

Fiscal Transparency and Local Government Education Spending Efforts

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Abstract:

Increasing education investment in each region and achieving balanced regional coordination are essential elements to promote high-quality development of education in China in the new era. How to stimulate local governments' willingness to spend on education becomes the focus point to optimize the public expenditure structure and increase the share of education expenditure. Using panel data of 285 prefecture-level cities in China from 2013-2019, the article empirically examines the impact of fiscal transparency on local governments' education spending efforts. It finds that local governments' education spending efforts increase significantly when fiscal transparency increases. The finding passes a series of robustness tests and shows heterogeneity in regional education levels, urban-rural development gaps, and before and after the implementation of the new Budget Law. Against the realistic background that local education spending is gradually facing rigid constraints, a study based on willingness to spend can help improve the government's motivation to supply education-based public goods.

Keywords: *Fiscal transparency, Education spending efforts, Education investment, Public spending structure.*

I. INTRODUCTION

As socialism with Chinese characteristics enters a new era, people's need for a better life is increasingly urgent, and economic and social development urgently needs to make up for shortcomings in the field of people's livelihood, of which education is one of the most important links. As an important indicator of government investment in education, the proportion of national fiscal expenditure on education to GDP is increasing year by year and officially broke through the 4% mark in 2012. However, there are still problems such as unbalanced and insufficient education expenditure of local governments in China [1], and the growth of local education expenditure has not yet formed a normalized mechanism. This is mainly due to the fact that the fiscal structure of local governments is often constrained by increasing financial pressure, fiscal decentralization and government competition in China, which has led to the distortion of the public expenditure structure of local governments that "emphasizes capital construction but not human

capital investment and public services" [2]. Studies based on the characteristics of government officials have found that promotion bidding contests have led local officials to focus on short-term visible governing goals, and that investment in education, which has no significant impact on GDP, is clearly not a political consideration for officials [3]. From the above studies, it can be found that when fiscal pressure increases, local governments' economic resources are continuously in relative scarcity, and the government's trade-offs for different public expenditure programs depend on the trade-offs between the interests of each party. However, in recent years, driven by the demand for transformation and upgrading as well as incentives from the central government, the importance of local governments for education has been steadily increasing. Developed regions gradually take education as a basic investment in human capital and science and technology innovation, and less developed regions also hope to achieve overtaking by improving the quality of education and cultivating high-quality talents. It is clear that the expected benefits of local governments for education are taking an increasingly important place in the trade-offs of public expenditure choices. Therefore, when more certainty is injected into economic development with increased fiscal transparency, will this affect local governments' motivation to invest in education, and thus the sustainable growth of education funding?

To date, there have been many academic studies on the definition, connotation characteristics, and economic regulation of local governments on fiscal transparency [4-7], but there is not much literature directly on fiscal transparency enhancement as a major inducing factor affecting financial livelihood improvement behavior, especially when it comes to specific education spending behavior. From the existing literature, some scholars have researched and obtained that the enhancement of fiscal transparency is conducive to resolving government debt risks, restraining ineffective fiscal competition, reducing the probability of rent-seeking in government power, and therefore improving the quality of basic public services in the territory [8]. However, some scholars have pointed out that excessive fiscal transparency can undermine efficiency, and that fiscal transparency should be guarded against the trap of "too much or too little" [9]. There may be a inhibition-first, promotion-later U-shaped relationship between fiscal transparency and efficiency of fiscal funds [10-11]. Therefore, it is necessary to pay attention to the improvement of fiscal transparency in line with economic and social development. In general, there is a lack of attention to the relationship between fiscal transparency and local government education spending efforts in domestic and international studies, and further analysis is necessary. Therefore, this paper uses panel data of 285 prefectural-level cities from 2013 to 2019 to empirically analyze how local governments' education spending efforts change when fiscal transparency is improved, and to investigate the actual impact of fiscal transparency on the development of local education. In the "post-4% era", the responsibility of local governments in education spending has become more and more important, and improving the quality of education-related public goods and enhancing social innovation and creativity is the basic path to implement the new development philosophy. In addition, against the background of complexity, diversity and challenges at home and abroad, the study on how to optimize government public expenditure structure to meet the new stage of economic and social development is of great significance to enhance the effectiveness of government governance and modernize the national governance system and capacity.

The innovations of this paper include the following three aspects. First, it broadens the perspective of the impact of fiscal transparency. Based on the hypothesis of rational "economic man", this paper analyzes the trade-off between the interests of governmental fiscal expenditure and the economic and social effects caused by it, taking the local government as the target of intervention in the fluctuation of economic and policy environment. Second, this paper enriches the study of factors influencing local governments' education spending efforts. Based on the existing literatures, which mainly explore how administrative factors such as political centralization, fiscal decentralization, transfer payments and officials' characteristics affect the motivation of local education investment, this paper introduces fiscal transparency to analyze how it affects the government's willingness and behavior in education spending. Third, this paper complements the research method of government public expenditure structure. Starting from the financial constraints faced by local governments, it seeks to objectively sort out the evolutionary thinking of government spending decisions.

II. THEORETICAL ANALYSIS

Fiscal transparency is first proposed by Kopits and Craig (1998) [12]. Specifically, it refers to the timely and detailed disclosure of government structure and functions, fiscal policy orientation, public sector accounts, and fiscal revenues and expenditures to the public. Fiscal transparency is also an important source of information for the public to evaluate government performance and monitor government behavior [13], and the improvement of fiscal transparency helps to correct the problems of adverse selection and moral hazard caused by information asymmetry [14].

In recent years, with the increasing downward pressure on the economy and the accumulation of factor input costs, the crude development model has become increasingly unsustainable, and the willingness of regions to transform and upgrade has become increasingly urgent. Innovation, as the engine of economic development, has increasingly become the first choice for regions to build core competitiveness. Cultivating highly qualified and capable innovative talents is the main task to accumulate innovative power and stimulate economic potential [15]. Some scholars have found that fiscal education spending has an important pulling effect on the increase of industrial labor productivity across the industry, which indicates that the government has an endogenous incentive to invest in public education [16]. Human capital accumulation tends to have a hindering effect on low-end manufacturing and only shows a boosting effect on mid- and high-end manufacturing [17].

Although education is gaining more and more weight in local governments' behavioral choices, rational local governments usually adopt more conservative education spending strategies, even though education investment may yield greater economic benefits in the future when facing economic development pressure due to the special characteristics of long-cycle and slow-effect education investment. Local governments, motivated by competition for growth, are bound to allocate economic resources to "immediate" productive areas. Especially in the "post-4% era", the weak preference, regional imbalance, and incentive of education investment by local governments have not been well addressed compared to the importance of education at the national level. In addition, against the background of continuous economic downward pressure and

prominent fiscal revenue and expenditure conflicts, local governments are under increasing pressure to preserve 4%. Under the administrative system of centralized political power and decentralized financial management, economic indicators centered on GDP are not only a measuring stick for the level of local economic development, but also an important reference for the promotion of government officials. Since education cannot create economic benefits in the short term, local governments tend not to spend a large amount of their limited financial resources on the supply of non-productive public goods with long payback periods and uncertain returns.

The improvement of fiscal transparency can make the public monitor the local government's income and expenditure behavior more effectively and have more detailed understanding of the budget and account information, which can ensure the local public's right to know the fiscal information and thus can motivate the local government to optimize the fiscal expenditure structure and allocate more fiscal funds to the basic public service expenditure, especially the education business which is related to the national livelihood. Secondly, the public and the government are a kind of principal-agent relationship in the provision of education public services. With the improvement of fiscal transparency, the problem of information asymmetry between the government and the public can be effectively alleviated. The public can effectively supervise the government's education spending behavior, they can participate more actively in the allocation of budget funds and evaluate the efficiency of the use of fiscal funds. At the same time, the local government's willingness to spend on education will be further improved.

In summary, this paper proposes the research hypothesis that the improvement of fiscal transparency is conducive to the increase of local government's education spending efforts.

III. RESEARCH DESIGN

3.1 Econometric Model

The existing literature tends to use provincial-level panel data when examining local governments' education spending efforts, which is clearly inapplicable for this paper. First, when provincial governments are treated as rational "economic man" for benefit trade-off analysis, many within-group differences are ignored, and the factors in the field of economic, geographic, human, and historical factors of different cities cannot be reflected. Second, the provincial scope is so vast that the impact of fiscal transparency may be neutralized across cities, and the model cannot accurately capture their actual effects. In view of this, this paper selects prefecture-level cities as the study subjective and excludes the special samples of municipalities, county-level cities, and minority autonomous prefecture (leagues and banners) with inconsistent administrative levels.

$$Effort_{ct} = \beta_0 + \beta_1 Ft_{ct} + \sum \beta_j X_{ct} + City_c + Year_t + \varepsilon_{ct} \quad (1)$$

We use equation (1) to explore the effect of fiscal transparency on local education spending effort, where the explained variable *Effort* refers to the relative value of government education spending and the

growth rate, the core explanatory variable F_t refers to fiscal transparency, X is the set of city-level control variables, and the subscripts c and t represent city and time, respectively. In addition, the model introduces the *city* dummy variable $City$ and $Year$ to control for both individual fixed effects and time fixed effects. In addition, all regression coefficients in this paper are clustered to city-level heteroskedasticity robust standard errors. The coefficient β_1 of F_t is of most interest to us in equation (1). Its direction and value are critical in determining whether the research hypothesis is correct.

The explained variable *Effort* in this paper is used to capture local governments' spending efforts on public education. Fiscal education expenditure as a share of GDP (*Education*) has been a key indicator of the extent to which governments value education. The target value of 4% of GDP for fiscal education expenditure is now gradually decomposed into a reference for local education expenditure. After the unitizing of the regional GDP, this indicator allows for an objective and scientific comparison of spending intentions and realistic gaps across localities. In addition, to reflect the trend of local education spending, we also include the growth rate of financial education expenditure (*Increase*) as an important element of the government's education spending efforts. The combination of these two indicators can not only realize the direct comparability of education expenditure scale in different regions, but also describe the dynamic process of respective education expenditure, which together constitute the proxy variables for measuring local education expenditure efforts in this paper.

The explanatory variable F_t in this paper is used to reflect the fiscal transparency of each prefecture-level municipality. Since 2012, the Center for Research in Public Economics, Finance and Governance of Tsinghua University has published fiscal transparency indicators for relevant prefecture-level municipalities in China every year, with a total of 81 municipalities published in 2012, 289 municipalities published in 2013-2014, and the sample increasing to 652 after 2015. Fiscal transparency in this paper is measured by the interaction term between the logarithm of fiscal transparency score and the share of public finance expenditure in GDP published by Tsinghua University.

The control variables in this paper include two levels of indicators, namely, the city's economic development status and its financial operation. The specific names and meanings of which are shown in TABLE I.

TABLE I. Comparison table of variables

Variable	Variable Name	DEFINITIONS
Quality of economic development	<i>Average</i>	Natural logarithm of GDP per capita
Level of economic growth	<i>Rate</i>	GDP Value Added/Lagged Phase GDP
Level of financial development	<i>Finance</i>	Deposits in financial institutions/GDP
Level of labor remuneration	<i>labor</i>	Natural logarithm of per capita employee wage
Reserve of human resources	<i>Human</i>	Number of students (secondary students + university students)/total population

Rate of financial self-sufficiency	<i>Self</i>	Fiscal revenue/expenditure
Ratio of investment in science and technology	<i>Science</i>	Expenditure scale of science and technology/scale of financial expenditure
Government deficit rate	<i>Deficit</i>	Fiscal expenditure-revenue)/GDP

3.2 Data Description

This paper uses 285 prefecture-level cities from 2013 - 2019 as the initial sample. The novel coronavirus epidemic sweeping the world in 2020 brings the worldwide uncertainty to another level. To avoid the intervention of the epidemic-induced policy uncertainty on the findings of the empirical study, this paper takes 2019 as the end of the sample period^①. Data for the explanatory variables are obtained from the *Research Report on Fiscal Transparency of Municipal Governments in China* published by Tsinghua University from 2013-2019; data for the explanatory and control variables are obtained from the China City Statistical Yearbook, the China Fiscal Yearbook, the EPS database, the CSMAR database, and the *Statistical Bulletin of National Economic and Social Development* of each city during the sample period.

TABLE II presents the results of descriptive statistics for the main variables. It can be seen that the average value of the share of education expenditure in GDP for the 285 sample cities over the seven-year period is 3.23%, which has not yet reached the national requirement of 4%. This indicates that there is still much room for growth in the investment of local governments in public education in China.

TABLE II. Description of the statistical characteristics of the main variables

Variable Name	Number of Observations	Mean	Standard Deviation	Minimum Value	Maximum Value
Explained Variables					
<i>Education</i>	1976	0.0323	0.0160	0.0003	0.1422
<i>Increase</i>	1963	0.1540	0.4396	-1.0000	16.2640
Explanatory variable					
<i>Ft</i>	1971	0.7708	0.4020	0.2160	7.9574
Controlled variables					
<i>Average</i>	1985	10.5086	0.6218	8.3885	12.5793
<i>Rate</i>	1949	0.1034	0.0446	-0.1938	1.0900
<i>Finance</i>	1985	1.3067	0.6305	0.0753	8.8714
<i>laber</i>	1972	10.1828	1.8494	1.4405	15.0210
<i>Human</i>	1923	0.0692	0.0266	0.0031	0.2084
<i>Self</i>	1995	0.4818	0.2198	0.0544	1.5413
<i>Science</i>	1938	0.0154	0.0141	0.0007	0.2068
<i>Deficit</i>	1995	0.1057	0.0926	-0.0671	1.3833

IV. EMPIRICAL ANALYSIS

4.1 Benchmark regression

TABLE III presents the results of the benchmark regressions, where the explained variable in columns (1) and (2) is the share of government fiscal spending on education in GDP (Education), and the explanatory variable in columns (3) and (4) is the growth rate of education spending (Increase); columns (1) and (3) introduce only the core explanatory variables, Columns (2) and (4) add control variables and core explanatory variables and regress them by using fiscal transparency (Ft). The results in columns (2) and (4) show that there is a positive effect of fiscal transparency on the share of local education expenditure in GDP and the growth rate of government education expenditure, both of which are significant at the 1% level. Since the central government has repeatedly emphasized the ratio of education expenditure to GDP as a hard indicator in the *Government Work Report*, and the *Government Work Report* is a "baton" for local governments to allocate resources which specifies the value orientation and value guidelines for government decisions and, to a large extent, tells the public which areas the government will invest.[18] Therefore, the absolute level of local government spending on education is certain to increase. The increasing fiscal transparency enables the territorial public to have a more personal feeling about local government education fiscal expenditure, and motivates local governments to increase the share of education fiscal expenditure with the growth rate climbs year by year. This suggests that the research hypothesis of this paper is valid-when fiscal transparency increases, the willingness and effort of local governments to spend on education are enhanced.

TABLE III. Benchmark regression results

	(1)	(2)	(3)	(4)
	<i>Explained Variable: Education</i>		<i>Explained variable: Increase</i>	
<i>Ft</i>	0.0243*** (0.0064)	0.0146*** (0.0053)	0.0542** (0.0041)	0.0381*** (0.2260)
<i>Average</i>		-0.0040*** (0.0015)		0.1305** (0.0609)
<i>Rate</i>		0.0093** (0.0040)		0.3343 (0.2340)
<i>Finance</i>		-0.0004 (0.0009)		-0.1386*** (0.0399)
<i>laber</i>		0.0004* (0.0002)		0.0247*** (0.0076)
<i>Human</i>		0.0025 (0.0198)		-1.8056 (1.1903)
<i>Self</i>		0.0066** (0.0028)		0.1522 (0.1000)
<i>Science</i>		-0.0650		-5.3913***

		(0.0563)		(2.6028)
<i>Deficit</i>		0.0255*		0.3970*
		(0.0130)		(0.2116)
City fixed effect	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y
_cons	0.0191***	0.0440***	1.3173***	-0.2775
	(0.0116)	(0.0126)	(0.4763)	(0.4592)
<i>N</i>	1938	1938	1927	1927
adj. <i>R</i> ²	0.2862	0.2995	0.0785	0.0940

Note: The heteroskedasticity robust standard errors of clustering to the city level are reported in parentheses, and *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively. The table below is the same.

4.2 Robustness Test

Although the results of the benchmark regression prove the validity of the research hypothesis, the deficiencies of the model may still bias the empirical findings. Therefore, this section will conduct robustness tests in terms of replacing core variables, introducing instrumental variables, excluding special samples, and adding control variables to ensure the reliability of the findings.

4.2.1 Replace core variables

TABLE IV. reflects the regression results after replacing the core variables, where the explained variables in columns (1) and (2) are the natural logarithm of local per capita education expenditures (*Lneducation*) and the share of government public education expenditures in the total fiscal expenditures of the year (*Public*), respectively. It can be seen that with the improvement of fiscal transparency, the scale of local governments' fiscal funds for public education spending is increasing, and the share of education spending in all spending is also increasing, thus indicating that the benchmark regression results are robust. The public expenditure structure of local governments is affected by fiscal transparency. The improvement of fiscal transparency is conducive to stabilizing economic expectations and guaranteeing stable economic development, and the increase of economic certainty is conducive to the increase of local governments' expenditure in the category of people's livelihood.

TABLE IV. Robustness test 1: Replacement of core and instrumental variables

	(1)	(2)	(3)	(4)
	<i>Lneducation</i>	<i>Public</i>	<i>Education</i>	<i>Increase</i>
<i>Ft</i>	0.2162*	0.0141**	0.0046***	0.0385*
	(0.1240)	(0.0061)	(0.0007)	(0.0209)
Controlled variable	Y	Y	Y	Y

City fixed effect	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y
_cons	-0.3471	0.2990***	0.0536***	0.0031
	(1.1948)	(0.0641)	(0.0151)	(0.4420)
N	1938	1938	1912	1912
adj. R ²	0.5838	0.3455	0.3049	0.0595

4.2.2 Introduce tool variables

Considering the possible endogeneity problem of the benchmark model, this section uses the number of Internet broadband access subscribers divided by the total year-end population as the instrumental variable for a two-stage least squares regression. The fiscal transparency score depends on how much fiscal information the government publishes online, and only Internet users have access to information publicly available to the government. Therefore, the number of Internet broadband access users is to some extent related to fiscal transparency, while the number of Internet broadband access users does not directly affect the level of education spending efforts in each local area of the country. The instrumental variable is able to satisfy exogeneity.

Columns (3) and (4) of Table 4 reflect the second-stage regression results of the two-stage least squares regression, where we use the 2 explained variables of the share of government fiscal spending on education and the growth rate of education spending. It can be seen that when fiscal transparency increases, the share of education spending in GDP and the growth rate of local governments increase significantly. It proves once again that increased fiscal transparency leads to an increase in the willingness of local governments to devote financial resources to education and an increase in education spending efforts.

4.2.3 Consider special events

Since the sample selected in this paper has seven-year span and many far-reaching political and economic events happened at home and abroad during this period, these factors will undoubtedly create some problem for the empirical analysis. Since 2014, China has vigorously implemented targeted-poverty alleviation, which means that poor areas have to devote part of their financial resources to poverty alleviation issues such as relocation of poor people and industrial poverty alleviation. This factor may affect the quantity and scale of local government's supply for education-based public goods. For this reason, we exclude the sample of prefecture-level cities containing 832 national-level poverty-stricken counties after 2014 to avoid the impact of targeted-poverty alleviation on government education spending efforts. It is easy to see from the results in columns (1) and (2) of TABLE V that the results of the benchmark regression still hold after excluding the sample affected by the event of targeted-poverty alleviation.

TABLE V Robustness test 2: Considering special events

	(1)	(2)	(3)	(4)
	Excluding national poverty-stricken counties		Excluding provincial capitals and sub-provincial cities	
	Explained Variable: <i>Education</i>	Explained Variable: <i>Increase</i>	<i>Explained Variable: Education</i>	Explained Variable: <i>Increase</i>
<i>F_t</i>	0.0149**	1.0214***	0.0149**	0.8435***
	(0.0067)	(0.3114)	(0.0067)	(0.2280)
Controlled variable	Y	Y	Y	Y
City fixed effect	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y
_cons	0.0497***	-0.5342	0.0497***	0.0645
	(0.0138)	(0.6831)	(0.0138)	(0.4432)
<i>N</i>	1106	1095	1882	1871
adj. <i>R</i> ²	0.3173	0.0860	0.3173	0.0904

Thirdly, provincial capitals and sub-provincial cities have more advantages both in terms of economic development level and financial resource distribution, and their demands for optimizing public expenditure structure are different from those of general prefecture-level cities, so the degree of financial information disclosure and the importance of education are not consistent. In view of this, we exclude all provincial capitals and sub-provincial cities from the sample period. The results in columns (3) and (4) of Table 5 show that after excluding provincial capitals and sub-provincial cities or introducing provincial control variables, the findings of the benchmark regression results still hold significantly, and fiscal transparency is positively related to the share of local governments' education expenditures in GDP and the growth rate of adult education expenditures.

V. HETEROGENEITY ANALYSIS

The ability of local governments to disclose financial information as well as their motivation and strength to invest in education are interfered by different factors. This makes the impact of financial transparency on the degree of local education spending efforts often show significant structural features. Therefore, deeper exploration need to conducted through heterogeneity analysis.

First of all, there are large disparities in the levels of economic and social development in different regions of China. Local governments often attach different importance to education, indicating that there are systematic differences in education spending efforts among regions. In contrast to previous literature that divides samples according to east, middle and west, this paper attempts to define various regions with different levels of education based on the regional division pattern of China's college entrance examination

paper assignments in terms of education quality. We define the provinces that use National College Entrance Examination Paper 1 and the provinces with self-assigned questions as regions with high education levels, and the remaining provinces that use National College Entrance Examination Papers 2 and 3 as regions with low education levels.

TABLE VI reflects the results of the heterogeneity analysis of education levels. As can be seen, in regions with lower education levels, fiscal transparency causes local governments to increase the scale of education expenditures more and the growth rate of expenditures more rapidly, i.e., the effort of education expenditures is relatively greater. For educationally developed regions, the future benefits of education investment to the regions are large. Local governments attach more importance to education and these regions have sufficient motivation to develop education. The impact of external uncertainty on local education investment is much limited. In contrast, for educationally underdeveloped regions, local governments not only assume the function of providing basic public services, but also face economic development pressure. Under the assessment system of competing for economic growth, local governments have the characteristics of emphasizing productive expenditures over public service expenditures (Fu Yong and Zhang Yan, 2007). With the transparency of fiscal information and the increase of the state's emphasis on education, the public can effectively monitor local governments' revenue and expenditure activities, thus optimizing the fiscal expenditure structure more. The above findings also show that fiscal transparency is conducive to solving the problem of regional public education development gap.

TABLE VI. Heterogeneity analysis I

	(1)	(2)	(3)	(4)
	Areas with high education levels		Areas with low education levels	
	<i>Explained Variable: Education</i>	<i>Explained Variable: Increase</i>	<i>Explained Variable: Education</i>	<i>Explained Variable: Increase</i>
<i>F_t</i>	0.0093***	0.5811**	0.0166***	1.7225***
	(0.0012)	(0.2372)	(0.0044)	(0.4558)
Controlled variable	Y	Y	Y	Y
City fixed effect	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y
_cons	0.0472***	0.1166	-0.0016	-0.0629
	(0.0117)	(0.4605)	(0.0117)	(0.7623)
<i>N</i>	1128	1175	818	752
adj. <i>R</i> ²	0.5624	0.0584	0.1582	0.1727

Second, the new Budget Law, which came into force in January 2015, has made clearer regulations on government finance and revenue. "Establishing a sound, open and transparent budget system to ensure healthy economic and social development" is written into the general provisions of the new Budget Law. The comprehensive regulation of the budget process in the new Budget Law may have a heterogeneous

impact on governments with different degrees of fiscal transparency. Therefore, this paper takes 2015 as the time cut-off point and divides the sample into two intervals: 2013-2014 and 2015-2019 for the regressions respectively.

TABLE VII reflects the results of the heterogeneity analysis of the implementation of the new Budget Law. It can be seen that fiscal transparency has a greater impact on local governments' education spending efforts after the implementation of the new Budget Law. The continuous standardization of budget content and budget process profoundly affects the spending behavior of local governments, and the openness and transparency of fiscal information can effectively hedge the negative impact of fiscal policy uncertainty; local governments' expected benefits for education will not be significantly reduced, so the investment in education still accounts for a high proportion of the public expenditure structure.

TABLE VII. Heterogeneity analysis II

	(1)	(2)	(3)	(4)
	Before the implementation of the new Budget Law		After the implementation of the new Budget Law	
	<i>Explained Variable: Education</i>	<i>Explained Variable: Increase</i>	<i>Explained Variable: Education</i>	<i>Explained Variable: Increase</i>
<i>Epul</i>	0.0022**	0.8410***	0.0053***	1.0337***
	(0.0010)	(0.2920)	(0.0007)	(0.3004)
Controlled variable	Y	Y	Y	Y
City fixed effect	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y
_cons	-0.0362***	-0.4254	0.0120	0.3923
	(0.0089)	(0.5375)	(0.0105)	(0.3263)
<i>N</i>	548	542	1390	1385
adj. <i>R</i> ²	0.2590	0.0950	0.3885	0.2317

Finally, the urban-rural gap is an important factor affecting the structure of public goods supplied by the government. For regions with large urban-rural disparities, local governments often have to spend a large amount of financial resources on the provision of productive public goods such as urban-rural infrastructure construction and improvement of rural quality of life, which will obviously crowd out the supply of education-based public goods and reduce the government's willingness to invest in education. This paper chooses the urban-rural consumption level ratio to measure the urban-rural gap in different regions, and names provinces above this ratio as regions with large urban-rural gap and provinces below this ratio as regions with small urban-rural gap.

The results of the urban-rural gap heterogeneity analysis are presented in TABLE VIII. When the degree of fiscal policy uncertainty is high, regions with large urban-rural gaps are forced to spend their

limited funds mainly on infrastructure development to narrow the urban-rural gaps for the sake of conservation, and invest less in education and other livelihood-based expenditures. However, regions with large urban-rural disparities have more incentive to narrow the gap between urban and rural areas in basic public services with the injection of fiscal transparency and certainty, and local governments have more incentive to spend financial resources on education development than regions with small urban-rural disparities, so both the percentage of fiscal expenditure on education and the absolute value of the growth rate of education expenditure are larger. This result also indicates that encouraging localities to increase education investment should be tailored to local conditions and time, and corresponding incentive and constraint targets should be set based on full consideration of the current situation and actual demands of local development.

TABLE VIII. Heterogeneity analysis III

	(1)	(2)	(3)	(4)
	Large gap between urban and rural areas		Small gap between urban and rural areas	
	<i>Explained Variable: Education</i>	Explained Variable: <i>Increase</i>	<i>Explained Variable: Education</i>	Explained Variable: <i>Increase</i>
<i>Epul</i>	0.0047***	0.0679**	0.0042***	0.0629***
	(0.0007)	(0.0309)	(0.0009)	(0.0090)
Controlled variable	Y	Y	Y	Y
City fixed effect	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y
_cons	0.0009	0.4657	-0.0207**	-0.6226
	(0.0093)	(0.8721)	(0.0090)	(0.4411)
<i>N</i>	813	809	1125	1118
adj. <i>R</i> ²	0.3975	0.2366	0.2734	0.1586

VI. CONCLUSIONS AND POLICY SUGGESTIONS

This paper systematically examines the impact of fiscal transparency on local governments' education spending efforts by using data related to local government education spending and the *China Municipal Government Fiscal Transparency Study Report* from 2013-2019. The empirical results show that local governments' education spending efforts significantly increase when fiscal transparency increases, and the findings pass a series of robustness tests. The results of the heterogeneity analysis show that the positive effect of fiscal transparency on local education spending efforts is relatively stronger in regions with relatively low education levels and large urban-rural development gaps and after the implementation of the new Budget Law. Currently, the state attaches more and more importance to local education investment and keeps clarifying the responsibility of local education expenditure by means of input targets in relevant

policy documents. However, such mandatory means cannot fundamentally solve the problem of insufficient local education investment, and it ultimately comes back to how to stimulate the government's willingness to increase education expenditure. To this end, this paper proposes countermeasures to increase the scale of local education expenditure, optimize the structure of government public expenditure and achieve balanced development of education among regions from the following three aspects.

First, fiscal transparency should be included in the scope of fiscal performance assessment. Local governments at all levels are required to strengthen financial information disclosure, clearly refine the content and requirements of financial information disclosure at the level of laws and regulations, and further improve the relevant rules on financial transparency in the Budget Law and the *Secrecy Law* to provide legal protection for financial information disclosure. From the government's perspective, it is also necessary to broaden the channels of financial information disclosure, use big data platforms to create an open and transparent cloud government, and fully utilize WeChat public platforms and microblogging clients to create a government information network within the reach of the public, but it is also necessary to pay attention to the readability of information and write the people's accounts.

Secondly, the performance appraisal for officials should pay more attention to the field of people's livelihood and guide the optimization and upgrading of local expenditure structure. As the goal of modernizing national governance capacity becomes clearer, local governments should focus on non-economic areas such as education, health, medical care and ecological environment to achieve overall improvement of local governance effectiveness and comprehensive high-quality economic and social development. According to the theory of official promotion competition, "the official's administration ability can be shown in the data on the reports, which in turn help them get promotion. This is an important reason for why the local governments care much about the GDP they have achieved. In order to change the concept of local development and promote the rapid development of non-economic fields, embedding education and health into the appraisal system of officials in the form of indicators can undoubtedly stimulate the willingness and determination of local governments to vigorously develop related fields. At the same time, the appraisal system for the collection of non-economic fields is also an important criterion for evaluating the level of development of local education, health, medical care and ecological environment, which helps to further improve the overall layout and decision-making deployment from the central to the local level.

Finally, education reform in the new era should be tailored to local conditions and time, with pilot projects and gradients. The level of local economic growth, fiscal scale, and financial sustainability determine the quantity and quality of public goods that the government can provide. There are huge disparities among the eastern, central, and western regions of China in these areas, resulting in highly uneven investment in education and the development of modern education. Therefore, instead of setting rigid standards for local education investment, differentiated policies should be formulated after taking into account the actual situation of each region in terms of population structure, economic level and government financial resources. Places with low education levels should focus on improving the efficiency of capital use and expanding the coverage of public education; places with high education levels should

focus on education quality and education equity to ensure that education benefits the general public and enhance the government's ability to provide quality public goods. The implementation of some advanced education concepts can be piloted in developed coastal areas, and then promoted nationwide in a gradient when the time is ripe. In addition, local education development should not be at the expense of seriously damaging local financial sustainability, and should ensure that local debt risk and deficit risk are maintained at reasonable levels.

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