

Income Redistribution Effects of the Housing Provident Fund: Data Evidence from CHFS

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Abstract

This paper constructs an income redistribution model based on CHFS household micro-income data, studies the impact of China's housing provident fund redistribution policy on urban and rural income distribution during 2010-2018, analyzes the mechanism of income redistribution of China's housing provident fund, uses Theil index method to measure the income gap between urban and rural employees, and evaluates the redistribution effect of housing provident fund. The research results show that the housing provident fund affects income redistribution through four ways: employer matching contribution, individual tax deduction in employee contribution, interest benefit of provident fund loan, and investment income of provident fund loan, and forms a circle structure of income redistribution of urban and rural employees. This circle structure leads to a gradually widening income gap between urban and rural five circles. Among them, the income gap of the working population has been significantly expanded in two ways: matching deposit and investment income. The policy implication of this study is that, combined with the essential goal of socialism for common prosperity, we should re-examine the circle structure of the income redistribution of urban and rural working population generated by the redistribution effect of the housing provident fund at the three levels of opportunity, process and result, and further improve the fairness of the housing provident fund policy and the convergence of its distribution structure.

Keywords

Housing Fund; Redistribution Effect; Urban and Rural Income Distribution; Ring Structure.

1. Introduction

Housing provident fund system is an important part of China's social security system, but also an important policy-based housing finance system, the goal is to improve the ability of low and middle income groups to buy housing, to meet the needs of low and middle income groups. Since its implementation in 1999, the system has made great contributions to promoting China's housing market reform and improving residents' ability to buy houses. The operation of the housing provident fund is divided into two links: deposit and release. In the deposit link, urban units and their employees provide special funds for their house purchases through the deposit of the housing provident fund to improve the ability of employees to buy houses. In the issuance process, urban unit employees can purchase, build or rebuild housing by withdrawing provident fund or applying for housing provident fund loans.

From the perspective of economic attributes, the housing provident fund system belongs to the social security system and is a means of income redistribution. However, with the passage of time, whether the housing provident fund system can really play a role in narrowing the income distribution gap of residents, there are some differences, and lead to the question of its survival and abolition. Identifying differences, it is necessary to clarify the three problems of housing accumulation fund in our country: the historical longitude and latitude of policy formulation

and operation evolution; The mechanism of its participation in income redistribution; The effect of income redistribution and its causes.

2. Research Review

In China, the housing provident fund system refers to a social security system implemented by the state to solve the housing problem of employees in urban units. China's housing accumulation fund system is a policy measure to solve the housing problem of state-owned enterprise workers under the planned economy in the process of socialist market economic system reform. In terms of regulating the income of the working population, different people have different opinions, but the basic focus is on the primary redistributive income of the provident fund system and the effectiveness of income regulation.

Domestic and foreign scholars have done some theoretical and empirical research on the income redistribution effect of the housing accumulation fund in China, but there are many differences on its effect of adjusting the income gap in our country. From the perspective of research literature, scholars mostly study from a static or single redistribution perspective, pay less attention to the diversification and dynamic characteristics of the provident fund redistribution income, and lack to reveal its formation path and mechanism from the overall formation of the redistributive income such as fund collection and treatment, investment income of provident fund loans, tax system and market mechanism. The redistributive income of China's housing accumulation fund differs significantly in the definition of urban unit employee treatment, personal accumulation and social planning, current and long-term income, investment income and other aspects, which may affect the accurate assessment of redistribution effect. In addition, the gradual reform of China's dual and multi-level redistribution policy objectively affects the accuracy of the assessment.

The housing provident fund system belongs to income redistribution in essence and becomes an important part of social security. As an institutional arrangement in the process of China's market economy reform, the housing provident fund system has improved the ability of urban unit workers to buy houses. However, according to the research of scholars, in the system design and operation, there have been problems of primary redistribution and polarization of income redistribution, which seem to have failed to promote social fair distribution. In the form of income delay payment, it has an expanding effect of income redistribution gap on different groups of society through the "collection" and "expenditure" of the provident fund. Therefore, in order to understand the income redistribution effect of China's housing provident fund system, it is necessary to clarify the multi-channel formation of the housing provident fund's redistribution income, and reveal the formation mechanism of its redistribution income from both ends of the provident fund income and expenditure, such as employee personal contribution, employer matching contribution, provident fund withdrawal and investment, provident fund loan investment, etc. Only by constructing the income distribution function of housing provident fund redistribution under the standard of urban and rural working population can we accurately measure the income distribution of the population redistribution, and then study and judge the income distribution effect of the provident fund system.

3. The Redistribution Mechanism of the Housing Accumulation Fund System

The provident fund contribution rule directly increases the income level of urban unit workers within the policy, and expands the income gap of workers within the policy. According to the current housing provident fund policy, the system in which employers pay a certain proportion of their employees' wages into the provident fund is an extension of the initial distribution rather than a redistribution. In urban units, the employer pays the provident fund according to

a certain proportion of the employee's salary, resulting in the employee's actual wage income determines the amount of provident fund income, thus forming the Matthew effect.

In terms of employees' contributions, due to the personal tax exemption policy adopted by the state for employees' contributions to the provident fund, employees with higher incomes save more personal income tax, and some employees will also have a regressive effect of personal income tax, so that they pay less personal income tax. Employers with good efficiency can match a higher proportion of provident fund contributions, and employees with high wages can also get more employer matching amount and matching proportion, thus saving more personal income tax payment, which may lead to the reduction of disposable income level and the expansion of actual income level of employees.

Based on the analysis of the formation mechanism of housing provident fund redistributive income, this paper proposes the following hypothesis:

Hypothesis I: The housing provident fund in proportion to wages will be redistributed for the first time, and the adjustment of income is likely to be reverse.

Hypothesis II: In the short term, the adjustment of the housing provident fund to disposable income may be positive, but in the long term, considering the increase of real income and investment income, the adjustment of income may be reverse.

Hypothesis III: The housing provident fund will widen the income gap between urban and rural working population and form an obvious income redistribution circle structure.

4. Empirical Analysis

4.1. Sample Description

According to the data of China's Household Finance Survey (CHFS) from 2011 to 2019, we investigate whether we can enjoy the housing provident fund policy and whether we can obtain the income of the housing provident fund. The CHFS data is divided into two major categories according to the urban and rural working population, namely the urban unit employees who enjoy the provident fund (class I) and the non-provident fund employees (Class II). Class I can be subdivided into urban unit employees who have used housing provident fund loans (class I -1) and urban unit employees who have not used housing provident fund loans (Class I -2), the former obtained the investment income after housing provident fund loans, and the latter did not handle housing provident fund loans and therefore did not obtain investment income. Class II includes some employees of urban units (class II-1), urban individuals and other urban employees (class II-2), and rural employees (class II-3), all of whom have not received the redistributed income from the housing provident fund.

4.2. The Impact of the Release of Housing Provident Fund on Income Redistribution

4.2.1. The Impact of the Provident Fund on the Income Redistribution of the Working Population within the Urban Unit Policy

The employed population of urban units includes I-1 and II-2 categories. According to the policy provisions, among the urban unit employees, only Class I personnel enjoy the housing provident fund, and most of the employees do not enjoy the housing provident fund II-1 class employees. Policy residents are those who work in the city and participate in the housing provident fund system. According to CHFS data, as of the end of 2022, a total of about 170 million people nationwide are enrolled in the housing provident Fund system. These participating workers are required to contribute a certain percentage of their salary to the housing provident fund every month, and the employer is also required to contribute a corresponding percentage.

According to the CHFS data, the Thiel index before and after the payment of provident fund and the growth rate of Thiel index after payment are calculated using the relevant data of urban unit employee income in 2010. Then, the income data of urban unit employees in 2012 is converted into the actual value of 2010 according to the price index, and the income data of 2012 after conversion is aggregated into the income data of 2010 to calculate the Thiel index and the growth rate of the Thiel index after payment. After the income data of 2014 is converted into the value of 2010, it is summarized into the data of 2010-2012, and the growth rate of the Thiel index of 2010-2014 and the Thiel index after payment are calculated. The data processing and calculation methods in 2016 and 2018 are the same as those in 2014. Then we get Theil index and growth rate data for 2010-2016 and 2010-2018. As shown in Table 1:

Table 1. The income adjustment effect of the housing provident fund on the working population within the urban unit policy during 2010-2018

Base period of investigation	Pre-redistribution	Post-redistribution	Degree of convergence	Effect direction
2010	0.20911	0.20878	-0.16%	Forward direction
2010-2012	0.24845	0.24717	-0.52%	Forward direction
2010-2014	0.19780	0.19715	-0.33%	Forward direction
2010-2016	0.21688	0.21832	0.66%	Reverse
2010-2018	0.22025	0.22220	0.89%	Reverse

Table 1 statistics the Theil index and its growth rate of the income of the employed population in the urban unit policy before and after the provident fund deposit. From the data of the three stages of 2010, 2010-2012 and 2010-2014, the Theil index after the reallocation of the housing provident fund of the employed population within the urban unit policy has decreased, indicating that the reallocation of the housing provident fund has indeed narrowed the income gap of the redistribution of the employed population within the urban unit policy. That is, at this time, the housing provident fund has positively adjusted the income of the employed population within the policy. The main reason for this phenomenon is that employees in urban unit policies receive unit contribution income, interest income from provident fund deposits, income from individual tax reduction, and the resulting opportunity cost. Moreover, the positive adjustment effect of opportunity cost exceeds the reverse adjustment effect of the first three mechanisms, resulting in the overall effect of narrowing the income redistribution gap.

From the data of 2010-2016 and 2010-2018, the Theil index after the reallocation of the working population's housing provident fund within the urban unit policy has increased, indicating that the housing provident fund system in these two stages has expanded the income gap of the working population's redistribution within the urban unit policy. At this time, the housing provident fund made a reverse adjustment to the income of the employed population within the policy. The main reason for this phenomenon is that employees in urban unit policies receive unit contribution income, interest income from provident fund deposits, income from individual tax reduction, and the resulting opportunity cost. In addition, the reverse adjustment effect of the first three mechanisms exceeds the positive adjustment effect of opportunity cost, resulting in the overall effect of widening the income redistribution gap.

4.2.2. The Impact of Provident Fund on the Income Redistribution of Urban Working Population

Table 2 statistics the Theil index of income and its growth rate of urban unit employees before and after their provident fund contributions.

Table 2. The income adjustment effect of housing provident fund on the working population of urban units during 2010-2018

Base period of investigation	Pre-redistribution	Post-redistribution	Degree of convergence	Effect direction
2010	0.36222	0.37511	3.56%	Reverse
2010-2012	0.32042	0.33424	4.31%	Reverse
2010-2014	0.31223	0.31791	1.82%	Reverse
2010-2016	0.32024	0.32423	1.25%	Reverse
2010-2018	0.32181	0.32985	2.50%	Reverse

It can be seen from the data in the table that the Theil index has increased after the redistribution of the housing provident fund of the urban unit working population, indicating that the housing provident fund system has widened the income gap of the urban unit working population redistribution, and the housing provident fund has made a reverse adjustment to the income of the urban unit working population. The main reason for this phenomenon is that part of the employed population in urban units belongs to the employment group within the policy, which has the income of the provident fund and other ancillary income. The other part of the urban unit policy outside the employment group has no provident fund and its affiliated income. It is precisely because of this obvious difference in the urban unit working population that the accumulation fund redistribution has expanded the urban unit working population redistribution income gap. In addition, employees in urban unit policies receive unit contribution income, interest income from provident fund deposits, income from individual tax reduction, and the resulting opportunity cost, and the reverse adjustment effect of the first three mechanisms exceeds the positive adjustment effect of opportunity cost, resulting in the overall effect of widening the income redistribution gap.

4.2.3. The Impact of Provident Fund on the Income Redistribution of Urban and Rural Working Population

Table 3 statistics the Theil index and its growth rate of the urban and rural working population before and after the provident fund contributions.

Table 3. Income adjustment effect of housing provident fund on urban and rural working population during 2010-2018

Base period of investigation	Pre-redistribution	Post-redistribution	Degree of convergence	Effect direction
2010	0.47013	0.58760	24.99%	Reverse
2010-2012	0.73077	0.76761	5.04%	Reverse
2010-2014	0.70767	0.71387	0.88%	Reverse
2010-2016	0.74424	0.80910	8.91%	Reverse
2010-2018	0.75713	0.81620	7.80%	Reverse

According to the data in the table, the Thiel index has increased after the redistribution of the housing provident fund for urban and rural employees, indicating that the housing provident fund system has widened the income gap of the redistribution of the urban and rural employees,

and the housing provident fund has reversely adjusted the income of the urban and rural employees. The main reasons for this phenomenon are similar to the reasons for the widening of the income gap after the redistribution of the working population in urban units. Because whether it is farmers or urban units outside the policy of employment groups, they have not paid the provident fund, let alone the provident fund affiliated income, from the perspective of the provident fund covered groups, they actually belong to the same type of people. In addition, according to the data results, the reverse distribution effect of the provident fund system on the income redistribution of urban and rural working population is uncertain, sometimes the impact is more significant, sometimes the impact is less significant.

4.3. The Impact of Housing Provident Fund Loans on Income Redistribution

Table 4 shows the Theil index and its growth rate of the income of the employees in the urban unit policy before the provident fund deposit and after the provident fund loan deposit.

Table 4. The income adjustment effect of housing provident fund loans on the working population within the urban unit policy during 2010-2018

Base period of investigation	Pre-redistribution	After provident fund loan	Degree of convergence	Effect direction
2010	0.20911	0.20652	-1.24%	Forward direction
2010-2012	0.24845	0.24832	-0.05%	Forward direction
2010-2014	0.19780	0.21622	1.53%	Reverse
2010-2016	0.21688	0.24863	9.31%	Reverse
2010-2018	0.22025	0.25307	14.90%	Reverse

From the data in the table, the situation in Table 4 is similar to that in Table 1. From the data of 2010 and 2010-2012, the Theil index after the reallocation of the housing provident fund of the employed population within the urban unit policy has decreased, indicating that the reallocation of the housing provident fund has indeed narrowed the income gap of the redistribution of the employed population within the urban unit policy, that is, the housing provident fund has positively adjusted the income of the employed population within the policy at this time. From the data of the three stages of 2010-2014, 2010-2016 and 2010-2018, the Theil index after the reallocation of the working population's housing provident fund within the urban unit policy has increased, indicating that the housing provident fund system in these two stages has expanded the income gap of the working population's redistribution within the urban unit policy. At this time, the housing provident fund made a reverse adjustment to the income of the employed population within the policy. The reasons for these two phenomena are similar to the reasons for the widening of the income redistribution gap of the working population within the urban unit policy. Moreover, compared with Table 1, the effect of reverse adjustment in the later stage is more significant, mainly for the following reasons: Due to the unit contribution income, interest income of provident fund deposit, income from individual tax exemption, interest income saved by provident fund loan, opportunity benefit obtained by provident fund house purchase, and the opportunity cost brought by this, and the reverse adjustment effect of the first five mechanisms exceeds the positive adjustment effect of opportunity cost, resulting in the overall effect of widening the income redistribution gap.

4.3.1. The Impact of Housing Provident Fund Loans on the Income Redistribution of Urban Unit Employees

Table 5 statistics the income index and its growth rate data of urban unit employees before and after they pay the housing provident fund and use the provident fund loan.

Table 5. Income adjustment effect of housing provident fund loans on the working population of urban units from 2010 to 2018

Base period of investigation	Pre-redistribution	After provident fund loan	Degree of convergence	Effect direction
2010	0.36222	0.38511	6.32%	Reverse
2010-2012	0.32042	0.34221	6.80%	Reverse
2010-2014	0.31223	0.34584	10.76%	Reverse
2010-2016	0.32024	0.37065	15.74%	Reverse
2010-2018	0.32181	0.37631	16.94%	Reverse

On the whole, the Thiel index of the urban unit working population has increased after the redistribution of the housing provident fund - that is, it is developing in the direction of expanding the income gap of the urban unit working population redistribution, and this reverse adjustment effect is rising year by year. Compared with Table 2, this adverse adjustment effect is more significant, mainly for the following reasons: On the one hand, some groups have contributed provident fund, so they can get the provident fund and its affiliated income; The other group does not belong to the residents of the policy, and does not have the provident fund and its affiliated benefits. On the other hand, it is because the part of the group that has paid the provident fund will also get different benefits because of whether to use the provident fund loan and the provident fund to buy a house. Under the joint action of the two layers of reasons, the income redistribution gap of the urban unit working population has further expanded after the redistribution of the provident fund.

4.3.2. The Impact of Housing Provident Fund Loans on the Income Redistribution of Urban and Rural Employees

Table 6 shows the Theil index of income and its growth rate of urban and rural employees before and after they paid provident fund and used provident fund for loans from 2010 to 2018.

Table 6. Income adjustment effect of housing provident fund loans on urban and rural employees during 2010-2018

Base period of investigation	Pre-redistribution	After provident fund loan	Degree of convergence	Effect direction
2010	0.47013	0.53435	13.66%	Reverse
2010-2012	0.73077	0.76323	4.44%	Reverse
2010-2014	0.70767	0.72782	2.85%	Reverse
2010-2016	0.74424	0.82233	10.49%	Reverse
2010-2018	0.75713	0.83038	9.67%	Reverse

On the whole, the Thiel index of the urban and rural working population has increased after the redistribution of the housing provident fund - that is, it has developed in the direction of expanding the income gap between the urban and rural working population. Compared with Table 3, this reverse adjustment effect is more significant. The reasons for this phenomenon are similar to the reasons for the widening of the income redistribution gap of the working population in urban units.

5. Conclusion and Enlightenment

5.1. Main Conclusions

Based on the analysis of the empirical part (2) and (3) of this paper, the three hypotheses mentioned above are further verified. According to the provident fund contribution rules, there is a large gap between the upper and lower limits of the provident fund contributions, and the contribution ratio is also different. In reality, there is a phenomenon that high base and high proportion coexist, and low base and low proportion coexist, leading to the primary redistribution, which verifies hypothesis I.

According to the results in Table 1 and Table 4, there is both positive adjustment and reverse adjustment before and after the redistribution of the provident fund. For the urban unit working population, since more than half of the urban unit working population belongs to the non-policy personnel, the Theil index of the urban unit working population before and after the redistribution of the provident fund is relatively large, and the reverse adjustment effect after the distribution is relatively significant. This is reflected in Table 2, thus verifying the judgment of hypothesis II.

Since farmers are people outside the policy, China's urbanization rate is steadily increasing, and the number of farmers is decreasing. Based on the above premise, the Theil index base of urban and rural working population is relatively large before the redistribution of the provident fund, and the growth rate of the Theil index does not fluctuate greatly after the redistribution of the provident fund, which is reflected in Table 3. Since China's economic reform and opening up, the economic growth rate is rapid, the real estate market is also developing rapidly, the housing price index is growing rapidly, for the use of housing provident fund loans within the policy of employment, access to more investment income and speculative income. At the same time, it also led to the increase in the value of urban employment workers and self-housing properties. Therefore, the Thiel Index produces a relatively obvious circle structure among the employed population within the policy, the employed population in urban units, and the employed population in urban and rural areas, which is reflected in the analysis results of Table 4, Table 5, and Table 6, verifying hypothesis III.

The results of the study show that the housing provident fund system has caused an increase in the Thiel index of residents' redistribution of income, that is, the gap between the rich and the poor has widened. As an important part of China's social security system, the housing provident fund system aims to provide employees with the accumulation of housing funds and loan support. Since its implementation in 1999, the housing provident fund system has achieved certain results, but there are also some problems. Based on the data of the Household Finance Survey (CHFS), this paper quantitatively analyzes five kinds of redistributive income mechanisms of the housing provident fund system and measures the redistributive income effect of the provident fund system. The findings are as follows: (1) the provident fund system expands the income gap of residents through four redistributive income mechanisms: unit income distribution, individual tax exemption, interest concession of provident fund loans, and investment opportunity income. Only a lower interest rate on provident fund deposits would narrow the redistributive income gap. (2) The housing provident fund system expands the income gap of residents' redistribution within the policy through two income mechanisms of provident fund loan saving interest income and investment opportunity income. (3) The housing provident fund system has widened the income gap between urban and rural working population redistribution through four income mechanisms: income from unit distribution, income from individual tax exemption, interest savings from provident fund loans, and income from investment opportunities.

5.2. Some Enlightenments

In the "14th Five-Year Plan" period, China will comprehensively build a modern socialist country, achieve the second centenary goal and a new journey to fully build a modern socialist country. Common prosperity is the essential requirement of the great rejuvenation of the Chinese nation. The housing provident fund system is a long-term system for the state to encourage residents to buy houses and improve housing quality. It aims to improve the housing level of all residents and promote the balanced development of housing quality of urban and rural working population.

Some problems of China's provident fund system are mainly manifested in that the provident fund system increases the inequality of urban and rural working population and the income redistribution of urban and rural working population within the policy. In the access stage, most of the employees in urban units, urban non-workers and migrant workers have no provident fund, and different groups have great unfairness in the access stage. In the process of the implementation of the provident fund system, due to the different nature of units or different positions, the proportion of employees' provident fund contributions is different, resulting in great unfairness. According to the results of employees' benefits from the provident fund system, employees' use of provident fund loans will bring a lot of investment opportunity returns, while those who do not use provident fund loans will lose this part of income. Whether to use provident fund loans is an important factor that causes the inequity of provident fund in the result stage.

Therefore, to achieve the goal of common prosperity, it is urgent to improve the housing provident fund system, expand the coverage of policies, fully consider the housing needs of urban flexible employees (urban workers who are not employed by urban units), increase the contribution ratio of urban low-income groups, including urban employees and urban flexible employees, and appropriately reduce the contribution ratio of high-income groups. Make the provident fund system more fair, stable and sustainable, meet the housing and housing needs of different groups, promote the realization of new urbanization and common prosperity, and make important contributions to the phased goals of economic development in the new era.

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