

Research on Flexible Financial Management Strategies of Innovative Enterprises in the Context of Environmental Uncertainty

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Abstract: *Under the background of globalization and informationization, the uncertainty of enterprise environment has increased, which puts forward higher requirements on the financial management of innovative enterprises. This study explores the effectiveness of flexible financial management strategies of innovative enterprises in the context of environmental uncertainty, and reveals the positive role of flexible financial management strategies (covering cash flexibility, liability flexibility and equity flexibility) in enhancing enterprise value through theoretical analysis and empirical tests. A sample of A-share listed companies in China's Shanghai and Shenzhen markets from 2007 to 2020 is taken as the sample, and a multiple regression model is constructed for empirical analysis, which shows that financial flexibility is positively correlated with enterprise value, and the positive effect of financial flexibility is more significant when environmental uncertainty increases. The results show that financial flexibility is positively related to corporate value, and the positive effect of financial flexibility is more significant when environmental uncertainty increases. The case study of Jinjiang International Hotel is also used to demonstrate its practical achievements in the management of financial and equity flexibility, which provides a reference for other innovative enterprises. This study aims to provide theoretical support and practical guidance for innovative enterprises to optimize their financial management strategies in an uncertain environment.*

Keywords: *environmental uncertainty; innovative enterprises; flexible financial management; enterprise value*

1. Introduction

Under the background of globalization and the accelerated development of information technology, the business environment in which enterprises are located is increasingly complex and volatile, and the environmental uncertainty has increased significantly. This uncertainty not only comes from the rapid changes in external market demand, the acceleration of technological iteration and the frequent adjustment of policies and regulations, but also involves the challenges and changes in the internal management mode of enterprises [1]. Innovative enterprises, as an important force to promote the high-quality development of the economy, are facing unprecedented challenges in their financial management. The traditional rigid financial management model has been difficult to adapt to the current highly uncertain environment, while the flexible financial management strategy has gradually become an effective means for enterprises to cope with environmental uncertainty. This study aims to explore in depth how innovative enterprises can use flexible financial management strategy to enhance their adaptive ability and risk-resistant ability and realize sustainable development under the background of environmental uncertainty [2]. Through theoretical analysis and empirical test, this study will reveal the positive role of flexible financial management strategy in enhancing enterprise value, and provide theoretical guidance and practical reference for the financial management practice of innovative enterprises.

2. Theoretical Foundations

2.1 Environmental uncertainty and business management

Environmental uncertainty, as a distinctive feature of the business field, is broadly defined to encompass the unpredictability of market demand, technological advances, policies and regulations,

and the competitive landscape, which originates from changes in the external environment and is also closely related to the internal adjustment of enterprises. To measure this uncertainty, academics often use statistics such as standard deviation and coefficient of variation, combined with qualitative analysis of industry trends and policy changes. The application of big data and artificial intelligence technology further enhances the sensitivity of enterprises to changes in market dynamics and the accuracy of uncertainty assessment. In the face of this challenge, companies need to demonstrate flexibility in strategic planning, such as Huawei's strategy to enhance risk resistance through diversified markets and independent research and development; in operations management, an efficient supply chain becomes a must to ensure that each link responds quickly to the market; and financial management requires the establishment of a risk early warning and optimization of the capital structure in order to enhance robustness. Environmental uncertainty stimulates the organizational learning and innovation ability of enterprises. Continuous learning helps enterprises grasp market trends, while innovation becomes the key to developing new products, expanding markets, and improving efficiency, such as Tesla leading the industry with its electric car technology innovation. Enterprises need to adjust and optimize in all aspects, respond flexibly and innovate continuously in order to maintain competitive advantages and achieve sustainable development in an uncertain environment.

2.2 Overview of flexible financial management theory

As a new paradigm of enterprise management, the importance of flexible financial management is becoming more and more prominent, which transcends the scope of traditional financial management and focuses on flexible adaptation and rapid response in an uncertain environment. This paradigm integrates the idea of flexibility into financial management activities, and through strategic adjustment and optimization of resource allocation, it effectively responds to changes in the internal and external environments and promotes the sustainable development of enterprises. The core features of flexible financial management are flexibility, adaptability and innovation, which can quickly adjust the financial plan to cope with market fluctuations, but also ensure the synergy of the financial management system with the corporate strategy, business model and external environment [3]. For example, through the flexible financial management strategy, enterprises flexibly adjust the investment of funds and optimize the cost structure when the market shrinks, showing its strong market adaptability. Compared with the traditional financial management focus on normality and stability, flexible financial management focuses more on the management of uncertainty and response, realizing the integration of normality and flexibility, and enhancing the adaptability and competitiveness in the complex and changing market environment. The rise of flexible financial management is not only a complementary improvement to the traditional model, but also a profound change in the concept of financial management, requiring managers to enhance professionalism and innovation, accurately grasp the market dynamics, and flexibly adjust the strategy to support the long-term development of enterprises (see Figure 1). With the evolution of the market environment and management level, flexible financial management is gradually becoming an important trend in the field of financial management.

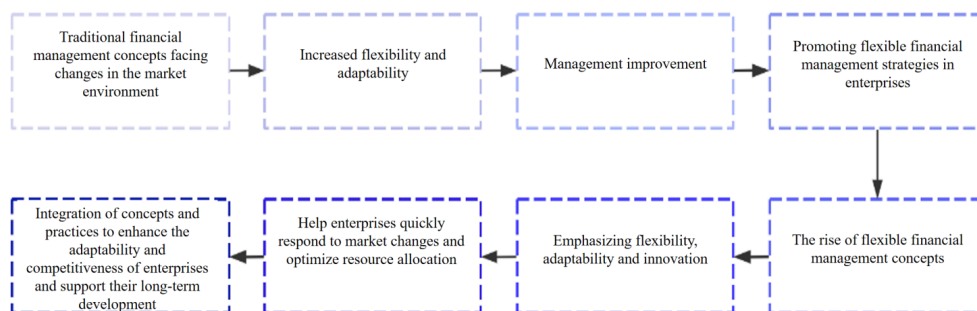


Figure 1. Evolutionary relationship between the concept of flexible financial management and the level of management of the market environment

2.3 Innovative enterprises and financial management

Innovative enterprises, as the engine of high-quality economic development, take technological innovation as the core and continuously introduce new products, services and business models, showing high R&D investment, huge growth potential and coexisting risks and benefits. When pursuing technological breakthroughs, such companies as Huawei, Alibaba, and Jinjiang International

Hotel need to align their financial management closely with their innovation strategies to ensure that R&D funds are sufficient and efficiently utilized, while balancing high-risk investments with a sound financial structure. Environmental uncertainty poses significant challenges to the financial management of these companies, including rapid changes in market demand, accelerated technology iterations, and fluctuations in the policy environment. This requires a high degree of flexibility and predictability in financial management, and the ability to quickly adjust strategies to respond to changes in the environment. In this context, innovative enterprises need to strengthen financial risk management and establish an early warning mechanism to avoid potential risks; at the same time, they need to optimize their capital structure and maintain a moderate degree of financial leverage, so as to ensure the stability of cash flow in the midst of market fluctuations. Environmental uncertainty also drives financial innovation, such as the use of financial technology to improve management efficiency and the adoption of flexible budget management systems to adapt to R&D uncertainty, which not only enhance the financial resilience of enterprises, but also help them seize the first opportunity in the market competition.

3. Analysis of the Impact of Environmental Uncertainty on the Value and Financial Flexibility of Innovative Firms

3.1 Environmental uncertainty and the value of financial flexibility

Environmental uncertainty appears in the operation of innovative enterprises in multiple dimensions, covering market demand, competitive landscape, technological innovation and policies and regulations. Market demand is affected by fluctuations in consumer preferences and changes in market capacity, such as green consumption trends that increase the difficulty of forecasting; the international economic environment, such as the uncertainty of the global trade situation, affects the stability of export business. Competitive landscape is volatile due to the rise of emerging companies utilizing AI and blockchain technologies, forcing companies to frequently adjust their market strategies. Technological innovations face the dual challenges of high costs and uncertain returns, such as electric vehicles and autonomous driving technologies. Frequent adjustments in policies and regulations and increased regulation, such as changes in data protection, tax, and environmental policies, directly affect the operating costs and market access of enterprises. Against this backdrop, financial flexibility becomes the key to cope with uncertainty, enhancing liquidity through excess cash holdings, lowering refinancing costs, meeting precautionary and speculative needs, and helping innovative firms respond quickly to market opportunities and create value. Therefore, it is hypothesized that financial flexibility is positively related to firm value, and that financial flexibility enhances the value of innovative firms more significantly when environmental uncertainty increases.

3.2 Modeling environmental uncertainty and financial management of innovative firms

This study selects a sample of innovative companies listed on A-shares in China's Shanghai and Shenzhen markets from 2007 to 2020, and retains 6917 valid observations after rigorous screening, with the data originating from the Cathay Pacific database. Enterprise value (TobinQ) is used as the explanatory variable, and its calculation is based on the sum of bond and equity values. The explanatory variables cover financial flexibility (CFF) and environmental uncertainty (pvar), where financial flexibility is assessed by a combination of firm-industry cash ratio spreads and debt ratio spreads, and environmental uncertainty is characterized by the coefficient of variation of the firm's stock price. In order to control potential disturbing factors, fixed asset ratio (ppe), operating income growth rate (sale_gr), year (Year) and industry (Inds) are introduced as control variables. In order to deeply analyze the relationship between financial flexibility and enterprise value and explore the moderating role of environmental uncertainty, this study constructs two multiple regression models. Model 1 directly examines the relationship between financial flexibility and enterprise value; model 2, on this basis, incorporates environmental uncertainty and its interaction term with financial flexibility to more comprehensively reveal the complexity of the association between the three. The two models are formulated as follows:

$$\text{Model 1: Tobin}Q_{i,t} = a_0 + a_1 \text{CFF}_{i,t-1} + a_2 \text{ppe}_{i,t} + \text{ppe}_{i,t} a_3 \text{sale_gr}_{i,t} + a_4 \text{Year} + a_5 \text{Inds} + \epsilon_{i,t}$$

$$\text{Model 2: Tobin}Q_{i,t} = a_0 + a_1 \text{CFF}_{i,t-1} + a_2 \text{pvar}_{i,t} + a_3 (\text{CFF}_{i,t-1} \times \text{pvar}_{i,t}) + a_4 \text{ppe}_{i,t} + a_5 \text{sale_gr}_{i,t} + a_6 \text{Year} + a_7 \text{Inds} + \epsilon_{i,t}$$

3.3 Descriptive statistics, correlation analysis and model validation

Descriptive statistics in this study reveal that the mean value of innovative firms' value is 2.7835, indicating that their capital has achieved the goal of preserving and increasing its value, while the mean value of financial flexibility is only 0.0044, reflecting that most innovative firms have neglected their financial flexibility reserves (see Table 1).

Table 1. Descriptive statistics of the overall sample

Variant	Sample volume	Average value	Standard deviation	Minimum value	Maximum values
tobinQ	6917	2.7835	2.1416	0.8743	12.5988
CFF	6917	0.0044	0.2746	-0.6011	0.7826
pvar	6917	0.2003	0.1073	0.0452	0.6097
ppe	6917	0.2304	0.1689	0.0017	0.7188
sale_gr	6917	0.0937	0.3262	-0.9975	1.6282

Correlation analysis further shows that the value of innovative enterprises is positively correlated with financial flexibility (correlation coefficient 0.194, significant level 1%) and environmental uncertainty (correlation coefficient 0.310, significant level 1%), which supports Hypothesis 1 that financial flexibility enhances the value of innovative enterprises and suggests that an increase in environmental uncertainty is conducive to the enhancement of their value. Financial flexibility is positively correlated with environmental uncertainty (correlation coefficient 0.041, significant level 1%), which preliminarily verifies hypothesis 2 that financial flexibility enhances the value enhancement of innovative enterprises when environmental uncertainty increases (see Table 2).

Table 2. Overall sample correlation analysis

	tobinQ	CFF	pvar	ppe	sale gr
tobinQ	1				
CFF	0.194***	1			
pvar	0.310***	0.041***	1		
ppe	-0.167***	-0.158***	-0.103***	1	
sale_gr	0.065***	-0.00500	0.023**	-0.105***	1

In the multiple regression analysis, the Adjusted of model 1 is 0.3120, and the regression coefficient of financial flexibility is 1.6709 (significant level of 1%), which confirms the positive relationship between financial flexibility and the value of innovative firms, and supports hypothesis 1. The Adjusted of model 2 is increased to 0.3448, and the coefficient of the cross term of financial flexibility and environmental uncertainty is 5.5511, which strengthens the positive moderating effect of environmental uncertainty on the relationship between financial flexibility and the value of innovative firms (see Table 3). The positive moderating effect of environmental uncertainty on the relationship between financial flexibility and innovative enterprise value verifies hypothesis 2 (see Table 3).

Table 3. Relationship between environmental uncertainty, financial flexibility and innovative firm value

Variant	Model 1		Model 2	
	Modulus	VIF	Modulus	VIF
CFF	1.6709*** (20.18)	1.14	0.4047** (2.42)	4.87
pvar			3.7783*** (15.83)	1.34
CFF×pvar			5.5511*** (8.02)	4.80
ppe	-0.8910*** (-5.38)	1.61	-0.7695*** (-4.76)	1.62
sale_gr	-0.0068 (-0.10)	1.12	-0.0865 (-1.24)	1.12
Constant	3.2927*** (11.73)		2.7591*** (10.00)	
Observations	6917		6917	
Adjusted R ²	0.3120		0.3448	

Note: *, **, *** denote significant correlation at 10%, 5%, and 1% levels (two-sided), respectively.

The robustness test validates the analytical findings of financial flexibility through dummy

variables and ensures the stability and reliability of the findings.

4. Discussion

4.1 Flexible management of funds

Flexible capital management is a key part of enterprise financial management, which involves cash reserve and cash flow management strategy, as well as optimization of liability structure and choice of financing channels. In terms of cash reserves, enterprises need to dynamically adjust the level of cash reserves according to the market environment and their own business characteristics, in order to cope with potential market risks and seize investment opportunities. For example, for industries with strong cyclicalities, enterprises should accumulate cash at the trough of the industry in order to expand rapidly when the industry recovers. Enterprises also need to focus on the stability and predictability of cash flow, and ensure the adequacy and stability of cash flow by optimizing accounts receivable management and strengthening inventory control. In terms of debt structure optimization, enterprises should reasonably match short-term liabilities with long-term liabilities to reduce financial risks and financing costs. For projects that require a large amount of capital investment, enterprises can raise funds by issuing long-term bonds or applying for long-term loans to reduce the pressure of short-term debt repayment [4]. Enterprises should also actively expand financing channels, make full use of the capital market, raise funds through equity financing, bond financing and other ways to meet the capital needs of enterprise development. Through the scientific flexible management of funds, enterprises can maintain financial flexibility in the uncertain market environment and provide a strong guarantee for the sustainable development of enterprises.

4.2 Equity and comprehensive flexible management

The flexible management of corporate equity focuses on the adjustment of dividend policy and equity structure, as well as the improvement of financial risk early warning, internal control and auditing systems, while emphasizing the importance of information technology construction and data-driven decision-making. In terms of dividend policy, enterprises need to flexibly adjust dividend distribution according to their own operating conditions and future plans, such as growth-oriented enterprises tend to prefer low dividend reinvestment strategy, while mature enterprises may maintain stable dividends to attract long-term investors. In terms of equity structure adjustment, enterprises should take measures such as equity repurchase, issuance of additional shares or share allotment in a timely manner according to the market environment and strategic needs to optimize the equity structure and enhance governance efficiency [5]. Tencent's share repurchase program has effectively increased the share price and optimized the shareholder structure, demonstrating the effectiveness of flexible management of equity. In the face of environmental uncertainty, enterprises should build a financial risk early warning mechanism, use big data and artificial intelligence technology to monitor the financial situation in real time, and ensure the authenticity and compliance of financial information by combining a sound internal control system and internal auditing, for which Huawei's practice provides a model. Informatization and data-driven decision-making have become the key to comprehensive and flexible enterprise management. By building an integrated financial management information system, real-time data sharing and analysis can be achieved, such as Amazon.com's use of a data analysis platform to optimize supply chain, inventory and sales management, reduce costs and improve profitability. Enterprises also need to cultivate a culture of data-driven decision-making and encourage scientific decision-making based on data to enhance the ability to cope with environmental uncertainty.

4.3 Practical case study: flexible financial management of Jinjiang International Hotel

Jin Jiang International Hotel, as a leader and innovation model in China's hotel industry, has demonstrated its excellent flexible financial management capability in the face of multiple challenges of macroeconomic fluctuations, changes in market demand and intensified competition in the industry. In the global economic environment, the hotel industry is generally experiencing the pressure of declining occupancy and rising costs, but Jin Jiang International Hotel has effectively responded to these difficulties and maintained stable financial performance with innovative strategies and multi-dimensional flexible financial management. In terms of flexible capital management, Jin Jiang Hotels flexibly adjusted its cash reserves to ensure sufficient liquidity during market fluctuations, and optimized its debt structure by rationally allocating short-term and long-term borrowings to reduce

financing costs and enhance financial flexibility. In terms of equity flexibility management, Jin Jiang Hotel has implemented a stable dividend policy while maintaining the flexibility of equity adjustment, which not only protects the interests of shareholders, but also retains sufficient capital for the future development of the enterprise. For example, Jin Jiang Hotel has maintained a high dividend payout ratio in 2022, sending a positive signal to the market and consolidating investor confidence. Jin Jiang Hotel also attaches importance to information technology construction, using big data analysis to predict market demand, optimize resource allocation and improve operational efficiency. The dynamic changes in Jin Jiang Hotel's assets and liabilities in recent years (see Table 4) further confirm its robust development under its flexible financial management strategy.

Table 4. Changes in Assets and Liabilities of Jinjiang Hotels, 2018-2022

Sports event	2018	2019	2020	2021	2022
Current assets	98.35	84.96	94.18	98.74	104.63
Noncurrent asset	302.97	303.78	292.18	387.26	369.68
Total assets	401.32	388.74	386.36	486.00	474.31
Current liability	80.50	76.14	78.17	123.43	118.11
Noncurrent liability	182.84	169.05	171.14	187.47	184.70
Total liabilities	263.34	245.19	249.31	310.90	302.81
Owners' equity	137.98	143.56	137.06	175.11	171.51

(Data Source: <https://money.finance.sina.com.cn>) (in billions of dollars)

Jin Jiang International Hotel's flexible financial management practices provide valuable experience for the industry, emphasizing the importance of flexible adjustments to the capital structure, moderate cash reserves and reasonable debt ratios to cope with market risks. Stable dividend policy and flexible equity adjustment strategy balances the interests of shareholders and the needs of corporate development. Informatization construction and data-driven decision-making enhance the efficiency of financial management, accurately grasp the pulse of the market through big data analysis, optimize resource allocation, and improve operational efficiency [6]. The practice of Jinjiang International Hotel not only provides an effective strategy for innovative enterprises to deal with uncertainty, but also provides a useful reference for financial management innovation.

5. Conclusion

This study focuses on the effectiveness of flexible financial management strategy of innovative enterprises under the background of environmental uncertainty, and through theoretical analysis and empirical tests, it is found that environmental uncertainty significantly affects the financial management decisions and performance of enterprises, and the flexible financial management strategy shows a positive role in enhancing enterprise value. Innovative enterprises need to build a flexible financial management system, by dynamically adjusting the capital structure, optimizing the proportion of liabilities and implementing a flexible dividend policy, in order to enhance the financial adaptability and risk-resistant ability. Strengthen the construction of informationization and use emerging technologies to improve the efficiency of financial management. Although the study has achieved certain results, there are limitations in the sample selection and data analysis methods. In the future, we should expand the sample scope, optimize the analysis methods, and explore the combination of new technologies and flexible financial management strategies, as well as the impact of the global economic situation and policy adjustments on the financial management of innovative enterprises.

References

- [1] Xu Zexia. *Corporate financial flexibility and performance under environmental uncertainty*[D]. China Academy of Financial Sciences, 2024.
- [2] Chi Dongmei. *Research on the impact of financial flexibility on corporate entrepreneurial orientation and its effectiveness under uncertain environment*[D]. Shandong University, 2019.
- [3] Shi Xiaowei. *Literature review of financial flexibility and enterprise value*[J]. *Wealth era*, 2024, (09):44-46.
- [4] Huang Yuqi, Yuan Chang. *A study on the relationship between financial flexibility, R&D investment and high-tech enterprise performance*[J]. *Modern Business*, 2024, (17):182-188.
- [5] Wang Fengyi. *Research on the impact of enterprise digital transformation on financial flexibility*[D]. Xi'an University of Technology, 2024.
- [6] Liu Peishan. *Research on the risk of enterprise diversification under the perspective of financial flexibility*[D]. Guizhou University of Finance and Economics, 2024.