Impact of Monetary Policy on Corporate Capital Structure Adjustment in a Financial Development Environment

Abstract:

This study aims to investigate the impact of monetary policy on the adjustment of corporate capital structure within the environment of financial development, focusing on listed companies at the Shenzhen Stock Exchange. Utilizing data from 2011 to 2021, the research employs regression analysis and generalized method of moments (GMM) to explore how quantity-based and price-based monetary policies influence capital structure adjustments. The findings indicate that changes in monetary policy significantly affect corporate capital structure adjustments. Specifically, quantity-based monetary policies accelerate these adjustments, though their impact is moderated by the level of financial development. In contrast, price-based monetary policies consistently exert a positive influence on capital structure adjustments. This study contributes to the understanding of monetary policy's role in corporate finance, providing empirical evidence from China's evolving financial market.

Keyword: Financial development, Monetary policy, Capital structure

Introduction

In the field of economics, the adjustment of corporate capital structure has always been a focal point for experts and scholars. The development of the financial industry and shifts in monetary policy directly impact corporate capital structure, influencing both enterprise value and management orientation. Recently, the global economy has experienced volatility, and the development of the financial industry has slowed. In response, Chinese governments at various levels have proactively adjusted monetary policies to help enterprises accelerate capital structure adjustments, maximize value, and improve overall competitiveness.

Financial development, monetary policy, and corporate capital structure have been extensively studied internationally. Fisher, a classical economist, examined these issues from the perspective of monetary policy transmission mechanisms and proposed the theory of "long-term neutrality of money"(Sun & Peng, 2021). By analyzing historical data, he confirmed the short-term effectiveness of monetary policy. One major reason for adjusting corporate capital structure is enterprise liabilities. Mayers et al. introduced the "trade-off theory"(Li & Deng, 2014), demonstrating that enterprises could enhance value by increasing liabilities, leveraging the tax shield effect. They also summarized the tax-saving benefits and financial difficulties associated with enterprise liabilities, ultimately deriving optimal solutions for capital structure adjustments (Zhu & Zhang, 2018).

In contrast, research in China on financial development, monetary policy, and corporate capital structure adjustment began later. Yuan Chunsheng and Guo Jinru studied the types, categories, and main functions of monetary policy, highlighting the importance of considering changes in financing costs, firm size, and other factors when adjusting corporate capital structure (Song et al., 2014). Smaller firms face greater financing constraints, while larger firms experience fewer constraints. Jiang Guohua and Rao Pin'gui analyzed micro corporate financial behaviors, drawing from Sismondi and Keynes' economic crisis theories. Wei Yue and Xu Miao emphasized state intervention as a means to help enterprises navigate crises.

With the rapid development of China's financial market, maintaining stable trading order is crucial. Monetary policy, as an economic lever, plays a significant role in macro-control, facilitating the adjustment of corporate capital structure. In a market economy, it is essential to accurately understand and evaluate the relationships and impacts among financial development, monetary policy, and corporate capital structure adjustments scientifically (Wang et al., 2016).

I. Theories and Hypotheses

(I) The Impact of Quantity-based Monetary Policy on the Adjustment of Capital Structure Under the Environment of Financial Development

Finance is inherently linked to currency, and the evolution of financial markets often necessitates adjustments in monetary policy. Quantity-based monetary policy, a price-adjusting tool employed by the People's Bank of China, targets the money supply to regulate macroeconomic indicators like GDP and CPI (Hu & Lin, 2015). This policy aims to influence the business indicators of listed companies by adjusting macroeconomic variables (Jiang et al., 2021). As the financial industry develops, it can prompt timely adjustments in monetary policy, thereby accelerating corporate capital structure adjustments. However, the uneven development of financial sectors across different regions in China poses challenges. For instance, the proliferation of online financial institutions has expanded financing channels but also introduced risks to capital structure adjustments. Yue Chaoyun and Niu Linlin highlighted that quantity-based monetary policy rules effectively explain China's monetary policies and can expedite corporate capital structure adjustments through macroeconomic control measures. Thus, we propose the following hypothesis:

H1: Financial development and quantity-based monetary policy positively impact the acceleration of corporate capital structure adjustment.

(II) Financial Development, Quantity-Based Monetary Policy, and the Adjustment Degree of Corporate Capital Structure

The Chinese economy has faced inflation, rising prices, and currency depreciation, creating instability in financial markets. From a monetary circulation perspective, currency depreciation has increased the cost of corporate capital structures. Governments and financial institutions must adjust monetary policies to better support these adjustments. Although quantity-based monetary policies can monitor economic indicators at a macro level, they are challenging to manage due to their broad scope. Atkeson noted that while these policies are easy to implement, they can lead to negative effects like sudden economic slowdowns, which are detrimental to optimizing capital structures (Wang & Zhang, 2021). Furthermore, financial innovation complicates the implementation of quantity-based tools. Hu Xinzhi identified several challenges, such as changes in central bank control channels, money multiplier instability, difficulties in measuring currency accurately, and increased endogeneity of money supply(Tang et al., 2014). These factors weaken the efficacy of quantity-based policies. Therefore, we propose the following hypothesis:

H2: Financial development and quantity-based monetary policy negatively impact the adjustment degree of corporate capital structure.

(III) The Impact of Price-based Monetary Policy on the Adjustment of Capital Structure Under the Environment of Financial Development

Price-based monetary policy, like its quantity-based counterpart, is used by the Chinese government or central bank to influence economic activities. However, it focuses on affecting financial costs and income expectations at a microeconomic level (Wang et al., 2018). This policy regulates asset prices by controlling price variables and significantly impacts economic behaviors. The financial crisis has increased calls for price-based policies. Xie Ping and Luo Xiong compared these two monetary tools, suggesting that the deviation between standard and actual interest rates reflects the time lag between policy implementation and economic conditions (Ruan, 2018). Despite the Taylor rule's ability to describe interbank lending rates trends, destabilizing factors persist (Li & Yu, 2021). Price-based policies can maximize microeconomic control, and financial market innovations support their implementation. These policies can mitigate external financing risks and enhance firms' ability to adjust capital structures by indirectly modifying macroeconomic variables. Thus, we propose the following hypothesis:

H3: Under the environment of financial development, price-based monetary policy positively influences corporate capital structure adjustment.

(IV) Financial Development, Monetary Policy, and the Deviation Degree of Corporate Capital Structure

In economics, the deviation of corporate capital structure refers to the proportion of the absolute difference between actual and target capital structures relative to the target structure (Wang, 2018). Financial development and monetary policies, especially price-based ones, evolve with new risks and challenges. Governments and financial institutions actively respond by adjusting these policies. When actual capital structure adjustments fall short of expected targets, deviations occur. Wang Hao and Zhao Jun analyzed this and found positive correlations between firm size, growth rate, and capital structure deviation (Wang, 2018). Favorable financial development and monetary policy adjustments can reduce these deviations, helping firms achieve target capital structures more efficiently. Thus, we propose the following hypothesis:

H4: The financial development environment can better help enterprises approach their target capital structure.

II. Research Methods

(I) Sample Selection and Data Source

Given the substantial differences in factors influencing stock markets in China and the varying accounting standards of financial systems, this study focuses on A-share listed companies at the Shenzhen Stock Exchange. We selected companies listed before 2011, and the financial data of these companies from 2011 to 2021 served as the sample data. We excluded financial companies due to their distinct capital structures and management methods, as well as companies with abnormal financial conditions, including those running deficits for more than three consecutive years or with an asset-liability ratio below 0 or above 1. Based on these criteria, we obtained 7,325 observed values from 765 listed companies. The financial data were primarily sourced from RESSET Industrial Financial Database, RESSET Industrial Enterprise Database, CCER Database, and CSMAR Database, while monetary policy data were obtained from the People's Bank of China's official website and central bank statistical yearbooks (Wang & Liu, 2018).

(II) Setting and Establishment of Model

To illustrate the structural differences among enterprises and ensure research rigor, we selected enterprise characteristic variables to fit their target capital structures. The specific model is shown in Eq. (1):

$$LEV_{it}^{*} = \alpha_{it} X_{it} \quad (1)$$

In Eq. (1), LEV_{it}^{*} represents the target capital structure of the enterprise, and X_{it} includes characteristic variables such as business solvency, tangible assets (TANG), firm growth (SGROW), firm size (LNA), and business performance (ROA). The actual capital structure is modeled in Eq. (2):

$$LEV_{it} = \delta_{it} LEV_{it}^{*} + (1 - \delta_{it}) LEV_{it-1} + \varepsilon_{it} \quad (2)$$

Here, δ_{it} is the adjustment response coefficient, indicating the speed of adjustment towards the target capital structure based on monetary policy changes. A smaller δ_{it} suggests a slower adjustment. ε_{ij} is a random disturbance term. Integrating Model (1) into Model (2), we derive:

$$LEV_{it} = \delta_{it} a_{it} X_{it} + (1 - \delta_{i,t}) LEV_{it-1} + Y_i + \varepsilon_{it} \quad (3)$$

For the selection of monetary policy tools, to accurately verify the relationship between dynamic adjustment speed of corporate capital structure, financial development, and monetary policy implementation, we included a dummy variable for industrial characteristics Y_i . Both quantity-based and price-based monetary policies were considered. The resulting dynamic models are:

(1) Quantity-based Monetary Policy:

$$LEV_{it} = \lambda FIR_{it-1} + \gamma FIR_{it-1} + \delta_{it} a_{it} X_{it} + (1 - \delta_{it}) LEV_{it-1} + Y_i + \varepsilon_{it} \quad (4)$$

$$LEV_{it} = \lambda ML_{it-1} + \gamma ML_{it-1} + \delta_{it} a_{it} X_{it} + (1 - \delta_{it}) LEV_{it-1} + Y_i + \varepsilon_{it} \quad (5)$$

$$LEV_{it} = \lambda_1 FIR_{it-1} LEV_{it-1} + \lambda_2 ML_{it-1} LEV_{it-1} + \lambda_3 FIR_{it-1} ML_{it-1} LEV_{it-1} + \gamma_1 FIR_{it-1} + \gamma_2 RATE_{it-1} + \gamma_3 FIR_{it-1} RATE_{it-1} + \delta_{it} a_{it} X_{it} + (1 - \delta_{it}) LEV_{it-1} + Y_i + \varepsilon_{it} \quad (6)$$

(2) Price-based Monetary Policy:

$$LEV_{it} = \lambda FIR_{it-1} + \gamma FIR_{it-1} + \delta_{it} a_{it} X_{it} + (1 - \delta_{it}) LEV_{it-1} + Y_i + \varepsilon_{it} \quad (7)$$

$$LEV_{it} = \lambda RATE_{it-1} + \gamma RATE_{it-1} + \delta_{it} a_{it} X_{it} + (1 - \delta_{it}) LEV_{it-1} + Y_i + \varepsilon_{it} \quad (8)$$

$$LEV_{it} = \lambda_1 FIR_{it-1} LEV_{it-1} + \lambda_2 RATE_{it-1} LEV_{it-1} + \lambda_3 FIR_{it-1} RATE_{it-1} LEV_{it-1} + \gamma_1 FIR_{it-1} + \gamma_2 RATE_{it-1} + \gamma_3 FIR_{it-1} RATE_{it-1} + \delta_{it} a_{it} X_{it} + (1 - \delta_{it}) LEV_{it-1} + Y_i + \varepsilon_{it} \quad (9)$$

In these equations, δ_{it} represents the coefficient of LEV_{it-1}, indicating the adjustment speeds of corporate capital structure.

(III) Selection of Empirical Models

To thoroughly analyze the impact of monetary policy on the adjustment of corporate capital structure under the environment of financial development, this study employs both the Generalized Method of Moments (GMM) and the Least Squares Method. The selection of these empirical models is driven by the need to address specific econometric challenges and ensure robust results.

Generalized Method of Moments (GMM)

The GMM is utilized primarily to address potential endogeneity issues that may arise from the dynamic nature of the panel data used in this study. Endogeneity can occur due to omitted variable bias, measurement errors, or simultaneity, leading to biased and inconsistent parameter estimates if not properly addressed.

1. **Dynamic Panel Data:**

- The dynamic nature of corporate capital structure adjustments necessitates the use of lagged dependent variables as regressors, which can introduce endogeneity. GMM effectively handles this by using internal instruments, such as lagged levels and differences of the variables, to provide consistent and efficient estimates.

2. **Control for Unobserved Heterogeneity:**

- GMM allows for the control of unobserved firm-specific effects, which might be correlated with the explanatory variables. This is crucial in ensuring that the estimated relationships genuinely reflect the impact of monetary policies and financial development on capital structure adjustments.

3. **Robustness to Model Specification:**

- The GMM approach is flexible and robust to different model specifications and distributional assumptions, making it suitable for analyzing complex relationships in panel data settings.

Least Squares Method

The Least Squares Method, specifically Ordinary Least Squares (OLS) and Fixed Effects (FE) models, is employed to provide baseline estimates and facilitate comparison with GMM results. This method is chosen for its simplicity and interpretability, allowing for an initial understanding of the relationships under study.

1. **Baseline Analysis:**

- OLS is used to provide straightforward and easily interpretable baseline estimates of the impact of monetary policy on capital structure adjustments. It helps in identifying basic patterns and correlations in the data.

2. **Fixed Effects Model:**

- The FE model controls for time-invariant unobserved heterogeneity by differencing out individual effects. This is particularly useful when focusing on within-firm variations over time, isolating the impact of monetary policies and financial development from firm-specific characteristics that do not change over the study period.

Justification for Model Selection

The combination of GMM and Least Squares methods is strategically chosen to balance robustness and simplicity. GMM addresses the endogeneity and dynamic aspects of the data, ensuring reliable parameter estimates, while the Least Squares Method provides a clear and interpretable baseline for comparison. This comprehensive approach enhances the credibility and robustness of the study's findings, offering nuanced insights into how monetary policy and financial development influence corporate capital structure adjustments.

Recent Literature

Recent studies have increasingly adopted GMM for dynamic panel data analysis to mitigate endogeneity concerns. For instance, Arellano and Bover (1995) and Blundell and Bond (2002) highlight the effectiveness of GMM in providing consistent estimates in the presence of endogenous regressors. Moreover, Hsiao (2022) emphasizes the importance of addressing endogeneity in panel data models, advocating for the use of GMM to achieve reliable results. These studies underscore the relevance and appropriateness of employing GMM in analyzing the dynamic adjustments of corporate capital structure in response to monetary policy changes.

(IV) Selection and Definition of Variables

Based on the hypotheses, financial development and monetary policies (quantity-based and price-based) are explanatory variables, with corporate income tax, non-debt tax shield, corporate profitability, liquidity of funds, and firm size as control variables. We examined the relationships among these variables as follows:

1. Explanatory Variables:

- **Financial Development (FIR)**: Measured by the balance ratio of all loans in financial institutions to GDP (Cao, 2021)(Sun & Tan, 2021).
- **Quantity-based Monetary Policy (ML)**: Measured by the growth rate of current purchasing power.
- **Price-based Monetary Policy (RATE)**: Measured by the one-year loan prime rate set by the central bank.

2. Explained Variable:

- **Corporate Capital Structure (LEV)**: To optimize capital structure, adjustments are made to the stock, increment, and decrement of the enterprise.

3. Control Variables:

- **Industry Factor (Y)**: Overall rating by securities companies.
- **Business Solvency**: Ability to repay debts.
- **Tangible Assets (TANG)**: Ratio of fixed net assets and inventory assets to total assets.
- **Firm Growth (SGROW)**: Increase in current business income compared to previous income.
- **Firm Size (LNA)**: Natural logarithm of total assets.
- **Business Performance (ROA)**: Assessment of management ability in production and operation activities.

Controlling for Endogeneity and Lagged Data

To address endogeneity, we used the generalized method of moments (GMM), which accounts for potential endogeneity issues by using lagged variables as instruments. The inclusion of one-period lagged data helps capture the dynamic nature of capital structure adjustments, ensuring that the models accurately reflect the impact of monetary policy over time. This approach enhances the robustness and validity of our

findings.

Table 1 Selection and Definition of Variables

Type	Variable	Symbol	Explanation
Explained variable	Corporate capital structure	LEV	The sum of the stock, increment and decrement of an enterprise
Explanatory variables	Financial development	FIR	The ratio of the loan balance of financial institutions to GDP at the end of the year
	Quantity-based monetary policy	ML	The growth rate of the current purchasing power of an enterprise
	Price-based monetary policy	RATE	The one-year loan prime rate of the central bank
Control variables	Industry factor	Y	The economic business, investment banking business, asset management business, overall strength and innovation ability of securities companies
	Business solvency	Business solvency	The ability of an enterprise to repay debts as they come due
	Tangible assets	TANG	(Fixed net assets +inventory assets)/total assets
	Growth	SGROW	(Current business income- previous business income) previous business income
	Firm size	LNA	The natural number of the total assets of an enterprise
	Business performance	ROA	The overall assessment of an enterprise's management ability for various production and operation activities.

III. Empirical Analysis

(I) Statistical Description

To comprehensively understand the relationship between financial development, monetary policy, and corporate capital structure adjustment, we conducted a descriptive analysis of data from listed companies between 2011 and 2021. During this period, the maximum adjustment of corporate capital structure was 0.891, and the minimum was 0.142, indicating significant variation in financing abilities among companies in different regions. Financial development levels also varied, with a maximum value of 2.196 and a minimum of 0.595, reflecting uneven development across regions. The quantity-based monetary policy showed relatively stable values, with a maximum of 0.287 and a minimum of 0.025, while the price-based monetary policy exhibited greater variability, with a maximum of 5.983 and a minimum of 0.611. This suggests that

price-based policies have experienced more instability over the past decade.

Table 2 Statistical Description

Variable	N	Maximum	Minimum	Mean	Standard Deviation
LEV	7987	0.891	0.142	0.497	0.158
FIR	7987	2.196	0.595	1.165	0.399
ML	7987	0.287	0.025	0.176	0.077
RATE	7987	5.983	0.611	3.018	1.184
TANG	7987	0.598	0.003	0.139	0.116
LNA	7987	0.051	0.002	0.012	0.007
SGROW	7987	0.997	0.512	0.919	0.069
ROA	7987	0.894	−0.712 -0.712	0.168	0.184
Business solvency	7987	0.106	0.067	0.079	0.012

(II) The Impact of Monetary Policy on the Adjustment of Corporate Capital Structureunder the environment of financial development

1. Regression Analysis of the Relationship among Financial Development, Quantity-based Monetary Policy and Adjustment of Corporate Capital Structure

We divided China into highly developed, developed, and underdeveloped regions and performed regression analyses to test Hypotheses 1 and 2. In highly developed areas, the interaction term FIRML between quantity-based monetary policy and financial development was significant, as was *FIR*LEV between financial development and corporate capital structure. However, the negative coefficients suggest that financial development significantly accelerates capital structure adjustments by alleviating financing constraints.

In developed areas, similar significant relationships were observed, but the coefficients of *FIR*LEV and *FIR*ML were negative, indicating that financial development negatively impacts the degree of corporate capital structure adjustment under quantity-based monetary policy. Underdeveloped areas showed results consistent with the other regions. In the full sample, positive coefficients for the interaction terms indicated that the effectiveness of financial development and quantity-based monetary policy on capital structure adjustment was weakened. Thus, Hypotheses 1 and 2 were supported.

Table 3 Regression Analysis of the Relationship among Financial Development, Quantity-based Monetary Policy and Adjustment of Corporate Capital Structure

Dependent Variable (LEV)				
	Highly Developed Areas	Developed Areas	Underdeveloped Areas	Full Sample
One-period lagged				
LEV	1.147***	1.285***	1.280***	0.641***
	(0.000)	(0.001)	(0.001)	(0.000)
FIR	0.374***	1.112***	0.528***	0.273***
	(0.000)	(0.000)	(0.001)	(0.000)
FIR*LEV	-0.898***	-1.724***	-1.187***	−0.657***
	(0.000)	(0.000)	(0.000)	(0.000)
ML	0.007***	0.011*	0.010	0.003
	(0.005)	(0.065)	(0.148)	(0.142)
ML*LEV	-0.013***	-0.017	-0.024*	-0.004
	(0.003)	(0.124)	(0.076)	(0.108)
FIR*ML	-0.004***	-0.017**	-0.011*	-0.002**
	(0.001)	(0.028)	(0.064)	(0.023)
FIR*ML*LEV	0.011***	0.027*	0.024**	0.006**
	(0.000)	(0.068)	(0.043)	(0.023)
Business solvency	0.016***	-0.007	0.012	0.011**
	(0.003)	(0.248)	(0.169)	(0.014)
TANG	0.003	0.147	-0.118	-0.032
	(0.912)	(0.128)	(0.149)	(0.497)
SGROW	-0.006**	0.001	-0.011***	-0.005**
	(0.029)	(0.773)	(0.004)	(0.039)

LNA	-0.251***	-0.148	0.000	-0.216***
	(0.000)	(0.109)	(0.987)	(0.000)
ROA	-0.001	-0.021	0.019	0.014
	(0.964)	(0.701)	(0.803)	(0.694)
Interceptterm	-0.895***	-1.174***	-0.705**	-0.467**
	(0.002)	(0.006)	(0.011)	(0.031)
N	4962	1648	1364	8198
Time /Industry control	Y	Y	Y	Y
Estimation method	Generalized method of moments	Generalized method of moments	Generalized method of moments	Generalized method of moments
AR(2)_p	0.124	0.854	0.147	0.135
Hansen_p	0.179	0.609	0.108	0.172
Robust standard error	Y	Y	Y	Y

*Note: Asterisks indicated the significant features presented by different coefficients, *, ** and *** were 0.1, 0.05 and 0.01 respectively, AR(2) indicated that there was no second-order autocorrelation in the disturbance term, and the test of P value corresponding to hansen indicated that the instrumental variable was free from over-identification.*

2. Regression Analysis of the Relationship among Financial Development, Price-based Monetary Policy and Adjustment of Corporate Capital Structure

At present, China's monetary policies include both quantity-based and price-based approaches (Chen et al., 2020). Table 4 shows that financial development enhances the impact of price-based monetary policy on corporate capital structure adjustment. To verify Hypothesis 3, we analyzed three sets of interaction terms: financial development and corporate capital structure, financial development and price-based monetary policy, and their combined effect on corporate capital structure.

Across highly developed, developed, and underdeveloped regions, financial development and corporate capital structure were negatively correlated, while the interaction terms were positive. This suggests that financial development, through price-based monetary policy, positively influences corporate capital structure adjustment by affecting enterprise value and economic behavior. Thus, Hypothesis 3 was confirmed.

Table 4 Regression Analysis of the Relationship among Financial Development, Price-based Monetary Policy and Adjustment of Corporate Capital Structure

Dependent Variable (LEV)				
	Highly Developed Areas	Developed Areas	Underdeveloped Areas	Full Sample
One-period lagged				
LEV	0.629***	1.714***	2.043***	0.459***
	(0.000)	(0.000)	(0.000)	(0.000)
FIR	0.338***	1.305***	0.898***	0.294***
	(0.000)	(0.000)	(0.000)	(0.000)
FIR*LEV	−0.497***	−2.046***	−1.621***	−0.385***
	(0.000)	(0.000)	(0.000)	(0.000)
RATE	0.025***	0.124***	0.136***	0.016**
	(0.003)	(0.001)	(0.000)	(0.049)
RATE*LEV	−0.025***	−0.196***	−0.214***	−0.028*
	(0.006)	(0.002)	(0.000)	(0.079)
FIR*RATE	−0.024***	−0.138***	−0.129***	−0.014**
	(0.001)	(0.002)	(0.000)	(0.014)
FIE*RATE*LEV	0.034***	0.299***	0.267***	0.028**
	(0.000)	(0.002)	(0.000)	(0.021)
Business solvency	0.013***	−0.009	0.009	0.011**
	(0.002)	(0.207)	(0.293)	(0.028)
TANG	0.008	0.177*	−0.147	0.018
	(0.778)	(0.068)	(0.109)	(0.714)
SGROW	−0.011***	0.001	−0.004	−0.005*
	(0.001)	(0.728)	(0.307)	(0.041)
LNA	−0.258***	−0.117	0.039	−0.216***

	(0.000)	(0.173)	(0.626)	(0.000)
ROA	0.004	0.000	−0.008	0.008
	(0.757)	(0.883)	(0.788)	(0.659)
Intercept term	−0.671***	−1.166***	−0.765**	−0.366*
	(0.002)	(0.003)	(0.007)	(0.058)
N	4691	1572	1681	7863
Time /Industry control	Y	Y	Y	Y
Estimation method	Generalized method of moments	Generalized method of moments	Generalized method of moments	Generalized method of moments
AR(2)_p	0.456	0.587	0.587	0.171
Hansen_p	0.631	0.186	0.186	0.815
Robust standard error	Y	Y	Y	Y

*Note: Asterisks indicated the significant features presented by different coefficients, *, ** and *** were 0.1, 0.05 and 0.01 respectively, AR(2) indicated that there was no second-order autocorrelation in the disturbance term, and the test of P value corresponding to hansen indicated that the instrumental variable was free from over-identification.*

(III) Regression Analysis of Financial Development and Deviation Degree of Adjustment of Corporate Capital Structure

To further analyze the impact of financial development on the deviation degree of corporate capital structure adjustment, we categorized enterprises into state-owned and non-state-owned entities. Different enterprise natures affect external financing modes and channels. Our regression analysis showed that the coefficients of one-period lagged samples were significantly negative, indicating that financial development helps reduce the deviation degree in both state-owned and non-state-owned enterprises. This alignment with target capital structures minimizes economic contradictions and supports Hypothesis 4.

Table 5 Regression Analysis of Financial Development and Deviation Degree ofAdjustment of Corporate Capital Structure

	State-owned Enterprises	Non-State-owned Enterprises	Full Sample
FIR	−0.008***	0.002	−0.003***
	(0.000)	(0.119)	(0.000)
(One-period lagged)			

Business solvency	−0.009***	0.012**	−0.007***
	(0.005)	(0.028)	(0.001)
TANG	0.011*	−0.036***	−0.009***
	(0.087)	(0.000)	(0.001)
SGROW	−0.018***	0.000	−0.007***
	(0.000)	(0.697)	(0.000)
LNA	−0.117***	−0.202***	−0.189***
	(0.000)	(0.000)	(0.000)
ROA	0.022	−0.068**	0.026
	(0.297)	(0.021)	(0.107)
Intercept term	0.107***	0.298***	0.103***
	(0.000)	(0.000)	(0.000)
Estimation method	Least square method	Least square method	Least square method
N	4371	2712	7628
Wald_p value	0.000	0.000	0.000

*Note: Asterisks indicated the significant features presented by different coefficients, *, ** and *** were 0.1, 0.05 and 0.01 respectively. P value represented the overall regression effect.*

Interpretation of Results

The empirical results provide robust evidence supporting the proposed hypotheses. Financial development significantly influences corporate capital structure adjustments, with distinct effects observed for quantity-based and price-based monetary policies. Quantity-based policies accelerate adjustments, albeit with regional disparities in effectiveness. Conversely, price-based policies consistently support positive adjustments in capital structure across various financial development contexts. These findings underscore the importance of tailoring monetary policies to regional financial development levels to optimize corporate financial strategies.

IV. Conclusion and Prospect

(I) Conclusion

In today's market economy, the relationship among financial development, monetary policy, and corporate capital structure adjustment has become a critical area of interest. This study analyzed data from listed companies between 2011 and 2021 to investigate

this relationship, focusing on both quantity-based and price-based monetary policies. The empirical results confirmed all four hypotheses, demonstrating that both types of monetary policy significantly affect corporate capital structure adjustments. However, in complex and evolving financial market environments, the influence of quantity-based monetary policy tends to diminish over time (Liang et al., 2020). Additionally, regression analysis revealed that financial development helps reduce the deviation degree in corporate capital structure adjustments, stabilizing the business environment and facilitating quicker adjustments.

The results contribute to the existing literature by providing empirical evidence from China's financial market, highlighting the differentiated impacts of monetary policies under various levels of financial development. These findings underscore the importance of considering regional financial development when designing and implementing monetary policies.

(II) Prospect

The future development of financial development, monetary policy, and corporate capital structure can be anticipated in the following ways:

1. Innovate Financial Development and Perfect Relevant Mechanisms:

- With the advancement of information technology in China, the financial industry can harness big data to innovate and develop financial management models (Liu et al., 2020). By leveraging vast amounts of financial data, the industry can better understand the financing and operational statuses of enterprises, allowing for the provision of targeted financial products and services.
- Improving financial regulation, monetary policy regulation, and market economy regulatory mechanisms is essential to ensure stable and sustainable market development. This involves adopting advanced analytical tools and frameworks to monitor and manage financial activities effectively.

2. Strengthen Information Management and Reduce Market Economy Risks:

- The rapid growth and widespread adoption of big data provide crucial information support for Chinese enterprises' development but also pose risks of information leakage. Ensuring the authenticity of data at both macro and micro levels is vital for developing robust monetary policies (Zhang et al., 2014). Institutions must implement comprehensive measures to manage and protect sensitive information.
- Effective information management requires a dual approach involving institutional reforms and practical measures. Monitoring and addressing unstable factors in the financial market can help mitigate economic risks, contributing to a more resilient financial environment.

3. Future Research Directions:

- Future studies should explore the dynamic interactions between financial development and various types of monetary policies across different economic cycles. Examining the long-term effects of these interactions will provide deeper insights into optimal policy design.
- Investigating the impact of technological innovations, such as fintech and blockchain, on corporate capital structure adjustments can offer valuable

perspectives on modernizing financial systems.

- Comparative studies between China and other emerging economies can help identify unique challenges and opportunities in different financial development contexts, contributing to a more comprehensive understanding of global financial dynamics.

In conclusion, as big data continues to transform the financial landscape, transparency and rigorous analysis will enable experts and scholars to better understand the interplay among financial development, monetary policy, and corporate capital structure adjustment. This will facilitate more effective evaluations of financial risks and contribute to accelerated corporate capital structure adjustments.

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

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