

# The Poverty Reduction Effect of People's Livelihood Fiscal Expenditure—A Study Based on Multi-dimensional Poverty Index

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**Abstract:** This paper uses the relevant data of China Household Tracking Survey Database (CFPS) to construct China's multidimensional poverty index, discusses the multi-dimensional poverty reduction effect of people's livelihood fiscal expenditure, and uses relevant models to test the impact of people's livelihood fiscal expenditure on multi-dimensional poverty and the mechanism behind it.

**Keywords:** people's livelihood fiscal expenditure; multidimensional poverty; industrial structure level

## 1. Introduction

Poverty is a global practical problem and a long-term concern of Development economics. As the country with the largest population, China has prominent issues such as uneven development and weak foundation. Poverty has long accompanied the development of China's economy, causing a series of social problems that affect the stable operation of Chinese society. Since 2015, 55.75 million rural impoverished people have been lifted out of poverty. By the end of 2020, China had fully completed the task of eliminating absolute poverty and achieved a phased breakthrough. However, eliminating absolute poverty does not mean an end. With the continuous development of the economy, the factors leading to poverty are gradually diversified, and the definition of poverty is also becoming more and more extensive. China's poverty alleviation work still has a long way to go.

## 2. Measuring Multidimensional poverty

### 2.1 Multi-dimensions, indicators selection and data sources

At the end of the 20th century, discussions on multidimensional poverty gradually emerged. Sen first proposed the concept of "capability poverty" based on the perspective of Welfare economics<sup>[1]</sup>. From a development perspective, Sen believes that the welfare needs of people not only refer to income, but also include various opportunities and social resources, and correspondingly, people's poverty should also be multidimensional<sup>[2]</sup>.

Table 1: The setting of dimensions, indicators and weights of the multidimensional poverty index

Dimensions	Indicators	Assignment criteria	Weights
Income	Annual per capita income of households	The per capita annual household income is lower than the national poverty line, set as 1; Otherwise 0	1/7
	Chronic diseases	If any family member has chronic disease, set the value as 1; Otherwise 0	1/14
Health	Mental health	If any family member is mentally unhealthy, set the value to 1; Otherwise 0	1/14
	Medical insurance	Any family member who does not participate in any medical insurance is set as 1; Otherwise 0	1/7
Education	Per capita years of education per household	The average length of schooling per family is 9 years lower than that of compulsory education, and the value is set as 1; Otherwise 0	1/7
Living Conditions	Water conditions	The water is not tap water or purified water, and the setting value is 1; Otherwise 0	1/14
	Living fuels	The clean fuel is not used, and the setting value is 1; Otherwise 0	1/14
Assets	Durable goods	If there is no durable consumer goods in the home, set the value to 1; Otherwise 0	1/7
Housing	Per capita living space	If the per capita housing area is less than 13 square meters, the setting value is 1; Otherwise 0	1/7

This article uses the "Double Critical Value Method" (A-F Method) proposed by Alkire and Foster to track China's multidimensional poverty index<sup>[3]</sup>. We found that most studies have chosen dimensions such as income, education, and living conditions. In addition, scholars Wang Sangui and Yin Haodong found through their research on asset and long-term poverty in China that the asset poverty line has the function of measuring the welfare level of households and accurately identifying the status of impoverished households<sup>[4]</sup>. Based on China's actual national conditions and data availability, this article continues to add dimensions such as healthcare, health, housing, and assets, while setting corresponding indicators for each dimension. The dimensions, indicators, and weight settings are shown in Table 1.

**2.2 Multidimensional poverty in Chinese provinces**

From the results of the multidimensional poverty index MP in each province (Figure 1), it can be seen that the MP in the western provinces is significantly higher, while the eastern, central, and western regions show a gradual upward trend. From the perspective of multidimensional poverty incidence rate H (Figure 2), it shows a trend of low in the eastern region and high in the central and western regions. From the average deprivation level A of multidimensional impoverished households (Figure 3), the difference between different provinces is not significant, roughly between 0.4 and 0.5.

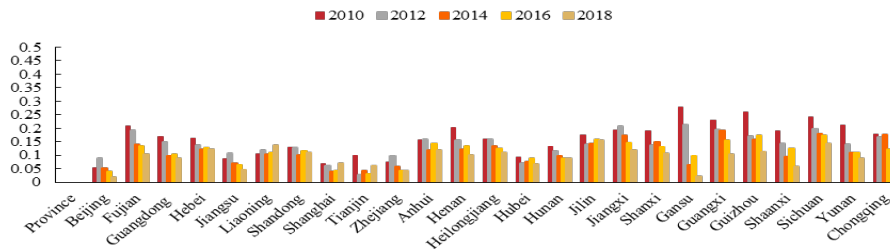


Figure 1: Multidimensional Poverty Index of 25 Provinces and Cities MP

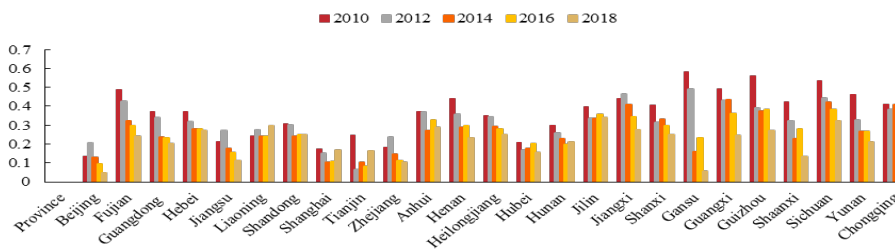


Figure 2: Incidence of multidimensional poverty in 25 provinces and cities H

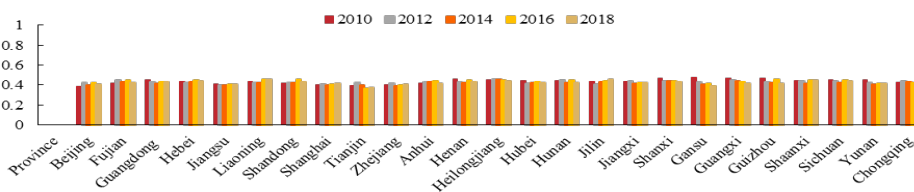


Figure 3: Average Deprivation Degree of Multidimensional Poor Households in 25 Provinces and Cities A

**3. Assumptions**

**3.1 Human capital**

In terms of education, financial expenditures related to people's livelihood include various scholarships, staff welfare expenditures, and educational infrastructure construction expenditures. Expenditures may also be used to improve educational equipment, reduce information barriers, and promote the accumulation of human capital. Scholars Yang Liangeng and Huang Peng mentioned that education fiscal expenditure has a long-term impact on poverty reduction<sup>[5]</sup>.

In terms of healthcare, poor areas have insufficient medical facilities and low levels of medical technology. Expenditures may improve the methods of medical treatment and physical examinations, such as online healthcare and poverty alleviation physical examinations. Liu Guoen believes that health is an important factor determining China's per capita income. With a healthy physique, impoverished residents can better participate in new labor and become rich through it<sup>[6]</sup>. Heiman and Artiga pointed out that the poverty reduction effect of medical fiscal expenditure will increase over time. Medical and health services play a positive role in improving residents' health, reducing mortality rates, and increasing residents' lifespan<sup>[7]</sup>.

In terms of social security, China has established unemployment insurance to provide employment training for the target population, enabling them to better integrate into social production activities.

Hypothesis 1: Based on the 3.1 analysis, this article speculates that fiscal expenditure on people's livelihood plays a multidimensional role in poverty reduction by increasing human capital.

### **3.2 Social Investment**

Poor areas have weak infrastructure and poor living conditions due to their natural geographical environment. The fiscal expenditure on people's livelihood shows the signal of fiscal policy, which helps to attract investment and improve production and infrastructure construction in impoverished areas. For example, in the process of relocation for poverty alleviation in remote areas, the government usually builds communities, markets, and infrastructure related to poverty alleviation, providing a hardware foundation for economic development.

Hypothesis 2: Based on the analysis in 3.2, this article speculates that livelihood fiscal expenditure can play a multidimensional role in poverty reduction through social investment.

## **4. Research design**

### **4.1 Variable definitions**

#### **4.1.1 Explained variables and explanatory variables**

The Multidimensional Poverty Index (MP) is the explained variable for this article. The core explanatory variable is the scale of fiscal livelihood expenditure (FG). The scale of financial livelihood expenditure (FG) is measured by the proportion of regional financial livelihood expenditure in Gross regional product. We also substituted the scale of education expenditure (JY), healthcare expenditure (YL), social security and employment expenditure (SH) into equation (1) for testing. The measurement of the scale of each individual expenditure is also expressed as the ratio of individual expenditure to regional GDP.

#### **4.1.2 Control variable X**

The control variables selected in this paper include industrial structure (str), unemployment rate (unemployment), and economic development level (gdp).

#### **4.1.3 Mediating variables M**

**Human capital:** this paper selects the teacher ratio of junior high school students (cz) as the proxy variable of education quality, which can partly reflect the distribution of educational resources in various regions of China during the compulsory Educational stage; Select the number of beds per 10000 medical institutions (cw) for medical level; In terms of employment status, this article selects the number of people receiving unemployment insurance benefits at the end of the year (sy).

**Social investment:** This article selects the amount of real estate development investment (tz) as the proxy variable for social investment, reflecting the status of newly added infrastructure construction.

This article logarithmically processes the intermediate variables and represents them accordingly with  $\ln cz$ ,  $\ln cw$ ,  $\ln sy$ , and  $\ln tz$ .

### **4.2 Empirical Model**

#### **4.2.1 Fixed effects model**

In this paper, the following fixed-effect model (1) is constructed:

$$MP_{it} = \beta_0 + \beta_1 FG_{it} + \beta_2 X_{it} + \mu_i + \mu_t + \xi_{it} \tag{1}$$

**4.2.2 Mediation Model**

On the basis of the fixed effect model, in order to further explore the mechanism of multi-dimensional poverty reduction of people's livelihood fiscal expenditure, this paper constructs a mediation effect model. Equation (2) is used to test the influence of people's livelihood fiscal expenditure on the mediating variable, and then the mediating variable is brought into Equation (3), if both  $\beta_1$  and  $\beta_6$  are significant, there is a mediating effect.

$$M_{it} = \beta_0 + \beta_1 FG_{it} + \beta_2 X_{it} + \mu_i + \mu_t + \xi_{it} \tag{2}$$

$$MP_{it} = \beta_3 + \beta_4 FG_{it} + \beta_5 X_{it} + \beta_6 M_{it} + \mu_i + \mu_t + \xi_{it} \tag{3}$$

**5. Results and discussion**

**5.1 National level inspection**

Table 2 shows that the livelihood fiscal expenditure composed of three expenditures (FG) has a significant role in alleviating multidimensional poverty. In the long-term process of economic development, the "Matthew Effect" has become more and more intense. The poor population is at a disadvantage in terms of access to resources, information, and even the most basic living conditions can not be guaranteed, let alone investment in education, medical care, insurance, and other aspects.

However, the impact of individual education expenditure scale (JY) and social security and employment expenditure scale (SH) on the multidimensional poverty index is not significant. The insignificant scale of education expenditure (JY) may be due to the longer period required for talent cultivation and the late establishment of China's social security system.

*Table 2: Multi-dimensional poverty reduction effect test of people's livelihood fiscal expenditure at the national level*

	(1)	(2)	(3)	(4)
FG	-.5162* (.2805)			
JY		-.7658 (.5759)		
YL			-4.4491*** (1.2459)	
SH				-.4705 (.5507)
lngdp	-.08697*** (.01293)	-.0831*** (.0129)	-.0761*** (.01241)	-.0878*** (.01386)
unemployment	.00074 (.0099)	.0004 (.01003)	.0028 (.0095)	.0017 (.01002)
str	.04062 (.07639)	-.0330 (.0611)	.1241* (.0745)	.0061 (.0868)
_cons	1.0088*** (.1326)	.9912*** (.1329)	.8875*** (.1272)	1.0001 (.1375)
region	fixed	fixed	fixed	fixed
time	fixed	fixed	fixed	fixed
Observations	125	125	125	125
R-squared	0.5758	0.5687	0.6123	0.5641

**5.2 Mechanism inspection**

Table 3 examines the Mesomeric effect of human capital and social investment. In terms of human capital, column (1) shows that (FG) has a significant negative impact on (lncz), column (2) has a significant positive coefficient, while (FG) is not significant, indicating that (lncz) has a complete mediating effect. Similarly, (lncw) does not have a Mesomeric effect, (lnsy) and (lntz) both have complete mediating effect.

Table 3: Mediation effect test results

	human capital				social investment			
	junior high school student-teacher ratio		number of beds in medical institutions per 10,000 people		number of people receiving unemployment insurance benefits at the end of the year		real estate development investment	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	lnsz	MP	lnsz	MP	lnsy	MP	lnsz	MP
FG	-2.5124*** (0.8598)	-0.3571** (0.2887)	4.2473** * (1.3236)	-0.4056 (0.2945)	-6.9124* (3.7014)	-0.4163 (0.2818)	4.4707** (2.0344)	-0.3388 (0.2768)
lnsz		0.0633* (0.0328)						
lnsz				-0.0260 (0.0216)				
lnsy						0.0144* (0.0076)		
lnsz								-0.0397 *** (0.0135)
lngdp	-0.2267 (0.0396)	-0.0726 *** (0.0148)	0.4910** * (0.0610)	-0.0742 *** (0.0167)	0.1865 (0.1706)	-0.0897 *** (0.0128)	1.1867*** (0.0938)	-0.0399* (0.0203)
unemployment	-0.0262 (0.0304)	0.0024 (0.0098)	-0.0382 (0.0467)	-0.0003 (0.0099)	0.1187 (0.1307)	-0.0010 (0.0098)	-0.0493 (0.0719)	-0.0012 (0.0096)
str	0.2319 (0.2341)	0.0259 (0.0757)	0.1159 (0.3604)	0.0436 (0.0762)	0.3356 (1.0079)	0.0358 (0.0754)	-0.7310 (0.5540)	0.0116 (0.0742)
_cons	4.9762*** (0.4063)	0.6937* ** (0.2093)	-1.2945 *** (0.6255)	0.9751* ** (0.1352)	2.2232 (1.7492)	0.9767* ** (0.1319)	-3.7944 *** (0.9614)	0.8583*** (0.1376)
region	fixed	fixed	fixed	fixed	fixed	fixed	fixed	fixed
time	fixed	fixed	fixed	fixed	fixed	fixed	fixed	fixed
Observations	125	125	125	125	125	125	125	125
R-squared	0.4909	0.5917	0.7386	0.5822	0.5770	0.5912	0.8129	0.6109

6. Conclusion and Suggestion

At the national level, empirical testing shows that livelihood related fiscal expenditures have significant multidimensional poverty reduction effects, and China should appropriately increase the proportion of healthcare expenditures.

The intermediary mechanism test shows that people's livelihood fiscal expenditure plays a role through the quality of education and employment status in human capital, as well as the amount of real estate development investment in social investment. Starting from human capital, reducing the student teacher ratio, improving the quality of education, increasing the coverage of unemployment insurance, and allowing more people to enjoy the benefits of unemployment insurance; Increasing the amount of real estate development investment in social investment can be used to improve infrastructure, improve the local investment environment, and lay the foundation for future development and investment attraction.

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