



# Can local People's Congress supervision improve the expenditure behavior of local governments? Evidence from provincial budget review

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## ARTICLE INFO

### Keywords:

Supervision of local People's Congress  
Public service of people's livelihood  
Expenditure bias  
Expenditure efficiency

## ABSTRACT

The Local People's Congress budget review and supervision is an important measure to "effectively safeguard and improve people's livelihood" under the changes of the current major contradictions. Using the multi period DID method, we found that after the revision of the regulations, the local people's livelihood public service expenditure bias and expenditure efficiency were significantly improved. This conclusion is still valid after considering a series of robustness tests and possible explanations. The specific ways for it mainly include the constraint on the opportunistic behavior of local governments and the signal transmission function of the LPC's supervision. Further research shows that more effective media attention, more open and transparent rule of law environment, greater financial pressure and regional differences can all affect the effect of LPC's supervision of spending behavior. The research conclusion shows that the role of LPC supervision should be further played to ensure the development of local people's livelihood and promote the construction of government revenue and expenditure management system.

## 1. Introduction

How to enhance people's sense of contentment, happiness and security, and promote the high-quality development of public services has become a hot topic highly concerned by scholars and policy makers [1,2]. Under the decentralized system of fiscal expenditure in China, the fiscal expenditure bias has obvious localization characteristics, which may lead to the distortion of the local fiscal expenditure structure, thus affecting the expenditure bias and expenditure efficiency of public services related to people's livelihood, which is not conducive to the improvement of people's quality of life and the overall progress of society. Therefore, the key to ensuring social equity and justice and improving people's well-being is to improve the expenditure bias and efficiency of local finance for people's livelihood public services [3]. How to achieve this goal and effectively ensure the expenditure bias and efficiency of public services for people's livelihood? It is necessary to give play to the supervision function of the Local People's Congress to adjust the distortion of the financial expenditure structure [4], and then explore the optimization path to improve the efficiency of financial public service expenditure [5].

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<https://doi.org/10.1016/j.heliyon.2023.e22395>

Received 26 March 2023; Received in revised form 27 October 2023; Accepted 10 November 2023

Available online 17 November 2023

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The existing literature starts from analyzing the causes of the financial expenditure structure's distortion, and then explores the bias of local governments in basic public services. Some scholars analyze it from the perspective of fiscal decentralization [6]. On the one hand, it is believed that this decentralization system and the intergovernmental promotion incentive brought by the performance appraisal cause the local government to focus on infrastructure investment rather than public service expenditure in the financial expenditure structure, and the basic public services provided by the local government are difficult to meet the actual and effective needs of residents [7]. On the other hand, it is believed that the mismatch of power and responsibility is also the cause of insufficient public service expenditure provided by local governments. Some scholars also analyzed the distortion of financial expenditure structure from the perspective of transfer payment, and believed that changes in the scale and structure of transfer payment would also lead to a positive or negative impact on basic public service expenditure bias, such as the "inverted U" relationship between the two. Other scholars also have explained unbalanced financial expenditure structure from financial pressure [7], Vertical fiscal imbalance [8]. It can be seen from the research of the above different students that, at present, China's local people's livelihood public service expenditure is still weak, and we need to play the role of people's livelihood public services in improving the distortion of the financial expenditure structure.

On the basis of clarifying the bias of local government expenditure on people's livelihood public services, Scholars, when evaluating the efficiency of public service expenditure for people's livelihood, conduct measurements based on the public service of a specific project [9], while others assess it from the perspective of regional or national public services [10,11]. By comparing the project differences and regional differences of these public services [12] and international and domestic comparative differences [13]. From these evaluation and measurement results, scholars found that the efficiency of public service expenditure for people's livelihood is declining and there is a serious waste of financial resources in public service supply. Then, scholars have given answers from different perspectives on how to improve the local people's livelihood public service expenditure bias and improve the efficiency of people's livelihood public service expenditure. Some scholars tend to adjust the financial expenditure structure, improve the preference of public service expenditure for people's livelihood, and promote the efficiency of general public service expenditure [14]. Some scholars also emphasized improving the efficiency of public service expenditure for people's livelihood from the perspective of

**Table 1**  
The revision time of the budget review and supervision regulations.

Region	Name	Time
Beijing	Regulations of Beijing Municipality on Budget Examination and Supervision	2017
Tianjin	Regulations of Tianjin Municipality on Budget Examination and Supervision	2019
Hebei Province	Regulations of Hebei Province on Budget Examination and Supervision	2016
Shanxi Province	Regulations of Shanxi Province on Budget Examination and Supervision	2022
Inner Mongolia Autonomous Region	Regulations of Inner Mongolia Autonomous Region on Budget Examination and Supervision	2019
Liaoning Province	Regulations of Liaoning Province on Budget Examination and Supervision	2019
Jilin Province	Regulations of Jilin Province on Budget Examination and Supervision	2017
Heilongjiang Province	Regulations of Heilongjiang Province on Budget Examination and Supervision	2021
Shanghai	Regulations of Shanghai Municipality on Budget Examination and Supervision	2021
Zhejiang Province	Regulations of Zhejiang Province on Budget Examination and Supervision	2017
Anhui Province	Regulations of Anhui Province on Budget Examination and Supervision	2016
Jiangxi Province	Regulations of Jiangxi Province on Budget Examination and Supervision	2006
Shandong Province	Regulations of Shandong Province on Provincial Budget Examination and Supervision	2001
Henan Province	Regulations of Henan Province on Budget Examination and Supervision	2019
Hunan Province	Regulations of Hunan Province on Budget Examination and Supervision of the Standing Committee of the People's Congress at or above the county level	2020
Guangdong Province	Regulations of Guangdong Province on the Supervision of Budget Examination and Approval	2020
Guangxi Zhuang Autonomous Region	Regulations of Guangxi Zhuang Autonomous Region on Budget Supervision	2016
Sichuan Province	Regulations of Sichuan Province on Budget Review and Supervision	2019
Yunnan Province	Regulations of Yunnan Province on Budget Examination and Supervision	2016
Gansu Province	Regulations of Gansu Province on the Supervision of Budget Examination and Approval	2016
Qinghai Province	Regulations of Qinghai Province on Budget Examination and Supervision	2022
Ningxia Hui Autonomous Region	Regulations of Ningxia Hui Autonomous Region on Budget Examination and Supervision	2019
Xinjiang Uygur Autonomous Region	Decision of the Standing Committee of the People's Congress of the Xinjiang Uygur Autonomous Region on Strengthening the Examination and Supervision of the Budget at the Own Level of the Autonomous Region	2022
Hubei province	Decision of the Standing Committee of the Hubei Provincial People's Congress on Strengthening the Examination and Supervision of Provincial Budget	2022
Jiangsu Province	Decision of the Standing Committee of the Jiangsu Provincial People's Congress on Strengthening the Examination and Supervision of the Provincial Budget	2001
Fujian Province	Decision of the Standing Committee of the Fujian Provincial People's Congress on Strengthening Budget Examination and Supervision	2002
Shaanxi Province	Regulations of Shaanxi Province on Budget Examination and Supervision	2021
Hainan Province	Regulations of Hainan Provincial People's Congresses at All Levels and Their Standing Committees on the Examination and Supervision of Budgets	2007
Chongqing	Regulations of Chongqing Municipality on Budget Examination and Supervision	2017

strengthening capital supervision [15]. Some scholars, based on the principal-agent theory [16], advocate for strengthening fund supervision to fully leverage the role of budget supervision [17,18]. They posit that the relationship between the People's Congress supervision and local government governance is one of delegation and supervision, which can be effectively monitored during the budgeting process. During the budget formulation stage, Kotera (2012) suggests that the opportunistic tendencies of local governments are primarily due to the lack of transparency in budget information, and the institutional characteristics of People's Congress supervision are designed to ensure such transparency. During the budget execution stage, the inadequate implementation of the government's public service budget for people's livelihood is identified as a significant reason for the bias and inefficiency in local government expenditure [19].

Based on the revision of the budget review and supervision regulations of the Local People's Congress, this paper attempts to analyze the impact of the LPC's supervision on the local government's expenditure bias and expenditure efficiency of public services related to people's livelihood from the perspective of supervision, with a view to reversing the existing insufficient expenditure bias and low expenditure efficiency, so as to achieve "guaranteed people's livelihood and satisfied people's needs". Compared with the existing literature, the possible contributions of this paper are as follows: Firstly, from the research perspective, this study uses the People's Congress supervision as a starting point to investigate the impact and mechanism of the revision of provincial People's Congress budget review and supervision regulations on the expenditure behavior of local government public services for people's livelihood. Existing research primarily focuses on audit supervision [20]; Secondly, in terms of research methods, this study treats the revision of provincial budget review and supervision regulations as a quasi-natural experiment and uses the difference-in-differences method at multiple time points to verify that the People's Congress supervision improves the bias and efficiency of public service expenditure for people's livelihood. This approach overcomes issues such as endogeneity and, through a series of robustness tests, yields more reliable and scientific results. Existing literature on the impact of People's Congress supervision on local government expenditure behavior is primarily normative, lacking in theoretical derivation and empirical research [21]; Thirdly, in terms of the research subject, in addition to exploring how the People's Congress supervision can influence the expenditure behavior of public services for people's livelihood through signal transmission functions and reducing government opportunistic behavior, this study also further analyzes the behavior of People's Congress supervision from the perspectives of media attention, rule of law environment, financial pressure and regional differences. This provides empirical evidence for improving the governance effectiveness of public services for people's livelihood and perfecting supervision mechanisms.

## 2. Background and research hypothesis

### 2.1. The system background of the supervision of the local People's congress

Therefore, after the promulgation of the new budget law in 2015, each province has identified the regions where its own budget review and supervision regulations have been revised in turn. Because the legislative process and the time of revision in each region are not consistent and have randomness, this provides a basis for this paper to identify the supervision effectiveness of the regions where the LPC's budget review and supervision regulations have been revised using the causal identification method. As shown in Table 1, Beijing revised its own regulations on budget review and supervision based on the new budget law in 2017, while the regulations on budget review and supervision issued by Jiangxi Province were in 2006, and it was not revised based on the budget law. By 2020, a total of 17 provinces have revised their own budget review and supervision regulations.

### 2.2. Theoretical analysis and research hypothesis

Solving the government financial problem is one of the core issues of government governance. Improving the proportion and efficiency of government expenditure on public services related to people's livelihood will help solve the government financial problem. The supervision of local people's congresses, as one of the important means to improve the efficiency of local government financial expenditure, runs through the whole process of budget preparation, budget implementation and final account supervision [22]. The supervision of these three stages was institutionalized and legalized through the budget review and supervision regulations, which also played a certain role in improving the supervision of the local government's expenditure bias on public services related to people's livelihood.

In the process of budget preparation, local people's congresses have improved the transparency of government information through the revision of the budget review and supervision regulations. On the one hand, the basic requirement of LPC supervision is that the government needs to ensure the openness of government management information, especially in the input link. Through social supervision, it can enhance the openness and transparency of government work, thus improving the level of government public service. On the other hand, according to existing research, government transparency can objectively and truly reflect the power operation of government public governance [23], and maximize the expansion of supervision [24] to let more citizens participate in the supervision through social hearing, public voting, etc. This is of great significance for the standardized operation of government power, solving the problem of bias and efficiency of government expenditure on public services related to people's livelihood, and establishing a scientific and reasonable financial distribution mechanism [25].

In the process of budget implementation, the local people's congresses further strengthened budget implementation through the revision of the budget review and supervision regulations, and effectively managed the unreasonable spending and budget of local governments on people's livelihood public services [26]. As an organization of state power, local people's congresses play an important role in giving play to public opinion and strengthening supervision. On the one hand, the government's expenditure on

public services for people's livelihood is a concrete manifestation of macro policies and a government activity that respects public opinion. In the budget review and supervision of relevant policies, strict review is required, and relevant expenditure plans and funds should be reasonably arranged to promote the government's implementation of the public budget. On the other hand, the revision of the Regulations on Budget Review and Supervision clearly focuses on budget expenditure and fund implementation. For example, in the budget implementation stage, the performance results are tracked and the budget and output results are evaluated. In specific practice, local people's congresses will also promote the inspection of the allocation and completion of revenue and expenditure of government public services related to people's livelihood through inquiry, research, review and supervision, law enforcement and other means. These measures are of great significance for correcting the government's behavior and regulating the further operation of power, and also help to promote the local government's expenditure bias and efficiency of public services related to people's livelihood.

In the final accounts review and supervision link, the local people's congresses strengthened the LPC's right to amend the budget through the revision of the budget review and supervision regulations, thereby helping to correct the government's spending behavior and adjust the budget deviation of the government's public service expenditure for people's livelihood. As there is a saying of "political promotion theory" in China's political assessment, economic growth is taken as the standard to evaluate the promotion of officials. It will lead to disorderly competition among local governments, a large amount of waste in repeated construction of public resources, and lead to excessive economic expenditure, reduced livelihood expenditure, so that public service expenditure can not be guaranteed. The revision of the budget review and supervision regulations of the local people's congresses has strengthened the right to amend the budget, held the government accountable for its spending behavior in the form of laws, provided legal protection for budget implementation, further curbed illegal spending, and also ensured the government's public service expenditure level for people's livelihood. Based on this, this paper proposes research hypothesis H1.

**H1.** After the revision of the Regulations on Budget Review and Supervision, the LPC's supervision ability has been further improved, which can improve the local government's expenditure bias and expenditure efficiency in public services related to people's livelihood.

### 3. Methods and data

#### 3.1. Empirical model

The revision time of the budget review and supervision regulations of the provincial people's congresses in China is not consistent. Since the promulgation of the new Budget Law in 2015, 17 provinces and cities have revised the local budget review and supervision regulations, improving the supervision effectiveness of the people's congresses. Therefore, in order to test whether the LPC supervision can improve the government's expenditure bias and expenditure efficiency of public services for people's livelihood after the revision of the Budget Review and Supervision Regulations, that is, to test hypothesis 1, a multi period double difference fixed effect model is set as follows:

$$Y_{it} = \beta_0 + \beta_1 \text{Treat}_i \times \text{Post}_{it} + \beta_2 X_{it} + \alpha_t + \gamma_i + \varepsilon_{it} \quad (1)$$

where  $i$  denotes province,  $t$  denotes year,  $Y_{it}$  represents the government's expenditure on public services related to people's livelihood in province  $i$  of the explained variable in year  $t$ , including public service expenditure bias and public service expenditure efficiency. The expenditure bias on public services related to people's livelihood refers to the proportion of the expenditure on public services related to people's livelihood in the general budget expenditure of province  $i$  in year  $t$ .  $\text{Treat}_i \times \text{Post}_{it}$  indicates the state of province  $i$  in year  $t$ . If province  $i$  revised the provincial budget review and supervision regulations in year  $t$ , the assigned value is 1. Otherwise, it is 0.  $X_{it}$  represents a series of control variables,  $\alpha_t$  stands for annual fixed effect,  $\gamma_i$  represents the fixed effect of provinces,  $\varepsilon_{it}$  is the introduced random error term. Coefficient  $\beta_1$  is a key indicator to measure the government's expenditure on public services related to people's livelihood. If  $\beta_1 > 0$ , indicating that the LPC's budget review and supervision has improved the local government's spending on public services related to people's livelihood. If  $\beta_1 < 0$ , indicating that the revision of the LPC's budget review and supervision regulations has restrained the local government's spending on public services related to people's livelihood.

#### 3.2. Variables

##### 3.2.1. Dependent variable

The preference of local government expenditure on public services related to people's livelihood and the efficiency of local government expenditure on public services related to people's livelihood.

This paper sets the proportion of people's livelihood public service expenditure and the efficiency of people's livelihood public service expenditure as explained variables. It can be seen that there are two main considerations for the choice of variables for the expenditure behavior of public services related to people's livelihood: the government's expenditure preference for public services related to people's livelihood and the government's efficiency choice of public service expenditure for people's livelihood. In order to make the research design of this paper more realistic and more consistent with the intention of the decision-makers, the specific variable indicators of this paper are set by reference to the relevant content of the "Fourteenth Five Year" Public Service Plan.

In order to solve the problems that the people are most concerned about, how to make up for weaknesses in the government's expenditure on public services related to people's livelihood and improve the quality of public services has become a practical need.

The “*Fourteenth Five Year Plan*” for Public Services specifies the key construction areas of basic public services, such as compulsory education, health care, social services, employment and social security, and housing security. Based on this, this paper selects compulsory education expenditure, medical and health expenditure and social security expenditure as the input indicators of public service expenditure for people’s livelihood. The output indicators correspond to education, health care and social security respectively: (1) Education is represented by compulsory education. It mainly refers to the junior middle school and primary school stages, and the “number of students in ordinary primary schools” and “number of students in ordinary junior middle schools” are selected to express the popularization effect of the investment in education; (2) In terms of medical and health care, “the number of medical and health institutions per 10,000 people” and “the number of health personnel per 10,000 people” are taken as output indicators, aiming to solve the problem and burden of “difficult and expensive medical care” of the people, “Number of people insured by basic endowment insurance” and “number of people insured by basic medical insurance” are adopted as output indicators corresponding to public services.

Therefore, through the above output and input indicators, we can calculate the government expenditure bias and efficiency of public services for people’s livelihood. This paper uses provincial data from 2013 to 2020. The preference of government expenditure on public services for people’s livelihood refers to the proportion of expenditure on public services for people’s livelihood in the general budget expenditure of provincial governments, while the efficiency of expenditure on basic public services is calculated by DEA (Data Envelopment Analysis) and DEAP2.1 based on input and output indicators.

### 3.2.2. *Independent variable.-Supervision by the local People’s congress*

The setting of core variables in this paper refers to whether the provincial people’s congress budget review and supervision regulations are revised as dummy variables after the 2015 new Budget Law.  $Treat_i \times Post_{it}$  represented as interactive item, whose coefficient indicates the impact of LPC supervision on the spending behavior of local governments on people’s livelihood public services. Among them, provinces that implement the revised budget supervision regulations of the Local People’s Congress will be  $Treat_i = 1$ , or will be 0; The starting point and subsequent time point of the revision of the budget supervision regulations of a provincial people’s congress will be  $Post_{it} = 1$ . The year when the province has not implemented the reform of the budget supervision regulations of the Local People’s Congress will be  $Post_{it} = 0$ .

### 3.2.3. *Control variables*

Referring to the existing literature, the main control variables in this model are: (1) the level of economic development, using regional per capita GDP and taking logarithms; (2) The urbanization rate is measured by the proportion of the regional urban population and the total regional population; (3) The industrial structure is measured by the proportion of the output value of the region’s secondary industry and the region’s GDP in that year; (4) Decentralization of fiscal expenditure, which is measured by local general budget expenditure and national general budget expenditure; (5) Population density is reflected by the logarithm of population density; (6) The degree of opening to the outside world is measured by the proportion of the region’s total imports and exports in the region’s GDP of the year.

### 3.2.4. *Data*

This study selects panel statistical data from 29 provinces, excluding Tibet and Guizhou, from 2013 to 2020 as the research sample. The research data are mainly collected and collated manually, of which the relevant data on the proportion of public service expenditure is from the wind database, and the urbanization rate, industrial structure and other data are from the Statistical Yearbook of China’s Urban Construction. The efficiency of government expenditure on people’s livelihood public services is measured manually, and other data are from the China Statistical Yearbook and the wind database. In addition, the missing values are compensated by interpolation. The explanation of research variable in this paper are shown in Table 2 below, and the descriptive statistical results of

**Table 2**  
The explanation of research variable statistics.

Variable Type	Variable Name	Variable Definition	Data Source
Dependent variable	Expenditure bias	Welfare-oriented public service expenditure/Regional budget	Wind Database
	Expenditure efficiency	Calculated using DEA (Data Envelopment Analysis) with DEAP2.1	Manual Calculation
Independent variable	Budget Oversight	The revision time of the budget review and supervision regulations, $Post_{it} = 1$ if revised, 0 otherwise	“China Statistical Yearbook”
	Budget Oversight	The revision time of the budget review and supervision regulations, $Treat_i = 1$ if implement, 0 otherwise	
Control variables	Economic development level	$\ln(Pgdp)$	“China Urban Construction Statistical Yearbook” and “China Regional Economic Statistics Yearbook”
	Urbanization rate	Urban population/Total population	
	Industrial structure	Secondary industry output value/Regional GDP	
	Opening up	Total import and export value/Regional GDP	
	Fiscal expenditure decentralization	Regional general budget expenditure/National general budget expenditure	
	Population density	$\ln(Stru)$	

the main variables are in [Table 3](#).

#### 4. Results and discussion

##### 4.1. The influence of the revision of the provincial People's congress budget review and supervision regulations on the Government's expenditure on public services for People's livelihood

Based on Equation (1), we use the double difference fixed effect model to identify the impact of LPC supervision on the spending behavior of local governments on people's livelihood public services, so as to test the hypothesis H1. [Table 4](#) shows the benchmark regression results of the model. Compared with column (2), the results of adding all control variables in column (1) show that LPC supervision has a significant impact on the proportion of local government's public expenditure on people's livelihood services, indicating that LPC supervision can affect the local government's public expenditure on people's livelihood services, because it may be affected by the level of local economic development, industrial structure, etc. It can be seen from the results of Column (3) and Column (4) that whether or not control variables are added, the efficiency of LPC supervision on local government's public expenditure on livelihood services is significant at the level of 1 %, indicating that LPC supervision has a significant positive impact on the efficiency of public expenditure on livelihood services. To sum up, LPC supervision can not only affect the local government's preference for public services related to people's livelihood, but also improve the efficiency of local government's public services related to people's livelihood. This is mainly because, after the revision of the Regulations on Budget Review and Supervision, the effectiveness of the LPC's supervision has been greatly improved. First, because local governments have greater financial autonomy before the revision of the Regulations, the impact of promotion incentives may squeeze the proportion of government spending on public services related to people's livelihood; Second, under the supervision of cost-benefit, it will greatly improve the effectiveness of local governments' fund use, and thus promote the efficiency of local governments' public services for people's livelihood. That is, suppose H1 is verified.

##### 4.2. Partial regression results

In order to explore the effect path of LPC supervision on the expenditure behavior of local governments on public services related to people's livelihood, this paper further conducts sub item regression on expenditure bias and expenditure efficiency after the benchmark regression. The results show that after the revision of the budget review and supervision regulations, the LPC supervision has improved the proportion of social security expenditure and the efficiency of medical and health expenditure, and the efficiency of medical and health expenditure is more significant. Specifically, from the subitem regression results in [Table 5](#), the role of LPC supervision in the proportion of social security expenditure and the efficiency of medical and health expenditure is much higher than that of other categories, which indicates that LPC supervision has improved the social security expenditure bias and the efficiency of medical and health expenditure, and has a weak impact on other types of expenditure bias and expenditure efficiency, which may distort the results of public service expenditure for people's livelihood, It may also have a certain impact on more specific industrial policy orientation.

##### 4.3. Robustness test

###### 4.3.1. Common trend and dynamic effect test

The multi time point double difference method needs to keep the same change trend of the experimental group and the control group before treatment as a prerequisite. Considering that after the revision of the Regulations on the Budget Review and Supervision of the Provincial People's Congress, the above results only test the short-term effect of the LPC's supervision, and the effect of the policy may also weaken over time in practice. There may be a time lag in the effect of LPC's supervision, so we will test the dynamic effect of LPC's supervision of local governments' spending on public services related to people's livelihood. The results are shown in [Table 6](#). Before the revision of the budget review and supervision regulations, all time trend variables of the experimental group and the control group were not significant, which verified the premise of the parallel trend hypothesis mentioned above. It can be seen that the efficiency of people's livelihood public services supervised by the Local People's Congress will be significant in the next year after the amendment of the regulations, while the people's livelihood public services expenditure of local governments under the supervision of the Local People's Congress is relatively weak. Comparing the regression results of the two columns, we can find that the

**Table 3**  
Variable descriptive statistics.

Variable	Obs	Mean	Standard	Min	Max
Expenditure bias	232	0.087	0.076	0	0.419
Expenditure efficiency	232	0.994	0.01	0.958	1
Economic development level	232	10.886	0.417	10.057	12.013
Urbanization rate	232	0.588	0.125	0	0.896
Industrial structure	232	0.505	0.877	0.347	0.839
Opening up	232	0.041	0.041	0.001	0.203
Fiscal expenditure decentralization	232	0.028	0.014	0.006	0.077
Population density	232	4.301	0.804	1.623	5.518

**Table 4**

The influence of the supervision of the local People's congress on the expenditure behavior of local governments on public services for People's livelihood.

Variable	Expenditure bias		Expenditure efficiency	
	( 1 )	( 2 )	( 3 )	( 4 )
$Treat_{it} \times Post_{it}$	0.005** ( 0.002 )	0.002 ( 0.003 )	0.003*** ( 0.001 )	0.003*** ( 0.001 )
Control variable	Yes	No	Yes	No
Individual effect	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes
N	232	232	232	232
R <sup>2</sup>	0.979	0.978	0.817	0.791

Note: \*, \*\* and \*\*\* in the table indicate significance levels of 10%, 5% and 1% respectively. The robust standard error is indicated in brackets.

**Table 5**

Partial regression results.

Variable	Education expenditure	Medical and health expenditure	Social security expenditure	Efficiency of education expenditure	Efficiency of medical and health expenditure	Efficiency of social security expenditure
	( 1 )	( 2 )	(3)	( 4 )	( 5 )	(6)
$Treat_{it} \times Post_{it}$	-0.001 ( 0.001 )	-0.001 ( 0.001 )	0.004* (0.002)	-0.006*** ( 0.001 )	0.028*** ( 0.007)	-0.001 (0.001)
Control variable	Yes	Yes	Yes	Yes	Yes	Yes
Individual effect	Yes	Yes	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes	Yes	Yes
N	232	232	232	232	232	232
R <sup>2</sup>	0.961	0.887	0.935	0.887	0.603	0.960

**Table 6**

Common trend and dynamic effect.

Variable	Expenditure bias	Expenditure efficiency
	( 1 )	( 2 )
Pre 2	-0.001 (0.002)	-0.001 (0.001)
Pre 1	0.002 (0.003)	0.001 (0.001)
current	0.006* (0.003)	0.003 (0.002)
Post 1	0.005 ( 0.003 )	0.005*** (0.002)
Post 2	0.003 ( 0.004 )	0.004*** (0.002)
Post 3	0.007* ( 0.004 )	0.004 (0.003)
Control variable	No	Yes
Time effect	Yes	Yes
Individual effect	Yes	Yes
N	232	232
R <sup>2</sup>	0.9669	0.8974

dynamic time trend after the implementation of the policy shows that since the revision of the Budget Review and Supervision Regulations, the University of Human Resources Supervision has a significant effect on the efficiency of the local government's expenditure on people's livelihood services, and also has a certain effect on the expenditure bias of people's livelihood public services, and further verifies the robustness of the hypothesis H1.

#### 4.3.2. Placebo test results

In order to exclude the impact of other unobservable factors on the estimation of the effect of the LPC's supervision of local governments' expenditure on public services related to people's livelihood, that is, after excluding the impact of the revision of the LPC's budget review and supervision regulations, whether the bias and efficiency improvement of local governments' expenditure on

public services related to people's livelihood are caused by other unobservable factors, this paper uses the method of "counterfactual" events to test this. Drawing on the practice of La Ferrara et al. (2012), in 29 provinces except Tibet and Guizhou, 17 provinces were randomly selected as virtual treatment groups for placebo test, and the rest were all used as virtual control groups. In consideration of the possible impact of random small probability events on the placebo test, repeat the experiment for 1000 times to obtain the estimated value of the supervision coefficient of the people's congress and the kernel density estimate of the P value of the virtual processing group. It can be seen from Figs. 1 and 2 that most of the LPC's supervision coefficients and P values are distributed around 0, and most scattered points are above the dotted line. It can be seen that the original benchmark regression results are not affected by the missing variables of unobservable factors, that is, the virtual revision of the LPC's budget review and supervision regulations has not affected the spending behavior of local governments on people's livelihood public services, which further verifies the effectiveness of the LPC in supervising the spending bias and spending efficiency of local governments on people's livelihood public services.

#### 4.3.3. Hysteresis effect

Considering that the effect of the revision of the Regulations on the Budget Review and Supervision of the Local People's Congress may not immediately affect the current expenditure on public services related to people's livelihood, that is, there may be a lag effect of the LPC's supervision on the expenditure bias and expenditure efficiency of public services related to people's livelihood, it is difficult to fully test the relationship between the two using the regression results of the benchmark model. In this regard, this paper replaces the current term with the lag term of the impact brought by the revision of the budget review and supervision regulations of each region, and uses the method of fixed effect model for regression estimation. The results are shown in Column (1) and Column (2) of Table 7. The relationship between the two is still positive and significant, which further verifies the theoretical hypothesis H1 of this paper.

#### 4.3.4. Removing municipalities

The administrative level of provinces in China is very different between municipalities directly under the Central Government and ordinary provinces. Usually, the administrative officials of municipalities directly under the Central Government and the government have stronger political mobilization ability. The chief administrative officials of municipalities directly under the Central Government and those of ordinary provinces are not on the same track, and generally can get more financial resources to support them. It can be seen that there may be great differences between municipalities directly under the Central Government and ordinary provinces in the expenditure bias and expenditure efficiency of public services related to people's livelihood. This paper chooses to exclude the impact of municipalities directly under the Central Government and retain the sample of ordinary provinces for regression analysis. From the regression results in columns (3) and (4) of Table 6, after excluding the samples of municipalities directly under the Central Government, the estimated coefficients and significance levels of the core explanatory variables of government public finance expenditure bias and expenditure efficiency for people's livelihood have not changed significantly compared with the benchmark regression results above, which further indicates that the benchmark regression results are stable.

#### 4.3.5. Changing the variables

In this paper, the government education, medical care and social security indicators are replaced by the number of primary school teachers, junior high school students teachers, hospital doctors, medical and health institutions' income, the number of unemployed insured, the number of work-related injuries insured and other summer vacations respectively, and then calculate the efficiency of local government public service expenditure on people's livelihood, to test the efficiency of the Local People's Congress in supervising local government public service expenditure on people's livelihood, so as to enhance the robustness of the empirical results. The results in column (5) of Table 7 show that the coefficient of  $Treat_t \times Post_t$  is significantly positive for the replacement variable, indicating that the LPC supervision is effective for the public service expenditure of people's livelihood, which is basically consistent with the conclusion of the benchmark regression results above.

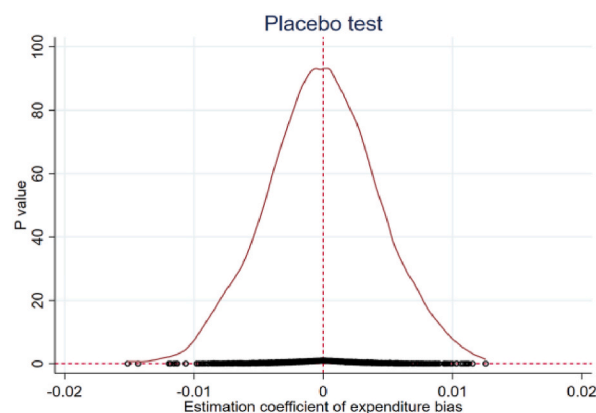


Fig. 1. Expenditure bias placebo test results.



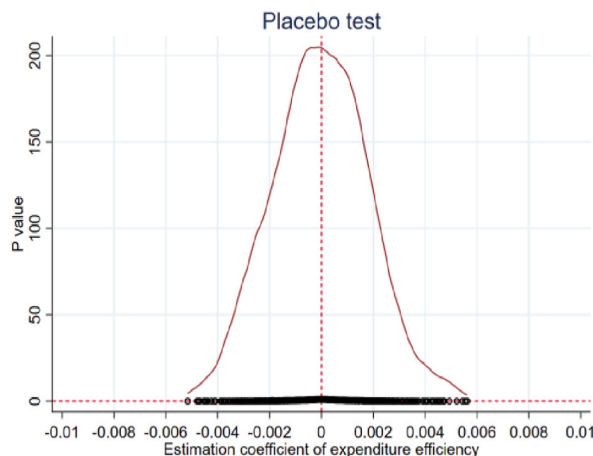


Fig. 2. Expenditure efficiency placebo test results.

Table 7  
Robustness test results.

Variable	Expenditure bias ( 1 )	Expenditure efficiency ( 2 )	Expenditure bias ( 3 )	Expenditure efficiency ( 4 )	Expenditure efficiency (5)
$Treat_i \times Post_{it}$	0.052** ( 0.024 )	0.003** ( 0.001 )	0.005** ( 0.002 )	0.004*** ( 0.001 )	0.004** (0.002)
Control variable	Yes	Yes	Yes	Yes	Yes
Individual effect	Yes	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes	Yes
N	232	232	232	232	232
R <sup>2</sup>	0.931	0.745	0.990	0.821	0.916

4.3.6. Robustness test considering heterogeneity treatment effect of multiphase DID

When using the multi period double difference model to test the effect of policy identification, it is often affected by the “heterogeneity treatment effect”, which will lead to estimation errors. In this paper, based on Equation (2), the fixed effect model with multiple time points and double difference is used to estimate the real parameters  $\beta$ . It is taken as the expected value of the sum of the treatment effects of all individuals treated.

$$\beta^{real} = E \left( \sum_{(g,t):D_{g,t}=1} W_{g,t} \Delta_{g,t} \right) \tag{2}$$

Wherein,  $W_{g,t}$ ,  $\Delta_{g,t}$  respectively represent the treatment effect and corresponding weight of the revision of the budget review and supervision regulations of the  $g$  th province in year  $t$ . Although the overall weight of the treatment effect is 1, the weights  $W_{g,t}$  and  $t$  may also be negative. If the negative weight accounts for a large proportion, the estimation result may not be robust. For this reason, this paper uses the method of Do Chaisemartin et al. (2020) for reference, and uses the Twoway weight command to test the robustness of heterogeneity processing effects. It can be seen from the test results that the processing effects  $\Delta_{g,t}$  and  $t$  of provinces that have revised the LPC’s budget review and supervision regulations in each year are positive, and in the heterogeneous processing, the robustness indicators of people’s livelihood public service expenditure bias and people’s livelihood public service expenditure efficiency are about 0.00011808 and 0.0075533 respectively, which indicates that the heterogeneous processing effects will not really affect the results of the processing effects in this paper, so the results are robust. It can be seen that the efficiency of public service expenditure for people’s livelihood is more robust, which is consistent with the previous regression results.

5. Mechanism analysis

5.1. The role of the local People’s congress in supervising and restraining the opportunistic behavior of local governments

From previous studies, it can be seen that whether local governments adopt opportunistic behavior mainly depends on the motivation of the behavior. The promotion incentive of officials is often linked to local economic growth, which leads to the opportunistic behavior of local governments for promotion incentive. Under this effect, local government officials will increase productive fiscal expenditure for their own political future to promote economic growth, but this will bring about a series of practical problems, especially insufficient public service support due to insufficient public expenditure for people’s livelihood. However, after

the revision of the Regulations on the Budget Review and Supervision of the Local People’s Congress, the supervision of the Local People’s Congress has been further strengthened, which will encourage local governments to reduce opportunistic behavior. The punishment caused by the supervision of the Local People’s Congress will have a deterrent effect, which will reduce the willingness to expand short-term productive financial expenditure stimulated by promotion incentives, thus improving the spending behavior of local governments on public services related to people’s livelihood. Therefore, the possible path for the Local People’s Congress to supervise and improve the spending on public services related to people’s livelihood is to directly curb the opportunistic behavior of local governments, constrain local governments to expand short-term economic construction expenditure, and thus weaken the impact of promotion incentives. We conduct a mechanism test based on the following model:

$$Y_{it} = \lambda_0 + \lambda_1 Treat_i \times Post_{it} + \beta_3 X_{it} + \alpha_i + \gamma_i + \varepsilon_{it} \tag{3}$$

$$rGDP_{it} = \lambda_2 + \lambda_3 Treat_i \times Post_{it} + \beta_4 X_{it} + \alpha_i + \gamma_i + \varepsilon_{it} \tag{4}$$

$$Y_{it} = \lambda_4 + \lambda_5 rGDP_{it} + \lambda_6 Treat_i \times Post_{it} + \beta_5 X_{it} + \alpha_i + \gamma_i + \varepsilon_{it} \tag{5}$$

Among them, Equation (3) examines the impact of LPC supervision on the spending behavior of people’s livelihood public services. Equation (4) examines the impact of LPC supervision on promotion incentives. Equation (5) simultaneously examines the impact of LPC supervision and promotion incentives on the spending behavior of people’s livelihood public services. With reference to existing literature, this paper uses GDP growth rate as a measure of promotion incentives. The regression results in Table 8 show that the coefficient  $Treat_i \times Post_{it}$  in model (4) is significantly negative, indicating that the LPC’s supervision restricts the opportunistic behavior of local government officials, and the promotion incentive is weakened. In model (5), the coefficient  $rGDP_{it}$  is significantly negative, indicating that the opportunistic behavior of local governments is negatively related to the expenditure on people’s livelihood public services. That is, after the revision of the budget review and supervision regulations, the LPC’s supervision and restraint ability has been improved, and the LPC’s supervision and restraint on the opportunistic behavior of local governments have weakened the impact of promotion incentives, thus improving the expenditure on people’s livelihood public services of local governments.

### 5.2. The signal transmission function of LPC supervision

The LPC supervision improves the financial transparency of local governments through the signal transmission function. The higher the supervision intensity of the LPC, the more sufficient the signal of supervision and governance, and the higher the financial transparency. On the one hand, the improvement of financial transparency will reduce the supervision cost of the LPC and improve the supervision efficiency; On the other hand, the improvement of financial transparency will reduce the tolerance of financial budget allocation and increase the investment in people’s livelihood financial expenditure by increasing the probability of negative information being found. Therefore, after the revision of the Regulations on Budget Review and Supervision, the LPC’s ability to supervise and restrain has been improved, and the financial transparency of local governments has also been further improved, which will help the LPC to strengthen its ability to supervise and restrain the spending of public services related to people’s livelihood. Therefore, the LPC supervision is also an important path to improve financial transparency through the signal transmission function, and thus improve the spending behavior of people’s livelihood public services. Similar to the previous mechanism, it is tested using Equations (3), (6) and (7):

$$Trans_{it} = \theta_1 + \theta_2 Treat_i \times Post_{it} + \beta_6 X_{it} + \alpha_i + \gamma_i + \varepsilon_{it} \tag{6}$$

$$Y_{it} = \theta_3 + \theta_4 Trans_{it} + \theta_5 Treat_i \times Post_{it} + \beta_7 X_{it} + \alpha_i + \gamma_i + \varepsilon_{it} \tag{7}$$

Among them, Equation (3) examines the impact of LPC supervision on the expenditure behavior of people’s livelihood public services. Equation (6) tests the impact of LPC supervision on fiscal transparency. Equation (7) tests the impact of LPC supervision and fiscal transparency on the spending behavior of people’s livelihood public services. With reference to existing literature, the financial transparency index is derived from the Report on China’s Financial Transparency issued by the Public Policy Research Center of

**Table 8**  
Mechanism inspection - promotion incentive.

Variable	Expenditure bias			Expenditure efficiency		
	(1)	(2)	(3)	(4)	(5)	(6)
	Model (3)	Model (4)	Model (5)	Model (3)	Model (4)	Model (5)
$Treat_i \times Post_{it}$	0.006** (0.002)	-0.013* (0.008)	0.005** (0.002)	0.003** (0.001)	-0.013** (0.008)	0.003** (0.001)
$rGDP_{it}$			-0.030* (0.016)			-0.014* (0.007)
Control variable	Yes	Yes	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes	Yes	Yes
Individual effect	Yes	Yes	Yes	Yes	Yes	Yes
N	215	215	215	215	215	215
R <sup>2</sup>	0.9838	0.5334	0.9831	0.8041	0.5334	0.8087

Shanghai University of Finance and Economics. The results are as shown in Table 9. The coefficient  $Treat_i \times Post_{it}$  in model (3) is significantly positive, that is, the stronger the signal transmission function of LPC supervision, the higher the expenditure of local governments on people's livelihood public services. In model (7), the coefficient is significantly positive, indicating that the LPC's supervision, financial transparency and public service expenditure for people's livelihood are positively correlated. That is, after the revision of the budget review and supervision regulations, the LPC's supervision and restraint ability has been improved, and the LPC's supervision has improved financial transparency through the signal transmission function, thus improving the public service for people's livelihood of local governments.

## 6. Further study

### 6.1. The impact of Media's supervision

Media attention plays an important role in the supervision of public opinion. Positive media attention helps local governments to enhance the efficiency of fund use in the public service expenditure for people's livelihood, improve the bias of public service expenditure for people's livelihood in financial expenditure, and also helps to achieve the supervision effect and objectives of the Local People's Congress. Drawing on existing literature research [27], with the help of Baidu News Search, "the names of provinces, autonomous regions and municipalities directly under the Central Government + LPC supervision + local government public service expenditure for people's livelihood" is taken as the search keyword, and the logarithm of the number of relevant news obtained from the search is taken as the measurement index of media attention, and the samples are divided into two groups according to the annual median.

The regression results in Table 10 show that the higher the media attention, the better the effect of the LPC's supervision on the local government's expenditure bias and expenditure efficiency of public services related to people's livelihood, and the LPC's supervision on the efficiency of public services related to people's livelihood is more significant. This shows that in the field of government public service expenditure, the supervision of the Local People's Congress in cooperation with the media supervision plays an important role in improving the efficiency of government public service expenditure.

### 6.2. The impact of legal environment

As one of the important indicators of government financial transparency, the rule of law environment has an important impact on the public service expenditure of local governments. Therefore, the rule of law environment may also have different impacts on the bias and efficiency of the LPC's supervision of local governments' public expenditure on livelihood services. With reference to the existing literature, the marketization index of each region is measured according to the Report on China's Provincial Marketization Index, and the logarithm is taken, and the samples are divided into two groups with the annual median as the boundary.

The regression results in Table 11 show that in areas with a high degree of rule of law, the expenditure on public services related to people's livelihood has a significant positive bias, which may be due to the fact that under a high level of rule of law, the Local People's Congress can produce better results by properly supervising and constraining government revenue and expenditure. However, under the low level of rule of law, the efficiency of public service expenditure for people's livelihood is higher, which may be related to the high level of rule of law, too strict supervision hindering the government's public service level and reducing administrative efficiency, which makes it difficult for local governments to achieve the expected efficiency of public service expenditure for people's livelihood.

### 6.3. The impact of financial pressures

The different financial pressures faced by local governments may affect the expenditure behavior of local finance. Therefore, in order to verify the influence of the LPC's supervision ability under different financial pressures after the revision of the Budget Review and Supervision Regulations, referring to previous literature, the financial pressure indicator is obtained by the ratio of financial

**Table 9**  
Mechanism testing - fiscal transparency.

Variable	Expenditure bias			Expenditure efficiency		
	(1)	(2)	(3)	(4)	(5)	(6)
	Model (3)	Model (6)	Model (7)	Model (3)	Model (6)	Model (7)
$Treat_i \times Post_{it}$	0.005** (0.002)	0.096** (0.039)	0.005** (0.02)	0.003** (0.001)	0.096** (0.039)	0.003** (0.001)
$Trans_{it}$			0.007* (0.004)			0.004** (0.002)
Control variable	Yes	Yes	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes	Yes	Yes
Individual effect	Yes	Yes	Yes	Yes	Yes	Yes
N	212	212	212	212	212	212
R <sup>2</sup>	0.9832	0.9661	0.9834	0.8128	0.9661	0.8179

**Table 10**  
The impact of different media attention.

Variable	Expenditure bias		Expenditure efficiency	
	( 1 ) High group	( 2 ) Low group	( 1 ) High group	( 2 ) Low group
$Treat_i \times Post_{it}$	0.010** ( 0.004 )	0.002 ( 0.003 )	0.006*** ( 0.002 )	0.003 ( 0.002 )
Control variable	Yes	Yes	Yes	Yes
Individual effect	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes
N	116	116	116	116
R <sup>2</sup>	0.976	0.980	0.765	0.849

**Table 11**  
The impact of LPC supervision on the expenditure of public services for people's livelihood (different legal environments).

Variable	Expenditure bias		Expenditure efficiency	
	( 1 ) High group	( 2 ) Low group	( 1 ) High group	( 2 ) Low group
$Treat_i \times Post_{it}$	0.01** ( 0.004 )	-0.003 ( 0.002 )	-0.001 ( 0.001 )	0.004** ( 0.002 )
Control variable	Yes	Yes	Yes	Yes
Individual effect	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes
N	116	116	116	116
R <sup>2</sup>	0.943	0.993	0.619	0.935

revenue to financial expenditure, and is grouped according to the median of this indicator. The regression results are shown in Table 12. In the biased column (1) and (2) of public service expenditure for people's livelihood, there is no significant difference between the two groups in the supervision and restraint effect of the LPC. In the efficiency of public service expenditure for people's livelihood, the regression coefficient of the group with high financial pressure is significant, which indicates that after the revision of the budget review and supervision regulations, the greater the financial pressure faced by local governments, the more the LPC supervision can improve the efficiency of public service expenditure for people's livelihood.

#### 6.4. The impact of regional differences

For a long time, due to differences in historical and cultural foundations, geographical locations, and policy preferences, the eastern region has been the most economically developed area in our country, followed by the central region, with the western region lagging behind in economic development. Therefore, the realities of different regions in our country vary. Accordingly, this paper divides the 29 provincial administrative regions, excluding Tibet and Guizhou, into eastern, central, and western regions, and conducts regressions according to the regions where the samples are located. The regression results are shown in Table 13. As can be seen from the estimated results in Table 13, the coefficients of the regression results in the eastern and central regions are significantly positive. This indicates that the effect of People's Congress supervision is stronger in economically developed regions, and weaker in economically underdeveloped western regions. This shows that there is significant heterogeneity in the behavior of People's Congress supervision of local public services for people's livelihood. In practice, regions with better economic development have better local government public services than those in economically backward regions, which may also be the effect of supervision.

## 7. Conclusion

We take the revision of the Regulations on the Budget Review and Supervision of the People's Congress of each province as a quasi natural experiment to empirically test the impact of the supervision of the People's Congress on the spending behavior of local governments on people's livelihood public services. From the research, we can draw the following conclusions: The LPC supervision can notably enhance both the expenditure preferences and efficiency of local governments concerning public services. This assertion remains robust when subjected to placebo and parallel trend tests and aligns with findings presented in the literature review. Its internal mechanism is that after the revision of the budget review and supervision regulations, the supervision effect of the Local People's Congress will be improved. The specific ways include restricting the opportunistic behavior of local governments and acting through the signal transmission function of the Local People's Congress supervision. Further research found that LPC supervision can enhance the expenditure behaviors of local governments concerning public services related to people's livelihood by influencing factors such as media attention and the rule-of-law environment. These aspects were previously overlooked in existing literature.

Consequently, these findings offer profound policy implications for enhancing the supervisory governance capacity of local governments. Firstly, legislative bodies should consider deepening reforms in People's Congress budgetary oversight, establishing a comprehensive incentive and constraint mechanism, clarifying responsibility constraints, and bolstering motivational guidance. Secondly, local People's Congresses should prioritize ensuring a seamless transmission of the reform effects, implementing official

**Table 12**  
The impact of financial pressures.

Variable	Expenditure bias		Expenditure efficiency	
	( 1 ) High group	( 2 ) Low group	( 1 ) High group	( 2 ) Low group
$Treat_i \times Post_{it}$	-0.002 ( 0.003 )	0.003 ( 0.005 )	0.005** ( 0.002 )	-0.001 ( 0.002 )
Control variable	Yes	Yes	Yes	Yes
Individual effect	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes
N	116	116	116	116
R <sup>2</sup>	0.9928	0.9361	0.8466	0.8606

**Table 13**  
The impact of regional differences.

Variable	Expenditure bias			Expenditure efficiency		
	East	Central	West	East	Central	West
$Treat_i \times Post_{it}$	0.006*** ( 0.003 )	0.005 *** ( 0.002 )	0.002 ( 0.006 )	0.007*** ( 0.003 )	0.006*** ( 0.002 )	0.003 ( 0.003 )
Control variable	Yes	Yes	Yes	Yes	Yes	Yes
Individual effect	Yes	Yes	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes	Yes	Yes
N	88	64	80	88	64	80
R <sup>2</sup>	0.904	0.872	0.987	0.623	0.908	0.987

accountability, and promoting fiscal transparency. Lastly, while reinforcing People's Congress supervision, local governments must also emphasize social oversight and play an active role in fostering a rule-of-law environment.

Of course, the content of this paper still needs to be further improved in the future. For instance, in terms of the measurement of the People's Congress supervision indicators, this paper identifies policy shocks based on the revision of provincial budget review and supervision regulations, without measuring the People's Congress supervision indicators. In future research, we can further identify the People's Congress supervision indicators by constructing an indicator system. Although the current literature has not yet been able to solve this problem, the study of this issue is very important for the research of People's Congress supervision and will be the content that needs to be further researched in the future.

### Funding statement

This work was supported by the World Bank and Ministry of Finance of China, "Innovative research on budget performance evaluation under the background of comprehensive implementation of budget performance management" (No.32522109016).

### Data availability

Declaration of interest's statement. Data relevant to this study are available in the Wind database. <https://www.wind.com.cn/portal/zh/WDS/database.html>.

### CRedit authorship contribution statement

**Liang Zhang:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Wubin Yuan:** Writing – review & editing, Writing – original draft, Investigation.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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