

Article

# Research on Property Income Inequality Effect of Fiscal Finance

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**Abstract:** “Creating conditions for more people to have property income” has become a national policy after the 17th National Congress of the Communist Party of China. Based on the micro survey data from Chinese Family Panel Studies (CFPS) in 2010, 2012, 2014, 2016 and the macro panel data at the provincial level, a logarithmic linear equation was built to estimate the impact of micro and macro factors on property income. Furthermore, the contribution of fiscal expenditure and financial development on property income equality can be recognized using the regression-based inequality decomposition method. This research revealed that fiscal expenditure improves residents’ property income and slightly reduces the inequality of property income distribution. With respect to financial development, it improves residents’ property income but aggravates the inequality of property income distribution. However, there is a significant difference between the different regions. In eastern and central regions, inequality of property income distribution greatly benefits from fiscal expenditure, while in northwest regions, fiscal expenditure makes property income inequality even worse. Therefore, the focus of financial sustainable development is to reduce property income inequality through the establishment of an effective government and the improvement of the rule of laws.

**Keywords:** fiscal redistribution; financial development; fiscal expenditure; property income

**JEL Classification:** G10; H30; E6

## 1. Introduction

The concept of “creating conditions for more people to have property income” was first introduced at the 17th National Congress of the Communist Party of China in October 2007. The propositions related to enriching residents’ property income were proposed at the 18th and 19th National Congresses of the Communist Party of China, respectively. Although residents’ property income grew rapidly in the past decade in China, it has not become an important source of national income as expected, according to previous research.

The purpose of this article was to analyze the impact of fiscal expenditure and financial development on property income and to measure their contributions to property income inequality. Therefore, both fiscal and financial factors are included in the framework of income distribution in this paper. With the regression-based inequality decomposition method, this paper quantitatively measured the degree of property income inequality and identifies the factors that affect residents’ property income using a large number of micro investigation data and macro data. Eventually, this article provides policy recommendations for optimization and reform of fiscal, financial and taxation systems based on the results of empirical analysis.

The results show that financial development can improve the level of residents’ property income though it can be harmful to the equality of property income distribution. Fiscal expenditure is

beneficial to residents' property income, but the regional differences are significant. Overall, fiscal expenditure slightly reduces the inequality of property income. As a result, the focus of financial sustainable development is to reduce property income inequality and build an effective government and law system.

This paper provides a new perspective and research direction on the adjustment of the financial market system in the field of primary distribution and the reform of fiscal and tax systems in the field of redistribution. More importantly, this article takes the lead in analyzing macroeconomic policies in the dimension of microeconomics. With the combination of macro data and micro household survey data, the effect of fiscal expenditure and financial development on residents' property income inequality can be measured. Besides, this paper quantitatively measures the contribution of macro and micro factors to property income inequality based on microsimulation analysis. Eventually, suggestions on the reform of the tax system and the optimization of the property income distribution are provided according to the quantitative results.

The rest of the paper is organized as follows. Section 2 introduces the relevant literature on residents' property income. Section 3 provides a brief description of the data derived from the Chinese Family Panel Studies (CFPS) and explains the design of the regression-based inequality decomposition method. Section 4 shows the results of the property income determining equation. Section 5 concludes the whole study and Section 6 provides policy recommendations according to the research findings.

## 2. Literature Review

According to the experience of developed countries, property income will become an important source of residents' income when the per capita GDP exceeds 2000 US dollars and China has reached this level as early as 2006 (Tang and Lai 2013). Based on the data released by the International Monetary Fund, the level of per capita GDP in China has reached \$8643 in 2018, which is four times higher than the threshold level. According to the National Bureau of Statistics (NBS), the proportion of property income in national income increased from 2.68% at the end of 2006 to 8.11% at the end of 2017. However, a large number of empirical researches based on household surveys show that the proportion is only about 3% and property income has not become an important source of national income as expected. Although property income cannot be regarded as the primary source of national income, the growth rate of property income is 5% higher than the growth rate of disposal income in both urban and rural areas according to NBS. As the studies conducted by NBS mainly rely on samples from rural residents, data from urban areas, and the whole country needed to be supplemented. Consequently, this paper employs microdata such as the China Household Income Project (CHIP) and Chinese Family Panel Studies (CFPS) to expand the original research. Table 1 divides the property income of urban and rural residents in 2002 and 2012 into five categories. It can be noticed that 20% of low-income groups take only 0.3% of the property shares, while 20% of high-income groups occupy 77.37% of the property shares. In other words, a great amount of social wealth is concentrated in a small group of people, and the property income of residents is extremely likely to become an important factor in income inequality.

In recent years, the main relevant researches focus on the following aspects:

The first one is analyzing the impact of unequal property income distribution on social stability. Inequality of property income was first introduced by Lampman as a source of social problems in 1962 (Lampman 1962). Nobel Prize winner Stiglitz pointed out the inefficiency of governments in income redistribution. He stated that the existing system is continuously transferring wealth from the bottom of the society to the top and it will lead to slow growth of GDP and social instability (Stiglitz 2013).

**Table 1.** Property shares of urban and rural residents in five categories.

Property Classification	Unit: RMB							
	Property Mean Value (Yuan)		National Share of Property		Town Property Share		Rural Property Share	
	2002	2012	2002	2012	2002	2012	2002	2012
Low-income households	7525	3422	2.37%	0.30%	3.32%	1.59%	3.35%	0.66%
Middle to the bottom	21,523	25,498	6.77%	2.25%	9.60%	5.32%	9.53%	3.68%
Middle-income household	38,251	69,395	12.03%	6.13%	15.22%	9.02%	15.17%	7.08%
Medium by upper	69,083	157,771	21.73%	13.94%	23.13%	16.30%	22.82%	13.86%
High income households	181,660	875,707	57.11%	77.37%	48.72%	67.78%	49.13%	74.73%

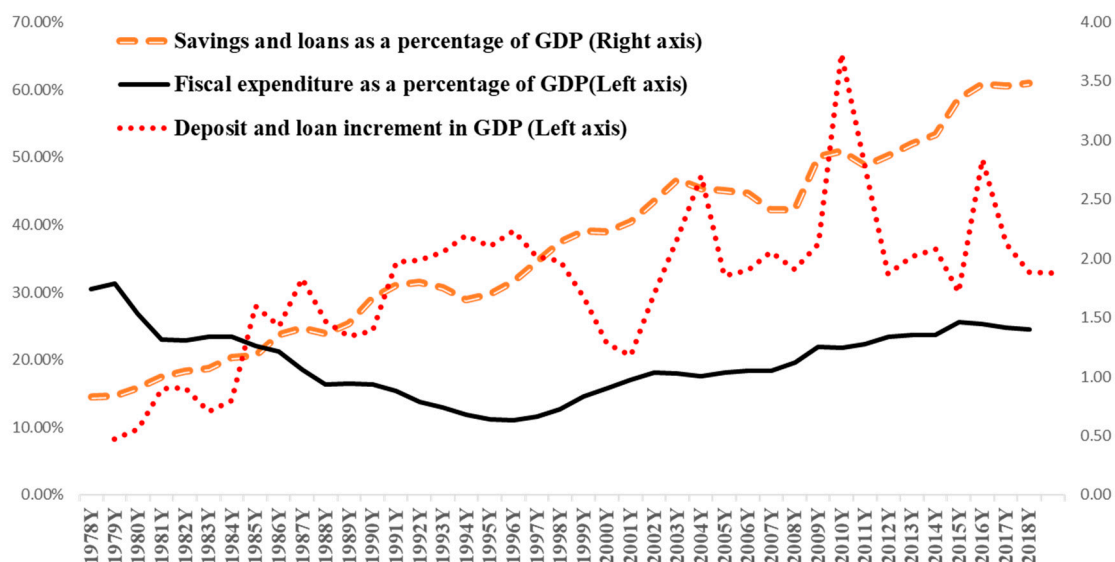
Data source: Calculated from the data listed in “the widening trend of residents’ property gap in the 13th five-year period” by the research group of China institute of income distribution, Beijing normal university.

The second one is studying the impact of property income on social welfare. In 1953, Harsanyi proposed that there is a two-way effect between the level of personal welfare and social income distribution. That is, the level of personal welfare depends on the social income distribution system, and the level of personal welfare also affects the social income distribution system (Harsanyi 1953). Milanovic believes that unequal property income distribution will result in higher redistribution, which distorts the tax burden and weakens economic growth (Milanovic 2000). Similarly, Bourguignon suggests that the suitability of economic policies will lead to different levels of residents’ property income (Bourguignon 2003).

The third one is studying the impact of property income on economic growth. There is no consistent conclusion on whether property income has a positive or negative effect on economic growth. For example, scholars such as Galor and Zeira (1993), Persson and Tabellini (1994), Xu et al. (2003) concluded that income inequality will reduce economic growth based on empirical research. However, Fields (2003) obtained an opposite conclusion with different measurement methods, that is, the impact of income inequality on economic growth is positive.

Finance is the foundation of governance. Modern finance theories suggest that finance can adjust the primary distribution of residents’ property income through the indirect adjustment to realize fair distribution and ensure social stability. The government’s influence on income distribution is mainly realized by adjusting the scale and structure of fiscal expenditure. In developed countries, the proportion of fiscal expenditure on GDP normally over 30%, while the percentage in China is less than 25%. With respect to the structure of fiscal expenditure, Yang and Fang found that the transfer expenditure and security spending are the main part of fiscal expenditure in the United States while fiscal expenditure in China mainly focuses on investment and government consumption (Yang and Fang 2010). In the market economy, fiscal expenditure realizes primarily through the financial system, especially for investment spending. Therefore, the development of a financial mechanism is included in the reform of the financial system in China. Liu and Fu divided the information process of China into four stages (Liu and Fu 2018). The first stage is the exploration of investment and financial system (1979–1991), when a loan is introduced in financing infrastructural projects. The second stage is the establishment of government investment and the reform of the financial system during the period of the socialist market economy (1992–2002), when the Policy Banks and financial asset management companies are founded and issuing bonds becomes the main channel of infrastructure financing. The third stage is the reform of government investment and financial system during the period of the improved socialist market economy (2003–2012), when infrastructure construction is financed by local financing platforms. The fourth stage is the period of comprehensively deep reform (from 2013 to now), during which the local government mainly uses debt replacement and standardized PPP (Public-Private Partnership) pattern to allocate bank credit resources. Figure 1 shows the relationship intuitively. At the early stage of Reform and Opening-up, the reform of using loans instead of allocation changed the previous accounting concept of fiscal expenditure for state-owned

enterprises. With the development of Reform and Opening-up, national wealth increases year by year. However, if replaced the total amount of deposits and loans with the increment amount of each year, the development is similar to the path of fiscal reform and fluctuates with the change of fiscal policy. It can be seen that finance in China, especially for banking, is set up for fiscal purposes and developed with fiscal reform.



**Figure 1.** Relationship between financial development and fiscal expenditure. Source of data: Calculated according to the statistical yearbook of previous years.

Although the history of financial development theory is limited, existing studies show that financial development is related to economic growth and income distribution, and it may widen or narrow the gap of income distribution. The original research of the relationship between finance and economy started in 1912, Schumpeter believes that finance can distinguish the innovative entrepreneurs and provide credit support for their innovation, and therefore promote economic growth (Schumpeter 1912). McKinnon and Edward (1973) study the relationship between financial development and economic growth from different perspectives and propose the theory of “financial repression” and “financial deepening”, which are the foundation of financial development theories in developing countries. They suggest that excessive government intervention will negatively affect financial efficiency and economic development, and therefore financial liberalization should be advocated. The marketization of the interest rate can increase savings and investment and help to achieve the goal of financial and economic growth. However, Stiglitz and Weiss hold different opinions on their proposition (Stiglitz and Weiss 1981). They suggested that information asymmetry of credit cooperation is the biggest problem in the financial market. Stiglitz put forward the financial constraint theory in 1993 and pointed out that governments should support financial institutions to guide enterprises and residents through a series of financial restraint policies such as deposit regulation and market access restrictions. The financial restraint theory believes that governments can solve the problem of financial market failure and promote economic growth, and therefore financial supervision should be adopted and strengthened. On the other hand, the financial repression theory suggests that the government’s control in the financial market distorts the allocation of resources and damages economic growth, and thus financial liberalization should be advocated. In reality, after the second world war, the phenomenon of financial repression did not appear in Thailand, Indonesia, Malaysia and China and the exercise of financial constraint theory also failed in the United States and Europe. As early as 1969, Goldsmith systematically elaborated on the concept of financial structure (Goldsmith 1969). He suggested that financial development is about the change of financial structure and the evolution process of financial structure is the process of financial development. He also proposed the eight indicators

to measure financial structure, including the Financial Interrelations Ratio (FIR). This indicator is very complicated in the original design and it is used as a measure of financial structure and financial development scale. To measure the financial level of a country or a region, McKinnon proposed a quantitative index of financial level, which is M2/GDP, based on Goldsmith’s theory (McKinnon and Edward 1973). This index reflects the function of payment intermediation and saving in monetary and financial systems. Although the measures of Goldsmith and McKinnon reflect the scale of financial development in a country, they ignore the ability of finance in diverting savings into investment. In 1992, Asian Development Bank optimized McKinnon’s index by replacing M2 with the credit volume of the private sector and this indicator can be used to represent the allocation efficiency of credit resources.

### 3. Data, Variables and Research Methods

A log–linear equation was constructed to estimate the impact of macro and micro factors on property income. On this basis, the regression-based inequality decomposition method was adopted to identify the contribution of financial instruments and financial development to property income inequality (Fields 2003).

First, we construct the income determining equation:

$$\ln Y_i = \beta_0 + \beta_1 x_i^1 + \beta_2 x_i^2 + \dots + \beta_K x_i^K + \varepsilon_i \tag{1}$$

where  $Y$  is individual property income,  $(x^1, x^2, \dots, x^K)$  is  $K$  factors affecting property income. In the empirical regression, the selected factors mainly include individual factors, village or neighborhood committee factors and regional macro factors.  $\beta_0$  is a constant term,  $\beta_1$ - $\beta_K$  is other parameters needed to be estimated, and  $\varepsilon$  is the random disturbance term.

Write Equation (1) in the form of matrix:

$$\ln Y = a'Z \tag{2}$$

where  $a = [\beta_0, \beta_1, \dots, \beta_K, 1]$ ,  $Z = [1, x^1, x^2, \dots, x^K, \varepsilon_i]$  and  $1$  as  $x^0$ ,  $\varepsilon$  as  $x^{K+1}$ , then there are  $K + 2$  variables in  $Z$ . If the variance of both sides of Equation (1) is calculated, the left side of Equation (1) is a simple inequality measure index, namely the logarithmic variance. According to the covariance theorem of random variables (Mood et al. 1974), the following equation holds:

$$\text{Cov} \left[ \sum_{k=0}^{K+1} \beta_k Z_k, \ln Y \right] = \sum_{k=0}^{J+1} \text{Cov}[\beta_k Z_k, \ln Y] \tag{3}$$

The left side of Equation (3) is the covariance of  $[\ln Y]$  with itself, which is actually the variance of  $[\ln Y]$ , so we get:

$$\sigma^2[\ln Y] = \sum_{k=0}^{J+1} \text{Cov}[\beta_k Z_k, \ln Y] \tag{4}$$

Divide both sides of Equation (4) by  $\sigma^2[\ln Y]$ :

$$\frac{\sum_{k=0}^{J+1} \text{Cov}[\beta_k Z_k, \ln Y]}{\sigma^2[\ln Y]} = \sum_{k=0}^{J+1} s_k[\ln Y] = 100\% \tag{5}$$

Among them,

$$s_k[\ln Y] = \frac{\text{Cov}[\beta_k Z_k, \ln Y]}{\sigma^2[\ln Y]} = \frac{\beta_k \sigma(Z_k) \text{cor}[Z_k, \ln Y]}{\sigma[\ln Y]} \tag{6}$$

$s_k$  is the relative contribution weight on income inequality of the  $k$  factor. If we ignore the influence of random disturbance on inequality, we can get:

$$\frac{\sum_{k=0}^J Cov[\beta_k Z_k, \ln Y]}{\sigma^2[\ln Y]} = R^2[\ln Y] \quad (7)$$

$R^2[\ln Y]$  is the decision coefficient of the logarithmic linear regression model in Equation (1). At this point, the relative contribution weight on income inequality of the  $k$  factor can be expressed as:

$$p_k[\ln Y] = \frac{s_k[\ln Y]}{R^2[\ln Y]} \quad (8)$$

The data used in this paper comes from CFPS. CFPS is an interdisciplinary survey covering more than 16,000 families in 25 provinces, municipalities and autonomous regions in the mainland of China. The samples include all kinds of data from sample families such as the changes and dynamic relationships in families, economic activities, education and health condition. Household income of CFPS in 2010, 2012, 2014 and 2016 are used in this paper, and household property income is chosen as the explanatory variable. In order to make the measurement as accurate as possible, the first step is to clean the database.

Firstly, as the property income in CFPS dataset belongs to the whole family, the size of property income may be different depends on the number of family members. Therefore, it is necessary to control the size of the family in the model.

Secondly, it is common to use the relevant characteristic of residents as explanatory variables when constructing income determining equations based on existing studies (Li and Zhao 1999; Luo and Wang 2012; Li and Liu 2013; Luo 2018). During the period of original data collection of the CFPS database, investigations are conducted on all members in families without a clear specification of the head of the household. In order to remedy this limitation, members with the highest income in families will be considered as the head of the household, and their characteristic variables will be introduced to the model as explanatory variables. These variables include age, gender, residence ("1" stands for urban areas and "0" stands for rural areas), education level, occupation and health condition ("1" stands for "relatively healthy", "healthy" and "very healthy" while "0" stands for other conditions).

In addition, variables from two villages are added to the model to investigate the impact of the economic development of the community on residents' property income. It includes the economic condition of the community ("1" represents the poorest condition and "7" represents the richest condition) and the per capita income level of community. As a community survey was not conducted in 2012 and 2016, the results in 2012 and 2016 were cautiously simulated by the data in 2010 and 2014, respectively, and it will not lead to obvious bias due to the stability of the community's economic situation in recent years.

Finally, this study focuses on the impact of fiscal expenditure and financial development on household property income. Therefore, the proportion of fiscal expenditure in GDP, the index of financial development scale and the index of financial development efficiency were placed in the model. Furthermore, provincial macro data are matched to each family according to the code of each province. For each family, investments related to real estate, property transactions and financial assets generally will not occur across provinces. Thus, the degree of financial development at the provincial level can reflect the market conditions of family property transactions better, and affect the level and distribution of residents' property income.

As some values are missing in several variables, only those families with complete information remained. Therefore, the sample sizes in 2010, 2012, 2014 and 2016 are 4988, 4610, 4216 and 6104 respectively. The total number of samples for four years is 19,918 and the descriptive statistics for all variables are shown in Table 2.

**Table 2.** Descriptive statistics of variables.

Variable	Mean	Standard Deviation	Minimum	Maximum
Property income	613.4283	15,555.498	−700,000	2,000,300
Householder age	44.45778	14.58847	16	110
Householder gender	0.678833	0.466936	0	1
Residence of head of household	0.218847	0.413475	0	1
Education level of householder	5.02617	4.518692	0	18
The head of the household professional	0.478763	0.499561	0	1
The head of the household health	0.745456	0.435615	0	1
Family size	4.106323	1.764394	1	26
Economic conditions of the village	4.150969	1.431242	1	7
Per capita income of the village	4830.161	4517.651	53	45,000
The proportion of regional fiscal expenditure	0.222123	0.087673	0.105822	0.437482
Regional financial development scale index	2.856067	0.843307	1.689742	7.875152
Regional financial development efficiency index	0.71111	0.085913	0.460515	0.956331

#### 4. Decomposition Results and Analysis

Table 3 reports the estimated results of the property income determining equation. Firstly, samples from CFPS in 2010, 2012, 2014 and 2016 were used to estimate the income determining equation in different years, respectively. Then, the samples for four years were collected and used as a sample to estimate the income determining equation. When the regression conducted year by year, dummy variables of provinces were introduced in each model to control the heterogeneity of data. When the regression used the samples for four years as a whole, dummy variables of both provinces and periods were necessary to be controlled. The estimated results show that:

- (1) Factors related to the head of household and family. Householder's age is positively related to family property income. Though the result is not significant in 2012, the results of other samples are significant at the statistical level of 10%. It can be explained that property income depends on property value. After a long period of accumulation, the property value of the elderly will be higher than the young people's, and therefore the elderly will get higher property income. The gender of the householder has no significant effect on household property income except in 2016. The influence of householder's residence is only significant in 2012, but it is significant when considering all samples as a whole at the statistical level of 10%. It indicates that the property income of households living in urban areas is slightly higher than those living in rural areas. The estimated coefficient of householder's education level is positive in all samples, but it is statistically significant only in 2010 and for the whole sample. It means that this variable can be an important factor in household property income. Although the estimation coefficient of the householder's occupation is positive in all samples, it is not statistically significant except in 2014 and for the whole sample. It suggests that the influence of householder's occupation on household property income is uncertain. The health condition of householder and family size has no significant effect on household property income. In general, wages and operating income are relevant to health conditions and family size. However, property income is different from wage and operating income and it mainly depends on long-term accumulation of property

value. Therefore, it is reasonable that the health condition of householder and family size are not relevant to property income.

- (2) Community factors. The economic condition of the community has no significant effect on household property income. However, per capita income level of the community has a positive relationship with household property income. It shows that residents in a well-developed community tend to own properties with higher value, and therefore the sales and rents of those properties will be higher. Moreover, the degree of economic development should be determined not only by the appearance of the community but also by the level of residents' income.
- (3) Provincial macro factors. The influence of the proportion of regional fiscal expenditure in GDP on household property income is relatively complex. In the sample of 2010, this variable is negatively related to the property income at a significant level of 1%. In the samples of 2012 and 2014, the variables are positively related to the property income at a significant level of both 1% and 5%. In the sample of 2016, the coefficient of variables is positive but not statistically significant. Due to the inter-annual heterogeneity, the effect of financial expenditure on household property income in the whole sample is not statistically significant. Overall, the government's allocation uses more economic resources, which may affect residents' savings, wealth level and household property income. The index of financial development scale can positively promote the growth of residents' property income in all samples at a significant level of 1%. And the index of financial development efficiency has a negative impact on residents' property income at a significant level of 1% except for 2014. In general, property transactions and financial investments develop better in regions with a higher degree of financial development, and residents from those areas tend to gain higher property income. Besides, the ability of the regional financial sector in converting savings into investment would be higher if the region's financial market is regulated and the greater efficiency of capital flows represents the higher efficiency of financial development. On the contrary, speculation will appear in the financial market of regions that lack effective supervision, and it will damage the profitability of financial assets for residents.

Table 4 reports the breakdown results of property income inequality in the sample years. On the whole, characteristics of the head of household including age, gender, residence, education level, occupation, health condition and family size, and community economic conditions including indicators such as economic conditions and per capita income of residents, contribute little to property income inequality.

This paper primarily focuses on the proportion of fiscal expenditure, the index of financial development scale and the index of financial development efficiency. In the three core variables, the contribution of the proportion of regional fiscal expenditure on property income inequality in 2010 is 9.34%, and the ratio changes into  $-17.31\%$ ,  $-19.23\%$  and  $-7.38\%$  in 2012, 2014 and 2016, respectively. As the variable's contribution to property income inequality is negative, the proportion of fiscal expenditure can help to reduce the inequality of property income distribution. In terms of the whole sample, a high percentage of fiscal expenditure can also reduce the inequality of property income distribution, but the ratio is only  $-4.94\%$  in this sample. Combined with the estimated results from the determining equation, it can be concluded that governments can participate in resource allocation and intervene in the market and private sector through fiscal expenditure. Nevertheless, it is helpless for residents to gain higher property income, but it can reduce the inequality of property income distribution by improving the restraint of the rich. But the effect of redistribution is relatively low, and it remains to be improved in the future.



**Table 3.** Estimation results of property income determining equation.

Explanatory Variables	2010 Samples	2012 Samples	2014 Samples	2016 Samples	All the Samples
Householder age	0.001 (1.91) *	0.001 (1.51)	0.014 (3.72) ***	0.010 (3.21) ***	0.009 (5.10) ***
Householder gender	0.025 (0.28)	0.128 (1.34)	−0.050 (−0.50)	−0.222 (−2.87) ***	−0.038 (−0.83)
Residence of head of household	−0.029 (−0.26)	0.566 (4.69) ***	−0.135 (−1.19)	0.088 (0.96)	0.105 (1.91) *
Education level of householder	0.021 (2.1) **	0.003 (0.27)	0.017 (1.52)	0.001 (0.09)	0.015 (2.71) ***
The head of the household professional	0.136 (1.47)	0.158 (1.57)	0.207 (1.91) *	0.117 (1.26)	0.123 (2.50) **
The head of the household health	0.006 (0.05)	−0.111 (−1.15)	0.025 (0.24)	−0.025 (−0.29)	−0.051 (−0.98)
Family size	0.019 (0.81)	0.099 (3.77) ***	0.032 (1.21)	0.018 (0.75)	−0.015 (−1.15)
Economic conditions of the village	−0.0001 (0)	−0.064 (−1.81) *	0.029 (0.91)	−0.038 (−1.33)	−0.024 (−1.46)
Per capita income of the village	−0.00001 (−0.76)	−0.00002 (−1.03)	0.00001 (0.88)	0.0001 (5.75) ***	0.0001 (9.33) ***
The proportion of regional fiscal expenditure	−4.049 (−5.24) ***	4.734 (2.46) **	7.341 (4.10) ***	1.791 (1.36)	1.123 (1.20)
Regional financial development scale index	3.741 (3.8) ***	9.218 (10.32) ***	6.095 (6.68) ***	7.350 (7.41) ***	4.834 (11.87) ***
Regional financial development efficiency index	−0.59 (−6.71) ***	−0.332 (−3.83) ***	1.044 (11.35) ***	−0.565 (−6.26) ***	−0.809 (−19.46) ***
Constant term	1.127 (1.44)	−4.111 (−4.94) ***	−7.815 (−9.23) ***	8.556 (11.30) ***	0.563 (1.59)
Whether to control the province dummy variable	Y	Y	Y	Y	Y
Whether to control the period dummy variable	—	—	—	—	Y
Adj_R2	0.1305	0.1519	0.143	0.172	0.139

Note: “\*” , “\*\*” and “\*\*\*” mean significant at the statistical level of 10%, 5% and 1% respectively.

**Table 4.** Decomposition results of property income inequality (%).

Explanatory Variables	2010 Samples	2012 Samples	2014 Samples	2016 Samples	All the Samples
Householder age	0.2069	0.5709	3.2228	1.6276	1.346
Householder gender	0.0209	0.2474	0.0093	0.6758	−0.001
Residence of head of household	−0.0336	3.6984	−0.504	0.5294	0.5352
Education level of householder	0.4612	0.0795	0.2784	0.0153	0.5088
The head of the household professional	0.3856	0.4614	0.3381	0.4654	0.4587
The head of the household health	0.0009	0.0543	−0.0297	0.037	0.0201
Family size	−0.062	0.1473	−0.8322	−0.4453	0.2153
Economic conditions of the village	0	−0.8518	0.6564	−0.6113	−0.2485
Per capita income of the village	−0.0215	−1.2101	1.9604	8.1616	5.901
The proportion of regional fiscal expenditure	9.3441	−17.311	−19.2328	−7.3842	−4.937
Regional financial development scale index	11.9309	5.991	6.9719	13.7861	20.8108
Regional financial development efficiency index	7.9053	15.561	11.6876	3.8047	7.62
Province dummy variable	69.8613	92.562	95.4736	79.3378	65.2859
Province dummy variable	—	—	—	—	2.4847

From the perspective of financial development, two indicators that measure the level of regional financial development have positive contributions to the inequality of property income.

The contributions of two variables different with years, however, when considered as a whole sample, a bigger scale of regional financial development will lead to more inequality in the property income distribution of residents. The contribution rate of the financial development scale is up to 20.81% while the contribution rate of each year is 11.93%, 5.99%, 6.97% and 13.79% respectively. The efficiency of financial development also damages the equality of property income distribution, and the rate of contribution is 7.62%. Specifically, the contributions of financial development efficiency on property income inequality in 2010, 2012, 2014 and 2016 are 7.9%, 15.56%, 11.69% and 3.8% respectively. It can be concluded that financial development provides a normative market for resident's property transaction and leasing, and ensures the property traded at a more reasonable price. However, families with higher property value gain benefit from property transactions and earn more property income, while low-income families with less property cannot benefit from the improvement and development of financial markets. As a consequence, financial development will widen the gap of property income between the rich and the poor.

Table 5 reports the estimated results of the property income determining equation according to different regions. In the eastern region, the proportion of fiscal expenditure significantly positively related to property income at a significant level of 1%, and the estimated coefficient value is as high as 32.326. Government intervention has a positive effect in economically developed areas. It will effectively promote trade and leasing of property, and becomes an important factor in increasing residents' property income. In central and western regions, fiscal expenditure also significantly contributes to residents' property income, but the estimated coefficients are only 5.798 and 9.672, which are much weaker than the effect in the eastern region.

**Table 5.** Estimation results of the determining equation of property income in the eastern, central and western regions.

Explanatory Variables	Eastern Full Sample	Middle Full Sample	Western Full Sample
Householder age	0.008 (2.77) ***	0.004 (1.23)	0.007 (2.71) ***
Householder gender	−0.047 (−0.66)	0.192 (2.03) **	−0.087 (−1.23)
Residence of head of household	0.008 (0.10)	−0.146 (−1.35)	−0.062 (−0.62)
Education level of householder	0.007 (0.88)	0.039 (3.57) ***	0.006 (0.71)
The head of the household professional	−0.069 (−0.89)	0.0005 (0.01)	0.096 (1.22)
The head of the household health	0.004 (0.04)	−0.219 (−2.11) **	0.138 (1.78) *
Family size	−0.010 (−0.49)	0.075 (3.05) ***	0.021 (1.08)
Economic conditions of the village	0.060 (2.18) **	−0.236 (−7.29) ***	0.006 (0.26)
Per capita income of the village	−0.000003 (−0.37)	−0.00005 (−2.86) ***	0.000005 (0.28)
The proportion of regional fiscal expenditure	32.236 (5.29) ***	5.798 (2.35) **	9.672 (9.14) ***
Regional financial development scale index	2.621 (1.75) *	3.146 (3.32) ***	−2.477 (−3.38) ***
Regional financial development efficiency index	−0.210 (−1.36)	−1.151 (−8.01) ***	−0.287 (−1.94) *
Constant term	−6.367 (−3.07) ***	2.594 (3.65) ***	0.617 (1.17)
Whether to control the province dummy variable	Y	Y	Y
Whether to control the period dummy variable	Y	Y	Y
Adj_R2	0.270	0.121	0.020

Note: “\*”, “\*\*” and “\*\*\*” mean significant at the statistical level of 10%, 5% and 1% respectively.

Similarly, the scale of financial development contributes to the improvement of residents' property income in the eastern region, but the estimated coefficient has reduced to 2.621. However, the influence of financial development efficiency is not significant and presents a weakly negative relationship. This shows that in developed regions, the financial market is relatively standardized and stable, and market competition is relatively strong. Property transactions, leasing and financial investment behaviors are normal businesses for residents, and they will not largely increase the residents' income. On the contrary, in the central region, the scale of financial development is statistically significant at 1% level and the estimated coefficient is 3.146. The efficiency of financial development is also statistically significant at a 1% level and the value of the estimated coefficient is  $-1.151$ . The results show that, in the central area, a high value of the financial development scale index can improve residents' property income while the situation is opposite for the financial development efficiency index. In the western area, two indicators that measure the level of financial development are significantly negatively correlated with property income. One of the reasonable explanations is that financial development cannot benefit the resident's property income in the irregular financial market.

Finally, Table 6 reports the breakdown results of property income inequality in the eastern, central and western regions. It can be seen that in the eastern region, the contribution of regional fiscal expenditure on the inequality of property income is  $-26.87\%$ . Governments can significantly reduce the inequality of property income distribution through fiscal intervention. In the central region, fiscal expenditure still plays a role in reducing the inequality of property income distribution though its effect is only  $-4.66\%$ . In the western region, fiscal expenditure deteriorates the level of property income inequality, resulting in a substantial increase in property income inequality of  $18.49\%$ . In terms of financial development index, financial development in the three regions worsen the distribution of property income, but in the eastern region, the index of financial development scale only increases  $1.77\%$  of property income inequality and the index of financial development efficiency leads to less than  $8\%$  increase in property income inequality. In the central region, the index of the financial development scale significantly damages the equality of property income and its contribution is up to  $28.24\%$ . Compared with scale, the index of financial development efficiency slightly increases the inequality of property income with the contribution of  $3.88\%$ . In the western region, the contributions of financial development scale and financial development efficiency on property income inequality are relatively high, which leads to further deterioration of property income distribution.

**Table 6.** Decomposition results of property income inequality in the eastern, central and western regions (%).

Explanatory Variables	Eastern Full Sample	Middle Full Sample	Western Full Sample
Householder age	0.8149	0.0510	4.3681
Householder gender	0.039	0.5480	0.2749
Residence of head of household	0.026	0.0300	0.266
Education level of householder	$-0.0537$	1.8627	$-0.1011$
The head of the household professional	$-0.0798$	$-0.0014$	$-0.3104$
The head of the household health	$-0.0033$	0.6232	1.5146
Family size	0.1728	2.3464	0.8999
Economic conditions of the village	0.8961	13.0441	$-0.2811$
Per capita income of the village	$-0.1856$	3.2857	$-0.2737$
The proportion of regional fiscal expenditure	$-26.8675$	$-4.6575$	18.4925
Regional financial development scale index	1.7659	28.2435	11.4649
Regional financial development efficiency index	7.9471	3.8816	10.5014
Province dummy variable	76.5969	36.4697	52.2776
Province dummy variable	38.9312	14.2731	0.8748

## 5. Conclusions

With the construction of the logarithmic linear income determining equation, this paper uses the data from CFPS in 2010, 2012, 2014 and 2016 to estimate the correlation coefficient of property income determining equation, and measures the contribution of influencing factors based on the regression of inequality decomposition method. Empirical analysis shows that:

- (1) The scale of fiscal expenditure is a “double-edged sword” for residents’ property income. Effective fiscal expenditure can promote the growth of residents’ property income, but the redistribution effect of fiscal expenditure on property income is relatively low. Overall, the crowding-out effect appears in government allocation as it occupies economic resources from residents, and thus affect the wealth of residents and their property income. The regional difference is obvious. In terms of the eastern, government intervention has a notable positive incentive effect in the market. It effectively promotes the trade and leasing of property, becoming an important factor in increasing residents’ property income. The scale of financial expenditure significantly promotes property income at the statistical level of 1% and the estimated coefficient is as high as 32.236. In central and western regions, the effect of government fiscal expenditure has been significantly weakened, with the estimated coefficient of 7.7 (5.798 in the central area and 9.672 in the western area, both significant at the statistical level of 5%). In the redistribution effect, the research shows that an appropriate size of fiscal expenditure can reduce the inequality of residents’ property income. The government’s participation in resource allocation and market intervention through fiscal expenditure will not help residents gain higher property income, but it can reduce savings and accumulations of rich groups and then improve the equality of property income distribution. As for the relative scale of fiscal expenditure, its contribution to property income inequality in the eastern is up to  $-26.87\%$ , but this rate drops into  $-4.66\%$  in the central. In the western area, fiscal expenditure even worsens property income inequality, resulting in inequality increased by  $18.49\%$ . Combining the governance performance of the eastern, central and western regions, the importance of government’s financial management is obvious and the government still has a large space in increasing residents’ property income.
- (2) The development of finance and economy is complementary. Financial development improves residents’ property income, but at the same time aggravates the inequality of residents’ property income. On one hand, except in the western region, the analysis of the financial development scale index suggests that financial development promotes the residents’ property income growth at a statistically significant level of 1%. The development of finance helps to provide a standard market for residents’ property transactions and leasing, encouraging more and more residents to engage in financial transactions. Meanwhile, financial development constantly enriches financial products and promotes greater property income for more and more households. On the other hand, except in 2014, the financial development efficiency index also has a negative effect on property income at a statistically significant level of 1%. In general, a great financial development scale leads to inequality of property income distribution and the contribution is as high as  $20.81\%$ . This number indicates that residents with none or a small amount of property cannot benefit from financial development and the gap between families with property and without property will expand accordingly. High efficiency of financial development results in deterioration of property income distribution and its contribution ratio of unequal distribution is  $7.62\%$ .
- (3) Financial development is also related to the efficiency of local government. In financial markets with strong supervision, financial development can improve residents’ property income and restrain the inequality of property income, and vice versa. In an economically developed area, financial development contributes to the growth of residents’ property income, and the financial development scale index increases property income inequality by  $1.76\%$  and the financial development efficiency index leads to a nearly  $8\%$  increase in property income inequality. In economically developed areas, the financial market is well-organized with various kinds of

financial products and strong market competition, and therefore the growth of residents' property income is relatively stable. In the central part of China where the economic development is relatively backward, although financial development can increase residents' property income, it leads to the deterioration of unequal property income and the contribution is up to 28.24%. In the western region, financial development negatively affects residents' property income and its contribution to unequal property income distribution is about 10%.

## 6. Policy Recommendations

Despite the current percentage of property income in total income is small, residents' property income has grown rapidly in recent years. Financial development contributes to the rapid growth of property income but damages the equality of property income distribution. In addition, the redistribution effect of fiscal expenditure on residents' property income is limited, and therefore fiscal and financial policy fails to achieve the original purpose of "create conditions to let more people own property income". According to the findings above, recommendations of policy are listed as follows.

(1) It is advisable to allocate government expenditure rationally and spare no effort to build an effective government.

The results of this paper show that an appropriate scale of fiscal expenditure has an inhibitory effect on the inequality of property income in economically developed regions while the situation is contrary to less developed regions. Under the condition of the socialist market economy with Chinese characteristics, the budget and final account system in China are different from western countries. With the maturity of the market economy, expanding fiscal expenditure is inevitable. In order to keep the balance of the budget system, both "increasing income" and "reducing spending" is necessary. In terms of "increasing income", the government primarily needs to eliminate the factors that hinder the development of productive forces through streamline administration and institute decentralization. Besides, innovation is recommended to improve the enterprises' efficiency and then promote the growth of GDP. Moreover, the government needs to accelerate the reform process of the financial and taxation system. In the context of "Supply-side Structural Reforms", the situation of tax revenue growth rate exceeding GDP growth rate is unlikely to continue. Thus, the financial and tax reform should focus on the revolution of the tax system, especially in the tax structure. Specifically, the government should promote the implementation of inheritance tax and real estate tax, and reduce the proportion of indirect tax to increase the proportion of direct tax. "Reducing spending" is about the best use of every penny. That is to say, the government is suggested to strengthen the constraints of public fiscal expenditure, and further improve the "Budget Law" and its supporting implementation rules to achieve the requirements of "establish a comprehensive, standardized and binding budget system and fully implement performance management".

(2) It is suggested to improve the rule of law, adjust financial support policies and promote market equity.

To realize the redistribution of national income, the government uses different fiscal policies to ensure fund flow in financial institutions without changing the ownership of capital. Proactive fiscal policies can promote national economic development and contribute to the rapid growth of finance. However, this study shows that the current financial policy not only promoting residents' property income but also worsening inequality, and the deterioration is more obvious in developed regions compared with less developed regions. Therefore, it is necessary to promote the legislation, standardization and routinization of market regulation to build a fair market.

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## References

- Bourguignon, François. 2003. The impact of economic policies on poverty and income distribution. *International Journal of Business and Economics* 3: 177–79.
- Fields, Gary S. 2003. Accounting for income inequality and its change: A new method, with application to the distribution of earnings in the united states. *Research in Labor Economics* 22: 1–38.
- Galor, Oded, and Joseph Zeira. 1993. Income distribution and macroeconomics. *The Review of Economic Studies* 60: 35–52. [CrossRef]
- Goldsmith, R. W. 1969. Financial structure and development. *The Journal of Finance* 25: 204.
- Harsanyi, John C. 1955. Cardinal utility in welfare economics and in the theory of risk-taking. *Journal of Political Economy* 61: 309–21. [CrossRef]
- Lampman, Robert J. 1962. *Determinants of Inequality of Wealth-Holding*. Princeton: Princeton University Press.
- Li, Yufang, and Xuan Liu. 2013. Household characteristics, education and income inequality—Decomposition based on regression equation. *Economics Reviews* 1: 137–44.
- Li, Shi, and Renwei Zhao. 1999. A Study on the Redistribution of Chinese Residents' Income. *Journal of Economic Research* 3: 3–17.
- Liu, Shangxi, and Zhihua Fu. 2018. *Financial Logic of China's Reform and Opening Up (1978–2018)*. Beijing: People's Publishing House.
- Luo, Chuliang. 2018. Changes in wage inequality among urban residents: 1995–2013. *World Economy* 41: 25–48.
- Luo, C. L., and Y. K. Wang. 2012. An empirical analysis of the expansion of income gap among urban residents and its factors. *Journal of Huazhong University of Science and Technology* 15: 77–85.
- McKinnon, R., and Shaw Edward. 1973. Financial Deepening in Economic Development. *The Economic Journal* 84: 227.
- Milanovic, Branko. 2000. The median-voter hypothesis, income inequality, and income redistribution: An empirical test with the required data. *European Journal of Political Economy* 16: 367–410. [CrossRef]
- Mood, Alexander McFarlane, Franklin A. Graybill, and Duane C. Boes. 1974. Introduction to the theory of statistics. *Journal of the American Statist Association* 69: 293.
- Persson, Torsten, and Guido Tabellini. 1994. Representative democracy and capital taxation. *Journal of Public Economics* 55: 53–70. [CrossRef]
- Schumpeter, Joseph A. 1912. The fundamental phenomenon of economic development. *The Journal of Evolutionary Economics* 35: 11–17.
- Stiglitz, Joseph E. 2013. The price of inequality. *New Perspectives Quarterly* 30: 52–53. [CrossRef]
- Stiglitz, Joseph E., and Andrew Weiss. 1981. Credit rationing in markets with incomplete information. *American Economic Review* 71: 393–410.
- Tang, Xuemei, and Shengqiang Lai. 2013. Study on the socioeconomic influence of property income and its optimal distribution. *Management Modernization* 13: 34–36.
- Xu, Lixin, George Clarke, and Heng-fu Zou. 2003. *Finance and Income Inequality: Test of Alternative Theories*. Washington, DC: World Bank.
- Yang, Wen-Fang, and Qi-Yun Fang. 2010. Fiscal revenue, fiscal expenditure and household consumption rate. *Journal of Contemporary Finance and Economics* 21: 43–50.



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