

Research on Financial Flexibility, R&D Investment and Corporate Performance

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Abstract: Amid the global wave of globalization, innovation has become the core driving force for corporate development, with the strength of innovation capability serving as the decisive factor for enterprises to stand out. Based on uncertainty theory, financing constraint theory, and flexible portfolio theory, this paper employs empirical research methods to deeply analyze how financial flexibility impacts corporate performance, with a focus on the mediating role of R&D investment. The study selects A-share listed companies on the main board of the Shanghai and Shenzhen stock exchanges from 2019 to 2024, screening a total of 6,354 sample data. Through empirical research and analysis, the following conclusions are drawn: (1) Enterprises can enhance financial performance by improving financial flexibility; (2) Higher financial flexibility promotes corporate R&D investment activities; (3) R&D investment acts as a mediator between financial flexibility and corporate performance. Finally, the paper proposes relevant recommendations based on the experimental results.

Keywords: Financial flexibility; R&D investment; Firm performance.

1. Introduction

Countries worldwide are actively driving industrial upgrading and innovation, with technological advancement emerging as the core engine of economic growth. The scale and efficiency of R&D investment now largely determine the core competitiveness of both enterprises and nations. Meanwhile, rapidly evolving consumer demands require continuous product and service upgrades. Companies that fail to invest in timely R&D to develop market-aligned products risk insufficient profits and eventual market elimination. Therefore, timely R&D initiatives are crucial for enhancing financial performance and ensuring sustainable development. However, given the high capital intensity, extended timelines, and elevated risks inherent in R&D, building financial flexibility becomes essential. This strategic reserve enables better risk management, reducing operational disruptions and debt defaults caused by funding shortages. Such financial resilience not only stabilizes business operations but also fuels R&D efforts, allowing companies to promptly create consumer-centric products with enhanced value and market competitiveness. Ultimately, this creates a virtuous cycle that boosts corporate performance while ensuring stable and sustainable development.

In this era, enterprises seeking sustainable development and performance enhancement must prioritize financial flexibility and strategic R&D investment allocation, while formulating scientifically sound development strategies. Financial flexibility provides robust funding for R&D, enabling businesses to expand into new sectors, thereby boosting performance and creating a virtuous cycle. This study examines A-share listed companies on the Shanghai and Shenzhen main boards from 2019 to 2024, empirically analyzing the interplay between financial flexibility, R&D investment, and corporate performance.

2. Research Hypothesis Formulation

2.1. Financial Flexibility and Corporate Performance

From the perspective of enterprises themselves, according to uncertainty theory, businesses face significant challenges in uncertain environments, such as financial management chaos and capital chain disruptions (Xu, X. L., & Xu, W. C., 2021) [1]. Enterprises with higher financial flexibility demonstrate stronger capital allocation capabilities when confronting such uncertainties (Zeng et al., 2011) [2]. During sudden market changes, financially flexible enterprises can swiftly mobilize funds, adjust production plans, and maintain normal operations, thereby avoiding financial distress and ensuring minimal impact on corporate performance (Yang, & Huang, 2016) [3]. Additionally, during economic instability, financially flexible enterprises can leverage capital reserves to promptly adjust inventory strategies, preventing losses from stockpiling or shortages while maintaining profitability (GAMBA & TRIANTIS, 2008) [4].

From a consumer perspective, demands are constantly evolving. Companies with high financial flexibility can strategically allocate resources—such as capital and human resources—to the most valuable projects, enabling agile responses to market needs (RAPP et al., 2014) [5]. This flexibility allows businesses to swiftly mobilize funds when market demand surges for specific products, thereby expanding production capacity, increasing supply, and boosting profits.

From an investor's perspective, companies with high financial flexibility demonstrate stronger financial stability. Their financial statements typically highlight advantages like ample cash reserves and balanced debt structures (Yung et al., 2015) [6]. These factors send positive signals to investors, indicating sound financial health and promising growth prospects. As a result, investors are more inclined to invest in such companies. This not only facilitates easier fundraising in capital markets but also further drives corporate development

(ARSLAN-AYAYDIN et al., 2014) [7].

In conclusion, higher financial flexibility can generate greater profits for enterprises and enhance their performance, whether viewed from the perspective of the enterprises themselves, consumers, or investors (Mu & Wang, 2024) [8]. Based on this, this paper proposes Hypothesis 1:

H1: Financial flexibility positively impacts corporate performance.

2.2. Financial Flexibility and R&D Investment

For enterprises, R&D activities typically involve high costs, long cycles, significant risks, and information asymmetry. These characteristics often lead to financing challenges during R&D processes, making companies susceptible to funding constraints that ultimately suppress R&D investment efficiency (Cui & You, 2019) [9]. These issues necessitate higher cash reserves, meaning companies need to maintain financial flexibility (Zeng & Wei, 2013) [10]. Financial flexibility reserves include cash flexibility and debt flexibility. When facing financing constraints, maintaining adequate financial flexibility can effectively mitigate such issues (Zhang & Zhang, 2020) [11]. From the perspective of domestic scholars Xiao Jianbo and Lü Sha (2015) [12], a company's investment efficiency plays a crucial role in its development. Their research reveals that companies with higher financial flexibility often demonstrate superior R&D investment efficiency. This is because firms with strong financial flexibility can more effectively integrate and utilize resources, providing stable and sufficient funding for R&D activities. This reduces capital bottlenecks during the R&D process, ultimately enhancing the efficiency of converting R&D investments into tangible outcomes. Furthermore, higher R&D investment efficiency further boosts operational efficiency, such as driving product innovation and optimizing production processes, thereby significantly advancing corporate development.

Research by scholar Zhang Ainuo (2024) [13] demonstrates that when enterprises exhibit high financial flexibility, their management demonstrates enhanced capital allocation capabilities and greater risk tolerance for R&D investment projects, thereby reducing constraints in R&D decision-making.

In conclusion, companies with greater financial flexibility demonstrate stronger financing capabilities and maintain stable, sustained R&D investments (Xiao et al., 2013) [14]. Based on this, we propose Hypothesis 2:

H2: Financial flexibility positively impacts R&D investment.

2.3. Research and Development Investment and Enterprise Performance

In corporate operations, R&D investment is closely tied to business performance. Typically, such investments provide a powerful boost to a company's growth (Zhu & Xu, 2006) [15]. By allocating funds to R&D, companies can develop new products and technologies to meet evolving consumer demands (Qin, 2022) [16]. Take the smartphone industry as an example: through R&D, companies enhance features like camera quality and processor performance, attracting more buyers, expanding market share, and ultimately boosting corporate performance.

In production operations, R&D investment helps optimize corporate workflows by exploring more efficient production methods, reducing resource waste and time consumption in

manufacturing processes, thereby lowering production costs (Liu, 2024) [17]. Cost reduction expands profit margins, enhancing market competitiveness and significantly improving corporate performance (Zhu et al., 2020) [18]. Moreover, R&D investment plays a crucial role in boosting corporate brand image and reputation. Companies actively investing in R&D are often perceived as innovative and promising, attracting more partners and investors. For instance, new energy vehicle manufacturers have achieved breakthroughs in battery technology and autonomous driving through sustained R&D investments, drawing substantial capital inflows that further drive business growth and improve corporate performance.

In conclusion, increased investment in R&D activities by enterprises can enhance their financial performance (Wang & Shi, 2016) [19]. Based on this, this paper proposes Hypothesis 3:

H3: R&D investment has a positive impact on corporate performance.

2.4. Financial Flexibility, R&D Investment and Corporate Performance

Technological innovation capability serves as the cornerstone of corporate sustainability. When enterprises prioritize R&D investment, they can develop diverse new products, expand market reach, increase revenue, and enhance corporate performance. The implementation of technological innovation activities requires robust financial support. In this regard, companies with higher financial flexibility demonstrate significant advantages (Ren & Zhang, 2017) [20], enabling them to stand out in market competition. Ling Zhixiong and Fang Lin (2015) [21] conducted a study on A-share listed companies and found that R&D investment exhibits partial mediating effects between financial flexibility and corporate performance. They noted that operational uncertainties present dual aspects: while they may lead to negative impacts, they can also create high-value investment opportunities. This indicates that financial flexibility influences corporate investment decisions and behaviors, thereby affecting performance (Gregory, 2020) [22]. Based on the above analysis, this paper proposes Hypothesis 4:

H4: R&D investment mediates the relationship between financial flexibility and corporate performance.

3. Research Design

3.1. Sample Selection and Data Sources

This study selects listed companies from 2019 to 2024 as the research sample, excluding those that were ST-treated or delisted during this period. ST-treated or delisted companies represent operational issues, and their data would distort empirical results. Financial listed companies were excluded due to the unique reporting standards and profit models of the financial and insurance sectors. Core data from companies with missing values were removed, and the sample underwent Winsorization (a tail-trimming method) to eliminate outliers. The final sample comprises 6,354 observations. Financial data were sourced from the Guotai An (CSMAR) database, with statistical analysis conducted using Stata 18.0.

3.2. Variable Definitions

3.2.1. Explained Variable

Drawing on the methodology of Qin Zhengna (2022) [16], this study adopts the comprehensive total asset return on

equity (ROA) as the financial performance metric. ROA directly reflects a company's ability to generate profits from its total assets, with the ratio of net profit to total assets demonstrating the profitability of these assets. Moreover, being unaffected by capital structure, ROA provides a holistic view of a company's financial health, offering stakeholders a comprehensive perspective for evaluation.

3.2.2. Explanatory Variable

The explanatory variable in this study is financial flexibility. Among existing research on financial flexibility, the measurement method proposed by Zeng Aimin, Fu Yuanlue, and Wei Zhihua (2011) [2] has garnered significant attention and is widely applied. This method defines financial flexibility through two key dimensions: First, it comprehensively analyzes the channels through which enterprises acquire financial flexibility, with particular emphasis on cash flow and debt capacity, as these two factors play a pivotal role in building a financial flexibility framework. Second, it categorizes financial flexibility into cash flexibility, debt flexibility, and equity flexibility based on the sources of funding. However, given the practical constraints faced by Chinese enterprises, obtaining financial flexibility through equity financing encounters numerous obstacles and poses considerable operational challenges. Consequently, in practical research and application scenarios, researchers often focus on cash flexibility and debt flexibility.

In conclusion, this study adopts the financial flexibility (FF) metric proposed by Zeng Aimin et al., calculated as follows:

Financial flexibility (FF) = Cash flexibility (CF) + Debt financing flexibility (DF)

Cash flexibility (CF) = Corporate cash ratio – Industry cash ratio average, where cash ratio = (Cash + Trading financial assets) / Total assets

Debt Flexibility (DF) = Max(0, industry average debt ratio – company debt ratio), where debt ratio = total liabilities / total assets

3.2.3. Mediating Variable

The intermediary variable in this study is R&D investment, which can be measured through two primary approaches. The first approach focuses on financial expenditure, positing that higher R&D expenditure directly correlates with greater research intensity. For instance, Zhu Weidong, Tian Yufei, and Hu Xue (2020) [18] adopted the logarithm of a company's annual R&D expenditure as a key metric, effectively reflecting its R&D commitment. The second approach recognizes that R&D involves not only material resources but also non-monetary factors like human capital. Wang Xinhong and Shi Xinxin (2016)[19] emphasized the stability and continuity of R&D personnel, thus using the ratio of R&D staff to total employees as an indicator of corporate R&D investment.

Given the actual conditions of newly listed companies, many of these firms exhibit significant gaps in disclosing key metrics such as the number of researchers and patents. Moreover, there are considerable variations in R&D investment priorities among different companies, and these notable individual differences can substantially impact empirical research outcomes. Based on these factors, this study has chosen the ratio of R&D expenditure to main business revenue as an indicator of R&D intensity, expressed by the following formula:

Research and development investment (Yftr) = R&D expenditure / main business revenue

3.2.4. Controlled Variable

Considering that other factors besides the explanatory variables may also influence corporate performance to some extent, this paper controls for these factors to ensure the reliability of the results. The selected control variables include firm size, cash flow ratio, operating revenue growth rate, and the proportion of independent directors.

The specific variable definitions are shown in Table 1:

Table 1. Variable Definitions

variable type	variable name	symbol	definition
explained variable	corporate performance	ROA	Net profit of enterprise/Total assets of enterprise
explanatory variable	financial flexibility	FF	cash flexibility + debt flexibility
Mediating Variable	research input	Yftr	R&D expenditure / main business income
controlled variable	scale	Size	natural logarithm of total assets
	cash flow ratio	Cashflow	net cash flow from operating activities/total assets
	increase rate of business revenue	Growth	(Current period's main business revenue-previous period's main Operating revenue) / Previous period operating revenue income
	proportion of independent directors	Indep	Number of independent directors/number of directors

3.3. Model Building

To test Hypotheses 1 through 4, this study employs linear regression to establish correlations, and constructs a mediation effect testing model based on the mediation effect and testing methods proposed by Wen Zhonglin et al. (2014) [23].

To verify Hypothesis 1, we constructed Model 4-1:

$$ROA = \partial_1 + \partial_2 FF_{i,t} + \partial_3 Size_{i,t} + \partial_4 Cashflow_{i,t} + \partial_5 Growth_{i,t} + \partial_6 Indep_{i,t} + \varepsilon \quad (4-1)$$

ROA (Return on Assets) is the dependent variable representing corporate financial performance, while FF (Financial Flexibility) is the independent variable indicating

financial agility. The control variables include Size (Company Size), Cashflow (Cash Flow Ratio), Growth (Growth Rate), and Indep (Independent Director Ratio).

To verify Hypothesis 2, we constructed Model 4-2:

$$Yftr = \gamma_1 + \gamma_2 FF_{i,t} + \gamma_3 Size_{i,t} + \gamma_4 Cashflow_{i,t} + \gamma_5 Growth_{i,t} + \gamma_6 Indep_{i,t} + \varepsilon \quad (4-2)$$

In this model, Yftr (dependent variable) represents R&D investment, while FF (independent variable) indicates corporate financial flexibility. The remaining control variables retain the same definitions as those in Equation (4-1).

To verify Hypothesis 3, we constructed Model 4-3:

$$ROA = \beta_1 + \beta_2 Yftr_{i,t} + \beta_3 Size_{i,t} + \beta_4 Cashflow_{i,t} + \beta_5 Growth_{i,t} + \beta_6 Indep_{i,t} + \varepsilon \quad (4-3)$$

In this context, Yftr serves as the explanatory variable for R&D investment, while the remaining control variables retain the same definitions as those in Equation (4-1).

To test Hypothesis 4, this study adopts the mediation model developed by Wen Zhonglin et al. (2014) [23], and builds Model 4-4 by extending Models (4-1) and (4-2).

$$ROA = \delta_1 + \delta_2 FF_{i,t} + \delta_3 Yftr_{i,t} + \delta_4 Size_{i,t} + \delta_5 Cashflow_{i,t} + \delta_6 Growth_{i,t} + \delta_7 Indep_{i,t} + \varepsilon \quad (4-4)$$

Model 4 builds upon Models 1, 2, and 3 to examine whether R&D investment mediates the relationship between financial flexibility and firm performance, with the definitions of variables provided in Equations (4-1) and (4-2).

4. Empirical Analysis

4.1. Descriptive Statistics

As shown in Table 2, the total sample size reaches 6,354. The average return on assets (ROA) is 0.060 with a standard deviation of 0.046, ranging from 0.002 to 0.235, indicating significant variations in asset returns across enterprises. Meanwhile, the financial leverage (FF) averages 0.070 with a standard deviation of 0.168, spanning from -0.173 to 0.636, highlighting substantial differences in financial leverage utilization among companies.

Yftr has a mean of 0.055 with a standard deviation of 0.051, and its maximum and minimum values are 0.268 and 0.000 respectively, indicating variations among enterprises. The average value of Size is 22.438 with a standard deviation of

1.321, and its range spans from 20.270 to 26.413, demonstrating the diversity in enterprise sizes within the sample.

Table 2. Descriptive Statistics

VarName	Obs	Mean	SD	Min	Max
ROA	6354	0.060	0.046	0.002	0.235
FF	6354	0.070	0.168	-0.173	0.636
Yftr	6354	0.055	0.051	0.000	0.268
Size	6354	22.438	1.321	20.270	26.413
Cashflow	6354	0.064	0.060	-0.084	0.254
Growth	6354	0.161	0.294	-0.388	1.594
Indep	6354	0.380	0.053	0.333	0.571

4.2. Correlation Test

Table 3's correlation analysis reveals that ROA (Return on Assets) serves as the dependent variable for corporate financial performance, while financial flexibility (FF) acts as the independent variable. R&D investment (Yftr) functions as the mediator variable, with Size, Cashflow Ratio, Growth Rate, and Independent Director Ratio serving as control variables respectively.

A significant positive correlation between ROA and FF indicates that enhanced financial flexibility may positively drive corporate financial performance, preliminarily validating Hypothesis 1. Similarly, FF shows a significant positive correlation with Yftr, suggesting that increased financial flexibility positively impacts corporate R&D investment, preliminarily validating Hypothesis 2.

Table 3. Variable Correlation Test Table

	ROA	FF	Yftr	Size	Cashflow	Growth	Indep
ROA	1						
FF	0.272***	1					
Yftr	0.079***	0.187***	1				
Size	-0.078***	-0.276***	-0.298***	1			
Cashflow	0.521***	0.198***	-0.055***	0.045***	1		
Growth	0.270***	-0.067***	-0.007	0.011	0.027**	1	
Indep	-0.019	-0.020	0.029**	-0.005	-0.008	-0.012	1

Note: ***P<0.01, **P<0.05, *P<0.1

Furthermore, as shown in Table 4, the VIF values for all variables are below 10, indicating no significant multicollinearity issues among them.

Table 4. VIF Test Table

Variable	VIF	1/VIF
Size	1.170	0.855
FF	1.160	0.860
Yftr	1.120	0.894
Cashflow	1.060	0.944
Growth	1.010	0.993
Indep	1.000	0.998

4.3. Regression Analysis

4.3.1. Financial Flexibility and Corporate Performance

The regression results show that financial flexibility (FF) has a significant coefficient of 0.049 at the 1% level. This indicates that, after controlling for variables such as firm size,

cash flow ratio, revenue growth rate, and independent director ratio, increased financial flexibility positively impacts corporate performance, thus validating Hypothesis 1.

Table 5. Regression Results: Financial Flexibility and Corporate Performance

Variable	(1)
	ROA
FF	0.049***
	(17.051)
Size	-0.002***
	(-5.107)
Cashflow	0.366***
	(47.260)
Growth	0.042***
	(27.095)
Indep	-0.007
	(-0.878)
_cons	0.070***
	(8.019)
N	6354
R ²	0.377
Adj. R ²	0.38

Note: ***P<0.01, **P<0.05, *P<0.1, with t-values in parentheses

4.3.2. Financial Flexibility and R&D Investment

The regression results in Table 6 on financial flexibility and R&D investment show that the financial flexibility (FF) has a significant regression coefficient of 0.040 at the 1% level. This clearly demonstrates that enhanced financial flexibility positively impacts R&D investment, thereby validating Hypothesis 3 of this study.

Table 6. Regression Results: Financial Flexibility and R&D Investment

Variable	(1)
	Yftr
FF	0.040***
	(10.280)
Size	-0.010***
	(-20.830)
Cashflow	-0.059***
	(-5.658)
Growth	0.001
	(0.549)
Indep	0.029**
	(2.512)
_cons	0.269***
	(22.982)
N	6354
R ²	0.106
Adj. R ²	0.11

Note: ***P<0.01, **P<0.05, *P<0.1, with t-values in parentheses

4.3.3. Research and Development Investment and Enterprise Performance

The regression results in Table 7 demonstrate that R&D investment (Yftr) has a significant positive effect on corporate performance (ROA). With a regression coefficient of 0.078 at the 1% significance level, this indicates that each unit increase in R&D investment leads to an average ROA improvement of 0.078 units. This confirms the positive impact of R&D

investment on corporate performance, thereby validating Hypothesis 2 of this study.

Table 7. Regression Results: R&D Investment and Corporate Performance

Variable	(1)
	ROA
Yftr	0.078***
	(8.211)
Size	-0.003***
	(-7.445)
Cashflow	0.398***
	(51.742)
Growth	0.040***
	(25.476)
Indep	-0.013
	(-1.474)
_cons	0.090***
	(9.962)
N	6354
R ²	0.355
Adj. R ²	0.355

Note: ***P<0.01, **P<0.05, *P<0.1, with t-values in parentheses

4.3.4. Test of the Mediating Effect of R&D Investment

To further validate the hypothesis that R&D investment mediates the relationship between financial flexibility and corporate performance, this study conducts empirical tests using Model 4. As shown in Table 8, Model 1 demonstrates a significant correlation between financial flexibility and corporate performance (coefficient: 0.049, 1% significance level), confirming Hypothesis 1. Model 2 reveals a positive relationship between financial flexibility and R&D investment (coefficient: 0.040, 1% significance level), supporting Hypothesis 2. Model 3 establishes a significant positive impact of R&D investment on corporate performance (coefficient: 0.078, 1% significance level), validating Hypothesis 3. Model 4 investigates the mediating effect of R&D investment, yielding a significant coefficient (0.059, 1% significance level). Analysis of R² values in Models (4-1) and (4-2) shows that Model (4-4) achieves higher R² values and better fit, confirming Hypothesis 4. These findings collectively demonstrate that R&D investment serves as a mediating factor between financial flexibility and corporate performance.

Table 8. Merged regression results

Variable	(1)	(2)	(3)	(4)
	Model 1	Model 2	Model 3	Model 4
FF	0.049*** (17.051)	0.040*** (10.280)		0.047*** (16.163)
Size	-0.002*** (-5.107)	-0.010*** (-20.830)	-0.003*** (-7.445)	-0.001*** (-3.377)
Cashflow	0.366*** (47.260)	-0.059*** (-5.658)	0.398*** (51.742)	0.370*** (47.724)
Growth	0.042*** (27.095)	0.001 (0.549)	0.040*** (25.476)	0.042*** (27.133)
Indep	-0.007 (-0.878)	0.029** (2.512)	-0.013 (-1.474)	-0.009 (-1.077)
Yftr			0.078*** (8.211)	0.059*** (6.240)
_cons	0.070*** (8.019)	0.269*** (22.982)	0.090*** (9.962)	0.055*** (5.999)
N	6354	6354	6354	6354
R ²	0.377	0.106	0.355	0.381
Adj. R ²	0.376	0.105	0.355	0.380

Note: ***P<0.01, **P<0.05, *P<0.1, with t-values in parentheses

4.4. Robustness Test

To enhance the reliability of this study's findings, we conduct robustness tests on the paper's hypotheses. Following Peng Shuyu's (2025) [24] methodology, we adopt the method of substituting the dependent variable by selecting Tobin's Q (TobinQ) as the dependent variable to measure corporate financial performance.

The results of the robustness test are shown in Table 9.

The financial flexibility (FF) in Model 1 shows a statistically significant positive correlation with corporate performance (Tobin Q) at the 1% significance level, indicating that the market highly values companies' financial resilience. This positive relationship between financial flexibility and corporate performance further validates Hypothesis 1.

The Model 2 demonstrates a statistically significant positive correlation between R&D investment (Yftr) and corporate performance (TobinQ) at the 1% significance level, indicating that increased R&D expenditure enhances financial performance. This confirms Hypothesis 2 by establishing a positive relationship between R&D investment and corporate performance.

The financial flexibility (FF) and R&D investment (Yftr) in Model 3 show a significant positive correlation at the 1% significance level, indicating that financial flexibility provides resource support for R&D activities. This positive correlation confirms Hypothesis 2.

In the Model 4, both financial flexibility (FF) and R&D investment (Yftr) show significant positive correlations with firm performance (TobinQ). The mediation effect test further confirms Hypothesis 4, demonstrating that R&D investment continues to mediate the relationship between financial flexibility and firm performance.

In conclusion, the experimental results pass the robustness test.

Table 9. Robustness Test Results

Variable	(1)	(2)	(3)	(4)
	Model 1	Model 2	Model 3	Model 4
FF	0.976*** (9.496)		0.040*** (10.280)	0.666*** (6.725)
Size	-0.292*** (-22.839)	-0.235*** (-19.117)	-0.010*** (-20.830)	-0.214*** (-16.934)
Cashflow	4.818*** (17.473)	5.680*** (21.992)	-0.059*** (-5.658)	5.275*** (19.957)
Growth	0.858*** (15.569)	0.822*** (15.599)	0.001 (0.549)	0.849*** (16.114)
Indep	0.624** (2.057)	0.349 (1.199)	0.029** (2.512)	0.401 (1.380)
Yftr		8.087*** (25.397)		7.812*** (24.415)
_cons	7.972*** (25.542)	6.370*** (21.051)	0.269*** (22.982)	5.870*** (18.900)
N	6354	6354	6354	6354
R ²	0.180	0.245	0.106	0.251
Adj. R ²	0.180	0.245	0.105	0.250

Note: ***P<0.01, **P<0.05, *P<0.1, with t-values in parentheses

5. Conclusions and Recommendations

5.1. Research Conclusion

Using panel data from A-share listed companies on the main board of Shanghai and Shenzhen stock exchanges from 2019 to 2024, this study investigates the mechanisms and pathways through which financial flexibility and R&D investment influence corporate financial performance, and concludes as follows:

First, financial flexibility demonstrates a significant positive correlation with corporate performance. Empirical results indicate that enhanced financial flexibility significantly boosts corporate financial performance. Second, financial flexibility shows a significant positive relationship with R&D investment, as its reserves provide financial support for R&D activities. Finally, R&D investment serves as a mediating factor between financial flexibility and corporate performance. Studies reveal that financial flexibility not only directly drives corporate performance but also indirectly influences it through increased R&D investment. R&D investment exhibits partial mediating effects between the two, suggesting that companies with high financial flexibility are better equipped to conduct R&D activities. The innovative outcomes of these R&D efforts ultimately translate into improved corporate performance, creating a virtuous cycle.

5.2. Related Suggestions

Based on the research conclusions, this paper puts forward the following suggestions from the perspective of policy makers and enterprise managers:

From a government policy perspective, the priority should be to enhance innovation support. Authorities can alleviate corporate R&D costs through measures like increased subsidies and expanded tax incentives. For instance, adjusting the R&D expense super deduction policy by setting higher deduction rates for high-tech enterprises and SMEs would directly reduce corporate tax burdens. Simultaneously,

streamlining the certification process for high-tech enterprises would enable more eligible companies to access policy benefits promptly, thereby stimulating R&D initiatives. Additionally, establishing dedicated innovation funds could support the commercialization of corporate R&D achievements, helping businesses transform technological innovations into tangible productivity and boosting their market competitiveness and profitability.

Secondly, government departments can further improve the financing system to alleviate corporate funding challenges. To address the limited financing channels and high costs faced by small and medium-sized enterprises (SMEs), authorities should enhance capital market development to diversify corporate financing options. On one hand, encouraging the growth of equity trading markets and lowering the threshold for corporate equity financing can provide SMEs with more direct financing opportunities. On the other hand, guiding financial institutions to develop specialized financial products tailored for innovative enterprises can meet the varying funding needs of businesses at different stages of development. Meanwhile, relevant departments should establish a robust financing guarantee system to reduce lending risks for financial institutions, thereby strengthening corporate financing capabilities and ensuring sufficient funding support for maintaining financial flexibility and conducting R&D activities.

From an enterprise management perspective, the first priority is to adjust financial flexibility reserves in a timely manner based on the company's development stage. Managers should thoroughly consider industry-specific characteristics and the enterprise's lifecycle phase to rationally determine the level and structure of financial flexibility reserves. For instance, growth-stage enterprises facing abundant investment opportunities and market expansion needs can moderately increase debt flexibility to utilize external funding for scaling up production and conducting R&D activities. For mature-stage enterprises with relatively stable market shares but heightened uncertainty risks, managers should prioritize enhancing cash reserves and cash flexibility to address market fluctuations, technological changes, and other contingencies, ensuring stable operations and sustained R&D activities. Additionally, enterprises must regularly assess their financial status and market environment, promptly adjusting financial flexibility reserve strategies to ensure effective risk management while seizing opportunities.

Secondly, establishing a financial flexibility early warning mechanism is crucial to enhance corporate risk resilience. Enterprises can leverage big data technology to monitor key financial and operational metrics like cash flow and debt ratios in real time, thereby developing a financial flexibility early warning model. By setting appropriate threshold values, the system can trigger timely alerts when indicators approach or exceed these thresholds, prompting management to take corrective actions. For instance, when signs of cash flow strain emerge, management may promptly adjust financing strategies to increase external funding. If debt ratios become excessively high, measures such as reducing liabilities and optimizing capital structure can be implemented to prevent further financial risks. Through this financial flexibility early warning mechanism, companies can promptly identify issues in their financial status and R&D activities, enabling proactive adjustments and responses. This ensures the rational reserve and effective utilization of financial flexibility, ultimately safeguarding sustainable corporate development.

Finally, enterprises should strengthen management training to enhance strategic awareness of financial flexibility and R&D investment. The strategic vision and decision-making capabilities of corporate executives play a pivotal role in shaping financial flexibility reserves and R&D investment strategies. Therefore, companies should intensify management training programs to deepen executives' understanding of financial flexibility and R&D investment. Through training courses on financial management and innovation management, executives can grasp the essence, functions, and reserve strategies of financial flexibility, as well as the critical importance of R&D investment for long-term corporate development. Additionally, adopting advanced management concepts and methodologies from both domestic and international sources can cultivate strategic foresight and risk awareness among executives. This enables them to allocate financial resources rationally from a long-term perspective, balance the relationship between financial flexibility reserves and R&D investments, improve financial performance, and ensure sustainable corporate development.

In conclusion, financial flexibility and R&D investment are crucial factors for enterprises to enhance performance and achieve sustainable development. Through collaborative efforts between governments and corporate leaders—by optimizing policy environments, improving financing channels, and strengthening management—these elements can fully leverage their positive synergies, enabling businesses to stand out in fierce market competition.

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