

Financial Structure Adjustment and Firm's Steady Leverage under New Development Pattern

—Research Based on Influence Mechanism and Enterprise Heterogeneity

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Abstract

How to grasp the dynamic balance between “stable growth” and “stable leverage”, prevent and control financial risks, optimize the allocation of financial resources, and achieve active and stable deleveraging by non-financial enterprises is a major issue that needs to be resolved urgently. Based on the financial data of 4054 non-financial listed enterprises in Shanghai and Shenzhen from 2007 to 2020, this paper empirically studies the relationship between the marketization level of financial structure and the leverage ratio of non-financial enterprises in China by constructing a dynamic panel model. It is found that the improvement of the marketization level of financial structure can significantly reduce the leverage ratio of enterprises, extend their debt maturity of enterprises, and effectively improve the problem of short-term debt for long-term use. This kind of influence shows certain heterogeneity among enterprises with different property rights, scales and industries. The influence of marketization level of financial structure on leverage ratio of enterprises can be enhanced with the improvement of their innovation degree. The research conclusions of this paper enrich the discussion on increasing the proportion of direct financing and promoting the development of multi-level capital markets, and provide policy references for active and prudent deleveraging.

Keywords

Financial Structure, Corporate Leverage Ratio, Stable Leverage, Financial Reform

1. Introduction

After the global financial crisis in 2008, Chinese corporate leverage rose sharply, from 94% in 2008 to a phased peak of 160% in 2016. Benefit from China's deleveraging policy in 2015, Chinese corporate leverage remained stable in 2017. However, due to the impact of macroeconomic policies to deal with the epidemic, Chinese corporate leverage was once reversed to 163% in the third quarter of 2020. Since 2020, Chinese economic development has faced severe challenges from the spread of epidemics and world changes. Faced with the instability and uncertainty of the external environment in the post-epidemic period, building a new pattern of overall development and security and realizing high-level self-reliance in economic development have become the central content and major tasks of Chinese economic work in the future (Gao, 2021). Entering 2021, the leverage ratio of Chinese enterprises has maintained a downward trend for three consecutive quarters, but the subsequent decline is the growth rate of corporate investment and investment willingness. In the actual implementation process of "deleveraging" due to the significant differences in the leverage of different types of enterprises, "one size fits all" and comprehensive "deleveraging" not only contradicts the premise of stable growth in China, but also tightens the capital level of enterprises, especially leading to the difficulty in meeting the financing needs of some private small and micro enterprises with high innovation and great growth potential. Therefore, it is of great significance to clarify the structure and characteristics of Chinese corporate leverage ratio, from reducing the level of corporate assets and liabilities to optimizing the allocation of financial resources, for effectively resolving corporate debt risks and grasping the dynamic balance between stable growth and stable leverage.

For a long time, Chinese financial system has always been dominated by state-owned banks, capital market development lags behind. By the end of January 2022, the stock of China's social financing scale reached 320.05 trillion yuan, and the scale of internal and external financing injected into the real economy through the banking system was 197.97 trillion yuan, accounting for 61.86%. Under the bank-oriented financial structure, the external financing mode of enterprises is mainly debt financing, which leads to higher leverage ratio of Chinese enterprises under the same financing scale compared with developed economies. From the 2017 Chinese government work report to the 2019 Belt and Road International Cooperation Summit, it is clear that China needs to develop multi-level capital markets means that multi-level capital markets are an important path to achieve steady growth, deleveraging and risk prevention. However, from the perspective of Chinese capital market structure, the multi-level market system has not yet been formed. In the intra-market, the entry threshold of the main board is high, the capacity of the science and technology innovation board and the GEM is too small, and the trading activity of the new third board and the regional equity market in the OTC market is low. In addition, China has a high level of financial repression, and credit discrimination and credit rationing

widely exist in the banking system where the state-owned financial sector occupies the dominant position. Due to the limited means of profitability, banks have stronger motivation to avoid risks. In the economic situation with a surge of uncertainties and a downturn, the rise of risk aversion makes this phenomenon more prominent, resulting in a large flow of financial resources to state-owned enterprises, heavy industry and real estate with low asset returns.

Facing the dilemma between Chinese stable economic growth and the policy of preventing financial risks, it is not enough to reduce the leverage ratio of Chinese real enterprises only, and it is still necessary to continue to promote the structural reform of the financial supply side. However, by improving the construction of multi-level capital market system, continuously increasing the proportion of direct financing and improving the financing structure, whether it will help to reduce the leverage ratio of enterprises and what is the specific mechanism, it needs to be more rigorously demonstrated. In order to effectively solve the above problems, this paper uses the financial data of 4054 non-financial listed companies in Shanghai and Shenzhen Stock Exchanges from 2007 to 2020 to construct a dynamic panel model, and analyzes the relationship between the marketization level of Chinese financial structure and the leverage ratio of enterprises from the micro perspective, and reveals whether this relationship will show heterogeneity among enterprises with different property rights, different scales and different industries.

2. Literature Review & Theoretical Framework

2.1. Financial Structure

The concept of financial structure was first put forward by Goldsmith, which thinks that financial structure is the form, nature and relative scale of existing financial institutions and financial instruments in a country or region. The differences in different financial structures have a direct impact on the external source of funds and the financing decisions of market players in a country's enterprise sector. At present, most of the academic circles are based on the theory of dichotomy. According to the relative situation of financial intermediaries and financial markets, the financial structure is divided into bank-oriented financial structure and market-oriented financial structure (Demirgüç-Kunt & Tressel, 2020). Kester's research from the perspective of financing decision finds that enterprises are more inclined to debt financing under the bank-oriented financial structure represented by the United States, while enterprises are more inclined to equity financing under the market-oriented financial structure represented by Japan (Kester, 1986). Based on the firm-level data of the Group of Seven (G-7), Rajan and Zingales confirmed that financial structure is a key factor that causes the difference in corporate leverage in different countries (Rajan & Zingales, 1995). Jong et al.'s empirical research on cross-border panel data at the enterprise level shows that the stronger the market orientation of financial structure, the lower the leverage ratio of enterprises (Jong, Kabir, & Nguyen, 2008). Based

on the panel data of 993 listed companies in China from 2005 to 2015, Wang Lianjun analyzed the impact of financial development on corporate deleveraging, and found that the higher the degree of financial development, the greater the extent of corporate deleveraging, and this mechanism has path dependence (Wang, 2018). Zheng Zhilai believed that the capital demand was in the seller's market (Zheng, 2019). On the one hand, the financial structure dominated by commercial banks pushed up the corporate leverage ratio, and on the other hand, it increased the corporate social financing cost.

2.2. Theoretical Hypothesis H1

The change of financial structure determines the relative scale of financial institutions and financial instruments in different categories. The external financing obtained by enterprises through the banking system is usually entered into the balance sheet as debt, which is manifested as the increase in monetary funds or bank deposits of asset subjects, and the increase in short-term or long-term borrowings of debt subjects. The proportion of equity assets in the balance sheet will decrease with the increase in debt financing, and ultimately the increase in the leverage ratio of micro enterprises. On the contrary, the external financing obtained by enterprises through the capital market will increase the proportion of equity assets of enterprises by introducing new shareholders, thereby reducing the level of corporate leverage.

Based on this, this paper proposes Hypothesis H1: **The improvement of the marketization level of financial structure can effectively reduce the leverage ratio of enterprises.**

2.3. Theoretical Hypothesis H2

Research on corporate debt cannot ignore the phenomenon of "short-term debt long-term use", that is, the mismatch of debt maturity caused by short-term debt supporting long-term investment (Liu & Liu, 2019). Based on the perspective of information asymmetry, in the bank-oriented financial structure, due to the limited means of bank profitability, the motivation to avoid risks is stronger, which leads to the debt obtained by enterprises through banks is generally dominated by short-term debt, and the proportion of long-term debt is significantly lower than that of long-term assets. Therefore, enterprises need to continuously roll short-term debt to support long-term investment, which has been highlighted in the institutional environment with high degree of financial repression in China (Huang, Lu, & Ding, 2016). On the contrary, in the market-oriented financial structure, the financial market has the function of concentrating, transmitting and evaluating the prospect information of enterprises, and the operation process of the financial market is also the process of information transmission. Information processing and disclosure can effectively alleviate the problem of high investment cost caused by information asymmetry between enterprises and investors, help enterprises to introduce new shareholders through the

transfer of equity and improve the level of total equity. In addition, the higher the level of marketization of the financial structure, the more sufficient liquidity of stock transactions and the more opportunities for enterprises to diversify and invest long-term (Pagano, 1993). Therefore, the higher the level of financial market development is, the more conducive it is to the increase of corporate equity financing, the reduction of long-term financing costs and the improvement of long-term financing capacity by reducing the information asymmetry between enterprises and investors, which is ultimately manifested in the reduction of corporate leverage and the increase of debt maturity.

Based on this, this paper proposes Hypothesis H2: **The improvement of the marketization level of financial structure can effectively increase the debt maturity of enterprises and alleviate the problem of long-term short debt of enterprises.**

2.4. Theoretical Hypothesis H3

Rajan and Peng Wensheng argue that different types of financial structures have different comparative advantages in funding different sectors (Rajan & Zingales, 2003; Peng, 2019). In the bank-oriented financial structure, banks are more inclined to provide funds to state-owned enterprises with large scale, high maturity and low risk, while private enterprises with small scale, high technology content and strong innovation ability are more likely to obtain external financing in the market-oriented financial structure.

On the one hand, most of the traditional industries are asset-intensive enterprises with large average scale, stable industry development cycle and technology, and sufficient physical objects as collateral. Banks are more inclined to provide financial support to traditional industries by imposing strict requirements on the number of mortgages and liquidating defaults when providing loans to “block” companies with insufficient operating capacity (Zhang, Lin, & Gong, 2019). However, in innovative industries, due to the lack of self-accumulation, small and medium-sized enterprises have less physical assets to be mortgaged, large R&D investment and high risks, and many investors need to carry out multiple verifications of enterprise technology, potential, growth and other information to compensate for the cognitive bias of a single investor. Therefore, financing from the capital market is better than financing from financial institutions in innovative industries (Xu, 2018).

On the other hand, due to the different characteristics of supervision and management and income distribution in different financial structures, there are significant differences in the tendency of capital supply. In the bank-oriented financial structure, banks, as creditors, can only follow the loan contract and regulatory requirements to manage the use and flow of funds, and have no right to participate in the operation and management and income distribution of financing enterprises. What they obtain is the fixed claim for loan funds, so they pay more attention to the default risk of enterprises rather than the value return

of enterprises (Macey & Miller, 1997). The equity acquired by investors in market-oriented financial structure represents the residual claim right of limited liability. In order to protect their own rights and interests, investors have the motivation to supervise the borrower, and have the right to participate directly in the management of enterprises and share the benefits of enterprise growth (Allen, Bartiloro, Gu, & Kowalewski, 2018). Because traditional, high-security industries and large-scale enterprises are more mature and stable in production and operation, internal management, risk prevention and control, they are more able to obtain financial support from banks. Due to the convergence of different industry information and investors' different opinions in the capital market, and managers' personal character and business ability, corporate reputation and other soft information can be fully revealed, which provides effective information for investors' investment decisions, and innovative industries with higher risk and greater growth potential are more able to obtain financial support from the capital market.

Based on this, this paper proposes Hypothesis H3: **The impact of financial structure marketization on enterprise leverage is heterogeneous among enterprises with different property rights, scales and industries.**

2.5. Theoretical Hypothesis H4

Different types of financial structure have different functional characteristics in liquidity creation, information processing and risk management, so they have different division characteristics in industry technology innovation. The internalization of risk management in bank-oriented financial structure makes banks tend to be cautious about risk. In the face of highly innovative and risky industries, banks tend to be inefficient in dealing with information asymmetry, resulting in limited effective financial support for innovative industries (Levine, 2004). The cross-market information transmission mechanism in market-oriented financial structure can provide effective information to investors through information disclosure, price signal and acquisition threat (Tan, Li, & Wang, 2019). Investors can effectively disperse investment risks and invest in high-risk and high-yield innovation projects by portfolio management based on the operation mechanism of financial market and hedging risk exposure with financial instruments.

Based on this, this paper proposes Hypothesis H4: **The improvement of financial structure marketization has a more obvious impact on the leverage ratio of innovative enterprises with high risks and uncertain returns.**

3. Econometric Specification, Data and Variables

3.1. Econometric Specification

Based on the existing research literature, this paper constructs a dynamic panel model to reveal the relationship between the marketization level of China's financial structure and the leverage ratio of enterprises. Considering the estimation bias caused by the lack of important variables, two groups of control variables at the enterprise level ($X_{i,t}$) and the macro level (Z_t) are added, and the

benchmark model is constructed as follows:

$$Y_{i,t} = \alpha_0 + \alpha_1 Y_{i,t-1} + \beta \text{finstr}_t + \delta X_{i,t} + \gamma Z_t + \mu_i + \omega_t + \varepsilon_{i,t} \quad (1)$$

The subscript i , t in Model (1) represents the enterprise and time. $Y_{i,t}$ represents the leverage level of enterprise i in t period. finstr_t represents the variable of financial structure. μ_i denotes firm fixed effect, ω_t is time fixed effect, $\varepsilon_{i,t}$ is random error term.

3.2. Variables and Data

3.2.1. Explained Variables

In the explained variables, the corporate leverage ratio is represented by the ratio of total liabilities to total assets in the corporate balance sheet. In order to effectively examine the debt maturity structure of enterprises and analyze whether there are debt problems such as short-term debt and long-term debt, this paper introduces four variables including short-term leverage ratio (*slev*), long-term leverage ratio (*llev*), debt maturity (*debtqx*) and short-term debt and long-term debt (*debtcy*) on the basis of leverage ratio. Among them, the short-term leverage ratio is the ratio of current liabilities (including short-term borrowings, non-current liabilities due within one year, accounts payable, etc.) to total assets. Ratio of long-term leverage ratio of non-current liabilities (including long-term loans, liabilities over one year, etc.) to total assets. Debt maturity is the ratio of non-current liabilities to total liabilities. Reference to Liu Xiaoguang, et al. (Liu & Liu, 2019) and Rao Pingui, et al. (Rao & Jiang, 2013). The difference between short-term debt ratio (short-term debt/total debt) and short-term asset ratio (short-term assets/total assets) is selected to reflect the matching of enterprise debt maturity and asset maturity, as a measure of short-term debt.

3.2.2. Core Explanatory Variables

In terms of the measurement of financial structure, on the one hand, this paper incorporates the bond market as an important channel for direct financing into the measurement range of financial structure ; on the other hand, unlike the existing literature widely used “ratio of stock market value to bank credit” to measure the financial structure, this paper uses stock market financing to replace stock market value, which not only eliminates the impact of stock price volatility on market value, but also enhances the comparability with indirect financing. Based on this, the financial structure (*finstr*) variable index is “(stock financing + bond financing)/loan financing”. The larger the value of the variable, the higher the level of marketization of financial structure.

3.2.3. Control Variables

This paper mainly selects control variables from the following two aspects.

The first is the enterprise characteristic variable. Referring to the relevant research (Liu, Liu, Chen, Zhou, & Li, 2019; Ji, Wang, Tan, & Huang, 2018; Kojarczyk & Levy, 2003), the main control variables affecting enterprise characteristics are: Enterprise asset size (*assets*), the total assets of the enterprise to take

natural logarithm; Enterprise profitability (*roa*), using the return on total assets; Growth of enterprises (*growth*), expressed by year-on-year growth of total operating income; Enterprise innovation (*inn*), calculated by the ratio of R&D expenditure to main business income in the enterprise annual report; Property rights nature (*prn*), “1” for Chinese state-owned enterprises and “0” for Chinese non-state-owned enterprises; The proportion of fixed assets (*fata*) is expressed by the ratio of fixed assets to total assets; Non-debt tax shield (*ndts*), enterprise fixed asset depreciation divided by total assets; Capital intensity (*ci*), expressed by natural logarithm of the ratio of total fixed assets to the number of employees; Financial cost rate (*fcr*), corporate financial cost divided by main business income.

Second, macroeconomic variables, referring to the study of Tan Xiaofen (Tan & Xu, 2020) and Gong Rukai (Gong, Xu, & Wang, 2019), and based on data availability, adding GDP growth (*GDPG*), using the annual GDP growth rate; Money supply growth (*M₂G*), using the annual growth rate of money supply; Inflation rate (*CPI*), the consumer price index; macroeconomic prosperity index (*MECI*) is expressed by the consistent index in the annual macroeconomic prosperity index.

3.2.4. Data

The data at the enterprise level are mainly from the WIND database, and the missing data of some variables are supplemented by the CSMAR database. Macroeconomic data and provincial data are mainly from the China Statistical Yearbook and the official website of the People’s Bank of China. This paper takes into account the impact of the promulgation of China’s new version of “Accounting Standards for Enterprises” in 2006 and the reform of corporate equity division on corporate financial data. In order to fully take into account data availability, comparability and sample length, this paper selects the financial data of listed companies in Shanghai and Shenzhen Stock Exchanges from 2007 to 2020 as the research sample. On this basis, the abnormal samples with negative asset-liability ratio of financial enterprises and enterprises are deleted, and the continuous variables at all enterprise levels are tailed on the upper and lower 1% quantiles to reduce the interference of outliers on the regression results. The final sample consisted of 36175 observations from 4054 enterprises. **Table 1** is descriptive statistics of variables.

4. Empirical Analysis

4.1. Estimation Methods

Because the lag term $Y_{i,t-1}$ of the explained variable is added to the explanatory variable of the benchmark research model (1), in order to effectively solve the endogenous problem of the variable and take into account the bias caused by the limitation of sample size, this paper uses one-step system GMM to estimate the model to ensure that the statistical inference results are true and effective. In order to ensure that the system GMM estimation is effective, this paper uses the

Table 1. Descriptive statistics of variables.

Variable	Mean	Std. Dev.	Min	Median	Max
<i>finstr</i>	0.3209	0.4482	-0.1834	0.2159	3.2511
<i>lev</i>	0.4377	0.2195	0.0502	0.4276	1.0192
<i>slev</i>	0.3548	0.1919	0.0382	0.3334	0.9511
<i>llev</i>	0.0834	0.1034	0.0000	0.0399	0.4795
<i>debtqx</i>	0.1727	0.1772	0.0000	0.1127	0.7401
<i>debtcy</i>	0.2562	0.2063	-0.3327	0.2573	0.7523
<i>assets</i>	21.9989	1.3191	19.2063	21.8300	26.0443
<i>roa</i>	0.0585	0.0757	-0.2719	0.0560	0.2850
<i>growth</i>	0.1443	0.3610	-0.6508	0.1006	2.0375
<i>inno</i>	0.0376	0.0629	0.0000	0.0243	0.4582
<i>prn</i>	0.3898	0.4877	0.0000	0.0000	1.0000
<i>fata</i>	0.2189	0.1671	0.0016	0.1840	0.7188
<i>ndts</i>	0.0202	0.0151	0.0003	0.0168	0.0708
<i>ci</i>	12.4790	1.1765	9.0970	12.4801	15.6684
<i>fcr</i>	0.0274	0.0797	-0.1660	0.0103	0.5128
<i>GDPG</i>	0.0734	0.0251	0.0230	0.0704	0.1423
<i>M₂G</i>	0.1265	0.0460	0.0810	0.1220	0.2768
<i>CPI</i>	102.5883	1.3926	99.3000	102.5000	105.9000
<i>MECI</i>	100.2701	5.1912	90.7742	99.9016	110.7664

residual sequence correlation test AR (n) to determine that the random disturbance term of the regression equation does not have sequence correlation, and uses the Hansen J test to determine that the instrumental variables do not have excessive recognition.

4.2. Estimation Results

4.2.1. Baseline Estimation Results

Table 2 reports the benchmark regression results of the impact of financial structure marketization on corporate leverage. Column (1) is the result of estimates that do not include control variables and shows that the estimated coefficient of the financial structure is significantly negative at a 5% level. Studies have shown that changes in the level of corporate leverage will be affected by macroeconomic, business characteristics and actual operating factors, and thus in column (2) and column (3) in turn to add business characteristics control variables and macroeconomic control variables, regression results show that the estimated coefficient of the financial structure is reduced from -0.0004 to -0.0054, and the level of visibility is increased from 5% to 1%, indicating that the improvement of the level of marketization of the financial structure can effectively

Table 2. Baseline estimation results.

Variable	(1) <i>lev</i>	(2) <i>lev</i>	(3) <i>lev</i>
<i>L.lev</i>	0.8717*** (0.0075)	0.8102*** (0.0096)	0.8102*** (0.0096)
<i>finstr</i>	-0.0004** (0.0012)	-0.0054*** (0.0012)	-0.0054*** (0.0012)
Enterprise characteristic control variables	NO	YES	YES
Macroeconomic control variables	NO	NO	YES
Firm-fixed effect	YES	YES	YES
Time-fixed effect	YES	YES	YES
observed values	36175	36175	36175
AR (1)	0.004	0.003	0.004
AR (2)	0.073	0.120	0.120
Hansen Test	13.00	13.03	13.59

Notes: *, **, and *** denote significance at the 10%, 5% and 1% levels. AR (1) and AR (2) represent the P values of the first-order and second-order difference residual sequence correlation tests, respectively; Hansen Test is the p value of the over-identification restriction test. The same table below.

reduce the corporate leverage, and the hypothesis H1 is verified.

4.2.2. Estimation Results of Term Structure

In order to verify the hypothesis H2, this paper divides corporate leverage into short-term leverage ratio (*slev*) and long-term leverage ratio (*llev*) according to the liquidity level of debt, and introduces two indicators of debt maturity (*debtqx*) and short debt long use (*debtcy*) to examine the impact of financial structure marketization on corporate leverage with different maturity structures. It can be seen from Column (1) and Column (2) of **Table 3** that the improvement of the marketization level of financial structure has a significantly negative impact on the short-term leverage ratio of enterprises at the level of 1%, but the negative impact on the long-term leverage ratio is not significant. The results in Column (3) of **Table 3** show that the marketization level of financial structure has a positive correlation with the corporate debt maturity at the 1% significant level, indicating that the improvement of the marketization level of financial structure has a positive effect on extending the corporate debt maturity. The column (4) of **Table 3** shows that there is a significant negative correlation between the marketization level of financial structure and the short debt long-term use of enterprises, indicating that the improvement of the marketization level of financial structure can effectively improve the short debt long-term use of sample enterprises.

4.2.3. Estimation Results of Property Rights and Size

In order to verify hypothesis H3, the sample enterprises are divided according to

Table 3. Estimation results of term structure.

Variable	(1) <i>slev</i>	(2) <i>llev</i>	(3) <i>debtqx</i>	(4) <i>debtcy</i>
<i>L.slev</i>	0.7447*** (0.0109)			
<i>L.llev</i>		0.6943*** (0.0117)		
<i>L.debtqx</i>			0.6558*** (0.0118)	
<i>L.debtcy</i>				0.6238*** (0.0115)
<i>finstr</i>	-0.0056*** (0.0014)	-0.0008 (0.0009)	0.0005*** (0.0018)	-0.0048** (0.0020)
Enterprise characteristic control variables	YES	YES	YES	YES
Macroeconomic control variables	YES	YES	YES	YES
Firm-fixed effect	YES	YES	YES	YES
Time-fixed effect	YES	YES	YES	YES
observed values	36175	36175	36175	36175
AR (1)	0.003	0.005	0.045	0.017
AR (2)	0.748	0.948	0.988	0.484
Hansen Test	13.03	13.59	13.07	13.22

property rights and scale, and the influence of the marketization level of financial structure on corporate leverage is investigated in groups. In the division of enterprise property rights, according to the division of property rights and actual controllers of sample enterprises in the listed enterprise database, the property rights are state-owned and the actual controllers are set as state-owned actual controllers is set as the state-owned enterprise group by the central state organs, local governments, SASAC and state-owned enterprises, and its ownership is the non-state-owned enterprise group. In the division of enterprise scale, the enterprises with the top 50 % asset scale in each year are set as large enterprise group, and the small and medium-sized enterprise group.

Column (1) of **Table 4** shows the sample estimation results of the state-owned enterprise group. After controlling the enterprise characteristic variables and macroeconomic variables, the estimated coefficient of financial structure is -0.0054, which is significantly indigenous at the level of 1%, indicating that the improvement of the marketization level of financial structure can significantly reduce the leverage ratio of state-owned enterprises. The regression results in Column (2) of **Table 4** show that although the estimated coefficient of financial structure in the sample of non-state-owned enterprises is also significantly negative, it is smaller than that of the state-owned enterprise group in terms of the absolute value and the level of obviousness of the estimated coefficient. Column

Table 4. Estimation results of property rights and size.

Variable	state-owned enterprise <i>lev</i>	non-state-owned enterprises <i>lev</i>	large enterprise <i>lev</i>	medium sized enterprises <i>lev</i>
<i>L.lev</i>	0.7961*** (0.0202)	0.8093*** (0.0125)	0.8266*** (0.0176)	0.8033*** (0.0202)
<i>finstr</i>	-0.0054*** (0.0017)	-0.0052** (0.0022)	-0.0063*** (0.0013)	-0.0020 (0.0028)
Enterprise characteristic control variables	YES	YES	YES	YES
Macroeconomic control variables	YES	YES	YES	YES
Firm-fixed effect	YES	YES	YES	YES
Time-fixed effect	YES	YES	YES	YES
observed values	14101	22074	18085	18090
AR (1)	0.007	0.004	0.006	0.003
AR (2)	0.257	0.646	0.723	0.286
Hansen Test	11.01	11.31	12.08	12.11

(3) and (4) show the relationship between the marketization level of financial structure and the leverage ratio of enterprises of different sizes. The results show that the improvement of the marketization level of financial structure can significantly reduce the leverage ratio of large enterprises. Each unit of the marketization level of financial structure increases will reduce the leverage ratio of large enterprises by 0.63%, and this negative impact is not obvious in the sample of small and medium-sized enterprises, which supports the hypothesis H3.

4.2.4. Estimation Results of Industry Classifications

In order to observe whether the benchmark regression results of model (1) show aboriginal differences due to the different industry distribution of enterprises, this paper classifies the sample enterprises according to the industry classification standard of China's national economy (GB/T 4754-2017). The results of **Table 5** show that after controlling the enterprise characteristics and macroeconomic variables, the estimated coefficients of financial structure are -0.0114, -0.0207 and -0.0022 respectively in the samples of manufacturing, transportation, warehousing, postal and real estate enterprises, and are significantly indigenous at the levels of 1%, 5% and 10%, respectively. In the sample of information transmission, software and information technology services firms, the financial structure is positive at 5%. It can be seen that the impact of the marketization level of financial structure on corporate leverage shows obvious industry differentiation, which supports hypothesis H3. Focusing on the trend of the average leverage ratio in specific industries, the manufacturing leverage ratio decreased by 10 percentage points during the sample period; the leverage ratio of

transportation, warehousing and postal industry is relatively stable, and the leverage ratio of real estate industry does not decline but rise, which has increased by 6 percentage points during the sample period. The leverage of information transmission, software and information technology services decreased first and then increased, but the average leverage ratio is always lower than other industries.

4.2.5. Estimation Results of Enterprise Growth and Innovation

In order to verify hypothesis H4, the sample enterprises are divided into the top 50% high growth group, the high innovation group, the bottom 50% low growth group and the low innovation group according to the year-on-year growth rate of total operating income and the ratio of R&D cost to operating income, respectively, and grouped regression is conducted. Column(1) to (4) of **Table 6** show the empirical results of the relationship between financial structure and leverage ratio of different growth enterprises and different innovative enterprises after considering enterprise characteristic control variables and macroeconomic control variables. The results show that the estimated coefficients of the financial

Table 5. Estimation results of industry classifications.

Industry Classifications	sample size	estimated coefficient	The average leverage ratio of sample enterprises in each industry		
			<i>finstr</i>	2007	2014
agriculture, forestry, animal husbandry, fisheries (A)	583	0.0018 (0.0163)	0.4328	0.3965	0.4124
mining industry (B)	848	-0.0043 (0.0059)	0.4453	0.4374	0.4549
manufacturing industry (C)	23070	-0.0114*** (0.0025)	0.4720	0.3788	0.3726
electricity, heat, gas and water production and supply industry (D)	1192	0.0012 (0.0049)	0.5230	0.5548	0.5540
building industry (E)	946	-0.0053 (0.0044)	0.6850	0.6882	0.6372
wholesale and retail trade (F)	1876	0.0001 (0.0053)	0.5301	0.5321	0.4990
transport, storage and post industry (G)	1130	-0.0207** (0.0162)	0.4083	0.4449	0.4346
software and information technology services industry (I)	2468	0.0049** (0.0048)	0.4047	0.2952	0.3388
real estate industry (K)	1626	-0.0022* (0.0044)	0.5669	0.6405	0.6287
other services (H, L-R)	2436	-0.0023 (0.0054)	0.4927	0.3953	0.4289

Table 6. Estimation results of enterprise growth and innovation.

Variable	state-owned enterprise <i>lev</i>	non-state-owned enterprises <i>lev</i>	large enterprise <i>lev</i>	medium sized enterprises <i>lev</i>
<i>L.lev</i>	0.7961*** (0.0202)	0.8093*** (0.0125)	0.8266*** (0.0176)	0.8033*** (0.0202)
<i>finstr</i>	-0.0054*** (0.0017)	-0.0052** (0.0022)	-0.0063*** (0.0013)	-0.0020 (0.0028)
Enterprise characteristic control variables	YES	YES	YES	YES
Macroeconomic control variables	YES	YES	YES	YES
Firm-fixed effect	YES	YES	YES	YES
Time-fixed effect	YES	YES	YES	YES
observed values	14101	22074	18085	18090
AR (1)	0.007	0.004	0.006	0.003
AR (2)	0.257	0.646	0.723	0.286
Hansen Test	11.01	11.31	12.08	12.11

structure of the high-growth group and the high-innovation group are -0.0081 and -0.0067 , respectively, and both of them pass the 1% level of significance test. The estimated coefficients of the financial structure of the low growth group are also significantly negative, but from the absolute value of the estimated coefficient and the level of visibility, are less than the high growth group; the estimated coefficients of the financial structure of the low innovation group did not pass the test of visibility, which further supported the hypothesis H4. The negative impact of the marketization of financial structure on corporate leverage will increase with the improvement of enterprise growth and innovation. This is mainly because the capital market is more inclined to finance high-risk and high-yield projects than the banking system, and equity financing is also the most important way of external financing to support R&D investment in science and technology enterprises. Therefore, raising the level of marketization of financial structure will broaden the financing channels of high-growth and high-innovation enterprises, and reduce the leverage of enterprises while achieving the goal that the financial system does not reduce its support.

5. Conclusion

This paper incorporates financial structure into the analysis framework of corporate leverage ratio, and attempts to explore the logical relationship between the improvement of financial structure marketization and the change of corporate leverage ratio from the structural level of the financial system. This paper selects the panel data of 4054 non-financial listed companies in Shanghai and

Shenzhen stock markets from 2007 to 2020 to reveal the reality of the structural change of enterprise leverage ratio, and puts forward the research hypothesis through literature review and theoretical analysis. On this basis, this paper constructs a dynamic panel model to empirically study the relationship between the marketization level of financial structure and enterprise leverage ratio in China. The results show that the improvement of the marketization level of financial structure can significantly reduce the leverage ratio of enterprises. From the term structure of enterprise leverage ratio, the improvement of marketization level of financial structure can effectively reduce the short-term leverage ratio of enterprises, prolong the debt maturity of enterprises, and effectively improve the problem of short debt long use of enterprises. From the perspective of enterprise property right structure and enterprise scale, the improvement of the marketization level of financial structure is more obvious in reducing the leverage ratio of state-owned enterprises and large enterprises. From the perspective of enterprise industry, the relationship between financial structure marketization level and enterprise leverage ratio has obvious differentiation characteristics under different industry distribution. Among them, the improvement of the marketization level of financial structure can significantly reduce the leverage ratio of manufacturing, transportation and real estate industries, but the leverage ratio of information transmission, software and information technology services shows a significant positive correlation. The negative impact of the marketization of financial structure on corporate leverage will increase with the improvement of enterprise growth and innovation.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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