

Research on Whether Enterprise Financialization Can Improve Enterprise Investment Efficiency

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Abstract. This paper examines the relationship between corporate financialization and the efficiency of corporate investment and explores the mechanisms, taking non-financial listed companies in the Chinese A-share market as a sample. The study finds that corporate financialization has a significant positive impact on the efficiency of corporate investment. The results of the mechanism analysis show that corporate financialization can improve the efficiency of corporate investment by reducing the ability of earning cashflow, alleviating corporate interest-bearing debt and enhancing financial risk. The results of the heterogeneity analysis show that the positive effect of financialization on investment efficiency is more pronounced among manufacturing firms and firms located in non-high administrative class cities. This study has implications for the use of financialization tools by firms to serve physical investment and thus optimize their investment efficiency.

Keywords: Corporate Financialization; The Efficiency of Corporate Investment; The Ability of Earning Cashflow; Interest-Bearing Debt; Financial Risk.

1. Introduction

Enterprises are the basic cells of the economy and the main body of the market, and if they are alive, the economy will be alive, and if they are prosperous, the economy will be prosperous. China's economy is at a critical stage where the growth rate is changing gears, the structural adjustment is in pain and the previous stimulus policy is being digested, and micro enterprises, as the most active participants in the economy and society, are the core drivers and power sources of economic development and transformation. However, the return on investment for Chinese enterprises is still serious, especially under the impact of the epidemic, the real economy continues to be in the doldrums and the return on investment for entity enterprises is declining. According to the 2022 Government Work Report, China will strengthen effective financial support to the real economy, guide financial institutions to accurately grasp credit policies, provide financing support to enterprises in industries severely affected by the epidemic, and address the problem of low return on investment for China's entity enterprises.

With the declining return on investment for entity enterprises, many enterprises have transformed into financial industry, real estate industry and other industries in an attempt to seek profit growth opportunities through financialization, which has led to a gradual imbalance in the allocation of resources to entity enterprises and a blow to their main business, with more and more productive funds gradually leaving the enterprises and forming "idle" in the financial market. Data shows that in 2009, only 899 companies allocated financial assets, while by 2020 there were 3086 companies holding financial assets. In 2009, the total size of China's financial assets was 240.328 billion yuan, but by 2020 that number had increased to 207.3348 billion yuan. The overall pattern of the economy is changing towards financialization, and the profit-driven model of companies' main business is gradually converging towards financial profit paths.

With the gradual inclination of enterprises towards financialization, its impact on the efficiency of physical investment has increasingly become a hot topic of research in academia. Some scholars have argued that corporate financialization has had a negative impact on the development of China's real economy and that the risk-return mismatch of financial assets inhibits industrial investment, and that this inhibitory effect increases as the degree of financialization rises (Zhang Chengsi and Zhang Buzhan, 2016), while some studies have analyzed the crowding out of industrial investment by

corporate financialization from different perspectives, arguing that it reduces the efficiency of financial resource allocation (Liu Duchi et al. 2016). However, some studies have also found that corporate financialization has a positive impact on industrial investment, improving the financial position of firms by alleviating financial distress and facilitating corporate refinancing (Stulz, 1996).

Considering that the decline in the efficiency of physical investment is underpinned by the decline in the potential growth rate of the Chinese economy and the efficiency of economic growth, it is necessary to conduct a fuller study of corporate financialization and the efficiency of corporate investment in the Chinese market environment. This paper systematically investigates this issue based on micro data of listed enterprises. The empirical results show that corporate financialization can improve the efficiency of corporate investment, and the positive effect of corporate financialization on the efficiency of corporate investment is more pronounced among manufacturing firms and firms located in non-high administrative cities. The analysis of the mechanism suggests that corporate financialization can help improve the efficiency of investment by lowering the ability of earning cashflow and alleviating interest-bearing debts, and can also help improve the efficiency of investment by increasing the financial risk of enterprises.

The possible marginal contributions of this paper are mainly in the following areas: First, scholars have started to focus on corporate financialization in China in recent years, but the existing literature mainly explores the correlation between corporate financialization and corporate innovation, stock prices and productivity, however, the efficiency of corporate investment is closely related to the real economy and little literature has explored whether corporate financialization can contribute to the efficiency of corporate investment in general. This paper examines corporate financialization and the efficiency of corporate investment in a framework that not only extends the literature on the role of corporate financialization heterogeneity in influencing firms, but also robustly demonstrates the positive effects of corporate financialization. Second, this paper examines in detail the impact paths of corporate financialization on the efficiency of corporate investment from three perspectives: the ability of earning cashflow, interest-bearing debt and financial risk, and deepens the study of the interaction mechanism between the two.

The remainder of the article is organized as follows: in the second part, the paper reviews the existing relevant theories and literature, as well as discusses the theoretical mechanisms and research hypotheses of the paper. The third part is the research design of the paper. The fourth part is the empirical tests and analysis of the results. The last part is the conclusions and implications of the paper

2. Theoretical Mechanisms and Research Hypotheses

2.1 Economic Effects of Corporate Financialization

In recent years, with the rapid development of the financial market, the participation of Chinese non-financial enterprises in the financial market has gradually increased, and the financialization of enterprises is becoming an important trend. There are three motives for corporate financialization, namely the "reservoir" motive, the risk diversification motive and the profit enhancement motive. The "reservoir" motive refers to the preventive reserve function of corporate financialization, in which the corporate reserve capital can avoid the adverse effects of capital shortage on the enterprise (Hu Yiming et al., 2017). The risk-diversification motive refers to the ability to reduce tax burden, financial costs and underinvestment through arbitrage trading of financial derivatives, thereby accelerating capital turnover and diversifying corporate risks (Bessembinder, 1991). The profit-enhancement motive indicates that the imbalance between the real economy and the financial market has prompted companies to change their business strategies, and firms are gradually turning to financial investment business as their main source of profit, thus, firms gradually tend to financialize their businesses in pursuit of profit maximization (Cai Mingrong and Ren Shichi, 2014; Hu Yiming et al., 2017).

Corporate financialization can have an impact in terms of corporate innovation, corporate share prices and the productivity of firms. First of all, diversified financial asset allocation can help enterprises avoid risks, so that they can take more risks in innovation and research and development (Gehring, 2013). However, relevant domestic studies have shown that the financialization of real enterprises has a negative crowding-out effect on enterprise innovation, and the market arbitrage motive will aggravate this effect (Wang Hongjian et al., 2017). Luo Mingjin et al. (2021) further studied on this basis and found that the financialization of enterprises will have two opposite effects on the labor income share. Namely "profit spillover" and "technology suppression" effect. Secondly, in terms of the relationship between financialization and stock prices, the research results show that corporate financialization will promote enterprises to increase the payment level to shareholders and executives in the form of dividends or stock buybacks, and promote the increase of stock prices (Dallery, 2009). In terms of stock price crash, financial investment is more likely to lead to stock price crash when operating risks are higher and insiders are less supervised (Peng Yuchao et al., 2018). Thirdly, Milberg (2008) emphasizes the financialization link in the global value chain, and believes that the global production network of multinational companies is conducive to the segmentation of production and the control of production costs to ensure higher production efficiency. Furthermore, empirical research shows that there is an inverted U-shaped relationship between enterprise financialization and enterprise productivity, that is, moderate financialization can improve the productivity of enterprises, but excessive financialization will be counterproductive (Hu Haifeng et al., 2020).

According to the existing literature, most studies have dealt with the impact of corporate financialization on corporate risk, profitability, innovation and productivity, but there are relatively few studies on the dimension of measuring investment efficiency, which, as an important indicator of the efficiency of capital allocation and the effective use of capital by enterprises, determines the degree of development of the real economy. Therefore, the study of corporate financialization can enrich the relevant research in the field of the efficiency of corporate investment, this paper focuses on the impact of corporate financialization on the efficiency of corporate investment

2.2 Factors Affecting the Efficiency of Corporate Investment

The efficiency of corporate investment is a measure of the return on investment for a given investment cost. The sources of enterprise investment efficiency are mainly focused on industrial policy, managerial background characteristics and internal and external environment. Li Wenjing et al. (2014) found that in general industrial policy did not significantly improve enterprise investment, and on this basis made suggestions for formulating industrial policy and adjusting industrial structure; however, some studies have shown that the introduction of industrial policy can reduce the efficiency of enterprise investment by influencing enterprise financing constraints, and argued that industrial policy should reduce direct intervention and replace government industry selection with industry guidance (Zhang Xinmin et al. 2017).

Executive characteristics are also an important factor affecting the efficiency of corporate investment, and the investment behavior chosen by different background characteristics (e.g. age, tenure, education, etc.) can have an impact on the efficiency of corporate investment (Li Yan et al., 2011). Meanwhile, the network location of independent directors is related to the efficiency of corporate investment, and the higher the centrality of the network of independent directors, the higher the efficiency of corporate investment (Chen Yansen et al., 2011). Dai Yunhao et al. (2017) further investigated the impact of executives' overseas experience on investment efficiency from the perspective of their personal experience, and found that returnee characteristics can enhance the efficiency of corporate investment.

Both the internal environment as well as the external environment can have an impact on corporate investment (Shin and Park, 1999 and Schiantarelli, 1996), and from the perspective of corporate financing constraints, firms are able to improve their investment efficiency by maintaining higher internal cash flows (Denis and Sibilkov, 2010) or by increasing their borrowing capacity (Aivazian

et al., 2005), thus alleviating the financing constraint in order to improve investment efficiency. Yu Kun et al. (2014) further proposed the financing constraint hypothesis to explain the investment efficiency of firms, where severe credit constraints are the main reason for the continuous decline in the investment efficiency of firms in non-state enterprises.

Most of the existing literature focuses on the influence of other aspects of corporate economy on the efficiency of corporate investment, but few scholars have studied the influence of corporate financialization on the efficiency of corporate investment and its transmission mechanism. Considering that corporate financialization has significant influence on corporate debt, profitability and risk, and that the efficiency of corporate investment is closely related to these aspects, this paper focuses on the influence of corporate financialization on the efficiency of corporate investment and its transmission mechanism.

2.3 The Influence of Corporate Financialization on the Efficiency of Corporate Investment

The relationship between corporate financialization and the efficiency of corporate financialization has a "crowding-out effect" on industrial investment, while the other believes that corporate financialization has a "reservoir effect", which can alleviate the financing constraints of enterprises, thus positively boosting industrial investment.

In terms of the "crowding out effect", Orhangazi (2008) studies the relationship between the investment efficiency of industrial investment and financialization of non-financial firms in the US and finds that excessive financialization of firms reduces the efficiency of industrial investment and suggests that when firms underinvest, increased financialization will "crowd out" industrial investment. The study finds that excessive financialization of firms reduces the efficiency of industrial investment, and suggests that when firms underinvest, increased financialization can "crowd out" industrial investment, which means that investment in financial assets crowds out capital from industrial investment, resulting in a decline in the efficiency of industrial investment.

Smith and Stulz (1985) and Stulz (1996) suggest that the "reservoir effect" allows companies to liquidate financial assets to alleviate financial distress and invest in industrial capital, while the appreciation of financial assets can improve the financial position of companies and facilitate refinancing.

The above literature shows that there are two opposite effects of financialization on industrial investment, namely the "crowding out effect" and the "reservoir effect", under which the direction of the impact of financialization on enterprise investment efficiency cannot be directly determined. Therefore, this paper proposes a set of opposing hypotheses aimed at determining the direction of the influence of corporate financialization on investment efficiency through empirical analysis, with the following hypotheses.

H0: Deeper financialization of firms has a significant negative impact on the efficiency of corporate investment.

H1: Deeper financialization of firms has a significant positive impact on the efficiency of corporate investment.

Further, this paper argues that corporate financialization can affect the efficiency of corporate investment through its ability to earn cashflow, which is positively related to its business performance and corporate profitability. Firstly, the study finds a non-linear relationship between firm profitability and investment decisions (Biddle et al., 2001). Secondly, Hu Yiming et al. (2017) suggested that firms may pursue higher profits through deeper financialization. This suggests that firm profitability plays a role in the relationship between firm financialization and investment efficiency, leading to the following hypothesis.

H2a: The financialization of a firm can affect its investment efficiency through its ability of earning cashflow.

In addition, this paper argues that corporate financialization, debt and investment efficiency are related, and Xiao Min (2010) finds that there is a strong correlation between internal cash flow and

investment efficiency. The financialization of enterprises can, to a certain extent, affect the debt structure of enterprises, which in turn affects the ease of financing and risk of investment activities.

H2b: The financialization of firms can affect their investment efficiency through interest-bearing debt.

Finally, this paper argues that corporate financialization can affect the efficiency of corporate investment by influencing corporate financial risk. As the proportion of financial investment increases, firms can use financial derivatives to hedge transactions to save tax, reduce the cost of financial aspects, and reduce corporate financial risk (Bessembinder, 1991); at the same time, it is also argued that corporate financialization can increase corporate financial risk, as firms have limited resources, and as the scale of financial asset allocation increases, it will inevitably crowd out fixed assets and R&D activities, leading to a decline in the firm's future main business performance and increasing financial risk (Zhang Chengsi and Zhang Budan, 2016). Wang Zhuquan et al. (2019) also found that there is a correlation between corporate financial risk and the efficiency of financial services to the real economy. Therefore, we hypothesize that corporate financial risk is one of the paths through which corporate financialization affects investment efficiency, and this paper proposes the following hypothesis.

H2c: The financialization of a business can affect the efficiency of its investments through the financial risk.

3. Research Design and Data Description

3.1 Econometric Model Construction

Based on the above theory, an OLS regression model was used to test the impact of corporate financialization on the efficiency of corporate investment.

$$Inveffi_{it} = \alpha_0 + \alpha_1 Fin_{i,t} + \delta X_{i,t} + \sum Year + \sum industry + \varepsilon_{i,t} \quad (1)$$

$Inveffi_{it}$ denotes the investment efficiency of the firm, and $Fin_{i,t}$ denotes the degree of financialization of the firm, and $X_{i,t}$ represents a set of control variables that may have an impact on the efficiency of corporate investment, and $\varepsilon_{i,t}$ is a random disturbance term, and in his paper, the Year and industry within the sample period are controlled.

In order to study the mechanism of the impact of financialization of firms on the efficiency of corporate investment, the following model was constructed.

$$Inveffi_{it} = \alpha_0 + \alpha_1 Fin_{i,t} + \alpha_2 Z_{i,t} + \alpha_3 Z_{i,t} * Fin_{i,t} + \delta X_{i,t} + \sum Year + \sum industry + \varepsilon_{i,t} \quad (2)$$

Model (2) adds an interaction term to model (1), where $Z_{i,t}$ is the mechanism variable by which the corporate financialization affects the efficiency of the firm's investment, α_2 represents the effect of the mechanism variable itself on the efficiency of corporate investment. If the coefficient α_3 of interaction term $Z_{i,t} * Fin_{i,t}$ is significantly non-zero, then the mechanism variable $Z_{i,t}$ plays a mediating role in the effect of financialization on the efficiency of corporate investment.

3.2 Description of Variables and Data

3.2.1 Sample Selection and Data Sources

This paper selects a sample of listed companies in the Chinese A-share market from 2012 to 2021, and screens the sample. Firstly, companies in the financial sector and real estate sector were excluded; secondly, companies in the ST category were excluded; and again, samples with abnormal or missing relevant data were excluded. The financial data used in the study were obtained from the CSMAR database. In order to eliminate the effect of extreme values, the continuous variables required in the analysis were tail-shrunk (Winsorize) at the 1% and 99% quartiles in this paper, resulting in a valid sample of 5308.

3.2.2 Definition of Variables

(1) Corporate financialization (*Fin*): This paper draws on Du Yong et al. (2017) and uses the ratio of financial assets to total assets to define corporate financialization. Based on the enterprise's statement of financial position, this paper includes trading financial assets, net available-for-sale financial assets, derivative financial assets, net held-to-maturity investments, net loans and advances granted, and net investment properties in the category of financial assets (The definition of financial assets in this paper does not include monetary funds because the purpose of holding monetary funds is to meet the needs of daily business activities and does not bring capital gains to the enterprise, so monetary funds are not included in the scope of measurement ; the definition of financial assets in this paper includes investment properties because the real estate industry is developing at an increasingly rapid pace and many enterprises hold investment properties to chase high profits, which is consistent with the definition of financial assets in this paper, so they are included in financial assets.). Accordingly, corporate financialization (*Fin*) is calculated as follows.

$$\begin{aligned} Fin = & (\text{trading financial assets} + \text{net available for sale financial assets} \\ & + \text{derivative financial assets} + \text{net held to maturity investments} \\ & + \text{net loans and advances granted} \\ & + \text{net investment properties}) / \text{total assets} \end{aligned}$$

(2) Enterprise investment efficiency (*Inveffi*): This paper refers to Li Wei'an and Ma Chao's (2014) measure of enterprise investment efficiency, calculates the optimal level of enterprise investment through the model, and then expresses the enterprise investment efficiency in terms of the deviation of the actual level of enterprise investment from the optimal level of investment obtained from the calculation, as follows.

$$Invest_{i,t} = \alpha_0 + \alpha_1 Tobinq_{i,t-1} + \alpha_2 Cash_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 lnSize_{i,t-1} + \alpha_5 Age_{i,t-1} + \alpha_6 ROA_{i,t-1} + \alpha_7 Invest_{i,t-1} + \sum Year + \sum industry + \varepsilon_{i,t} \quad (3)$$

$Invest_{i,t}$ denotes the new physical investment added by enterprise *i* in period *t*, equal to the net amount of (fixed assets + construction in progress + construction materials + intangible assets) of the enterprise in the current period / total assets of the enterprise at the end of the previous year. $Tobinq_{i,t-1}$ is the Tobin's Q value of the enterprise at the end of the previous year (equal to the market value of the enterprise at the end of the previous year/total assets of the enterprise at the end of the previous year). $Cash_{i,t-1}$ is the ratio of an enterprise's monetary resources at the end of the previous year to its total assets at the end of the previous year. $Debt_{i,t-1}$ indicates the enterprise's gearing ratio at the end of the previous year. $lnSize_{i,t-1}$ represents the size of the enterprise (equal to the natural logarithm of the total assets at the end of the previous year). $Age_{i,t-1}$ represents the number of years the enterprise has been listed as at the end of the previous year. $ROA_{i,t-1}$ represents the return on assets of the enterprise in the previous year. $Invest_{i,t-1}$ represents the enterprise's real value added of investment in the previous year. In addition, the Year and industry within the sample period are controlled. The efficiency of an enterprise's investment (*Inveffi*) is measured by the absolute value of residual $\varepsilon_{i,t}$. The higher the absolute value, the greater the deviation of the actual investment from the optimal investment, and the less efficient the enterprise's investment. When the residual is positive, the enterprise has over-invested, and when the residual is negative, the enterprise has under-invested.

(3) Mechanism variables

1. The ability of earning cashflow (*profit*)

The ratio of the net cash flow from operating activities of an enterprise for the period to the total assets at the end of the period can be used as a measure of the enterprise's ability to obtain cash by the following formula.

$$profit_{i,t} = \frac{\text{net cash flow from operating activities}}{\text{total assets at the end of the year}}$$

2. Proportion of interest-bearing debt (*KM*)

Referring to the study by Liu Shuwen et al. (2019), this paper defines the interest-bearing debt ratio as:

$$KM = (\text{short term borrowings} + \text{long term borrowings} + \text{bonds payable}) / \text{total assets}$$

Interest-bearing debt is debt that requires interest to be paid on a company's liabilities and reflects, to some extent, it reflects the cost and risk of financing a company's investment activities.

3. Corporate financial risk (*Risk*)

The Z-score model is a model developed by Edward Altman, a professor at New York University's Stern School of Business, using 22 financial ratios and a rigorous statistical screening process to measure the financial risk of an enterprise. In this paper, Altman's (2002) modified Z-score is used to measure financial risk because it is more in line with the financial situation of listed companies in the emerging capital market environment while retaining the comprehensiveness of the index, and is widely used in China and abroad, with the following formula.

$$Z = (0.717 \times \text{working capital} + 0.847 \times \text{retained earnings} + 3.107 \times \text{EBIT} + 0.42 \times \text{total market value} + 0.998 \times \text{sales revenue}) / \text{total asset}$$

4. Control variables

Based on the relevant literature and the specific situation of listed companies in China, the following control variables are set in this paper.

Corporate governance variables include board characteristics variables, executive characteristics variables and shareholding structure variables. Of these, the board characteristics variables include board size (*Dirsize*), expressed as the total number of board members.

Executive characteristics variables include management shareholding (*Mhldn*), expressed as the ratio of the number of shares held by management to the total number of shares, and the dual role of chairman and managing director (*Dual*) expressed as a dummy variable, with 1 indicating that both roles are held by one person and 0 indicating that they are held by different people.

Table 1. Definition and calculation of variables

variables	Symbols	Variable metrics	Data source
Corporate financialization	Fin	Financial assets/Total assets	CSMAR
The efficiency of corporate investment	Inveffi	Absolute value of residuals from model (1) regression results	CSMAR
The ability of earning cashflow	Profit	Net cash flow from operating activities/Total assets	CSMAR
Financial risks	Risk	Z-score	CSMAR
Board size	Dirsize	Number of board members	CSMAR
Management stock position proportion	Mhldn	Number of executive holdings/Total shares	CSMAR
Two jobs in one	Dual	If the chairman is also the general manager, it is 1, otherwise it is 0	CSMAR
Ownership concentration	Shrcr	Share proportion of the largest shareholder	CSMAR
Enterprise scale	Lnsiz	The natural log of total assets	CSMAR
Asset-liability ratio	Debt	Total liabilities/Total assets	CSMAR
Current ratio	Curatio	Current assets/Current liabilities	CSMAR
Return on asset	ROA	Net profit/Average total assets	CSMAR
Age of enterprise	Age	Number of years the company has been listed	CSMAR
Cash holdings	Cash	Money funds/Total assets	CSMAR
Percentage of interest-bearing debt	KM	(Short-term borrowings + long-term borrowings + bonds payable)/Total assets	CSMAR

Equity structure variables include equity concentration, with equity concentration (Shrcr) measured as the percentage of shares held by the largest shareholder.

In addition to these, the following other control variables are set, including: firm size (Lnsiz), gearing (Debt), current ratio (Curatio), return on assets (ROA), year of establishment (Age), and cash holdings (Cash).

Table 1 summarizes all the definitions and calculations of the variables involved in the regression model.

3.2.3 Descriptive Statistics

A descriptive statistical analysis of the main variables covered in this paper is presented in Table 2. It can be seen through Table 2 that the core explanatory variable firm financialization (Fin) has 5308 valid values, with a mean value of 0.0298, a maximum value of 0.839 and a minimum value of 0. This indicates that the degree of financialization varies between firms, with some firms even differing significantly from one another.

Table 2. Descriptive statistics of variables

	(1)	(2)	(3)	(4)	(5)
Variables	Sample size	Mean	Standard deviation	Minimum value	Maximum value
Fin	5,308	0.0298	0.0680	0	0.839
Curatio	5,308	2.045	1.959	0.245	12.99
Debt	5,308	0.453	0.203	0.0616	0.929
ROA	5,308	0.0355	0.0618	-0.219	0.217
Shrcr	5,308	34.04	14.91	8.380	72.47
Age	5,308	18.78	5.848	11	31
Dirsize	5,308	8.845	1.776	0	18
Dual	5,308	0.181	0.385	0	1
Lnsiz	5,308	22.56	1.320	19.83	26.43
Mhldn	5,308	0.0453	0.105	0	0.819
Cash	5,308	0.167	0.118	0.00230	0.980

4. Empirical Tests and Analysis of Results

4.1 Baseline Regression

Firstly, a baseline regression is conducted to test the regression of H1 to investigate the impact of corporate financialization on the efficiency of corporate investment. The dependent variable is the residual of model (1) taken as absolute value (noted as invest_eff), with a larger invest_eff indicating lower investment efficiency. The regression results are shown in Table 3. Column (1) shows the regression results without the control variables, industry and time effects, where the corporate financialization Fin is significantly negatively related to invest_eff at the 1% level. The results in column (2) are obtained by further controlling other variables, where the coefficient does not change significantly. Column (3) further takes into account the time and industry effects and the results are consistent with the above.

According to the results in column (3), the estimated coefficient of corporate financialization is -0.460 at the 1% significance level, so corporate financialization has a significant positive impact on the efficiency of corporate investment (the interpreted variable invest_eff measures the deviation of corporate actual investment from optimal investment). As the degree of financialization of enterprises increases, the ability of enterprises to realize their financial assets gradually strengthens, thus enabling them to replenish the funds needed in the process of production and operation in a timely manner, ensuring the liquidity of their assets and improving the efficiency of investment. Therefore, the deepening of financialization has a significant positive impact on the investment efficiency of enterprises, and hypothesis H1 is verified.

Table 3. Baseline estimation results

Dependent Variable	(1) invest_eff	(2) invest_eff	(3) invest_eff
Fin	-0.638*** (0.041)	-0.696*** (0.037)	-0.460*** (0.028)
Lnsiz		0.024*** (0.002)	0.009*** (0.002)
ROA		-0.299*** (0.048)	-0.205*** (0.037)
Cash		-0.564*** (0.023)	-0.314*** (0.018)
Dual		-0.015** (0.006)	-0.004 (0.005)
Shrer		4.52E-04*** (1.70×10 ⁻⁴)	-0.001*** (1.30E-04)
Debt		-0.208*** (0.018)	-0.072*** (0.014)
Age		0.002*** (0.001)	-0.001*** (3.99E-04)
Curatio		-0.016*** (0.002)	-0.013*** (0.001)
Dirsize		0.014*** (0.001)	0.003** (0.001)
Mhldn		-0.025 (0.023)	-0.040** (0.017)
Constant	0.427*** (0.003)	-0.027 (0.050)	0.260*** (0.049)
Time-fixed effect			Control
Industry-fixed effect			Control
Sample size	5,308	5,308	5,308
Adjusted-R ²	0.043	0.291	0.635

Note: ***, ** and * indicate significant at the 1%, 5% and 10% levels respectively. Same for the following tables.

In terms of the control variables, the coefficient on firm size is significantly positive, indicating that the larger the size of the firm, the less efficient the firm's investment. Meanwhile, the estimated coefficients of return on assets and management shareholding ratio are significantly negative, indicating that the higher the return on assets, the more efficient the firm's investment, and the higher the management shareholding ratio, the more efficient the firm's investment, holding all other conditions constant.

4.2 Mechanism Test

4.2.1 Corporate Financialization, the Ability of Earning Cashflow and the Efficiency of Corporate Investment

The results of equation (2) are estimated by adding the ability of earning cashflow indicator to the baseline regression equation (1) to explore how the financialization of firms has an impact on the ability of earning cashflow and hence on the efficiency of their investments, as shown in Table 4. Column (1) is the regression result without considering the control variables, industry and time effects, while column (2) adds control variables to column (1) and column (3) further considers the time and industry effects.

According to the regression results, the estimated coefficient of the interaction term between financialization and the ability of earning cashflow of enterprises is significantly negative, which indicates that the ability of earning cashflow tends to decrease as the degree of financialization of enterprises deepens, which ultimately has a positive effect on the efficiency of enterprises' investment. This paper argues that if a firm increases its investment in financial assets, its funds for operations and other business activities will be lost due to the increase in financial investment activities, thus reducing the cash that the firm obtains through production and operation, while the reduction in cash flow will limit the firm's over-investment to a certain extent (Jensen, 1986), and managers will be

more cautious in using cash flow to avoid using free cash flow in negative NPV investments, thus enhancing the efficiency of corporate investment.

Table 4. Impact of corporate financialization on the efficiency of corporate investment through the ability of earning cashflow

Dependent Variable	(1) invest eff	(2) invest eff	(3) invest eff
Fin*Profit	-1.386** (0.599)	-1.416*** (0.508)	-1.647*** (0.381)
Fin	-0.576*** (0.045)	-0.616*** (0.040)	-0.396*** (0.031)
Profit	0.440*** (0.043)	0.664*** (0.040)	0.349*** (0.030)
Lnsiz		0.021*** (0.002)	0.008*** (0.002)
ROA		-0.572*** (0.050)	-0.334*** (0.038)
Cash		-0.598*** (0.023)	-0.338*** (0.018)
Dual		-0.015** (0.006)	-0.004 (0.005)
Shrcr		2.86E-04* (1.66E-04)	-0.001*** (1.29E-04)
Debt		-0.181*** (0.018)	-0.063*** (0.014)
Age		0.001*** (0.001)	-0.001*** (3.94E-04)
Curatio		-0.013*** (0.002)	-0.012*** (0.001)
Dirsize		0.013*** (0.001)	0.002** (0.001)
Mhldn		-0.017 (0.022)	-0.035** (0.017)
Constant	0.405*** (0.004)	0.007 (0.049)	0.276*** (0.049)
Time-fixed effect			Control
Industry-fixed effect			Control
Sample size	5,308	5,308	5,308
Adjusted-R ²	0.062	0.328	0.644

Therefore, hypothesis H2a is tested and the empirical results support the path of "corporate financialization → the ability of earning cashflow → the efficiency of corporate investment".

4.2.2 Corporate Financialization, Interest-Bearing Debt and the Efficiency of Corporate Investment

Equation (2) is estimated by adding corporate interest-bearing debt to the baseline regression equation (1) to explore how corporate financialization indirectly affects the efficiency of corporate investment through interest-bearing debt, and the results are shown in Table 5. Column (1) is the regression result without considering the control variables, industry and time effects, while column (2) adds control variables to column (1) and column (3) further considers the time and industry effects.

According to the regression results, the estimated coefficient of interest-bearing debt is positive at the 1% level of significance, indicating that an increase in interest-bearing debt has a negative impact on the efficiency of corporate investment. In addition, the estimated coefficient of the interaction between interest-bearing debt and financialization is significantly negative. shows that as the corporate financialization increases, the proportion of interest-bearing debt decreases, which has a positive impact on investment efficiency. This suggests that if a firm invests most of its capital in financial assets, it can sell some of its financial products when it faces debt and is short of funds, which not only allows it to obtain funds in the short term to pay off its debts, but also allows it to use its surplus cash to invest in real assets and improve its investment efficiency.

Table 5. Impact of corporate financialization on the efficiency of corporate investment through interest-bearing debt

Dependent Variable	(1) invest_eff	(2) invest_eff	(3) invest_eff
Fin*KM	-2.098*** (0.288)	-1.645*** (0.255)	-1.072*** (0.199)
Fin	-0.288*** (0.051)	-0.474*** (0.046)	-0.339*** (0.036)
KM	0.581*** (0.018)	0.635*** (0.022)	0.300*** (0.019)
Lnsiz		0.015*** (0.002)	0.005** (0.002)
ROA		-0.113** (0.045)	-0.125*** (0.036)
Cash		-0.445*** (0.022)	-0.280*** (0.018)
Dual		-0.014** (0.006)	-0.004 (0.005)
Shrcr		0.001*** (1.58E-04)	-3.97E-04*** (1.28E-04)
Debt		-0.480*** (0.020)	-0.207*** (0.017)
Age		0.002*** (4.79E-04)	-0.001** (3.9E-04)
Curatio		-0.019*** (0.002)	-0.015*** (0.001)
Dirsize		0.012*** (0.001)	0.002** (0.001)
Mhldn		-0.062*** (0.021)	-0.054*** (0.017)
Constant	0.322*** (0.004)	0.168*** (0.047)	0.368*** (0.048)
Time-fixed effect			Control
Industry-fixed effect			Control
Sample size	5,308	5,308	5,308
Adjusted-R ²	0.211	0.387	0.652

Therefore, hypothesis H2b holds, corporate financialization can have an impact on the efficiency of corporate investment by affecting the interest-bearing debt.

4.2.3 Corporate Financialization, Financial Risk and the Efficiency of Corporate Investment

Equation (2) is estimated by adding corporate financial risk to the baseline regression equation (1), with the magnitude of financial risk measured by the Z-index (the higher the Z-index, the lower the corporate financial risk), in order to explore the impact of corporate financialization on the efficiency of corporate investment through the financial risk channel, and the results are shown in Table 6. Column (1) shows the regression results without considering the control variables, industry and time effects, while column (2) adds control variables to column (1) and column (3) further considers the time and industry effects.

Overall, the effect of corporate financial risk on investment efficiency is not significant, however, the estimated coefficient of the interaction term is significantly negative, indicating that increased corporate financialization increases financial risk, but promotes the efficiency of corporate investment. To explore the logic behind this, firstly, financial investment itself is a high-risk investment, which also crowds out some of the funds of the real business and increases the possibility of operational difficulties, however, as appropriate financial risk can reduce excessive on-the-job spending by managers and restrain firms from using free cash flow for wasteful investment, this may enhance the efficiency of corporate investment to a certain extent.

Therefore, hypothesis H2c is tested, which states that the corporate financialization affects its financial risk and therefore its efficiency of corporate investment

Table 6. Impact of corporate financialization corporate on investment efficiency through financial risk

Dependent Variable	(1) invest_eff	(2) invest_eff	(3) invest_eff
Fin*Risk	-0.010 (0.009)	-0.028*** (0.008)	-0.027*** (0.006)
Fin	-0.617*** (0.044)	-0.652*** (0.039)	-0.418*** (0.030)
Risk	0.001*** (2.11E-04)	-5.08×10 ⁻⁵ (1.99E-04)	-1.37E-04 (1.53E-04)
Lnsiz		0.026*** (0.003)	0.012*** (0.002)
ROA		-0.273*** (0.049)	-0.182*** (0.037)
Cash		-0.566*** (0.023)	-0.317*** (0.018)
Dual		-0.014** (0.006)	-0.003 (0.005)
Shrcr		4.45E-04*** (1.70E-04)	-0.001*** (1.30E-04)
Debt		-0.214*** (0.019)	-0.080*** (0.014)
Age		0.002*** (0.001)	-0.001*** (3.98E-04)
Curatio		-0.016*** (0.002)	-0.013*** (0.001)
Dirsize		0.014*** (0.001)	0.002** (0.001)
Mhldn		-0.025 (0.023)	-0.040** (0.017)
Constant	0.424*** (0.003)	-0.085 (0.055)	0.192*** (0.052)
Time-fixed effect			Control
Industry-fixed effect			Control
Sample size	5,306	5,306	5,306
Adjusted-R ²	0.045	0.293	0.637

4.3 Heterogeneity Analysis

4.3.1 Sample based on the City Where the Enterprise is Located

Due to differences in resource endowments and policy intensity, China's economic development has long been characterized by regional imbalances, with significant differences in the degree of economic development and financial market sophistication in different regions, and hence the sensitivity of the efficiency of corporate investment to corporate financialization. In order to investigate the heterogeneous impact of the degree of financialization on the investment efficiency of enterprises in different regions, this paper divides the sample into two sub-samples: high administrative level cities and general cities, and conducts regression analysis on the benchmark model separately. Among them, high administrative level cities include cities at full provincial (ministerial) level, vice-ministerial level (sub-provincial) cities, cities in planned provinces and cities in other provincial capitals; the rest of cities are categorized as general cities (High administrative level cities: Beijing, Shanghai, Tianjin, Chongqing, Harbin, Changchun, Shenyang, Jinan, Nanjing, Hangzhou, Guangzhou, Wuhan, Chengdu, Xi 'an, Dalian, Qingdao, Ningbo, Xiamen, Shenzhen, Hohhot, Nanning, Lhasa, Yinchuan, Urumqi, Shijiazhuang, Taiyuan, Hefei, Fuzhou, Nanchang, Zhengzhou, Wuhan, Changsha, Haikou, Guiyang, Kunming, Lanzhou, Xining, Taipei; General city: Cities other than high administrative level cities.), and the empirical results are shown in Table 7.

According to the regression results, the coefficient of corporate financialization is statistically significantly smaller than zero at the 1% level in both subsamples of high administrative level cities and general cities, however, the absolute value of the coefficient of corporate financialization is larger in the general city subsample; a test for difference in coefficients between groups is conducted and the p-value is zero, and the coefficient of the interaction term between corporate financialization and

the dummy variable (administrative class of city) is significant at the 1% level. Thus, the contribution of corporate financialization to the efficiency of corporate investment is stronger in the average city. Compared with cities of high administrative rank, average cities have scarcer factor resources, slower marketisation process, more backward institutional environment and lack of good opportunities for physical investment, while financial investment is not constrained by geographical conditions, which makes investment in financial assets more active in average cities compared with physical investment. Moreover, general cities are limited by the state of regional economic development and the degree of legal perfection of market financialization, and are less able to respond to changes in national policies and industrial structures, and thus more sensitive to changes in corporate financialization. As a result, there are regional differences in the impact of corporate financialization on the efficiency of corporate investment, corporate financialization has a stronger effect on the investment efficiency of firms located in general cities than in cities with high administrative levels.

Table 7. Regression results for the sample of different urban administrative classes

Dependent Variable	(1) High administrative level cities	(2) General cities
	invest_eff	invest_eff
Fin	-0.378*** (0.037)	-0.569*** (0.045)
Lnsiz	0.005** (0.002)	0.015*** (0.003)
ROA	-0.233*** (0.051)	-0.169*** (0.052)
Cash	-0.300*** (0.023)	-0.318*** (0.030)
Dual	-0.013** (0.006)	0.002 (0.007)
Shrcr	-1.99E-04 (1.74E-04)	-0.001*** (1.99E-04)
Debt	-0.068*** (0.019)	-0.049** (0.021)
Age	-0.001** (0.001)	-0.002*** (0.001)
Curatio	-0.013*** (0.002)	-0.012*** (0.002)
Dirsize	0.004*** (0.001)	-0.001 (0.002)
Mhldn	-0.008 (0.025)	-0.051** (0.023)
Constant	0.306*** (0.061)	0.124 (0.084)
Time-fixed effect	Control	Control
Industry-fixed effect	Control	Control
Sample size	3,119	2,189
Adjusted-R ²	0.662	0.615

4.3.2 Sample based on the Nature of the Industry to Which the Enterprise Belongs

The impact of the corporate financialization varies, taking into account the different industries to which they belong. In terms of industry, the manufacturing sector relies to a considerable extent on natural resources to provide raw materials for production and manufacturing, and has a different demand for capital than the non-manufacturing sector. Therefore, in this paper, the total sample is divided into manufacturing and non-manufacturing enterprises according to the National Economic Classification to explore whether corporate financialization is heterogeneous across industries, and the regression results are shown in Table 8.

Table 8. Classification of the nature of the industry to which the enterprise belongs

	(1) Manufacturing invest_eff	(2) Non- manufacturing invest_eff
Dependent Variable		
Fin	-0.556*** (0.038)	-0.382*** (0.045)
Lnsiz	0.009*** (0.002)	0.010** (0.004)
ROA	-0.190*** (0.041)	-0.196** (0.082)
Cash	-0.373*** (0.021)	-0.186*** (0.035)
Dual	-0.003 (0.005)	-0.005 (0.011)
Shrcr	-0.001*** (1.45E-04)	-1.77E-04 (2.82E-04)
Debt	-0.028* (0.016)	-0.176*** (0.030)
Age	-0.002*** (4.48E-04)	0.001 (0.001)
Curatio	-0.010*** (0.001)	-0.020*** (0.003)
Dirsize	-4.14E-04 (0.001)	0.009*** (0.002)
Mhldn	-0.055*** (0.018)	0.019 (0.046)
Constant	0.293*** (0.045)	0.123 (0.095)
Time-fixed effect	Control	Control
Industry-fixed effect	Control	Control
Sample size	3,994	1,314
Adjusted-R ²	0.596	0.596

Based on the regression results, it can be seen that the estimated coefficient of corporate financialization is negative at the 1% level of significance under both sub-samples, but the absolute value of the estimated coefficient of corporate financialization is greater in the sample of manufacturing firms. To ensure the reliability of the results, a test for difference in coefficients between groups is conducted and the p-value is zero, and the difference is significantly negative at the 1% level. The above test results indicate that the contribution of corporate financialization to the efficiency of corporate investment is more pronounced in manufacturing firms compared to non-manufacturing firms. This paper argues that since manufacturing enterprises have a greater demand for capital, relatively slower capital turnover, and relatively more extensive business activities and aspects involved in the use of capital, the risks of manufacturing enterprises are correspondingly greater and financing is more difficult, and corporate financialization can help manufacturing enterprises alleviate their financing constraints and, to a certain extent, improve the efficiency of investment in manufacturing enterprises.

4.4 Robustness Tests

In order to verify the reliability of the findings of this paper, the following robustness tests are conducted.

4.4.1 Replacement of Core Independent Variable

Corporate financialization indicators can also be measured by excluding "investment property". Among the components of the previous measure of corporate financialization, "investment property" is unique in that it is less liquid and more costly to recover than other financial assets, and therefore, after excluding "investment property", the indicator is recalculated and the baseline regression is conducted again. The estimated coefficient of corporate financialization is negative at the 1% level of significance for both measures of corporate financialization, therefore, the inclusion of "investment property" in the corporate financialization indicator does not affect the results of the baseline regression. This result confirms the robustness of the baseline regression findings.

4.4.2 Replacement of the Dependent Variable

To further ensure the robustness of the investment efficiency measure, this paper refers to the study of Dai Yunhao et al. (2017) and uses a regression model of firm investment on growth opportunities to estimate the efficiency of corporate investment, with growth opportunities measured by the growth rate of sales revenue. The regression model is as follows.

$$invest_{i,t} = \beta_0 + \beta_1 * SalesGrowth_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

The interpreted variable $invest_{i,t}$ is defined in line with model (1), the $SalesGrowth_{i,t-1}$ is the percentage change in sales revenue from year t-1 to year t. We estimate model (4) by fixing the industry and year, and the absolute value of the residuals obtained from the regression estimation is used as a measure of investment efficiency (*inveffi1*). The regression coefficients of corporate financialization are all negative at the 1% level of significance when using different measures of the efficiency of corporate investment. The results of the robustness tests are generally consistent with the previous tests and the research hypothesis H1 still holds.

4.4.3 Endogeneity Issues - Instrumental Variable Regression

Table 9. Regression results for instrumental variables

	(1) Two-stage regression	(2) Baseline regression
Dependent Variable	invest_eff	invest_eff
Fin	-0.492*** (0.032)	-0.460*** (0.028)
Lnsize	0.009*** (0.002)	0.009*** (0.002)
ROA	-0.205*** (0.036)	-0.205*** (0.037)
Cash	-0.316*** (0.018)	-0.314*** (0.018)
Dual	-0.004 (0.005)	-0.004 (0.005)
Shrcr	-0.001*** (1.29E-04)	-0.001*** (1.30E-04)
Debt	-0.074*** (0.014)	-0.072*** (0.014)
Age	-0.001***	-0.001***

	(3.98E-04)	(3.99E-04)
Curatio	-0.013***	-0.013***
	(0.001)	(0.001)
Dirsize	0.003**	0.003**
	(0.001)	(0.001)
Mhldn	-0.039**	-0.040**
	(0.017)	(0.017)
Constant	0.262***	0.260***
Time-fixed effect	(0.049)	(0.049)
Industry-fixed effect	Control	Control
	Control	Control
Sample size	5,308	5,308
Adjusted-R ²	0.635	0.635

Considering the possible endogeneity issues in the model, for example, some unobservable factors may affect both corporate financialization and the efficiency of corporate investment, and the efficiency of corporate investment may also affect the size of corporate financial investment and counteract corporate financialization. In this paper, a two-stage least squares estimation with fixed effects is conducted on the indicators of corporate financialization excluding "investment property" and "investment property" as an instrumental variable of corporate financialization, referring to a related study by Zhang Zhao et al. (2018). The results of the two-stage least squares regression is shown in Table 9.

Therefore, after accounting for possible endogeneity issues in the study, the estimates remain consistent with the previous baseline regression findings.

5. Research Conclusion and Implications

5.1 Research Findings

This paper examines the impact of corporate financialization on the efficiency of corporate investment by selecting data of Chinese A-share listed companies from 2012 to 2021. The study finds that corporate financialization has a catalytic effect on the efficiency of corporate investment, which is conducive to the future development of enterprises and macroeconomic stability. The analysis of the mechanism shows that the corporate financialization of enterprises can promote the efficiency of corporate investment by reducing the ability of earning cashflow, lowering the proportion of interest-bearing debt and increasing the financial risk of enterprises. Finally, the paper also finds that the impact of financialization on the efficiency of investment is greater in cities in general and in firms belonging to the manufacturing sector

5.2 Insights and Suggestions for Countermeasures

5.2.1 Control the Level of Corporate Cash Flow

The results of this paper suggest that as firms become more financialized, their ability to collect cash tends to decline, ultimately having a positive effect on their investment efficiency. In order for corporate financialization to have a catalytic effect on the real economy, the level of corporate free cash flow should be actively controlled and moderately regulated on the management side to prevent managers from using funds for wasteful investments and building corporate empires.

5.2.2 Improve Corporate Capital Structure

This paper finds that a reduction in the proportion of interest-bearing debt of a firm can promote investment efficiency. Although debt financing can help companies save tax revenue to a certain extent, if the interest-bearing debt ratio is too high, it can lead to higher bankruptcy and agency costs.

Therefore, in order to make the financialization of a company more effective in the process of physical investment, companies should optimize their capital structure, weigh the advantages and disadvantages of debt financing, and keep interest-bearing debt at a reasonable level.

5.2.3 Enterprise Risk Control

This paper shows that while corporate financialization raises financial risk, it has a beneficial effect on physical investment. Financial risk can, to a certain extent, inhibit enterprises from over-investing and blindly expanding, but if the risk is too high it can also put enterprises in financial difficulties and increase the risk of bankruptcy. In order to maintain a stable state of development and control risks at a reasonable level, enterprises should improve the financial risk prevention system and build a long-term mechanism to prevent and resolve financial risks, so that the financialization of enterprises can become a strong agent for entities to invest in financial assets and promote the development of the real economy.

5.2.4 Supporting Real Enterprises by Region and Industry

This paper finds that the impact of financialization on investment efficiency is greater in cities in general and in enterprises belonging to the manufacturing sector. Therefore, the government can effectively regulate the development of entity enterprises in different cities and different industries, and make greater efforts to support the development of entity enterprises and manufacturing enterprises located in general cities, and improve the financial investment environment and financial investment patterns of such enterprises, so that the financialization of enterprises can play a greater role in the real economy. In addition, the government can actively promote the relevant departments to set up financial services institutions according to the development profile of local enterprises, which can act as credit guarantors in the financing of entity enterprises when necessary, effectively alleviating the problem of information asymmetry between enterprises and financial institutions.

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