

# The Impact of Fiscal Expenditure Structure on the Income Gap between Urban and Rural China: An Example from Guangdong Province

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## Abstract

This paper constructs a two-way fixed-effects model, using the Guangdong Provincial Statistical Yearbook data to empirically analyze the impact of fiscal expenditure on the urban-rural income gap. The results show that after controlling for the time trend and the city fixed effect, science and technology expenditure projects have a positive impact on the expansion of the urban-rural gap, while urban-rural community expenditure projects have a negative impact on the urban-rural income gap. Financial education expenditures, medical and health expenditures, social security and employment expenditures, and agricultural, forestry and water affairs expenditures have no significant impact on the urban-rural income gap. In addition, relative to the bias of the fiscal expenditure structure, economic growth and time trends have a greater impact on the urban-rural income gap.

## Keywords

Fiscal Expenditure Structure; Income Gap; two-way fixed-effects model; Urban and Rural.

## 1. INTRODUCTION

Since the reform and opening up policy, Chinese economy has grown rapidly, the income of urban and rural residents has also been increasing, and the process of urbanization has accelerated, but the problem of the income gap between urban and rural residents has gradually emerged. The gap between the per capita disposable income of urban and rural residents has been widening, and the proportion of the two has been hovering around three times, resulting in an imbalance between urban and rural development.

Expanding income gap between urban and rural areas will lead to low income rural residents is continuously into the city, which leads to the absence of farmland idle, the rural infrastructure construction, agricultural production efficiency lower and other issues, is not conducive to China's agricultural development, at the same time produce low-income people of low social status, medical education guarantee not comprehensive, political and social problems. Therefore, in recent years, the government has paid active attention to the issues concerning agriculture, farmers and rural areas. The fiscal expenditure on agriculture, forestry and water affairs and urban and rural community construction has also been increasing year by year.

The long-term positive effect of government fiscal expenditure on economic growth has become an indisputable fact. It can eventually increase total social output through increasing government purchase and transmission through multiplier effect. Moreover, government expenditure can optimize resource allocation and invest government resources and capital into high-quality productivity sectors. However, in order to adapt to the typical urban-rural dual economic structure which has been formed by the Chinese economic development, fiscal

expenditures have also shown different characteristics between urban and rural areas, and the bias of fiscal expenditures could not be underestimated.

In addition, due to the competition among local governments, they are motivated by local interests to invest the financial resources and other production factors controlled by the government in high-productivity industries and service sector, instead of investing less in the poor quality of agriculture, rural areas and farmers. The “urban bias” of this fiscal expenditure structure will make the urban-rural gap problem more significant.

For the above reasons, this article will use the urban-rural data and fiscal expenditure data of cities in Guangdong Province from 2015 to 2017 to explore whether fiscal expenditure structure really affects the urban-rural income gap from an empirical perspective.

## 2. METHODOLOGY

### 2.1. Theoretical Explanation of the Influence of Financial Expenditure Structure on the Income Gap between Urban and Rural Areas

In macroeconomics, fiscal policies such as appropriate fiscal expenditures, government purchases, and taxation have affirmed the positive effects of the national economy. In this section, fiscal expenditure items will be used to illustrate their impact on the urban-rural gap.

Education and technology expenditures. The urban bias towards urban and rural education expenditures has made the proportion of urban residents receiving high school and higher education much larger than that of rural residents. The productivity of greater human capital directly leads to the gap in the wage rate of urban and rural labor. At the same time, the flow of science and technology expenditures is concentrated in cities with high productivity in the secondary and tertiary industries. There is less scientific and technological support for the primary industry, resulting in a large gap in the rate of technological progress. Cobb Douglas production function and Solow Economic growth models all take technological progress as the source of production and economic growth. The more serious urban bias of science and technology spending will gradually widen the gap between urban and rural productivity and economic growth, which will eventually be reflected in the income gap between them. Therefore, this study believes that the existing urban bias towards education and increased spending on science and technology will promote the expansion of the urban-rural income gap.

Medical and health, social security and employment expenditures. The existing structure of these two expenditures is still tilted towards the cities. The existing urban social security and medical and health systems are relatively sound, while the development of this system in the countryside is still relatively lagging. On the one hand, the large-scale government medical and social security expenditures make the cost of medical insurance and social security relatively low relative to the income of urban residents, and weaker expenditures in rural areas will lead to relatively high incomes of their relative residents. On the other hand, this expenditure bias causes urban medical and social security supplies to be higher in quality and quantity than in rural areas. In addition, in terms of supporting the unemployed, the expenditure structure also shows an urban bias. This has led to the widening of the disposable income gap between urban and rural residents, and the widening of the gap in health and quality of life. Similarly, the township is not conducive to the accumulation of human capital of rural residents. Although China's urban-rural proportion of this type of expenditure has gradually adjusted to a balance in recent years, there is still a large gap, which has an adverse effect on the urban-rural gap.

Agriculture, forestry and water affairs expenditures and Urban and rural community affairs expenditures. Agriculture, forestry and water affairs expenditures include agricultural expenditures, forestry expenditures, water conservancy expenditures, poverty alleviation expenditures, and comprehensive agricultural development expenditures. It can be seen from

the specific expenditure items that the policy bias of this expenditure is towards rural areas and farmers' lives. Increase expenditure on agriculture, exert its scale effect by expanding the scale of agricultural production, and increase agricultural productivity through capital investment to promote technological progress, thereby promoting the development of agriculture and rural areas. The existing direct subsidy policy also has a significant positive impact on farmers' income. Increasing the proportion of expenditures on agriculture, forestry and water affairs will help narrow the urban-rural income gap. In terms of urban and rural communities, including urban and rural community management expenditures, urban and rural community planning and management expenditures, urban and rural community public facilities expenditures, urban and rural community housing expenditures, urban and rural community environmental sanitation expenditures, construction market management and supervision expenditures, their bias is not obvious in theory, it is difficult to judge its effect on the urban-rural income gap. This study will explore its actual effect through empirical research.

## 2.2. Empirical Model Settings

In order to empirically verify the theoretical explanation, this article uses the panel data of the urban-rural income gap and fiscal expenditures of the cities in Guangdong Province from 2015 to 2017 as the basis to conduct an empirical regression analysis. Due to the obvious temporal trends and regional differences in the urban-rural income gap, In order to control the time trend and urban fixed effects, this research will mainly focus on the regression of the two-way fixed effects model. The specific model assumption is as follows:

$$\text{Gap}_{it} = \beta_0 + \sum_j \gamma_j \ln FE + \beta_1 \ln GDP_{it} + \delta_t + \lambda_i + \varepsilon_{it} \quad (1)$$

In the above formula, Gap represents the urban-rural income gap. This study uses the ratio of the annual disposable income of urban residents to the annual disposable income of rural residents as the measurement standard;  $\beta_0$  represents the intercept term of the regression; FE is the fiscal expenditure vector, including education expenditure (Educ), science and technology expenditure (Tech), medical and health expenditure (Medi), social security and employment expenditure (Soci), agriculture, forestry and water affairs expenditure (Agri), and urban and rural community affairs expenditure (Comm), using this category of financial expenditure in each city in Guangdong Province. In order to study the impact of percentage changes on income disparity and reduce the impact of heteroscedasticity, this study uses logarithmic values for regression;  $\ln GDP$  is the logarithmic regional GDP of each city as the control variable of this study;  $\delta$  is the time trend factor of the variable;  $\lambda$  is the city's fixed utility factor;  $\varepsilon$  is the error term.

## 3. RESULTS AND DISCUSSION

The regression analysis results based on the panel data of each city in Guangdong Province from 2015 to 2017 are shown in Table 1. Column (1) is the least squares regression of the mixed cross section, (2) is the random effect model, and (3) is the individual Fixed effect model, (4) is a time fixed effect model, and (5) is a two-way fixed effect model.

The result of the hausman test is at the 5% significance level (P value is 0.034), the hypothesis that the error term is not related to the individual city variables in the panel data is rejected. Therefore, this study adopts a fixed-effect model, and when the time trend variable is added, the results show that the time trend has a significant impact on the urban-rural income gap. so this research focuses on the regression that fixes both the urban effect and the time trend which is reported in column (5).

**Table 1.** Empirical Analysis Results of Financial Expenditure Structure and Urban-Rural Income Gap

VARIABLES	(1)	(2)	(3)	(4)	(5)
lnEduc	-0.408*** (0.103)	0.097 (0.069)	0.088 (0.067)	-0.447*** (0.111)	0.079 (0.065)
lnTech	0.036 (0.029)	0.026* (0.016)	0.027* (0.015)	0.020 (0.032)	0.028* (0.015)
lnMedi	0.070 (0.063)	-0.068* (0.038)	-0.106** (0.045)	0.127* (0.075)	-0.065 (0.048)
lnSoci	0.334*** (0.063)	0.067** (0.032)	0.037 (0.031)	0.349*** (0.071)	0.037 (0.031)
lnAgri	0.141*** (0.049)	0.053** (0.023)	0.033 (0.021)	0.088 (0.057)	0.018 (0.022)
lnComm	0.024 (0.030)	-0.022* (0.013)	-0.030** (0.012)	0.053 (0.038)	-0.023* (0.013)
lnGDP	0.043 (0.049)	-0.018 (0.058)	0.099 (0.123)	0.040 (0.055)	0.285* (0.148)
Constant	1.122*** (0.224)	1.393*** (0.297)	0.881 (0.728)	1.169*** (0.224)	— —
RE	NO	YES	NO	NO	NO
Individual FE	NO	NO	YES	NO	YES
Year FE	NO	NO	NO	YES	YES
R2	0.6252	0.4202	0.4604	0.6566	0.8827

Standard error in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The regression results show that after excluding the influence of time trends and urban effect factors, fiscal education expenditures, medical and health expenditures, social security and employment expenditures, and agriculture, forestry and water affairs expenditures have no significant impact on the urban-rural income gap. Science and technology expenditure has a significant positive impact on the income gap between urban and rural areas. Under other conditions unchanged, every 1% increase in fiscal science and technology expenditure will increase the ratio of urban and rural annual per capita income by 0.00028; expenditure on urban and rural community affairs has a significant impact on the income gap between urban and rural areas. A more significant negative impact. Under the circumstance that other conditions remain unchanged, every 1% increase in expenditure on urban and rural community affairs will reduce the ratio of urban and rural annual per capita income to 0.00023.

Furthermore, the study found that based on research data, economic growth is not conducive to the narrowing of the urban-rural income gap. Other conditions remain unchanged. Every 1% increase in regional GDP will lead to an increase in the urban-rural per capita income ratio by 0.0029. Compared with the bias of fiscal expenditure structure, economic growth and time trends have a greater impact on the urban-rural income gap.

#### 4. CONCLUSION

After a brief description of the current situation of the urban-rural gap in China, this article uses panel data from cities in Guangdong Province from 2015 to 2017, and establishes a two-way fixed effect model based on the theoretical explanation of the impact of the urban bias of fiscal expenditure structure on the urban-rural gap. Concluded as follow:

While controlling the time trend and urban effects, this article finds that science and technology expenditure items have a positive impact on the expansion of the urban-rural gap.

Urban-rural community expenditure items have a negative impact on the urban-rural income gap. Compared with the regional economic growth and time factors, its impact is still relatively small. The urban-rural gap is more affected by regional growth factors and is positive. The impact of other fiscal expenditure items on the urban-rural gap is not statistically significant.

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