

An Empirical Analysis of Fiscal Decentralization on Public Goods Spending

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Abstract

China has achieved a rapid economy growth for nearly forty years since the reform and opening-up policy in 1978, and the overall living standard of Chinese residents has also improved significantly. In reality, economic transition includes a series of processes, not only related to the market and business, but also involves with the government's change. The traditional theory of decentralization mainly argues it can make better for subordinate governments to ensure that the public goods they provided match with local residents' preferences and to promote the efficiency of local public services delivery. This paper essentially uses a year-county dual fixed effects model to test the impact of fiscal decentralization on the spending of public goods at county-level. Our analysis finds fiscal decentralization has a significant positive impact on the spending of residents' livelihood other than the investment in infrastructure. In particular, the county government prefers the projects closely related to public goods expenditure of local residents to the projects that have a larger spillover effect.

Keywords

Fiscal Decentralization, Public Goods Spending

1. Introduction

It was the reform and opening-up drive that thoroughly transformed China, which achieved rapid economic development in nearly forty years, and it is regarded as a great achievement and creation. By analyzing the prevailing international trends, China realized that peace and development were the two main themes of the modern world. It provided China with a historic opportunity to transform itself and to interact proactively with the rest of the world. The series of changes is well-known to the world as "China's growth miracle" [1]. To reveal the mask of such miracle, many academic scholars try to interpret the logic be-

hind the rapid development of China's economy. Initially, the interpretation is mainly based on the important happening of economic transition [2] [3] [4]. Some literature has extensively discussed the positive impact of market transformation and property right change. However, economic transition is a series of processes, not only included the reform of market and business, but also involves the government's change. In fact, during the time of China's economic development, the government's intervention in the economy has been there all the time, from the beginning of the reform and opening-up policy to the establishment of the market objectives of the socialist market economy. Therefore, researchers should not ignore the role of government when trying to comprehend the logic of China's economic development and the improvement of residents' living standards, as well as assessing the quality of policy interventions.

The classical theory of decentralization mainly argues that it can make better for subordinate governments to ensure that the public goods they provided match with local residents' preferences and to promote the development of local public services [5]. Therefore, it is more straightforward to explore the impact of decentralization on government functions than to examine its impact on economic growth, and it is more accuracy to analyze the governance effect or the quality of interventions brought by government reform. Therefore, this paper analyzes the impact of county-level fiscal decentralization on public goods expenditure by using county-level data based on the year-county dual fixed effects model.

Recently, the Central Economic Work Conference of China has repeatedly stressed that the prevailing economic development should take the initiative to adapt to the new normal state. Therefore, the search for sustainable development is also in an urgent need for economic development from the previous incremental conversion to rely on efficiency improvement. Although the supply side reform is an urgent task of China's current economic adjustment and development, the accurate assessment of the direct effect of government administrative decentralization will help to better assess the quality of government intervention, to provide empirical support for government reform and to offer propellant to current economic reform. Finally, the study also contributes on exploring the relation between fiscal decentralization and public goods expenditure.

The paper itself has been sub-divided into five main areas. Section 2 provides a brief literature review. Section 3 introduces the setting of empirical model and related indicators. Section 4 reports the results of empirical analysis, and the last part concludes.

2. Literature Review

In general, there are two significant ways for government to exert influence on the living standards of residents, the formulation of relevant economic policies and the government itself, or as known as politics. The latter involves two aspects, the decentralization and the officials. Around the issue of Chinese economic development, the existing literatures focused on the policy to promote

economic development have been carried out by plenty of analysis. Simultaneously, the relevant analysis of officials also derives a series of discussions on the tournament model of the official promotion, which emphasizes that officials have a strong incentive to develop the economy based on the political promotion [6] [7] [8]. In addition, in the discussion of decentralization, some literature has emphasized the federalism theory with specific Chinese characteristics, and claims the fiscal decentralization as one of the sources of incentive for the Chinese local government to a real boost to the smooth operation of markets and, therefore, to local economic growth [9] [10].

Good institutional arrangement often plays a crucial role in long-term economic development [11] [12]. In fact, this clear political system of fiscal decentralization has had a significant impact on both China's economy and residents' livelihood [13]. This is on account of that fiscal policy is an important measure by the central and local governments to raise residents' living standards, and fiscal decentralization can guarantee local governments receive fiscal revenue from the GDP growth. Moreover, fiscal decentralization in the process of China's economic development has also been adjusted several times [14] [15]. It provides the possibility and a rich source of data for the study.

Though plenty of existing research working on fiscal decentralization has been done based on the analysis on central government and provinces, there are relatively few involves decentralization between cities and counties. Moreover, the county government, as a key part of the rural-urban fringe zone and the most grassroots government to promote China's economic development, carries the dual functions of urban economic development and rural construction. Therefore, it is important to analyze the issue of county-level fiscal decentralization.

3. Data Source and Description

The core of the paper is using the fixed effects model by controlling the year factor and the county factor simultaneously, to test the effect of fiscal decentralization on county-level economic growth. The main sources of data are "National financial statistics of cities and counties (2000-2010)" and "China's county & city socio-economic statistical yearbook (2000-2010)". The former contains the basic information of more than 2000 counties (cities) and more than 20,000 towns in China from 2000 to 2010, including comprehensive information on economy, agriculture, industry, capital construction, education, health and social security. The latter includes financial information, special information, comprehensive information, and reference materials of all provinces (autonomous regions and all municipalities directly under the central government), which reflect the financial revenue, expenditure and the main economic indicators of all cities and counties.

Specific statistics described in the table as follows. In **Table 1**, the third row is the main explanatory variables, fiscal decentralization indicators, and the rows from four to eight are the explanatory variables, including infrastructure, livelihood, education, science, medical and health. The rest are the control variables.

Table 1. Descriptive statistics.

Variable	Obs.	Mean	Std.Dev.	Min	Max
Year	31,484	2005	3.126	2000	2010
Fiscal decentralization indicator	10,813	0.0935	0.0583	0.00362	1.155
Infrastructure(10,000 CNY)	10,605	2254	7039	1	395,228
Livelihood(10,000 CNY)	9027	13,377	12,757	368	337,464
Education(10,000 CNY)	16,550	8546	10269	18	331,798
Science(10,000 CNY)	9029	220.8	869.9	1	26,063
Medical and Health(10,000 CNY)	9866	2245	2482	34	80,635
Savings(10,000 CNY)	20,797	46.58	35.12	1	851
population(10,000 people)	20,727	291,100	497,403	6	1.350e+07
GDP per capita(CNY)	16,439	9112	15,696	0.0650	1.265e+06

Note: in regression, all above data are taking in log-form.

These variables constitute a decade panel data. We have a simple statistical description of the data in order to further explore the data distribution, and more detailed description can be found in **Table 1**.

4. Econometric Analysis

The empirical model mainly uses the dualfixed effect by controlling the variables of year and county, while fiscal decentralization is the main reference indicator. The specific regression equation is set as follows:

$$Y_{it} = \beta_0 + \beta_1 F_{it} + \beta_2 X_{it} + \delta_i + \gamma_t + \varepsilon_{it}$$

where F_{it} is the ratio of county-level expenditure and city level expenditure in public goods, and Y_{it} is the variable to be examined, namely the item of annual public goods expenditure of the county i in the t -th year, including expenditures on infrastructures and residents' livelihood, while the latter contains expenditures of education, scientific spending, medical and health spending. The core explanatory variable F_{it} is the fiscal expenditure indicator of the county i in t -th year, the definition of which is given by Zhang Jun and other researchers [16]-[21]. Moreover, here X_{it} represents the control variables of the county, including per capita GDP, population, and savings, and so on. The parameter δ_i indicates the fixed effect by controlling the county factor, which is used to capture the characteristics have not been considered, but relate to county-level feature and keep unchangeable in time of our model. The parameter γ_t captures the time fixed effect, which is used to lock in the related factors have not been considered in our model, but related to year varies. Finally, the term ε_{it} is the random disturbance.

Based on the above regression model, the paper examines the impact of fiscal decentralization on public goods spending with the infrastructure expenditure and the public goods expenditure. Moreover, we decompose the latter and examine the impact of the reform on education spending, scientific spending, and

medical and health expenditure, respectively. Details can be found in **Table 2** and **Table 3**. In the paper, all data are taken in log-form in order to facilitate the analysis and elimination of possible heteroscedasticity.

Table 2 examines the effects of fiscal decentralization and administrative decentralization on public goods expenditure, respectively. It includes expenditure on infrastructure and residents' livelihood. To be specific, the regressions of column (1) and column (2) study the impact of fiscal decentralization on infrastructure spending, while we add the fixed effect by controlling the factors of year and county at the same time in the second column. Similarly, column (3) and column (4) examine the impact of fiscal decentralization on residents' livelihood spending while in column (4) the fixed effect has been considered.

Table 2. Infrastructure expenditure and residents' livelihood expenditure.

	(1)	(2)	(3)	(4)
VARIABLES	infrastructure	infrastructure	livelihood	livelihood
free_e	3.767** (1.744)	3.894 (2.748)	0.822*** (0.194)	0.816** (0.336)
logv20	0.406*** (0.0945)	0.0136 (0.113)	0.516*** (0.0397)	0.0615*** (0.0199)
logv9	-0.292** (0.124)	-0.288 (0.212)	0.184*** (0.0384)	0.0674*** (0.0210)
Log(pgdp)	0.362*** (0.106)	0.0410 (0.0481)	0.104*** (0.0246)	0.0161*** (0.00567)
Constant	-0.717 (0.614)	7.581*** (1.682)	1.293*** (0.241)	7.704*** (0.256)
Observations	4584	4584	7482	7482
R-squared		0.208		0.839
Number of id	1355	1355	1597	1597
Country FE	NO	YES	NO	YES
Year FE	NO	YES	NO	YES

Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3. Decomposition of spending in residents' livelihood.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Education	Education	Science	Science	Medical/Health	Medical/Health
free_e	0.789*** (0.179)	0.738** (0.302)	0.983** (0.426)	1.194* (0.610)	1.413*** (0.304)	1.249*** (0.477)
logv20	0.456*** (0.0347)	0.0669*** (0.0209)	1.066*** (0.0796)	0.0439 (0.0414)	0.655*** (0.0496)	0.0590*** (0.0226)
logv9	0.273*** (0.0347)	0.0599** (0.0294)	-0.491*** (0.0822)	-0.0794 (0.0988)	-0.114** (0.0490)	0.0775* (0.0467)
Log(pgdp)	0.0994*** (0.0224)	0.0170*** (0.00615)	0.257*** (0.0630)	0.0332* (0.0195)	0.130*** (0.0319)	0.00545 (0.00717)
Constant	1.530*** (0.210)	7.481*** (0.279)	-9.450*** (0.457)	2.673*** (0.649)	-1.417*** (0.298)	5.792*** (0.327)
Observations	7758	7758	7469	7469	7760	7760
R-squared		0.718		0.770		0.816
Number of id	1599	1599	1597	1597	1599	1599
Country FE	NO	YES	NO	YES	NO	YES
Year FE	NO	YES	NO	YES	NO	YES

Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Through the comparative analysis of **Table 1**, the county-level fiscal decentralization has a significant positive impact on the spending of residents' livelihood, but there is no significant impact on the investment in infrastructure construction. Specifically, the fiscal decentralization spending on the livelihood of the people is significant at 5% level. This article is going to decompose the spending of residents' livelihood into three parts, education expenditure, scientific expenditure, and medical and health expenditure, to make a specific analysis. Results are showed in **Table 3**.

The arrangement of **Table 3** is similar as **Table 2**. The fixed effect is considered in columns (2), (4) and (6). By analyzing the regression results of even-numbered columns, we can see that fiscal decentralization has a significant positive impact on these projects of residents' livelihood. Specifically, the positive impact of fiscal decentralization indicator on medical and health is significant at 1% level, on education expenditure is significant at 5% level, and on science spending is significant at 10% level. Thus, the county-level fiscal spending on the sub-project of livelihood is of different preference. In summary, we can see that fiscal decentralization have a positive impact on all of above items. The county government will consider the externality of expenditure items. In particular, the county government prefers the area closely related to public expenditure of local residents, such as medical and health industry. It pays less concern about projects that have a larger spillover effect, such as scientific spending.

5. Summary and Conclusions

The paper evaluates the effect of fiscal decentralization on public expenditure by applying the dual fixed effects model by controlling factors of year and county simultaneously with county-level data. To systematically clarify the impact of fiscal decentralization, we decompose the public goods expenditure into infrastructure spending and residents' livelihood spending. Then, in order to have further clarification of the impact of fiscal decentralization on livelihood projects, we decompose it as education expenditure, science expenditure, and medical and health expenditure, respectively.

The regression results show that county-level fiscal decentralization does not significantly increase investment in infrastructure, but significantly increase spending on public goods. In particular, it contributes more about medical and health expenditure, followed by education spending, then the scientific expenditure. In other words, the county government will be more care with public goods about health and education projects, which are more closely related to local residents' daily life, rather than pay more attention on scientific expenditure. This finding is consistent with the intrinsic implication of the externalities of public goods. Meanwhile, taking into account the presence of officials, they may not be very concerned about those long-term effects of public goods, such as scientific projects.

Compared with the impact of the study on economic growth, this article con-

tributes a deep analysis of the direct impact of the reform on government governance. Moreover, to a certain extent, we also clarify the specific impact of fiscal decentralization on public goods spending, to provide certain material for further understanding of the process of decentralization in China. Finally, the article also furnishes a reference and empirical evidence for how to improve the government's governance ability. Although this paper analyzes the impact of fiscal decentralization on public goods expenditure based on detailed data, but it does not explore its internal mechanism, which will be done in our future research.

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