Contract Model under the Condition of Information Symmetry

In the case of symmetrical information, the central government will determine the pension revenue and expenditure rules based on the economic level of each province and the actual situation of pension insurance, and there will be no room for local governments to make profits for themselves. At this time, the central land contract model needs to ensure that the central government's incentives must meet the participation constraints (IR) of the local government. That is, the benefits of the local government's cooperation work must not be less than its opportunity cost U , and the local government's work cooperation will be realized based on the mandatory commission contract of the central government. In the case of information symmetry, the construction of the basic pension insurance nationwide central land contract model is as follows:

$$\begin{cases} \max_{e,m,n} \{\alpha e - (m + n\alpha e)\} \\ \text{s. t. } W(R) - C(e) = (m + n\alpha e) - \frac{1}{2}\rho n^2 \sigma^2 - \frac{1}{2}\beta e^2 \geq U(IR) \end{cases}$$

The payment of the central government only needs to ensure that the local government is willing to accept the entrustment, usually taken, so the central government's optimized incentive contract model can be expressed as

The payment of the central government only needs to ensure that the local government is willing to accept the commission, usually $(m+n\alpha e) - \frac{1}{2}\rho n^2 \sigma^2 - \frac{1}{2}\beta e^2 = U$, so the central government optimized incentive contract model can be expressed as :

$$\max_{e,m,n} L = \alpha e - \frac{1}{2}\rho n^2 \sigma^2 - \frac{1}{2}\beta e^2 - U$$

Taking the derivative of e and n , two optimal first-order conditions are obtained:

$$\begin{cases} \frac{\partial L}{\partial e} = \alpha - \beta e = 0 \\ \frac{\partial L}{\partial n} = \rho n^2 e = 0 \end{cases}$$

Under the first-order optimization conditions, the degree of coordination of local government work is obtained as $e^* = \alpha/\beta$, and the marginal incentive coefficient of the central government is $n^* = 0$, and furthermore, $m^* = U + \alpha^2/2\beta$, The optimal contract incentive function and central government revenue are as follows:

$$\begin{aligned} W(R) &= m + n\alpha e = U + \frac{\alpha^2}{2\beta} \\ Z^* &= R(e) - W(R) = \alpha e - U - \frac{\alpha^2}{2\beta} = \frac{\alpha^2}{2\beta} - U \\ D^* &= W(R) - C(e) = U \end{aligned}$$

In the case of symmetrical information, national pooling can achieve the optimal state of pension adjustment across

the country by introducing complete risk sharing between provinces. In this state, the central government's contract to encourage local governments to cooperate with the overall planning should be designed as a fixed remuneration $W(R)=U+\alpha^2/2\beta$, and the degree of cooperation of local governments will reach the optimal level. The degree of local government's optimal work coordination is affected by its cost coefficient and performance coefficient, which is inversely proportional to the cost coefficient and directly proportional to the performance coefficient.

C. The Central Land Contract Model under the Principal-Agent Relationship

In the case of information asymmetry, there is still a lot of information hidden space in the unified distribution of pension funds, and the central government cannot monitor and observe the cooperation of local governments at all times. In this case, there is a principal-agent problem caused by information asymmetry. The contract design of the central government needs to continue to meet the conditions of incentive compatibility (IC) on the basis of meeting the participation constraint (IR), that is, the contract design of the central government should consider that the local government will report pension insurance data and information according to its own benefits. The construction of a central land contract model with a principal-agent relationship is as follows:

$$\begin{aligned} & \max_{e,m,n} \{ \alpha e - (m + n\alpha e) \} \\ \text{s. t. } & \begin{cases} W(R) - C(e) = (m + b\alpha e) - \frac{1}{2}\rho n^2\sigma^2 - \frac{1}{2}\beta e^2 \geq U(IR) \\ \max_e \left\{ (m + n\alpha e) - \frac{1}{2}\rho n^2\sigma^2 - \frac{1}{2}\beta e^2 \right\} (IC) \end{cases} \end{aligned}$$

In this state, the central government's contract to encourage local governments to cooperate with the overall planning should be designed as a marginal incentive reward $n^{(**)}=1/(1+(\rho\beta\sigma^2)\alpha^2)$ ($0<n<1$), That is to say, the central government should allow local governments to obtain part of the risks and benefits of the coordination work, and the degree of cooperation of local governments will reach a sub-optimal level. The degree of local government's optimal work coordination is not only related to its cost coefficient and performance coefficient, but also proportional to the central marginal incentive coefficient. When the central government promotes the national overall planning of basic endowment insurance, the contract design of local governments should reasonably consider the protection of possible damage to the interests of local governments; reasonable attention should be paid to local governments with lagging endowment insurance management work, and the coordination of local governments should be reduced. The cost of work; the local government's risk protection mechanism should be reasonably designed to reduce the impact of exogenous uncertain factors on the work of local governments; local governments that cooperate with the work with a higher level of output should be given more incentive payments; at the same time, it is also necessary to improve information efficiency on the basis of incentive compatibility.

D. Central Land Contract Model with Principal-Agent Relationship under the Condition of Output Uncertainty

In the case of information asymmetry, there may be uncertain output in the principal-agent relationship. There are big differences in social security management methods and social security service systems between provinces. For areas with chaotic social security management and lagging information service systems, improving the level of pension insurance coordination requires more effort to clarify the information provision of the coordination work, and there may even be extreme efforts. In the case of coordinating the work of the central government, the effectiveness of the work still lags behind.

When the central government is unable to monitor the degree of local government's work coordination, in order to mobilize local participation enthusiasm, the central government needs to design the contract to satisfy the incentive compatibility conditions while meeting the constraints of local government participation, that is, the local government's high degree of cooperation. The income should not be less than the income of low work coordination. Under the uncertainty of the output result, the three-stage dynamic game model of the central government with the

principal-agent relationship is shown in Figure 1:

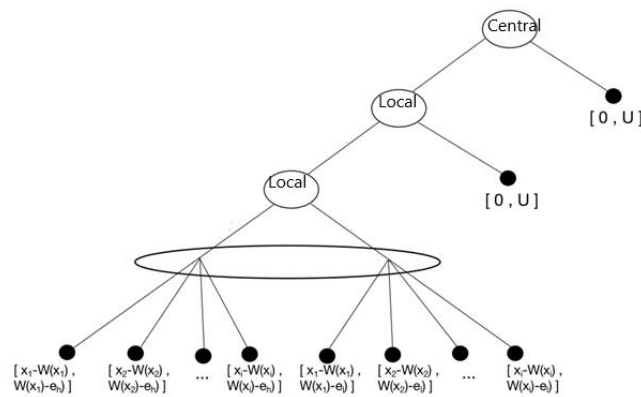


Fig.1 The Three-Stage Dynamic Game Model of the Central Government with Uncertain Output Results
The government's marginal penalty incentives should decrease as π_{ih} increases.

The principal-agent problem under output uncertainty needs to consider the output probability of the local government. In this case, the central government's contractual incentives should consider the combination of rewards and punishments. At the same time, it is necessary to strengthen information transparency and supervision. This can not only reduce the speculation and slackness of local governments, but also coordinate the pension insurance nationwide for areas where social security management is lagging. Coordination and cooperation in work has an stimulating effect.

V. Conclusion

This article discusses the central government's contractual incentive design in view of the moral hazards that may arise from local (provincial) governments in the national overall planning of basic pension insurance. In the case of information transparency, the national overall planning of basic pension insurance can achieve the optimal state, and the central government's contractual incentives should be fixed remuneration. In the case of information asymmetry, the central and local governments have entrusted-agent problems in the overall planning work, and the overall planning work can achieve sub-optimal status. The central government's contractual arrangements should adopt marginal incentives; further research should be conducted on the situation of uncertain output. The government's contractual arrangements should adopt a combination of rewards and punishments. In summary, combined with local government moral hazard issues, in order to promote the national overall planning process of basic pension insurance, the following suggestions are put forward:

A. Mandatory Advancement of Overall Planning

National co-ordination work will cause the loss of the benefits of the provinces with pension funds, but compared with land finance, the pension fund balance is only a meager income of the local government. It is in the interests of the central government and the people to protect all insured persons from receiving pensions normally. As the local government is the passive executor of the overall planning work, the central government can require the local governments to follow the central policy instructions through mandatory administrative instructions to promote the mandatory advancement of the national overall planning of basic pension insurance.

B. Clearly Define the Division of Powers and Responsibilities of the Central Government

Unify the power and financial power of the basic pension insurance fund to the central government, and use

legislation to clarify the responsibility of the central government to coordinate the national basic pension insurance. The pension insurance payment standards should be uniformly formulated by the central government, and the management, expenditure and financial support of the pension insurance payment flow are also borne by the central government, and local governments only act as the intermediate collection and issuers of pension insurance funds. Before the implementation of the national overall planning system, the surpluses of the provinces were left to the local governments. This can be regarded as a monetary payment that the central government encourages local governments to cooperate with the overall planning work, which helps buffer the conflict of interest of the central and local governments and ensure the slow transition of the overall planning policy.

C. Enhance the Central Information Advantage

The central government needs to get rid of its information disadvantage and increase its own game power. First of all, we should promote the construction of the national basic old-age insurance informatization, establish a national basic old-age insurance coordinated adjustment monitoring system and a shared information database, and realize the commonality of data between the central and local governments. Second, the monitoring system should be improved, and the central and public oversight forces should be brought into play. The central government should transform the supervision and interview measures to institutionalization, and at the same time give full play to the power of the public and the media to monitor the behavior of local governments, and strengthen the subordinate relationship between the central and local governments. We weaken the information advantages of local governments through various forms, strengthen the constraints of the central government, reduce the occurrence of opportunistic tendencies and moral hazards of local governments, and reduce the overall welfare loss of overall planning caused by information asymmetry.

D. Establish and Improve the Evaluation, Reward and Punishment Mechanism

Strengthen evaluation, rewards and punishments, link the personal performance of local government officials with the overall planning of basic pension insurance, clarify the management responsibilities of relevant government personnel, and use the performance appraisal mechanism to encourage local governments to reduce effort cost, improve effort level, and effort performance. In the principal-agent relationship of the overall planning of basic pension insurance, the central government should adopt an incentive mechanism with incentives as the mainstay and punishment as the supplement. In the case of output determination and information symmetry, the central government should pay a fixed reward to the local government; in the case of output determination but asymmetric information, the central government should rationally design the marginal payment reward based on the output level of the local government; In the case of output uncertainty, the central government should implement an incentive mechanism with both rewards and punishments. According to the specific circumstances of the "probability of high output and low output of local governments", choose to implement a marginal payment or a marginal penalty, of which the marginal payment The gold design should increase with the increase of the probability of high yield, and decrease with the increase of the probability of low yield. The marginal penalty design should decrease with the increase of the probability of high yield and the probability of low yield. At the same time, in the reward and punishment mechanism, attention should be paid to the use of non-monetized promotion rewards for officials, and multiple measures should be taken to enhance the local government's efforts in the national coordination of basic pension insurance.

E. Give Full Play to the Transitional Role of Central Adjustment Funds and Central Fiscal Subsidies

In the transition from provincial-level overall planning to national overall planning, the buffering role of the central adjustment fund and central fiscal subsidy funds should be fully utilized to alleviate the current situation of insufficient pension income in some areas and ensure the orderly progress of the overall planning. In order to ensure the fund adequacy of the central adjustment fund account, the withdrawal ratio should be gradually increased, and the adjustment system for large differences in the income and expenditure of pension funds between regions should be strengthened. After issuing the central adjustment fund and financial subsidy funds, the central

government should strengthen the accountability of local government funding gaps to prevent local governments with large pension fund gaps from generating moral hazards. During the implementation of the central adjustment fund system, the central government should cooperate to promote the unified standardization of the regional basic pension insurance fund budget management, paving the way for the national overall planning of the basic pension insurance fund.

References

- [1] Yan Linlin, Mu Huaizhong. Research on the Income Redistribution Effect of the Improvement of Pension Levels: A Case Study of Liaoning Provincial Overall Planning. *Social Security Research*, 2012(06): 23-35.
- [2] Yao Heng. The necessity of national overall planning of endowment insurance and its realization path. *People's Forum*, 2020(19): 98-99.
- [3] Li Lianfen, Liu Dewei. The power source and path selection of the national overall planning of my country's basic endowment insurance. *Finance and Economics*, 2013(11): 34-43.
- [4] Zhu Hengpeng, Xu Jingting. Shared development, community identification and social security system construction. *Finance, Trade and Economics*, 2016(10): 5-15+29.
- [5] Shen Yan, Deng Dasong. Regional unbalanced development of basic pension under the background of national overall planning--An empirical analysis based on China's provincial panel model. *Hubei Social Sciences*, 2015(01): 80-85.
- [6] Zheng Gongcheng. From regional division to national overall planning: the only way to deepen the reform of the basic pension insurance system for Chinese employees. *Journal of Renmin University of China*, 2015, 29(03): 2-11.
- [7] Pang Fengxi, He Penghao, Zhang Nianming. Fundamental pension fund arrangement and financial burden analysis in the whole country. *Financial Research*, 2016(12): 38-49.
- [8] Han Keqing. Institutional Obstacles and Policy Paths for National Coordination of Pension Insurance. *Social Development Research*, 2018, 5(02): 101-109.
- [9] Liu Hongwei, Liu Yibei. Research on the Main Obstacles and Countermeasures of the National Coordination of Basic Pensions. *Zhongzhou Academic Journal*, 2020(02): 76-83.
- [10] Qi Haipeng, Yang Shaoqing, Yin Kehui. Analysis of obstacles to the national overall planning of basic pensions in my country and plan design. *Local Finance Research*, 2016(11): 26-33.
- [11] Zhu Hengpeng, Yue Yang, Lin Zhenhui. How does the increase in overall planning affect the income and expenditure of social security funds: Empirical evidence from the principal-agent perspective. *Economic Research*, 2020, 55(11): 101-120.
- [12] Zhao Renjie, Fan Ziying. Pension reform, collection and management incentives and corporate contribution rates. *China Industrial Economics*, 2020(09): 61-79.
- [13] Xia Jun, Li Chungen. National Coordination of Basic Pension Insurance: Theoretical Basis, Implementation Difficulties and Policy Points. *Local Finance Research*, 2016(11): 18-25.
- [14] Jia Hongbo. The Central Government Game, Incentive Compatibility and the Coordination Mechanism of the Floating Population Social Security System. *Urban Development Research*, 2020, 27(06): 124-131+140.
- [15] Jiang Xiaogan, Wang Wei. Principal-agent model analysis of the relationship between central and local governments. *Quantitative Economics and Technical Economics*, 2004(04): 77-84.