An Empirical Study on the Impact of Government Subsidies on the Operational Performance of Listed Companies in China

Junsheng Liu, Jingyi Xia, Wenhao Shen

School of Economics and Management, Shanghai University of Political Science and Law, Shanghai 201701, China

Abstract: This paper examines the impact of Chinese government subsidies on the operational performance of listed companies. Methodologically, a panel fixed-effects regression model was employed, utilizing a sample of A-share listed companies covering the period 2014–2023 for empirical analysis. The results indicate that government subsidies indeed exert a significant stimulating effect on the operational performance of listed companies. Government subsidies serve as a direct source of funds that effectively alleviate financial pressure on enterprises, providing necessary support for various business developments, thereby promoting an improvement in operational performance. Furthermore, property rights heterogeneity analysis shows that government subsidies have a stronger stimulating effect on non-SOEs (non-state-owned enterprises). The operational mechanisms of non-SOEs are flexible, and government subsidies can efficiently enhance their operational performance. In contrast, SOEs exhibit lower efficiency levels, making it more challenging for government subsidies to translate into improved operational performance.

Keywords: government subsidies; operational performance of listed companies; heterogeneous effects

1. Introduction

In China, government subsidies have been employed as a crucial macroeconomic regulation tool. In 2023, these subsidies reached approximately 3.8 trillion yuan, and the importance of subsidy policies in fostering the development of new quality productive forces will be further emphasized.

The impact of government subsidies on the operating performance of listed companies constitutes a complex and extensive system. Within the existing research, some studies indicate that government subsidies can provide financial assistance[1], reduce production and R&D costs[2], and thereby drive technological innovation[3]. However, other research suggests that government subsidies may induce rent-seeking behavior among enterprises, leading to reduced efficiency in resource allocation and diminished social welfare[4]. Additionally, studies demonstrate that the effects of government subsidies vary across firms with different characteristics (such as industry, scale, and ownership structure), and that more subsidies do not always yield positive outcomes[5].

This empirical study examines the direct and indirect effects of Chinese government subsidies on corporate performance. By constructing a panel data model to analyze the mediating mechanisms through which subsidies operate, this research contributes to refining innovative performance mechanisms within the government's macro-control framework.

2. The Development of Government Subsidies and the Operational Performance of Listed Companies in China

2.1 The Development of Listed Companies' Operational Performance

The following figure 1 illustrates the operational performance of listed companies in China from 2014 to 2023, indicating a general downward trend. The performance metric decreased from 0.0393% in 2014 to 0.0226% in 2023, with a notably sharper decline observed in 2018.

Figure 1. ROA in Listed Companies from 2014 to 2023 (Source: CSMAR Database. Income statements of listed companies)

From an international perspective, in 2018, the global economic growth momentum faced uncertainties and downward pressures, while intensifying international trade frictions impacted global industrial chains and supply chains.

Since 2018, the operational performance of listed companies has generally improved, though it experienced a decline in 2022 and 2023. In 2023, A-share listed companies exhibited a pronounced polarization in profitability: the number of enterprises reporting substantial profit growth or substantial losses far exceeded those within the moderate range, indicating a trend toward two extremes.

2.2 The Development of Subsidies to Listed Companies by the Chinese Government

The Chinese government provides substantial subsidies to support corporate entities, including listed companies, in their production operations, business activities, and R&D innovation initiatives. As illustrated in Figure 2, the aggregate government subsidies received by China's listed companies surged from 85.41 billion yuan in 2014 to 321.7 billion yuan in 2023—representing an approximate quadrupling over the decade. This consistently upward trajectory demonstrates the progressive expansion of governmental subsidy allocations to enterprises amid socioeconomic development.
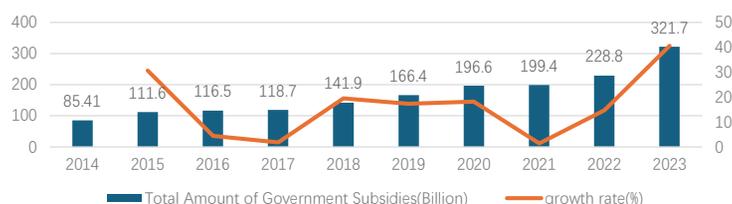

Figure 2. Subsidies to Listed Companies by the Chinese Government from 2014 to 2023
(Source: CSMAR Database. Income statements of listed companies)

From the perspective of enterprise ownership types, as illustrated in Figure 3, government subsidies to both state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs) showed significant growth and an upward trend from 2014 to 2023. Compared to non-SOEs, SOEs maintained an absolute advantage in total subsidy amounts for most of the period. However, non-SOEs demonstrated a consistently steadier growth trend in total subsidies received. The Chinese government has been strongly supporting the development of non-state-owned enterprises throughout this period.
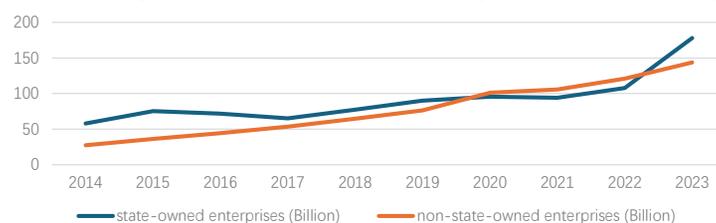

Figure 3. Government Subsidies to Listed Companies by Ownership from 2014 to 2023
(Source: CSMAR Database. Income statements of listed companies)

3. The Impact Mechanism of Government Subsidies on the Operational Performance of Listed Companies

3.1 The Explanation of Resource Allocation Theory

Government subsidy policies represent an intervention mechanism grounded in the principles of resource allocation efficiency and Pareto improvement, aiming to enhance the utilization efficiency of societal production factors[6]. By channeling government financing into public policies, these subsidies seek to rectify misallocation of factor resources. However, the effectiveness of subsidies primarily depends on their ability to elevate enterprises' marginal output of factors. From the perspective of corporate governance, after undergoing the conversion of policy resources, the impact of subsidy policies on microeconomic entities' operational performance is reflected in their operational outcomes. The regulatory effectiveness of such policies may also vary across different types of enterprises.

Subsidies primarily exert their effect on enterprises by promoting investment, output, and enterprise performance, thereby indirectly stimulating increased productive investment. If the enterprise is state-owned, the effect is more direct; if it belongs to the non-state sector, the effect is more pronounced. Private enterprises listed on the SME Board generally exhibit more rational decision-making regarding overall efficiency, resulting in relatively stable outcomes.

3.2 The Explanation of Externality Theory

The existence of externalities determines the necessity of government subsidies, which are limited in scale. Marshall's theory of "external economies" posits that while a firm's actual returns may increase due to certain activities, the firm cannot exclusively appropriate or dispose of this incremental gain. This leads to underinvestment by firms, resulting in private marginal benefit being less than social marginal benefit[7].

In this scenario, the regulatory role of subsidies leads to societally optimal levels of labor and production inputs exceeding market equilibrium. Consequently, when corporate innovation outputs exhibit significant positive externalities, subsidies demonstrate superior effectiveness in boosting Return on Assets (ROA). For instance, subsidies for biopharmaceutical enterprises outperform those for industries with negative externalities, such as steel manufacturing.

4. Empirical Analysis of the Impact of Chinese Government Subsidies on the Operational Performance of Listed Companies

4.1 Data Sources and Model Specification

This study selects all A-share listed companies from 2014 to 2023 as the research sample to empirically examine the impact of government subsidies on the operational performance of these companies. This study selects Return on Assets (ROA) as the primary dependent variable representing operating performance, with Return on Equity (ROE) serving as an alternative variable for robustness testing. Government subsidies (Sub) are measured by the proportion of government grants disclosed in the "Income Statement" section of the financial statement notes, relative to total assets[8].

This study draws on existing research and incorporates control variables at different levels [9]. The definitions and descriptions of the main variables are as detailed in Table 1 below.

Table 1. The definitions and descriptions of the main variables (Data source: processed through the present study)

Variable Type	Variable Name	Variable Symbol	Measurement Method
Dependent Variable	operational performance	ROA	Total Profit / Total Assets
Core Independent Variable	Government Subsidy	Sub	Annual Government Subsidy / Total Assets
Control Variables	Firm Size	Size	Natural Logarithm of Total Assets
	Firm Age	Age	Natural Logarithm of Years Since Establishment
	Financial Leverage	Lev	Total Liabilities / Total Assets
	Cash Flow Ratio	CASH	Net Cash Flow from Operating Activities / End-of-Period Current Liabilities
	Revenue Growth Rate	Growth	Current Year Revenue / Prior Year Revenue - 1
	Board Size Board	Board	Natural Logarithm of Number of Board Members
	Independent Director Ratio	Indep	Number of Independent Directors / Total Board Members
	Largest Shareholder Ownership	Top1	Shares Held by Largest Shareholder / Total Outstanding Shares

This study employs a panel regression model to examine the impact of government subsidies on the operational performance of listed companies, controlling for both firm and year fixed effects, and constructs the following model[10]:

$$ROA_{it} = a_0 + a_1 Sub_{it} + \sum a_j Control_{it} + \varepsilon_{it}$$

In this context, the subscript i represents a firm, t denotes the year, and j is the index for control variables. If the government subsidy coefficient a_1 is significantly positive, it indicates that government subsidies have a direct promoting effect on the operational performance of listed companies.

4.2 Model Testing and Regression Results

According to the Hausman test results, the p-value of the test is 0.0000, indicating that the null hypothesis is rejected at the 1% significance level. Therefore, the fixed effects model was selected for regression analysis. Table 2 reports the regression results of the model. Thus, government subsidies exert a positive impact on corporate performance, and enhancing subsidy intensity can effectively improve the operational performance of listed companies.

Table 2. Regression results of the model (Data source: processed through the present study)

	(1) ROA	(2) ROA
Sub	0.439*** (4.82)	0.483*** (5.74)
Size		0.022*** (25.31)
Age		-0.025*** (-3.70)
Lev		-0.167*** (-51.50)
Cash		0.039*** (36.56)
Growth		0.006*** (12.39)
Board		0.0001 (0.96)
Indep		-0.0001 (-1.07)
Top1		0.001*** (17.74)
Constant	0.066*** (2.74)	-0.312*** (196.95)
N	35093	35093
R^2	0.058	0.207

4.3 Robustness checks and heterogeneity analysis

This study employs the method of substituting the dependent variable for robustness testing, selecting Return on Equity (ROE) as an alternative to ROA. A higher ROE indicates that the company possesses sufficient capital for management to engage in more business activities, thereby enhancing the operational performance of listed companies. The results, as shown in column (1) of Table 3, reveal that the regression coefficient of government subsidies is 0.729, significant at the 1% level. This confirms that the promotive effect of government subsidies remains robust.

Table 3. The results of the robustness test for the regression model (Data source: processed through the present study)

	(1) ROE	(2) ROA
Sub	0.729*** (3.35)	0.483*** (5.74)
Size	0.067*** (29.64)	0.022*** (25.31)
Age	0.004 (0.26)	-0.025*** (-3.70)
Lev	-0.434*** (-51.68)	-0.167*** (-51.50)
Cash	0.047*** (17.04)	0.039*** (36.56)
Growth	0.015*** (12.84)	0.006*** (12.39)
Board	-0.0001 (-0.34)	0.0001 (0.96)
Indep	-0.0001 (-0.68)	-0.0001 (-1.07)
Top1	0.002*** (16.45)	0.001*** (17.74)
Constant	-1.236*** (-14.06)	-0.312*** (196.95)
N	35093	35093
R^2	0.159	0.207

Based on the ownership type of enterprises, this study categorizes them into state-owned enterprises (SOEs) and non-

state-owned enterprises (NSOEs) for heterogeneity analysis[11]. Table 4 presents the analytical results. This indicates that government subsidies exert a negative yet insignificant impact on the operational performance of SOEs, but significantly enhance the operational performance of NSOEs[12][13].

Table 4. The Regression Results for Ownership Groupings (Data source: processed through the present study)

	SOEs ROA	NSOEs ROA
Sub	-0.069 (-0.58)	0.726*** (6.73)
Size	0.020*** (14.27)	0.025*** (22.22)
Age	0.031*** (2.92)	-0.022** (-2.50)
Lev	-0.181*** (-34.63)	-0.155*** (-37.38)
Cash	0.039*** (21.92)	0.039*** (29.67)
Growth	0.003*** (6.35)	0.007*** (10.88)
Board	-0.001 (-1.44)	0.001* (1.91)
Indep	-0.0001** (-2.31)	-0.0001 (-0.79)
Top1	0.0001** (2.18)	0.001*** (16.49)
Constant	-0.421*** (-8.72)	-0.361*** (-7.74)
N	10085	25007
R2	0.227	0.218

5. Conclusion

This study selects listed companies in China from 2014 to 2023 as the research sample. By constructing a panel fixed-effects model, it empirically analyzes the impact of government subsidies on the operational performance level of these companies and arrives at the following conclusions:

First, government subsidies have a significant positive impact on the operational performance of listed companies, enhancing their overall level of economic efficiency. Listed companies often require substantial funding for expanding production, fostering research and development innovation, and exploring new markets.

Second, the impact of government subsidies on the operational performance of listed companies exhibits heterogeneity across different classifications of firms. Compared to state-owned enterprises (SOEs), government subsidies significantly enhance the operating performance of non-SOEs. Non-SOEs possess flexible operational mechanisms; upon receiving subsidies, they can promptly allocate funds to projects with promising market prospects, effectively responding to market demands.

References

[1] Li Weian, Li Haobo, Li Huicong. Innovation Incentive or Tax Shield? — Research on Tax Incentives for High-tech Enterprises[J]. Science Research Management, 2012, (9): 61-69.

[2] Wang Hongjian, Li Qingyuan, Xing Fei. Financial Crisis, Government Subsidies and Earnings Manipulation: Empirical Evidence from Chinese Listed Companies[J]. Management World, 2014(7): 157-167.

[3] Zhang Jie, Zheng Wenping, Zhai Fuxin. How Competition Affects Innovation: A New Test in the Chinese Context[J]. China Industrial Economics, 2015, (11): 56-68.

[4] Chen Donghua, Chen Xinyuan, Wan Hualin. Compensation Discipline and Job-related Consumption in State-owned Enterprises[J]. Economic Research Journal, 2005, (2): 92-101.

[5] Zhang Hong. Government Subsidies and Business Performance: From the Perspective of Business Management Heterogeneity [J]. Guangxi Quality Supervision Guide, 2020, (03): 20-21.

[6] Zhang Jie, Lu Zhe, Zheng Wenping. Financing Constraints, Financing Channels and Corporate R&D Investment[J].

The Journal of World Economy, 2012, (10): 66-89.

[7] Hu Zhiyong, Tang Wenhui. Corporate Environmental Investment, Government Subsidies and Operational Performance: An Empirical Study Based on Agricultural Listed Companies[J]. Journal of Tianjin University of Commerce, 2021, 41(01): 9-14.

[8] Zhong Yi. Study on the Impact of Government Subsidies on Business Performance of Enterprises — Empirical Evidence from High-Tech Enterprises[J]. China Collective Economy, 2023(35): 75-78.

[9] Wang Xinhong, Nie Yaqian. Government Subsidies, R&D Investment and Corporate Performance[J]. Accounting Communications, 2019, (3): 63-67+76.

[10] Li Chuntao, Zhang Xuan. Rent-Seeking, Financial Constraints, and Corporate Innovation: Evidence from Chinese Industrial Enterprises[J]. Journal of Financial Research, 2018, (1): 103-118.

[11] Wang Jiajia, Liu Jiaying. Research on the Impact of Government Subsidies on Corporate Operating Performance: A Case Study of iFLYTEK[J]. Business Manager, 2022, (12): 86-88.

[12] Liu Yi, Zhang Xinrong, Shen Jingqi. Financing Constraints, Government Subsidies and Technological Innovation: A Lifecycle Perspective of High-Tech Enterprises [J]. Communication of Finance and Accounting, 2019(09): 97-102.

[13] Yu Minggui, Hui Yafu, Pan Hongbo. Political Connections, Rent-seeking, and the Effectiveness of Local Government Fiscal Subsidies[J]. Economic Research Journal, 2012, (3): 65-77.