

The Impact of Fiscal Decentralization on Infrastructure Development: Based on a Dual Perspective of Quantity and Quality

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Abstract: Currently, the focus of infrastructure development must shift from the pursuit of high growth to high-quality development. As a public good, comprehensive infrastructure development is inextricably linked to the government's financial contribution. This paper uses a provincial panel data set comprising 30 provinces (Tibet is excluded due to incomplete data) from 2005 to 2021, measures fiscal decentralization indicators based on two perspectives: revenue decentralization and expenditure decentralization, and examines the impacts on the quantity and quality of infrastructure respectively. Furthermore, the mechanism is investigated from the perspective of fiscal pressure, and a series of endogeneity, robustness, and heterogeneity are examined. The results demonstrate that fiscal decentralization exerts a positive influence on the quantity of infrastructure, yet a negative impact on its quality. This conclusion remains robust following a series of robustness tests and endogeneity analyses. The mechanism of fiscal decentralization, as evidenced by the significant alleviation of fiscal pressure on the quantity of infrastructure, does not yield a similar effect on the quality of infrastructure. This results in disparate inputs from local governments. Additionally, quantile regressions demonstrate that the varying effects of fiscal decentralization on the quantity and quality of infrastructure are particularly pronounced at low to medium levels of quantity. This paper provides theoretical evidence for promoting fiscal system reform, which is conducive to enhancing the effectiveness of local government governance and playing a strategic, fundamental, and pioneering role in the overall national development of infrastructure.

Keywords: Fiscal Decentralization, Quantity of Infrastructure, Quality of Infrastructure, Fiscal Pressure.

1. Introduction

Over 40 years of reform, China boasts a formidable infrastructure system, leading globally in transport & power. As China shifts to high-quality development, infrastructure must also evolve. Current issues like quality, funding gaps and mismanagement demand a shift from speed to quality and efficiency. The 19th CPC Congress and 2021 Government Work Report underscore the need for a strong transport nation and comprehensive quality enhancement of infrastructure.

The existing literature on infrastructure quantity is extensive while there is a paucity of studies on infrastructure quality. Furthermore, there is a dearth of research on the disparate impacts of fiscal

decentralization with Chinese characteristics on the quantity and quality of infrastructure, which may result in a paucity of theoretical underpinnings for the advancement of high-quality infrastructure in China and the underappreciation of infrastructure quality development by local governments.

This paper explores how Chinese fiscal decentralization impacts infrastructure quantity and quality, mechanisms, and regional heterogeneity. Clarifying these issues enhances local governance, promoting high-quality infrastructure development aligned with "steady progress amidst stability." This supports the modern socialist country's construction, adhering to the principle of "steady progress while maintaining stability".

This paper contributes to regional infrastructure analysis by: 1) reassessing fiscal decentralization's impact on infrastructure from both quantity and quality angles, enriching literature; 2) exploring fiscal decentralization's path on infrastructure quality and quantity via fiscal pressures, enhancing understanding of mechanisms; 3) analyzing decentralization's effect across quartiles, aiding targeted policy recommendations.

2. Literature Review and Theoretical Hypotheses

2.1. Literature Review

The current existing literature on the impact on the quantity of infrastructure has been explored not only from the macro perspective of national systems in terms of political, economic, and fiscal aspects[1][2][3], local government behaviors[4][5][6][7] and economic growth pressure but also from micro perspectives such as political promotion[8], official incentives, and official turnover[9][10][11]. In contrast, the existing literature on infrastructure quality is limited and predominantly drawn from foreign sources. At the micro level, Bose et al. (2008) investigated the influence of official corruption on the quality of public infrastructure[12]. At the macro level, Wang et al. (2017) contributed to the research on the quality of infrastructure in China by utilizing data from Chinese villages[13]. While Chen (2023) offers insights into the role of productive government officials and their competence characteristics on the quantity and quality of infrastructure from a micro perspective, there remains a dearth of research on this issue from a macro perspective.[8]

Meanwhile, the full development of infrastructure is a public good, so its development is closely related to the government's public financial investment. The Chinese system of fiscal decentralization is an important system for ensuring the effective implementation of the relevant functions of local governments. The extant literature on the impact of fiscal decentralization on public services is inconclusive. The existing research can be broadly classified into three main theoretical perspectives: the "decentralization promotion theory"[14][15], the "decentralization inhibition theory"[16][17] and the "non-linear impact theory"[18][19].

The extant literature on infrastructure influences tends to focus on a single aspect of infrastructure quantity or quality, with minimal attention paid to the interrelationship between these two dimensions. While a limited number of studies have examined the relationship between fiscal decentralization and infrastructure development, for instance, Zhang et al. (2007) highlight that decentralization and appropriate incentives for local governments can enhance infrastructure quality.[6] Similarly, Wang et al. (2014) have noted that under partial economic decentralization, local government officials utilize monopoly land disposal power to provide public infrastructure[11], thereby generating tax revenues and land grant revenues. It is regrettable that these studies do not integrate fiscal decentralization, infrastructure quantity, and infrastructure quality into a unified analytical framework to examine the impact of these factors on infrastructure quantity and quality separately. Indeed, local governments may hold disparate attitudes toward infrastructure quantity and quality in the context of fiscal decentralization, a topic this paper addresses.

2.2. Theoretical Hypotheses

In accordance with the fiscal decentralization system, the central government bestows upon local governments a certain degree of autonomy about debt arrangements, tax management, and budget execution[20], thereby enhancing their motivation to stimulate economic growth. Furthermore, it enables local governments to allocate financial resources in a rational and effective manner, based on the specific needs of the local area.

On the one hand, local governments are subject to performance appraisal systems and promotion mechanisms and must therefore allocate local resources in a rational and independent manner to alleviate pressure on performance and achieve political promotion despite limited financial resources. In the context of the "promotion tournament," local officials are compelled to demonstrate their superior performance to gain recognition from their superiors[21]. From the perspective of benefit comparison, local officials frequently elect to invest a substantial number of financial resources in productive sectors with rapid and discernible outcomes, thereby facilitating the attainment of their objectives and a more straightforward quantitative assessment by higher-level authorities. From the perspective of "visibility bias," it can be observed that higher-level governments assign "impression scores" to city officials based on their performance during these inspections[22]. Officials tend to prioritize investments in public goods with high visibility[23]. The quantity of infrastructure is more readily observable and quantifiable, exhibiting a greater degree of "high visibility" than the quality. What is more, as the quality of infrastructure improves, the marginal benefit of investing in it diminishes while an increase in the quantity of infrastructure consistently contributes to economic growth[8]. Consequently, local governments tend to prioritize infrastructure expansion over quality development in the face of promotion pressures.

On the other hand, Zhang et al. (2015) discovered that secure tenure can reinforce officials' sense of belonging and role consciousness[24], prompting their decision-making behavior to gravitate towards long-term outcomes. In a fiscal decentralization system, officials may be promoted or transferred to other positions with greater frequency than would otherwise be the case following the achievement of significant economic results, which in turn results in a shorter tenure. Given that government-led livelihood projects typically span a longer period, officials tend to select initiatives that are straightforward to quantify, yield rapid outcomes, and have a brief duration during their tenure. In some instances, the term of the project may even be shortened under the pressure of performance appraisal, thereby triggering the short-sighted tendency of local governments to pursue quantitative growth at the expense of qualitative development. Furthermore, in the event of an official's transfer to another region and subsequent divestiture of responsibility for a project that has not yet reached completion, the incoming official may elect to deviate from the predecessor's plan of action, redirecting their focus towards alternative initiatives. This can result in the project's legacy being compromised[21]. In such instances, the original project is disrupted by the transfer of officials, which will inevitably result in a decline in project quality.

Considering the aforementioned literature, this paper puts forth the following hypotheses:

H1: fiscal decentralization exerts a significant positive influence on the quantity of infrastructure, while exerting a negative influence on the quality of infrastructure.

H2: The discrepancy in the impact of fiscal decentralization on the quantity and quality of infrastructure can be attributed to the distinction in the role of the two in mitigating fiscal pressure. Specifically, an increase in the quantity of infrastructure has a positive impact on fiscal pressure, whereas an increase in the quality of infrastructure has a negligible effect on pressure relief.

3. Empirical Design

3.1. Data Sources

In consideration of the availability and timeliness of data, this paper selects the provincial panel data of 30 provinces in China (Tibet is excluded from the statistics due to incomplete data) for the period of 2005-2021. These data are derived from the China Statistical Yearbook. The dollar-denominated indicators included in the data have been converted into RMB using the annual average exchange rate of RMB against the US dollar in previous years.

3.2. Modeling

Considering the aforementioned impact mechanism analysis, this paper presents two benchmark models for testing the direct effect of fiscal decentralization on the quantity and quality of infrastructure construction.

$$iqty_{it} = \alpha_1 + \beta_1 fd_{it} + \gamma X' + \lambda_t + \mu_i + \varepsilon_{it} \quad (1)$$

$$iq_{it} = \alpha_2 + \beta_2 fd_{it} + \gamma X' + \lambda_t + \mu_i + \varepsilon_{it} \quad (2)$$

where $iqty$ stands for infrastructure quantity, iq stands for infrastructure quality, fd stands for the level of fiscal decentralization, subscripts i and t denote prefecture-level cities and years, respectively, X' is the set of control variables with province fixed effects (μ_i), year fixed effects (λ_t), and ε_{it} is the random error term.

3.3. Variable Measurement and Description

3.3.1. Explained Variable: Level of Infrastructure

This paper attempts to analyze the level of infrastructure that is distinct from the quantitative and qualitative dimensions. In line with the approach proposed by Huang et al. (2022) of measuring infrastructure levels based on transportation facilities[8], this paper employs highway data to reflect the condition of infrastructure.

To quantify the infrastructure, this paper employs the metric of highway mileage density, defined as the number of highway miles within a given province divided by the area of that province. For infrastructure quality, this paper refers to Guo and Gao (2009), and Huang et al. (2022), which consider high grade roads as high quality transport infrastructure, and use the proportion of Class I roads to the mileage of roads to measure the quality of transport infrastructure[8][25].

3.3.2. Core Explanatory Variable: Fiscal Decentralization

Fiscal decentralization is commonly measured by indicators of fiscal expenditure decentralization, fiscal revenue decentralization, and fiscal autonomy decentralization. To address potential limitations of a single indicator and given that the decentralization of revenues and expenditures jointly influence fiscal capacity and behavioral patterns of governments at all levels, this paper draws upon the approach proposed by Tian(2024), which assesses fiscal decentralization from the perspectives of decentralization of expenditures (fed) and decentralization of revenues (frd)[26]. Furthermore, this paper follows the methodology of Li and Yang(2018) in controlling for the potential correlation between population size and fiscal expenditure size[27].

3.3.3. Control Variables

To reduce the impact of omitted variables, this paper incorporates control variables: per capita real GDP for economic advancement, urban population ratio for urbanization, population density, trade level, and tertiary industry's GDP share for assessing regional industrial structure.

Table 1: Description of main variables and statistical descriptions

Variable	Meaning	Obs	Mean value	Sd	Min	Max
iqty	Infrastructure quantity	510	0.023	0.021	0.0004	0.101
iq	Infrastructure quality	510	0.861	0.466	0.0427	2.235
fed	Fiscal expenditure decentralization	510	0.834	0.061	0.634	0.937
frd	Fiscal revenue decentralization	510	0.492	0.133	0.263	0.857
urban	Urbanisation level	510	0.558	0.140	0.269	0.896
trade	Trade levels	510	0.297	0.354	0.008	1.721
pop	Population density	510	0.042	0.053	0.001	0.298
struc	Industrial structure	510	0.447	0.010	0.286	0.839
growth	Economic growth levels	510	0.0004	0.0002	0.0001	0.0018

4. Empirical Results Analysis

4.1. Results of Benchmark Regressions

Based on equations (1) and (2), this paper attempts to examine the effect of fiscal decentralization on the quantity and quality of infrastructure separately, and Table 2 presents the results of the benchmark regression.

Table 2: Benchmark regression results

	iqty(1)	iq (2)	iqty (3)	iq(4)
fed	1.769*** (5.34)	-0.615*** (-3.45)		
frd			0.344* (1.85)	-0.193* (-1.95)
urban	1.495*** (5.42)	0.094*** (6.36)	1.675*** (5.81)	0.091*** (6.00)
trade	0.199*** (3.16)	-0.011*** (-3.17)	0.241*** (3.75)	-0.012*** (-3.48)
pop	8.294*** (6.29)	0.025 (0.36)	6.518*** (5.00)	0.081 (1.18)
struc	0.597*** (3.22)	0.011 (1.05)	0.486** (2.55)	0.013 (1.3)
growth	314.378*** (4.77)	19.342*** (5.46)	314.995*** (4.57)	19.880*** (5.46)
Year fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
Constants	-2.264*** (-7.74)	0.019 (1.22)	-1.087*** (-6.03)	-0.195** (-2.05)
R2	0.751	0.539	0.738	0.531
Obs	510	510	510	510

In Table 2, expenditure decentralization boosts infrastructure quantity by 1.769 units but reduces quality by 0.615 units (1% significance). Revenue decentralization similarly increases quantity by 0.344 units but decreases quality by 0.193 units (10% significance), after controlling for variables. Overall, fiscal decentralization enhances infrastructure quantity but degrades quality, aligning with theoretical H1.

4.2. Mechanical Testing

This paper examines the impact of infrastructure quantity and quality on fiscal pressure, measured by the fiscal expenditures-revenues gap over fiscal revenues. Separately, it finds that a unit increase in infrastructure quantity significantly reduces fiscal stress by 0.301 units ($p < 0.01$), indicating a mitigating effect. However, quality enhancements do not significantly alleviate fiscal pressure. Combined, each unit increase in the quantity of infrastructure reduces fiscal pressure by 0.312 units, ($p < 0.01$), while the results for the quality of infrastructure are statistically insignificant.

Taken together, the study suggests that quantity, not quality, of infrastructure effectively eases fiscal burdens, possibly explaining the differential impact of fiscal decentralization on infrastructure aspects and supporting H2.

Table 3: Mechanical testing

	pressure	pressure	pressure
iqty	-0.301*** (-3.28)		-0.312*** (-3.35)
iq		-0.325 (-0.18)	-1.278 (-0.73)
controls		Yes	
Year fixed effects	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes
Constants	1.937*** (5.56)	2.224*** (6.47)	1.894*** (5.35)
R2	0.518	0.507	0.518
Obs	510	510	510

4.3. Robustness Check

4.3.1. Core Explanatory Variables Lagged by One Period

Considering that the level of fiscal decentralization is a long-term feature of the region and may have a continuous impact on infrastructure, this paper replaces the current period frd and fed used in the benchmark regression with their lagged one-period indicators, and see the results in the table, which show that the lagged first-order coefficients of the indicators of fiscal decentralization are all significant at 1% level, with coefficients of expenditure decentralization on the quantity and quality of infrastructure at 1.579 and -0.0968, and the coefficients of revenue decentralization and the quantity and quality of infrastructure are 0.552 and -0.0322, respectively, which indicates that the main findings of this paper are still valid after considering the lag, and have strong robustness.

Table 4: Core explanatory variables lagged by one period

	iqty(1)	iq (2)	iqty (3)	iq(4)
fed	1.579*** (6.00)	-0.0968*** (-5.58)		
frd			0.552*** (3.74)	-0.0322*** (-3.31)
controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
Constants	-1.613*** (-6.94)	0.0398*** (2.60)	-0.619*** (-4.36)	-0.0216** (-2.31)
R2	0.7277	0.5952	0.7141	0.5766
Obs	480	480	480	480

4.3.2. Endogeneity Test: IV-2SLS

To tackle endogeneity, this paper estimates fiscal decentralization's impact on infrastructure quantity and quality via IV-2SLS, referring to Liu and He (2022), using lagged one-period fiscal decentralization as an instrument[28]. The lagged indicator is highly correlated with the current fiscal decentralization and is unable to directly influence regional infrastructure, but rather indirectly influences infrastructure through the current fiscal decentralization, satisfying both the correlation and exogeneity conditions. Results are in Table 5.

Table 5: Rndogeneity Test

	iqty(1)	iq (2)	iqty (3)	iq(4)
fed	1.963*** (5.92)	-0.1203*** (-6.03)		
frd			0.665*** (2.98)	-0.0387*** (4.75)
controls	Yes	Yes	Yes	controls
Year fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
Constants	-1.294*** (-5.15)	0.0553*** (3.34)	-0.0437 (-0.40)	-0.0218** (-2.12)
R2	0.9788	0.9555	0.9779	0.9540
Obs	480	480	480	480

Results indicate revenue and expenditure decentralization positively impact infrastructure quantity but negatively quality, significant at 1%. Overcoming endogeneity with IV the conclusion still holds.

4.3.3. Heterogeneity Analysis

Due to China's regional economic disparities, this paper analyzes east, middle and west regions separately. Results in Tables 6&7.

Expenditure decentralization boosts infrastructure quantity more in middle and west (2.175 and 2.056 units rise) than east (1.627), likely due to lower baselines and higher local incentives. Revenue decentralization increases infrastructure quantity in east and west (0.217 and 0.907) but reduces it in

middle (-0.605), possibly due to resource fragmentation in the central region affecting the concentration and efficiency of funds in the number of infrastructure.

Table 6: Regional heterogeneity (fed)

	iqty			iq		
	East	Middle	West	East	Middle	West
fed	1.627** (2.53)	2.175*** (2.94)	2.056*** (3.70)	-0.105*** (-3.04)	0.0141 (0.43)	-0.112*** (-3.13)
controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constants	-2.298*** (-3.95)	-2.041 (-2.68)	-1.781*** (-3.98)	0.0259 (0.83)	-0.0829** (-2.45)	0.0311 (1.09)
R2	0.746	0.837	0.781	0.598	0.549	0.650
Obs	187	136	187	187	136	187

Expenditure decentralization has a significantly negative impact on infrastructure quality in the eastern (-0.105) and western (-0.112) regions, but a positive effect in the central region (0.0141). Similarly, revenue decentralization also negatively affects infrastructure quality in the east (-0.0204) and west (-0.023), while positively influencing it in the central region (0.0201). This can be attributed to the maturity of the eastern region, which reduces marginal benefits from further investment, and the challenges faced by the western region due to natural conditions and historical development levels. The middle region, potentially at a critical stage of accelerated infrastructure development, benefits from fiscal decentralization allowing local governments to allocate resources according to their needs and priorities, enhancing the quality and effectiveness of infrastructure projects.

Table 7: Regional heterogeneity (frd)

	iqty			iq		
	East	Middle	West	East	Middle	West
frd	0.217 (0.57)	-0.605 (-1.27)	0.907*** (3.43)	-0.0204 (-1.00)	0.0201 (0.99)	-0.023 (-1.33)
controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constants	-1.171*** (-3.20)	-0.220 (-0.38)	-0.648** (-2.43)	-0.0448** (-2.27)	-0.0795** *	-0.0367** (-2.10)
R2	0.735	0.748	0.779	0.574	0.553	0.631
Obs	187	136	187	187	136	187

4.3.4. Further Discussion: Quantile Regression

Using quantile regression, this paper finds fiscal decentralization positively impacts infrastructure quantity and the impact is significant at low-medium quantiles (0.1, 0.25, 0.5), less so at higher quantiles (0.75, 0.9). This may be because incremental investment benefits are more evident in

infrastructure-deficient areas, where local governments can ease fiscal pressure faster by increasing infrastructure quantity.

Quantile regression on infrastructure quality shows negative coefficients for fiscal decentralization at low-medium levels (0.1, 0.25, 0.5 quartiles), indicating a negative effect. At high levels (0.75, 0.9 quartiles), coefficients are negative but less significant, suggesting minimal impact. This may stem from lower-quality areas prioritizing quantity over quality for political gains, while high-quality areas have sufficient infrastructure, reducing pressure on local governments to compromise quality.

Table 8: Quantile Regression(fed)

	iqty					iq				
Q	0.1	0.25	0.5	0.75	0.9	0.1	0.25	0.5	0.75	0.9
fed	1.416 *** (4.70)	1.566 *** (5.02)	1.615 *** (3.16)	1.046 (1.63)	1.169 * (1.87)	-0.032 * (-1.78)	-0.038 ** (-1.96)	-0.052 ** (-2.44)	-0.002 (-0.13)	-0.001 8 (-0.11)
controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-1.536 *** (-4.56)	-1.175 *** (-4.40)	-1.110 ** (-2.49)	-0.448 (-0.85)	-0.142 (-0.26)	-0.014 (-0.70)	-0.016 (-0.83)	0.011 (0.56)	0.010 (0.81)	0.016 (1.23)
R2	0.873	0.874	0.861	0.861	0.871	0.750	0.759	0.794	0.852	0.883
Obs	510	510	510	510	510	510	510	510	510	510

Table 9: Quantile Regression(frd)

	iqty					iq				
Q	0.1	0.25	0.5	0.75	0.9	0.1	0.25	0.5	0.75	0.9
frd	0.583 *** (2.95)	0.630 *** (3.42)	0.604 ** (2.54)	0.369 (1.42)	0.300 (1.25)	-0.017 ** (-2.24)	-0.018 * (-1.94)	-0.026 ** (-2.43)	-0.005 (-0.54)	-0.002 3 (-0.32)
controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.602 ** (-2.36)	-0.148 (-0.74)	-1.159 (-0.91)	0.215 (1.08)	0.568 ** (2.44)	-0.032 *** (-2.79)	-0.032 *** (-2.86)	-0.012 (-0.98)	0.008 (0.87)	0.015 * (1.67)
R2	0.870	0.869	0.859	0.859	0.867	0.751	0.759	0.794	0.852	0.883
Obs	510	510	510	510	510	510	510	510	510	510

5. Conclusions and Advice

Strengthening infrastructure is crucial for modern industry and economic growth, tied to government financial investment. This study uses 2005-2021 China data to analyze fiscal decentralization's effects on infrastructure quantity and quality. The main conclusions are as follows: (1) Decentralization boosts quantity but hurts quality, confirmed through rigorous tests. (2) Mechanism: Quantity growth eases fiscal pressure more than quality, explaining the differing impacts.

The findings of this paper provide the following three policy implications: (1) Promote the reform of the fiscal system and regulate the fiscal relationship between the central and local governments. Under China's fiscal decentralization system, we should rationalise the power and responsibility

relationship between the central and local governments, ensure that the responsibilities of local governments in infrastructure construction are clearly defined, bring into play the ‘two proactivities’ of the central and local governments, strike a balance between efficiency and fairness, and integrate the present and the long term, so as to promote the matching of power and responsibility, and the spending of money, and to promote the synergy between the government's governance system, the management of economic growth targets, and the fiscal system; (2) Establish a comprehensive evaluation mechanism to balance the quantity and quality of infrastructure. A comprehensive evaluation mechanism should be set up to assess the quantity and quality of infrastructure construction in each province, and economic growth targets should be set scientifically to avoid local governments from excessively pursuing quantity at the expense of quality. The supervision and accountability mechanism should be strengthened, and the supervision of local governments' financial expenditures should be enhanced through auditing and supervision to ensure that the funds are used in a standardised and effective manner, and to put an end to quality problems caused by the blind pursuit of quantity. At the same time, a sound performance assessment system should be established and the quality of infrastructure should be included as an important indicator in the performance appraisal of local governments; (3) Promote the upgrading of local governments' economic development objectives and approaches from the pursuit of “high growth rates” to “high-quality development”. The ideas of ‘GDP-only’ and ‘quantity-only’ should be eliminated, and local governments should be guided to pay more attention to the sustainability and comprehensiveness of development when formulating economic policies. By deepening supply-side structural reforms, optimising industrial structure and enhancing innovation capacity, it will promote the long-term healthy development of the economy and achieve a simultaneous improvement in the quality and effectiveness of economic growth.

References

- [1] Cicala S. *Imperfect Markets versus Imperfect Regulation in US Electricity Generation*. *American Economic Review*. Vol. 112 (2022) No. 2, p. 409-441.
- [2] Kemmerling A, Stephan A. *Comparative political economy of regional transport infrastructure investment in Europe*. *Journal of Comparative Economics*. Vol. 43 (2015) No.1, p. 227-239.
- [3] Vålilä T. *Fiscal sustainability and the composition of government investment: The case of investment in road infrastructure*. *Transport Policy*. Vol. 145 (2024), p. 105-125.
- [4] Liu Lei, Chen Can. *Policy Promotion or Policy Friction?—Research on Policy Interaction between Medical Insurance Immediate Settlement, and Hierarchical Diagnosis and Treatment*. *Journal of Public Administration*. Vol. 13 (2020) No. 5, p. 81-101
- [5] Tang YuGanh, Chen Qiang. *Decentralization, Land Finance and Urban Infrastructure*. *Comparative Economic & Social Systems*. (2012) No. 6, p. 98-110.
- [6] Zhang Jun, Gao Yuan, Fu Yong et al. *Why Does China Enjoy So Much Better Physical Infrastructure?*. *Economic Research Journal*. (2007) No. 3, p. 4-19.
- [7] Zhao Fuyang. *Land Price Bubble, Public Investment and Resource Misallocation*. *Economic Research Journal*. Vol. 57 (2022) No. 3, p. 155-172.
- [8] Huang Liangxiong, Lin Shaoliang, Wang Xianbin et al. *How does target-leading affect infrastructure? A quantitative and qualitative analysis*. *Industrial Economics Research*. (2022) No. 1, p. 129-142.
- [9] Chen Zhaoling. *Local Officials and China's Infrastructure: The Trade-off Decision Mechanism Between Quantity and Quality of Infrastructure*. *Journal of Yunnan University of Finance and Economics*. Vol. 39 (2023) No. 8, p. 1-21.
- [10] Ding Congming, Liu Ming, Liao Yijie. *Political Turnover and Public Investment in Transportation Infrastructure: Evidence from the*. *Journal of Finance and Economics*. Vol. 41 (2015) No. 4, p. 90-99.
- [11] Wang Xianbin, Zhang Li, Xu Xianxiang. *Local Government Land Lease, Infrastructure Investment and Local Economic Growth*. *China Industrial Economics*. (2014) No. 7, p. 31-43.
- [12] Bose N, Capasso S, Murshid A P, 2008. *Threshold Effects of Corruption: Theory and Evidence*[J]. *World Development*, 36(7): 1173-1191.

- [13] Wang Yongjin, Huang Qing. *Transportation Infrastructure Quality, Time Sensitivity and Export Performance*. *Journal of Finance and Economics*. Vol. 43 (2017) No. 10, p. 97-108.
- [14] Yuan Yue, Wu Tingshuai. *Research on Fiscal Decentralization and Social Security Input-Output Efficiency*. *Fiscal Science*. (2020) No. 2, p. 45-60.
- [15] Yang Zhian, Liu Zishuo, Chen Minhui. *Fiscal decentralization, government innovation preferences and environmental governance*. *Friends of Accounting*. (2024) No. 8, p. 93-101.
- [16] Wang Hao, Liu Chengkui, Zhuang Jiaqiang. *Fiscal Autonomy and Public Service Allocation Efficiency: From the Perspective of Legal Expenditure Constraints*. *Fiscal Science*. (2024) No. 1, p. 30-47.
- [17] Wu Junpei, Ding Weirong, Gong Min. *An empirical analysis of the impact of fiscal decentralization on environmental quality in China*. *Public Finance Research*. (2015) No. 11, p. 56-63.
- [18] Chu Deyin, Han Yiduo, Zhang Tongbin et al. *Chinese Fiscal Decentralization and Efficiency of Public Service Supply: Linear or Inverse U-Curve*. *China Economic Quarterly*. Vol. 17 (2018) No. 3, p. 1259-1288.
- [19] Yang Zhian, Qiu Guoqing. *Chinese-style Fiscal Decentralization and Technological Innovation-driven Development: Linear or Inverted "U"-Curve*. *East China Economic Management*. Vol. 33 (2019) No. 1, p. 5-10
- [20] Liao Guoping, Qin Jianmei. *Can Green Technology Innovation Effectively Improve Environmental Quality? Based on the Perspective of Fiscal Decentralization*. *Technology Economics*. Vol. 41 (2022) No. 4, p. 17-29.
- [21] Zhou Lian. *The Incentive and Cooperation of Government Officials in the Political Tournaments: An Interpretation of the Prolonged Local Protectionism and Duplicative Investments in China*. *Economic Research Journal*. (2004) No. 6, p. 33-40.
- [22] Wu Min, Zhou Lian. *Political Incentives and City Construction: The Visibility of Public Projects*. *Economic Research Journal*. Vol. 53 (2018) No. 12, p. 97-111.
- [23] Sun Chao, Liu Jindong. *Promotion Incentive, Official Heterogeneity and Public Investment Competition Strategy*. *Business Management Journal*. Vol. 45 (2023) No. 6, p. 121-138.
- [24] Zhang Xianfeng, Li Ying, Lu Dan. *Officials' Tenure Stability, Industrial Structural Suitability and Regional Economic Development*. *Economic Review*. (2015) No. 1, p. 118-128.
- [25] Guo Jingguang, Gao jingmei. *The Effect of Infrastructures Investment on Poverty-reduction: 1987-2006*. *Issues in Agricultural Economy*. Vol. 30 (2009) No. 9, p. 63-71
- [26] Tian Weiteng. *Fiscal Decentralization, Urban Expansion, and China's Carbon Emission Intensity*. *East China Economic Management*. Vol. 38 (2024) No. 4, p. 72-82.
- [27] Li Zheng, Yang Siying. *Fiscal Decentralization, Government Innovation Preferences and Regional Innovation Efficiency*. *Journal of Management World*. (2018) No. 12, p. 29-4.
- [28] Liu Liangliang, He Jun. *Will Vertical Fiscal Imbalance Inhibit the Improvement of Regional Innovation Efficiency*. *Contemporary Finance & Economics*. (2022) No. 7, p. 27-37.