

The Impact of Corporate Financialization on R&D Innovation

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Abstract

This paper uses the data of Chinese A-share listed companies in Shanghai and Shenzhen from 2010 to 2019 as the research sample to study the impact of corporate financialization on corporate R&D innovation from the perspectives of government subsidies, media attention and the nature of corporate property rights. Government subsidies and media attention, as moderating variables, favor corporate R&D innovation and weaken the crowding-out effect of corporate financialization on corporate R&D innovation; media attention positively moderates corporate R&D innovation and weakens the crowding-out effect on corporate innovation; total corporate assets, as a mediating variable, positively promotes corporate R&D innovation and plays a mediating role in corporate financialization and corporate R&D innovation. The findings of this paper enrich the discussion of the relationship between corporate financialization and corporate R&D innovation, and conclude with a series of recommendations from the perspectives of enterprises, investors, government and media, which provide a reference for preventing the risk of corporate financialization and promoting corporate R&D innovation.

Keywords

Corporate Financialization; Corporate R&D Innovation; Government Subsidies; Media Attention; Total Corporate Assets.

1. Introduction

General Secretary Xi Jinping pointed out in the report of the 20th Party Congress that "we must insist that science and technology is the first productive force, talent is the first resource, and innovation is the first driving force", and the report emphasizes accelerating the implementation of the innovation-driven development strategy, opening up new fields and new tracks for development, constantly shaping new momentum and new advantages for development, and achieving a high level of scientific and technological self-sufficiency and self-improvement. However, the current domestic and international economic situation is still severe and complex, and the development of the real economy is under pressure, while the asset sector continues to expand, showing a trend of "de-realization to deficiency" in China's economy, which is microscopically manifested by the financialization of enterprises (Dai Ze, 2018). The financialization of enterprises is the increase of real enterprises to invest in financial markets rather than traditional production and operation activities (Demir, 2009; Cai, 2014), and the profits of enterprises are more from financial channels (Krippner, 2005). A study shows that the average size of financial assets of non-financial listed companies in Shanghai and Shenzhen A-shares rose from 926 million yuan to 2.86 billion yuan during 2007-2019, showing a significant upward trend (Xu Yun, 2022). In addition, according to Wind database, the average allocation size of financial assets of Chinese real enterprises increased from 1.44 trillion yuan to 9.77 trillion yuan during 2010-2020, with an average annual growth rate of 6.75%. Innovation is an important force to enhance the quality of economic development, however, the trend of financialization has been remarkable in recent years, and whether the increased

investment in financial assets by real enterprises can truly serve innovation has become a concern for many scholars at present.

Regarding the motivation for real enterprises to allocate financial assets, it is generally believed that there are two main types of motivations: the "reservoir" motivation to avoid future uncertain risks, and the "substitution" motivation to improve profits by obtaining returns from financial assets. Under the "reservoir" motive, financial assets have the characteristics of quick realization and low adjustment cost, which can effectively help enterprises accumulate funds for real investment (Du, 2017), and financial assets are regarded as an important reserve to prevent macro shocks, and the allocation of financial assets of moderate scale is an important means for enterprises to revitalize stock capital and increase liquidity (Deng Lu, 2020). Therefore, the allocation of financial assets helps to promote R&D and innovation of enterprises and assume the function of "reservoir" (Liu Guanchun, 2017). Under the "substitution" motive, the main objective of firms is to increase profits rather than reduce risks, and the high returns from financial channels drive management to invest more in financial markets and less in industry, thus negatively affecting R&D innovation, i.e. the "crowding out effect" (Orhangazi, 2008). Similarly, domestic scholars Zhang Chengsi (2016) and Wang Hongjian (2017) also argue that corporate financialization will drive firms to rely more on financial channels for profits and reduce investment in fixed assets accordingly, and the stronger the "substitution" motive, the more real firms. The stronger the "substitution" motive, the more significant the negative relationship between financialization and corporate innovation. Wang (2022), An (2022) and Xu (2022) suggest that financialization has an inverted U-shaped nonlinear effect on innovation investment, i.e., there is an inflection point between financialization and R&D intensity, and when the level of financialization is to the left of the inflection point, the "reservoir" motive of enterprises is reflected in the "reservoir" effect on R&D innovation. When the level of financialization is on the right side of the inflection point, the enterprises are induced by the "substitution" motive to have a "pooling" effect on R&D innovation.

In general, excessive financialization of enterprises can affect the healthy development of the real economy, and the Chinese government has implemented various measures to curb "de-realization to deficiency", promote enterprise R&D and innovation, and firmly strengthen the real economy. Government subsidies have an incentive effect on R&D cost investment in strategic emerging industries (Chu, 2016) and significantly increase the level of human capital investment in enterprise innovation (Zhang, 2016), and an empirical study by Li, Ruixi and Bai, Junhong (2013) also shows that government R&D funding has a significant positive effect on enterprise technological innovation. In addition, the news media has become an increasingly important information intermediary and external monitoring agency in the capital market, and the media has enabled more information about firms to be disseminated, which helps to improve the transparency of firm information and make firm activities more visible to its stakeholders, and firms are recognized by the outside world, which helps to obtain more resources and opportunities (Strang, 1998).

2. Theoretical Analysis and Hypothesis Formulation

2.1. Corporate Financialization and Corporate Innovation

The financialization of enterprises is mainly manifested in the financial statements of non-financial enterprises as an increase in the proportion of financial assets, or an increase in the proportion of profits obtained by real enterprises from financial channels to the total profits of enterprises (Zhang Chengsi, Zhang Budan, 2015). From 2017 to 2020, Yunnan Baiyao Group's financial assets climbed from 12.17% to 20.33% of total assets, much higher than the industry average, but Yunnan Baiyao's R&D investment has been less than 1% of operating revenue, reaching a maximum of only 0.59%, a figure far below the industry average. As Yunnan Baiyao

gradually increases its investment in financial assets and gradually begins to neglect its core business development, its operating profitability is declining, with gross margin decreasing from 31.19% in 2017 to 27.75% in 2020. It can be seen that the financialization of Yunnan Baiyao has a certain degree of negative impact on R&D innovation and operating profitability, which will reduce the core competitiveness of the company and is not conducive to its long-term development.

Under the profit motive of enterprises, financial assets have higher yield and their return level is significantly higher than that of real investment, while innovation R&D activities have long maturity, high risk and high capital demand, and real enterprises will have the "substitution" motive of using financial assets to obtain returns to enhance profits. In other words, in order to obtain a high rate of return, real enterprises may shift the funds originally used for real investment to financial assets investment, resulting in the substitution of financial assets for real investment (Dai et al., 2018). Under the influence of this motive, firms allocate a large amount of capital used for real investment to financial assets, resulting in insufficient investment in R&D and innovation activities to generate high-quality innovation performance. For example, the study of Chengsi Zhang (2016) shows that the increased allocation of financial assets by firms will reduce the investment in fixed assets, which is not conducive to R&D innovation, and Hongjian Wang (2017) shows that the stronger the arbitrage motive, the more significant the negative relationship between corporate financialization and corporate innovation, and corporate financialization has a crowding-out effect on R&D innovation.

According to the principal-agent theory, the implementation of equity incentives for executives can effectively reduce the agency costs of enterprises. The equity incentive plan links executives' earnings to the share price, which means that executives' personal interests are closely related to the company's interests. On the one hand, corporate R&D and innovation activities are characterized by long cycle, high risk and high investment, and the technological innovation transformation of enterprises also has a certain possibility of failure. The pressure from the capital market makes managers' long-term goals waver, and in order to pursue high short-term corporate profits, self-interested managers may reduce R&D investment (Xie Zhen and Ai Chunrong, 2014) and choose to invest in finance and real estate, which have high short-term returns fields. On the other hand, when the firm does not achieve the expected short-term performance, managers can blame the instability of financial assets themselves and use the excuse that it is difficult to judge the risk to avoid due punishment, i.e., corporate financialization can effectively alleviate the short-term performance assessment faced by managers (Yang Songling et al., 2019). In summary, the analysis can be concluded that corporate financialization tends to make business managers have a short-sighted effect and neglect to pay attention to and invest in R&D and innovation activities.

In addition, due to information asymmetry and other reasons, real enterprises are generally facing financing constraints. Under the limited resource constraint, there is a certain relationship between financial investment and real investment. Firms generally disclose less details related to innovation and technology in order to retain their competitive advantage, which leads to the inability of outsiders to form a correct valuation of the firm (Hirshleifer et al., 2018), forming an information barrier that prevents firms from obtaining sufficient funds through equity financing, and thus their investment in financial assets will inevitably take away from their investment in R&D and innovation, which in turn has a negative impact.

In summary, the research hypothesis of this paper is proposed 1.

H1: Corporate financialization has a crowding-out effect on corporate R&D innovation.

2.2. The Regulatory Role of Government Subsidies

Enterprise innovation activities are characterized by high investment and high risk, and these characteristics lead to the instability of most enterprises' R&D activities in China, thus requiring

government intervention through subsidies and other policy instruments to support enterprise development. There are two types of arguments about the impact of government subsidies on enterprises' R&D innovation. One is that government subsidies can effectively stimulate enterprise R&D innovation, and the other is that government subsidies hinder enterprise R&D innovation.

Western scholars generally agree that if technological innovation is left entirely to the market, then firms will underinvest in R&D innovation below the optimal level for society (Arrow, 1962), and that public policies aimed at promoting and encouraging technological innovation are of substantial importance if technological innovation is known as the most important force driving economic growth (Branstetter, Sakakibara, 2002). There is a large literature that has demonstrated through empirical analysis that government subsidies have a positive contribution to corporate R&D innovation (Hu, 2001; Xie Weimin et al., 2009). Firms may face problems of technology spillover, R&D uncertainty and R&D funding constraints, especially for firms with tight capital and weak risk tolerance, and also the long payback period of R&D innovation activities makes more firms less motivated to conduct R&D. Therefore, government subsidies often play a role in lowering the cost of R&D innovation, increasing the return and expected profitability of R&D innovation, and motivating enterprises to develop and innovate. Özçelik and Taymaz (2008) argue that government subsidies have a positive impact on firms' R&D innovation, and similarly, Czarnitzki and Fier (2003) argue that government funding of R&D is more helpful for firms to obtain patents. The study of domestic scholars, Junhong Bai (2011), shows that government R&D innovation subsidies have a significant incentive effect on firms' R&D innovation expenditures, and the larger the knowledge stock, the larger the scale, and the higher the technological level of the industry, the more beneficial the incentive effect of government subsidies is.

However, government subsidies not only play a positive role in promoting enterprise R&D innovation, but also may replace enterprises' own R&D investment and have a negative effect on enterprise R&D innovation. Firstly, government subsidies select specific manufacturers, and technology spillover in the industry may lead to "free-riding" behavior of other manufacturers in the same industry as the subsidized manufacturer, so government subsidies tend to reduce R&D investment in the industry. Secondly, government subsidies will lead to an increase in the demand for a certain factor required for R&D innovation, which will lead to an increase in the price of the factor and increase the cost of R&D innovation for other enterprises, which is not conducive to the development of innovation activities of other enterprises (Xie Weimin et al., 2009). In addition, in reality, policy makers often do not know the real situation of enterprises, and policy makers can only judge the innovation situation of enterprises through the innovation signals released by enterprises to the outside world, so it is easy to have information asymmetry between enterprises and policy makers, which can make the process of allocating government subsidies easy to appear rent-seeking and corruption. Enterprises may also release and false information or conceal important information to obtain R&D and innovation subsidies that are more beneficial to their own development, forming a mismatch of government subsidy resources (Li Zheng, 2018). For example, in order to obtain government support for scientific research, some enterprises hire university scholars and researchers at high salaries, forming a consortium of interests between enterprises and academia (Tongliang An, 2009), which facilitates enterprises to apply for R&D innovation subsidies. After enterprises receive government subsidies for R&D and innovation, they do not necessarily invest the funds in R&D and innovation, which distorts the effective allocation of social resources and reduces the effectiveness of government subsidies (Yuan-Yuan Gu and Shen, 2012). The inefficiency and mismatch of government subsidies can seriously weaken the incentive effect of government R&D innovation subsidies and make the enterprises that should receive government subsidies

to achieve economies of scale and technological innovation stagnate or even die out (Baochang Xu, 2015).

In summary, it can be seen that government subsidies, as a moderating factor, may either promote or weaken firms' R&D innovation, and possibly based on the two different roles played by government subsidies, this paper proposes hypotheses H2a and H2b:

H2a: Government subsidies favor corporate R&D innovation and weaken the crowding-out effect of corporate financialization on corporate R&D innovation.

H2b: Government subsidies are detrimental to corporate R&D innovation and enhance the crowding-out effect of corporate financialization on corporate R&D innovation.

2.3. The Moderating Role of the News Media

Corporate innovation activities are motivated by the protection of R&D information, and the information asymmetry between firms and the outside world deepens, so that the innovative R&D value of firms is easily undervalued by the capital market (Bhattacharya and Ritter, 1983). And the most essential job of news media is to disseminate various news to the society and make some events known to everyone. Research in the field of finance and finance suggests that the media are shaping the corporate information environment by mining new information, selecting, creating and packaging integrated information, and disseminating information (Miller, 2006; Dyck et al., 2008; Bushee et al., 2010) to influence investor behavior. Existing studies conclude that media coverage helps investors understand the internal business conditions of firms and improve the transparency of corporate information, which can effectively alleviate the problem of information asymmetry between firms and the outside world (Dyck et al. 2008; Luo Jinhui and Du Xingqiang 2014; Lai Li 2016), which facilitates investors to judge the value of corporate innovation and R&D more accurately, and that positive media coverage leads to lower costs for firms to obtain more more financing or other resource opportunities at a lower cost, enhance investors' willingness to invest (Fang & Peress, 2009), and have a positive impact on corporate R&D innovation.

In addition to transmitting firm-related information to the capital market, the news media also investigate and expose corporate scandals (Dyck, 2008) and restrain the opportunistic behavior of corporate managers by influencing their reputation (Li Peigong and Shen Yifeng, 2010), which means that the moves of corporate managers that are only beneficial to short-term performance improvement but not long-term development are more easily identified by investors, in addition In addition, the past experience and performance of managers are also comprehensively recorded in the digital environment, and media attention makes managers tend to focus more on R&D innovation. In short, the presence of the news media can reduce management's short-sightedness and provide effective external oversight. It guides managers to improve corporate governance, increase investment in R&D innovation, and promote corporate innovation (He Feng and Liu Guanchun, 2022).

Since Lakonishok's (1995) study, it is now widely accepted in the academic community that inexperienced individual investors tend to give up their own private information and imitate or follow others, thus creating a herding effect, and the presence of media reports can influence individual investors' decisions and exacerbate the herding effect of investment. At present, the rapid development of the news media has made it an increasingly important information intermediary and external supervisory body in the capital market, playing various roles such as the publicizer of existing information about companies, the exposé of scandals, the forecaster of financial market changes, and the investigator of news about major events (Yang Jidong, 2007). The media can influence public perceptions of companies through positive or negative tone vocabulary expressions and play a role in guiding social values. In order to get more recognition from institutions and investors, corporate managers will strategically choose to invest in R&D, enhance the competitiveness of corporate innovation, and show the

innovative side of the company to the outside world, which in turn will improve the public perception of the corporate social image and shape the good reputation of the company. Therefore, hypothesis 3 is proposed in this paper.

H3:Media attention has a positive moderating effect on corporate R&D innovation and attenuates the crowding-out effect of corporate financialization on corporate R&D innovation.

2.4. The Intermediary Role of Total Corporate Assets

From the perspective of the characteristics of enterprise R&D innovation, R&D innovation is an activity with large investment and high risk, and its smooth implementation requires stable and reliable funding sources, so sufficient funds are necessary for enterprises to carry out R&D innovation activities.

A firm with large total assets, with a large enterprise size and well configured departments, has the advantage of resources such as technology, manpower, capital and management (Meulenaere et al., 2021), has more resources (González & Pazó, 2008), has greater marketability, and therefore can mobilize more resources such as human and material resources. A current study suggests that the more total assets a firm has, the stronger the guarantee it can provide for R&D innovation (Zhang Zhongshou & Zhu X. Q., 2022). In addition, enterprises with high total corporate assets not only imply sufficient internal resources such as capital, but also influence to a certain extent the ability of enterprises to raise finance from outside. Larger enterprises have less financing constraints and have wider channels and lower costs when financing in the external market (Luo Qi, 2007).

Meanwhile, according to the findings related to the resource-based view, large firms are better at resource orchestration compared to small firms (Sirmon, 2011), and achieve high levels of innovation by integrating and utilizing programmable internal and external resources (Sun, 2022). For large firms, their R&D investments are spread across different fields and projects, and diverse investments can reduce business risks, thus large firms have a higher risk-taking capacity (Nelson, 1959). galbraith's (1956) theoretical model emphasizes that large firms are better suited for innovation and are notable inventors and disseminators of technological innovation, thus large firms with more total assets the more innovative they are.

In summary, the fourth hypothesis of this paper is proposed.

H4:Total corporate assets have a positive contribution to corporate R&D innovation and play a mediating role in corporate financialization and corporate R&D innovation.

3. Model, Variables and Data

3.1. Sample Selection and Data Sources

In this paper, the data of Chinese listed companies in Shanghai and Shenzhen A-shares from 2010-2019 are used as the research sample, and the company-level data are obtained from the Guotaian database (CSMAR). Further, based on the needs of the study, this paper treats the sample data as follows: (1) Excluding financial and real estate listed companies. (2) Excluding ST and PT listed companies. (3) Excluding the listed companies with serious missing financial data or outliers. Finally, 18906 valid samples are obtained. In order to avoid the influence of outliers, the continuous variables are Winsorized by 1% up and down in this paper.

3.2. Variable Definition

3.2.1. Enterprise Innovation Level

This paper draws on Zhu (2017)'s innovation capability measure to reflect the innovation level of enterprises by their innovation input, which is the logarithmic value of their R&D investment. Among them, innovation input mainly includes research personnel input and R&D expenditure.

The larger the innovation input of an enterprise, the higher the innovation level of the enterprise is indicated.

3.2.2. The Level of Financialization of Enterprises

This paper draws on the financialization measure of J. Z. Xie et al. (2014), which uses the ratio of a firm's financial assets to its total assets at the end of the period to measure the level of financialization of the firm. Among them, financial assets include trading financial assets, loans and advances issued, held-to-maturity investments, and investment properties. The higher the ratio of financial assets to total assets, the higher the level of financialization of an enterprise.

3.2.3. Government Subsidies

This paper uses the logarithm of the amount of government subsidies received by firms to measure the level of government subsidies, and constructs a cross product term between government subsidies and the level of financialization of firms to explore the effect of government subsidies on firms' incentives to invest in financial assets, i.e., the moderating effect of government subsidies.

3.2.4. Media Attention

This paper measures the level of media attention using the number of Baidu news of the firm in the current year + 1 taken as a logarithm, and constructs a cross product term between media attention and the level of financialization of the firm to explore the influence of media attention on the firm's motivation to invest in financial assets, i.e., the moderating effect of media attention.

3.2.5. Total Corporate Assets

This paper uses the value of total corporate assets as the level of total corporate assets and regresses the level of corporate innovation on the level of corporate financialization, the level of total corporate assets on the level of corporate financialization, the level of corporate innovation on the level of corporate financialization, and the level of total corporate assets using stepwise regressions to explore the effect of corporate financial assets on total corporate assets and thus the effect on corporate innovation. That is, the mediating effect of total corporate assets.

3.2.6. Control Variables

Table 1. Definition of variables and measurement methods

Variable Name	Variable Symbols	Variable Definition
Enterprise innovation level	Rd1	Logarithm of R&D input value plus one
Level of corporate financialization	FIN	Ratio of financial assets to total assets
Government Subsidies	GS1	Logarithmic value of government subsidy amount
Media attention	MEDIA	When the number of Baidu news plus one to take the logarithmic value
Government subsidies* Level of financialization of enterprises	GS*FIN	
Media attention*level of corporate financialization	MEDIA*FIN	
Total corporate assets	TOL_ASSET	Total corporate assets

In this paper, we mainly select financial and corporate governance variables that may affect the level of corporate innovation, including firm size (SIZE), firm age (YEARS), return on assets (ROA), net asset margin (ROE), number of employees (NUM_W), board size (BOARD_SIZE),

number of executive shareholdings (EQUITY), equity concentration (EQUITY_CON), corporate social responsibility (SOCIAL_RES), and year effect (YEAR) are also controlled for in the empirical test. The specific variables and metrics are shown in Table 1.

3.3. Research Model

To test the hypotheses proposed in the previous section, the following four models are developed in this paper:

$$RD1it = \alpha_0 + \alpha_1 FINit + \lambda t + \theta t + \varepsilon 1it \quad (1)$$

$$RD1it = \alpha_0 + \alpha_1 FINit + \sum \alpha_j Controlit + \lambda t + \theta t + \varepsilon 1it \quad (2)$$

$$RD1it = \alpha_0 + \alpha_1 FINit + \alpha_2 GS1it + \alpha_3 FINit * GS1it + \sum \alpha_j Controlit + \lambda t + \theta t + \varepsilon 1it \quad (3)$$

$$RD1it = \alpha_0 + \alpha_1 FINit + \alpha_2 MEDIAit + \alpha_3 FINit * MEDIAit + \sum \alpha_j Controlit + \lambda t + \theta t + \varepsilon 1it \quad (4)$$

In the model, the explanatory variable $RD1it$ denotes the innovation level of each firm, which is measured by taking the logarithm of the firm's R&D investment plus 1. The explanatory variables FIN in models (1) and (2) denote the firm's financialization index of firm i in year t . The larger its value, the higher the level of firm financialization. If the regression coefficient $\alpha_1 > 0$, it indicates that corporate financialization has a facilitating effect on corporate innovation; if the regression coefficient $\alpha_1 < 0$, it indicates that corporate financialization has a suppressing effect on corporate innovation. The explanatory variable $FINit * GS1it$ in model (3) represents the indicator of the interaction term between the log value of government subsidies received by firms in year i and financialization in year t . If the regression coefficient $\alpha_3 > 0$, it indicates that government subsidies play a positive moderating role in the relationship between corporate financialization and corporate innovation; if the regression coefficient $\alpha_3 < 0$, it indicates that government subsidies play a negative moderating role in the relationship between corporate financialization and corporate innovation. The explanatory variable $FINit * MEDIAit$ in model (4) indicates the indicator of the interaction term of media attention and financialization received by the firm in year i in year t . If the regression coefficient $\alpha_4 > 0$, it indicates that media attention plays a positive moderating role in the relationship between corporate financialization and corporate innovation; if the regression coefficient $\alpha_4 < 0$, it indicates that media attention plays a negative moderating role in the relationship between corporate financialization and corporate innovation. Control variables in models (2), (3) and (4) denote the control variables in this paper, which include: firm size (SIZE), firm age (YEARS), return on assets (ROA), net asset margin (ROE), number of employees (NUM_W), board size (BOARD_SIZE), number of executive shareholdings (EQUITY), equity concentration (EQUITY_CON), and corporate social responsibility (SOCIAL_RES).

$$\ln(TOL_ASSET)it = \alpha_0 + \alpha_1 FINit + \sum \alpha_j Controlit + \lambda t + \theta t + \varepsilon 1it \quad (5)$$

$$RD1it = \alpha_0 + \alpha_1 FINit + \alpha_2 \ln(TOL_ASSET)it + \sum \alpha_j Controlit + \lambda t + \theta t + \varepsilon 1it \quad (6)$$

Models (1), (5), and (6) are tests of the mediating variables using stepwise regression. Model (5) is a test of the relationship between the mediating variables and the main effect. If the regression coefficient $\alpha_1 > 0$, it indicates that corporate financialization has a facilitating effect on total corporate assets; if the regression coefficient $\alpha_1 < 0$, it indicates that corporate

financialization has a suppressing effect on total corporate assets. Model (6) is a test of the relationship between the explanatory variables and the main effect and mediating variables. If $\alpha_2 > 0$, it indicates that total assets has a promoting effect on enterprise innovation; if $\alpha_2 < 0$, it indicates that total assets has a suppressing effect on enterprise innovation.

4. Empirical Analysis

4.1. Descriptive Statistics

From the descriptive statistics of the variables related to corporate innovation, government subsidies and corporate financialization, the mean value of corporate innovation investment (RD) is 158 million with a standard deviation of 770 million, indicating that the overall corporate R&D investment is larger in the observation year, but the degree of corporate innovation varies widely among different companies; the mean value of government subsidies (GOV_S) is about 25.96 million with a standard deviation of 108 million. The mean value of GOV_S is about 25.96 million, with a standard deviation of 108 million, indicating that the listed enterprises received more government subsidies in the observation year, but the differences in government subsidies received among different enterprises are large. The mean value of corporate financialization (FIN) is 136 million with a standard deviation of 1.65 billion, indicating that more financial assets are allocated to corporate finance in the observation year, but the level of corporate financialization varies widely among different firms. Total assets (TOL_ASSET), both with a large standard deviation, indicate that the assets vary widely across firms, indicating that the size of the firms in the selected sample varies widely. Media attention (MEDIA) with small mean and standard deviation, indicating that most of the enterprises in the selected sample have relatively low media attention, which is related to the nature of their industries.

Table 2. Descriptive statistics

Variable Name	Average value	Standard deviation	Minimum value	Median	Maximum value
RD	158000000	770000000	0	44515575.26	73800000000
GOV_S	25960639.49	108000000	-4795645.58	4659685.635	3990000000
FIN	136000000	1650000000	-685200	173203.51	135000000000
ROA	0.042	0.205	-5.169	0.036	22.003
ROE	0.032	0.203	-5.259	0.024	22.005
YEAR_EN	12.972	8.634	0	14.33	52.67
NUM_W	4601.659	11675.406	0	1864	253724
TOL_ASSET	8150000000	26500000000	0	2670000000	849000000000
BOARD_SIZE	6.596	3.829	0	8	18
EQUITY	28536687.58	82080270.03	0	100000	1780000000
EQUITY_CON	33.626	14.385	3.003	31.494	89.986
MEDIA	2.817	1.781	0	2.996	12.743
SOCIAL_RES	4.339	4.022	-15	3.99	30

4.2. Regression Analysis

4.2.1. Test of Main Effects

In this paper, F-test and Hausman test are chosen to further determine the form of the model. The test result of F-test rejects the original hypothesis of mixed OLS at 1% level, and Hausman

test rejects the original hypothesis of random effect model at 5% significance level, so fixed effect model is used for regression.

The first column is the regression model without considering the control variables, the explanatory variable is the level of corporate innovation (RD1) and the explanatory variable is the level of corporate financialization (FIN), FIN passes the significance test at 1% significance level and its estimated coefficient is -4.705, indicating that the level of corporate financialization will seriously inhibit the level of corporate innovation, i.e., the higher the level of corporate financialization, the less innovation input the firm will. The second column is the regression model after adding control variables, including media attention (MEDIA), total assets (TOL_ASSET), return on total assets (ROA), net profit margin on total assets (ROE), board size (BOARD_SIZE), and number of executive shareholdings (EQUITY), and other. The results of the variables. After excluding the influence of other factors on the regression results, the regression results found that, for the level of corporate financialization (FIN), the indicators of corporate financialization selected in this paper are financial assets for trading, loans and advances issued, held-to-maturity investments and investment properties, all of which have strong arbitrage properties. Investment real estate, for example, accounts for the largest share of the four indicators and is defined as "assets held to earn rents or capital appreciation (the difference between the purchase and sale of real estate), or both." From 2010 to the end of 2019, the number of investment properties and total assets invested by listed companies in Shanghai and Shenzhen A-shares have been rising significantly due to the rising housing prices in China. In addition, relevant documents issued by China's Audit Office for many years have indicated the existence of speculation in several enterprises in China, i.e., enterprises hold investment real estate in order to get profits from rising house prices, indicating that enterprises make real estate investments for arbitrage purposes. Therefore, the estimated coefficient of the financialization level of enterprises is still negative at -4.455 and passes the significance test at the 1% level, thus indicating that enterprises make financial investments for arbitrage purposes and the level of innovation of enterprises is significantly and negatively related to the financialization of enterprises. The higher the level of corporate financialization, the lower the level of corporate innovation, and hypothesis 1 is confirmed. In the regression results of the control results, the coefficient of EQUITY_CON is positive and significant at the 1% level. The higher the concentration of equity, the more stable the equity structure of the company, which in turn can improve the efficiency of the company. In addition, the company can focus on its own production and management, reduce the short-sightedness of production and management decisions caused by the fragmentation of shareholders, and focus on the main business, so that the company can invest more capital in innovation, and thus improve the innovation ability of the company. The coefficient of board size (BOARD_SIZE) is positive and significant at the 5% level, which indicates that the larger the board size is, the stronger its ability to obtain external resources, and the more external investment it can obtain compared to the small board size, which reduces its financing cost, thus alleviating the problem of funding for R&D, promoting R&D investment, and improving the innovation capability of the enterprise. The coefficient of total assets (TOL_ASSET) is positive and significant at the 1% level, which is consistent with the daily perception that "the more assets, the stronger innovation ability", i.e., the more assets an enterprise has, the more assets it has at its disposal, and the more funds it can allocate to each enterprise task, therefore, the more total assets an enterprise has, the higher its. The higher the absolute value of R&D investment, the higher the amount of R&D investment can promote the innovation level of enterprises and improve their innovation ability. Since the results of the control variables in this paper remain almost unchanged in the analysis of this paper, the role of the control variables is not repeated in the following.

Table 3. Main effects model

	RD1(1)	RD1(2)
FIN	-4.705*** (0.964)	-4.452*** (0.952)
SOCIAL_RES		0.005 (0.010)
EQUITY_CON		0.037*** (0.011)
EQUITY		-0.000 (0.000)
BOARD_SIZE		0.139** (0.062)
TOL_ASSET		0.000*** (0.000)
NUM_W		0.000 (0.000)
YEAR_EN		-0.030 (0.048)
ROE		0.685 (3.071)
ROA		-0.633 (3.124)
_cons	10.877*** (0.191)	8.640*** (0.757)

Standard errors in parentheses* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4.2.2. Test of Moderating Effect

(1) Reconciliation effect of government subsidies

It is clear from the above that government subsidies are an important tool for the government to guide firms' technological innovation, so what role do government subsidies play in the relationship between corporate financialization and corporate innovation? This paper will try to investigate the impact of government subsidies on firms' financialization motivation and then investigate its moderating role in the relationship between firm financialization and firm innovation.

The first column of Table 4 adds the interaction terms of government subsidies, government subsidies and the level of firm financialization to the main effects model. The regression results show that government subsidies play a negative moderating role between corporate financialization and corporate innovation, i.e., they weaken the crowding-out effect of corporate financialization on corporate innovation. The interaction term between financialization and government subsidies (GS*FIN) is significant at the 1% level with a coefficient of -0.04. This indicates that government subsidies can directly share the R&D costs of firms, reduce the business risks arising from innovation activities, and reduce firms' investment in financial assets due to the "reservoir" effect. Government subsidies can also stimulate enterprises' enthusiasm for innovation, and enterprises will vigorously engage in R&D activities in order to earn profits by obtaining high government subsidies, which will reduce their enthusiasm for investing in financial assets; in addition, the profit-seeking nature of financial investment will lead to managers' short-sightedness, and government subsidies can also alleviate managers' "short-sightedness. In addition, because of the profit-seeking nature of financial investment, managers will be short-sighted, and government subsidies can alleviate the "short-sighted" behavior of managers, which can maximize both short-term and long-term

benefits, thus reducing a series of agency problems arising from principal-agent, and reducing managers' enthusiasm to invest in financial assets. That is, hypothesis H2a is correct.

(2) Moderating effect of media attention

As a product of today's Internet era, media attention plays a huge role in monitoring social phenomena and corporate behavior. Then, what role does media attention play in the relationship between corporate financialization and corporate innovation? In this paper, we will try to investigate the influence of media attention on the motivation of corporate financialization, and then study its moderating role in the relationship between corporate financialization and corporate innovation.

Table 4. Moderating variable model

	RD1(3)	RD1(4)
FIN	-2.828*** (0.926)	-1.535 (1.353)
SOCIAL_RES	0.005 (0.010)	0.004 (0.010)
EQUITY_CON	0.037*** (0.011)	0.028** (0.011)
EQUITY	-0.000 (0.000)	0.000 (0.000)
BOARD_SIZE	0.121** (0.060)	0.103* (0.061)
TOL_ASSET	0.000***	0.000*** (0.000)
NUM_W	0.000 (0.000)	0.000* (0.000)
YEAR_EN	-0.033 (0.048)	0.418*** (0.077)
ROE	1.886 (2.967)	-0.580 (3.023)
ROA	-1.824 (3.010)	0.626 (3.077)
GOV_S1	0.054*** (0.010)	
GS*FIN	-0.040*** (0.011)	
MEDIA		-6.987*** (0.902)
MEDIA*FIN		-1.142* (0.589)
_cons	8.189*** (0.765)	18.486*** (1.443)

Standard errors in parentheses* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The interaction term of media attention, media attention and the level of corporate financialization is added by the second column of Table 4. From the perspective of the interaction term between the level of corporate financialization and government subsidies (MEDIA*FIN), it is significantly negative at the 5% level with a coefficient of -1.142. This indicates that media attention plays a negative moderating role between corporate financialization and corporate innovation, i.e., it weakens the crowding out effect of corporate financialization on corporate innovation. It indicates that firms become more cautious about making financialized investments under the supervision of the media. Financial investment is

often uncertain, and if companies make too much "de-financialization", investors will lose confidence in investing in companies, which is not conducive to the long-term development of companies. At the same time, the real market value of an enterprise should be the real component of the enterprise, that is, the strength of manufacturing and innovation capabilities. If a company allocates too much of its assets to financial assets, investors will think that the company has lost its physical manufacturing and innovation capabilities, which will also weaken their enthusiasm for investing in the company. To sum up, the higher the media attention, the lower the level of financialization of the firm will be, which in turn will weaken the crowding-out effect on the firm's innovation. That is, hypothesis H3a is correct.

4.2.3. Test of Mediating Effect

Table 5. Tests of intermediary utility

	ln_TOL_ASSET(5)	RD1(6)
FIN	-0.528* (0.276)	-4.032*** (0.927)
SOCIAL_RES	0.000 (0.001)	0.004 (0.010)
EQUITY_CON	-0.000 (0.002)	0.038*** (0.011)
EQUITY	0.000** (0.000)	-0.000** (0.000)
BOARD_SIZE	0.056*** (0.009)	0.095 (0.059)
TOL_ASSET	0.000** (0.000)	0.000*** (0.000)
NUM_W	0.000** (0.000)	0.000 (0.000)
YEAR_EN	0.029*** (0.007)	-0.052 (0.048)
ROE	0.458 (0.801)	0.321 (3.368)
ROA	-0.475 (0.811)	-0.255 (3.440)
ln_TOL_ASSET		0.796*** (0.159)
_cons	20.428*** (0.121)	-7.629** (3.422)

Standard errors in parentheses* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

According to the regression results in the first column of Table 5, the coefficient of financialization level is -0.528, which is significant at the 1% level of significance, indicating that an increase in financialization level reduces the total assets of the enterprise. This indicates that the allocation of financial assets by enterprises may be more profitable in the short run, but in the long run, it is not conducive to the further expansion of total assets of enterprises. Because the analysis based on the main effect shows that the enterprise innovation R&D is squeezed out, the innovation results can really expand the enterprise assets, but the financial assets are not necessarily. At the same time, due to the higher risk of allocating financial assets, enterprises face the risk of losing money in the financial market, which will lead to a decline in total corporate assets. The second column of Table 5 shows that the coefficient of total corporate assets on the level of corporate innovation is 0.796, which is significant at the 1% level of

significance, indicating that the expansion of total corporate assets promotes corporate innovation. This is consistent with the daily perception that "the more assets, the stronger innovation ability", i.e., the more assets an enterprise has, the more assets it has at its disposal, and the more funds it can allocate to each enterprise task, so the more total assets an enterprise has, the higher the absolute value of its R&D investment, and the higher R&D investment can promote the innovation level of an enterprise and improve its innovation ability. and improve the innovation ability of the enterprise. In summary, the financial asset allocation of enterprises will first reduce the level of total assets of enterprises, which in turn positively promotes the innovation of enterprises, confirming that the financialization of enterprises will eventually reduce the total assets of enterprises and thus have a crowding-out effect on the innovation of enterprises.

Based on the above analysis of the regression results, we get that corporate financialization inhibits corporate innovation and shows the crowding-out effect; government subsidies play a negative moderating role between corporate financialization and corporate innovation, and government subsidies weaken the crowding-out effect of corporate financialization on corporate innovation; media attention plays a negative moderating role between corporate financialization and corporate innovation, and media attention weakens the crowding-out effect of corporate financialization on corporate innovation; total corporate assets play a mediating role between corporate financialization and corporate innovation, and corporate financialization eventually reduces total corporate assets and has a crowding-out effect on corporate innovation. The results of the empirical analysis prove that the hypotheses H1a, H2a, H3a and H4b are correct.

4.3. Robustness Test

4.3.1. Substitution of Explanatory Variables Method

Table 6. Robustness tests for replacement variables

	RD1(1)	RD1(2)
FIN1	-0.026*** (0.007)	
SOCIAL_RES	0.005 (0.010)	0.005 (0.010)
EQUITY_CON	0.037*** (0.012)	0.037*** (0.011)
EQUITY	-0.000 (0.000)	-0.000 (0.000)
BOARD_SIZE	0.149** (0.062)	0.139** (0.062)
TOL_ASSET	0.000*** (0.000)	0.000*** (0.000)
NUM_W	0.000 (0.000)	0.000 (0.000)
YEAR_EN	-0.025 (0.048)	-0.030 (0.048)
ROE	0.741 (3.120)	0.689 (3.064)
ROA	-0.694 (3.171)	-0.636 (3.117)
FIN2		-5.319*** (1.118)
_cons	8.610*** (0.762)	8.646*** (0.757)

Standard errors in parentheses* p < 0.1,** p < 0.05,*** p < 0.01.

Since the net amount of loans and advances granted is not an "arbitrage" motivated variable, this paper first eliminates it and replaces the original financialization level with the sum of trading assets, net held-to-maturity investments and net investment properties, which is named FIN1, to test the robustness of Model 2. The robustness of model 2 is tested, and the regression results are shown in the first column of Table 6. The results show that after excluding the net amount of loans and advances issued, the coefficient of financialization level 1 is -0,026, which is significantly negative at the 1% level, and the sign and significance level of the coefficients of the remaining variables are not significantly different from the original enterprise financialization measure; then consider taking the logarithm of the original financialization level to test the robustness of model 2, which is the logarithm of the ratio of financial assets to total assets after adding 1 to measure the The regression results are shown in the second column of Table 6. The results show that after logging the original financialization level, the coefficient of FIN2 is -5.319, which is significantly negative at the 1% level, and the sign and significance level of the coefficients of the remaining variables are not significantly different from the original corporate financialization measure. With both replacement explanatory variables, both indicate that the previous regression results are more robust. The conclusion that corporate financialization inhibits corporate innovation and manifests as a crowding-out effect is again supported.

4.3.2. Instrumental Variable Method

To address the endogeneity problem posed by panel data, i.e., endogenous variables are correlated with the nuisance terms. Referring to previous studies, the lagged one-period term of financialization level is selected as an instrumental variable in this paper as a way to eliminate the correlation between the explanatory variables and the residuals. The reason for selecting this variable is that the lagged term of the level of financialization of firms is correlated with the level of financialization of firms, while it is not correlated with the random disturbance term. In this paper, after selecting the instrumental variables, regressivity analysis of model 2 using 2SLS for endogeneity testing is performed.

Table 7. Regression results for instrumental variable 2SLS

	RD1(3)
FIN	-11.928*** (2.963)
SOCIAL_RES	0.002 (0.009)
EQUITY_CON	0.033*** (0.007)
EQUITY	0.000 (0.000)
BOARD_SIZE	0.130*** (0.048)
TOL_ASSET	0.000*** (0.000)
NUM_W	0.000 (0.000)
YEAR_EN	-0.020 (0.037)
ROE	3.293 (2.410)
ROA	-3.439 (2.388)
Kleibergen-Paaprk LM	(58.282)***
Cragg-Donald Wald F	(1778.487)***

Standard errors in parentheses.

* p < 0.1, ** p < 0.05, *** p < 0.01.

The Kleibergen-Paap LM statistic and the Cragg-Donald Wald F statistic both pass the test at the 1% significance level, rejecting the hypotheses of "unidentifiable instrumental variables" and "weak instrumental variables", respectively. The regression results of the 2SLS method are shown in Table 7. In the second stage of the regression, the coefficient of the level of corporate financialization is -11.928, which is significantly negative at the 1% level, and the sign and significance level of the coefficients of the remaining variables are not significantly different from the original corporate financialization measure. This indicates that the previous regression results are more robust. The reliability of the conclusion that corporate financialization inhibits corporate innovation and manifests as a crowding-out effect is again demonstrated, i.e., the regression results are still robust after controlling for the endogeneity problem through 2SLS.

5. Conclusion and Recommendations

5.1. Research Findings

This paper uses the data of Chinese A-share listed companies in Shanghai and Shenzhen from 2010-2019 as a research sample to study the impact of the level of corporate financialization on corporate R&D innovation from the perspective of government subsidies, media attention and the nature of corporate property rights, and draws the following conclusions.

Enterprises make financial investments for arbitrage purposes, and the level of enterprise innovation is significantly negatively related to enterprise financialization; the higher the level of enterprise financialization, the lower the level of enterprise R&D innovation, and enterprise financialization has a crowding-out effect on enterprise R&D innovation.

Government subsidies can directly share the R&D costs of firms and reduce the business risks arising from innovation activities, while firms will vigorously engage in R&D activities in order to earn profits from high government subsidies. Thus, government subsidies negatively regulate the relationship between corporate financialization and corporate innovation, and government subsidies weaken the crowding-out effect of corporate financialization on corporate innovation.

Under media scrutiny, firms will become more cautious about making financialized investments. If a firm allocates too much of its assets to financial assets, investors will believe that the firm has lost its ability to manufacture and innovate physically, which will also weaken its enthusiasm for investing in the firm. Media attention plays a negative moderating role between corporate financialization and corporate innovation, weakening the crowding-out effect of corporate financialization on corporate innovation.

Total corporate assets mediate between corporate financialization and corporate innovation, and corporate financialization ultimately reduces total corporate assets and has a crowding-out effect on corporate innovation

5.2. Inspirational Suggestions

First, reduce the degree of financialization of enterprises. In actual development, enterprises should promptly recognize the disadvantages of excessive financialization for enterprise development, rationalize and scientifically allocate the financial assets of enterprises, enterprises must adjust the relationship between financial investment and real investment according to their own situation, pay practical attention to many factors such as the business capacity and financial situation of enterprises, raise funds, increase the investment in R&D and innovation, and provide financial support for enterprise technological innovation. The government can introduce some preferential policies to guide enterprises to increase investment in R&D and innovation, such as setting up special loans and lowering interest rates

as much as possible to help enterprises get loans more easily and reduce the financial pressure of enterprises as much as possible. In addition, the government can also provide technical training for real investment, help enterprises to improve the technical capacity of real investment, and narrow the efficiency gap between real investment and financial investment. Ultimately reduce the degree of financialization of enterprises, to prevent enterprises from "off the real to the virtual".

Second, strengthen government subsidies. The problems of large initial investment, uncertainty of innovation output and externality of innovation benefits in enterprises' technological innovation activities have to a certain extent inhibited the enthusiasm and initiative of enterprises to carry out innovation activities. Government subsidies can help reduce the sunk cost of the initial stage of technological innovation and promote the innovative activities of enterprises. Therefore, the government should provide subsidies for enterprises, such as subsidies in the form of equity investment, ex-ante funding and ex-post awards, including financial subsidies, equipment subsidies and incentives, to share some of the risks in the innovation activities of enterprises and continuously increase the innovation subsidies for enterprises.

Third, further develop the role of the media as an important information intermediary in the capital market. Media coverage is used to alleviate the problem of asymmetric market information and enhance the courage of enterprises to innovate. The news media should enhance their sense of social responsibility and ensure the accuracy and authenticity of information. Government departments should strengthen supervision to prevent malicious speculation in the news media, while the government can guide the news media to publish more positive reports on innovative enterprises to create a good public opinion atmosphere for scientific and technological innovation, which in turn can guide enterprises to increase R&D and innovation. At the same time, corporate investors should also look at media reports rationally and not blindly invest in following the trend.

Fourth, moderate expansion of the enterprise scale to enhance the total assets of the enterprise. The moderate expansion of enterprise scale will be conducive to the economy of scale effect, realize the effective integration of enterprise resources, and reduce the production cost of enterprises. At the same time, the scale effect will also bring about the improvement of profitability, increase the capital income of enterprises to accumulate capital advantages and guarantee the sustainability of innovation activities.

References

- [1] Arrow, K. J. (1962). The economic implications of learning by doing. *the review of economic studies*, 29(3), 155-173.
- [2] Andrei Shleifer, Robert W. Vishny. Politicians and Firms[J]. *The Quarterly Journal of Economics*, 1994,109(4).
- [3] Bhattacharya, S., & Ritter, J. R. (1983). Innovation and communication: Signalling with partial disclosure. *The Review of Economic Studies*, 50(2), 331-346.
- [4] Branstetter, L. G., & Sakakibara, M. (2002). When do research consortia work well and why? Evidence from Japanese panel data. *American Economic Review*, 92(1), 143-159.
- [5] Birgit Aschhoff, Wolfgang Sofka. Innovation on demand-Can public procurement drive market success of innovations?[[J]]. *Research Policy*,2009,38(8).
- [6] Brian J. Bushee, Theodore H. Goodman, Shyam V. Sunder. Financial Reporting Quality, Investment Horizon, and Institutional Investor Trading Strategies[[J]]. *The Accounti*.
- [7] Bushee, B. J., Core, J. E., Guay, W., & Hamm, S. J. (2010). The role of the business press as an information intermediary. *journal of accounting research*, 48(1), 1-19.

- [8] Craven, B. M., & Marston, C. L. (1997). Investor relations and corporate governance in large UK companies. *Corporate Governance: An International Review*, 5(3), 137-151.
- [9] Czarnitzki, D., & Fier, A. (2003). Publicly funded R&D collaborations and patent outcome in Germany.
- [10] Charlene Sinkin, Charlotte J. Wright, Royce D. Burnett. Eco-efficiency and firm value[J]. *Journal of Accounting and Public Policy*, 2008, 27(2).
- [11] Dyck, A., Volchkova, N., & Zingales, L. (2008). The corporate governance role of the media: Evidence from Russia. *The Journal of Finance*, 63(3), 1093-1135.
- [12] Demir, F. (2009). Financial liberalization, private investment and portfolio choice: Financialization of real sectors in emerging markets. *Journal of Development Economics*, 88(2), 314-324.
- [13] Dirk Czarnitzki, Hanna Hottenrott. R&D investment and financing constraints of small and medium-sized firms[J]. *Small Business Economics*, 2011, 36(1).
- [14] De Meulenaere, K., De Winne, S., Marescaux, E., & Vanormelingen, S. (2021). The role of firm size and knowledge intensity in the performance effects of collective turnover. *Journal of Management*, 47(4), 993-1023.
- [15] Fang, L., & Peress, J. (2009). Media coverage and the cross-section of stock returns. *The Journal of Finance*, 64(5), 2023-2052.
- [16] Galbraith, J. K. (1956). *American capitalism: The concept of countervailing power* (Vol. 619). Transaction Publishers.
- [17] Guntram B. Wolff, Volker Reinthaler. The effectiveness of subsidies revisited: Accounting for wage and employment effects in business R&D[J]. *Research Policy*, 2008, 37.
- [18] González, X., & Pazó, C. (2008). Do public subsidies stimulate private R&D spending? *Research Policy*, 37(3), 371-389.
- [19] Hu, A. G. (2001). Ownership, government R&D, private R&D, and productivity in Chinese industry. *Journal of Comparative Economics*, 29(1), 136-157.
- [20] Hirshleifer, D., Hsu, P. H., & Li, D. (2018). Innovative originality, profitability, and stock returns. *The Review of Financial Studies*, 31(7), 2553-2605.
- [21] James Crotty. The Effects of Increased Product Market Competition and Changes in Financial Markets on the Performance of Nonfinancial Corporations in the Neoliberal.
- [22] Krippner, G.R. (2005). The financialization of the American economy. *socio-economic review*, 3(2), 173-208.
- [23] Lakonishok, J., Shleifer, A., & Vishny, R. W. (1992). The impact of institutional trading on stock prices. *Journal of Financial Economics*, 32(1), 23-43.
- [24] Miller, G. S. (2006). The press as a watchdog for accounting fraud. *Journal of Accounting Research*, 44(5), 1001-1033.
- [25] Nelson, R. R. (1959). The economics of invention: A survey of the literature. *The Journal of Business*, 32(2), 101-127.
- [26] Orhangazi, Ö. (2008). Financialisation and capital accumulation in the non-financial corporate sector: a theoretical and empirical investigation on the US economy: 1973-2003. -*Cambridge Journal of Economics*, 32(6), 863-886.
- [27] Özçelik, E., & Taymaz, E. (2008). R&D support programs in developing countries: The Turkish experience. *Research Policy*, 37(2), 258-275.
- [28] Strang, D., & Soule, S. A. (1998). Diffusion in organizations and social movements: From hybrid corn to poison pills. *Annual Review of Sociology*, 24(1), 265-290.
- [29] Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011). Resource orchestration to create competitive advantage: Breadth, depth, and life cycle effects. *Journal of Management*, 37(5), 1390-1412.
- [30] An Yun-Ya & Xu Yun-Song. 2011 A new species of the genus An Yun-Ya & Xu Yun-Song (Hymenoptera, Braconidae). (2022). A study on the non-linear relationship between financialization of firms and innovation inputs. *Finance Research* (04), 81-91. doi:10.14115/j.cnki.10-1242/f.2022.04.006.

- [31] Bai, J. H.. (2011). Is government R&D funding in China effective? Empirical evidence from large and medium-sized industrial firms. *Economics (Quarterly)* (04), 1375-1400. doi:10.13821/j.cnki.ceq.2011.04.009.
- [32] Bai Xuyun,Wang Yan Yu,Su Xin. R&D subsidies or tax incentives--the impact of government intervention on firms' innovation performance and innovation quality[J]. *Scientific Research Management*,2019,40(06):9-18.DOI:10.19571/j.cnki.1000-2995.2019.06.002.
- [33] Chen Xiao,Li Jing. Exploration of the role of local government fiscal behavior in enhancing the performance of listed companies[J]. *Accounting Research*,2001(12):20-28+64.
- [34] Chen, Donghua. Local government, corporate governance and subsidy income - empirical evidence from China's securities market[J]. *Financial Research*,2003(09):1521.doi:10.16538/j.cnki.jfe.2003.09.003.
- [35] Tsai, M.R. & Ren, S.C.. (2014). Corporate financialization: a review of research. *Finance and Economics Science* (07), 41-51.
- [36] Chu, D.Y., Yang, Shan & Song, Genmiao. (2016). Financial subsidies, tax incentives and innovation investment in strategic emerging industries. *Finance and Trade Research* (05), 83-89. doi:10.19337/j.cnki.34-1093/f.2016.05.010.
- [37] Chen, C.-J., Dong, M.-T., Ma, P.-C. & Min, Y.-J. (2020). The interaction between media and institutional investors' attention on internal control - Empirical data from state-owned enterprises. *Finance and Trade Research* (09), 99-110. doi:10.19337/j.cnki.34-1093/f.2020.09.009.
- [38] Du Y,Zhang H & Chen JY. (2017). The impact of financialization on the future main business development of real enterprises:Facilitation or inhibition. *China Industrial Economics* (12), 113-131. doi:10.19581/j.cnki.ciejournal.20171214.007.
- [39] Dai Ze,Peng Yu-Chao & Ma Si-Chao. (2018). Understanding economic "de-realization" from a micro perspective: A review of studies related to financialization of enterprises. *Foreign Economics and Management* (11), 31-43. doi:10.16538/j.cnki.fem.2018.11.003.
- [40] Deng Lu, Liu H. & Hou Chongran. 2011 A new species of the genus Deng, L., and L. (2011). (2020). Financial asset allocation and default risk: reservoir effect, or profit-seeking effect? *Financial Studies* (07), 172-189.
- [41] Gu, Yuan-Yuan & Shen, Kun-Rong. (2012). Local government behavior and firms' R&D investment: An empirical analysis based on inter-provincial panel data in China. *China Industrial Economics* (10), 77-88. doi:10.19581/j.cnki.ciejournal.2012.10.007.
- [42] Gu, Xia-Ming, Chen, Yong-Min, Pan, Shi-Yuan. Economic policy uncertainty and innovation-an empirical analysis based on listed companies in China[J]. *Economic Research*,2018,53(02):109-123.
- [43] He, Feng & Liu, Guanchun. (2022). Digital media information dissemination and enterprise technology innovation. *Research in Quantitative Economics and Technology Economics* (12), 111-131. doi:10.13653/j.cnki.jqte.2022.12.006.
- [44] Luo Q, Xiao W.-Chong & Xia X.-P. (2007). Financing constraints or overinvestment - Empirical evidence on investment-cash flow sensitivity of Chinese listed firms. *China Industrial Economics* (09), 103-110. doi:10.19581/j.cnki.ciejournal.2007.09.013.
- [45] Li, Pei-Gong & Shen, Yifeng. (2010). The role of media in corporate governance: empirical evidence from China. *Economic Research* (04), 14-27.
- [46] Li, R. X. & Bai, J. H.. (2013). The impact of government R&D funding on firms' technological innovation-an empirical study based on threshold regression. *China Economic Issues* (03), 11-23. doi:10.19365/j.issn1000-4181.2013.03.002.
- [47] Lu X., Zheng Y. F., Li J. M.. A study on the impact of financing constraints on corporate R&D investment--empirical evidence from high-tech listed companies in China[J]. *Accounting Research*, 2013(05):51-58+96.
- [48] Luo, Jin-Hui & Du, Xing-Qiang. (2014). Media coverage, institutional environment and stock price collapse risk. *Accounting Research* (09), 53-59+97.

- [49] Liu, Duchi, He, Yuping & Wang, Xi. (2016). A study on the impact of financialization of enterprises on the productivity of real enterprises. *Shanghai Economic Research* (08), 74-83. doi:10.19626/j.cnki.cn31-1163/f.2016.08.008.
- [50] Lai L, Ma YQ & Xia XRL. (2016). Media coverage and credit access. *World Economy* (09), 124-148. doi:10.19985/j.cnki.cassjwe.2016.09.007.
- [51] Liou, S.D.. Research on the impact of government subsidies on corporate innovation [D]. Nanjing Agricultural University, 2017.
- [52] Liu Guanchun. (2017). Financial asset allocation and corporate R&D innovation: 'crowding out' or 'crowding in'. *Statistical Research* (07), 49-61. doi:10.19343/j.cnki.11-1302/c.2017.07.005.
- [53] Li, Zheng, Yang, Siying & Lu, Jingjing. (2018). Can government participation enhance the efficiency of regional innovation? *Economic Review* (06), 3-14+27. doi:10.19361/j.er.2018.06.01.
- [54] Liu X.C., Zhang X.H.. Research on the mechanism of media coverage to promote the role of corporate governance[J]. *Business Accounting*, 2019(10):76-78.
- [55] Mao Qilin, Xu Jiayun. The impact of government subsidies on firms' new product innovation--a perspective based on the "moderate interval" of subsidy intensity[J]. *China Industrial Economics*, 2015(06):94-107. DOI:10.19581/j.cnki.ciejournal.2015.06.009.
- [56] Sun, Hui, Wang, Hui. Government subsidies, R&D investment and firms' innovation performance--an empirical study based on high-tech enterprises in GEM[J]. *Science and Technology Management Research*, 2017, 37(12):111-116.
- [57] Shi, Xuezhi, Yang, Zhen. Financialization of enterprises and corporate innovation--a re-examination based on the perspective of industrial policy[J]. *Scientific Research Management*, 2021, 42(04):147-157. DOI:10.19571/j.cnki.1000-2995.2021.04.016.
- [58] Sun, Zhongjuan, Fan, Hejun & Li, Jizhen. 2011 A new species of the genus *Phyllostachys* (Coleoptera, Staphylinidae) from China. (2022). What innovation policy is more effective? --An analysis of heterogeneity based on firm size. *Economic Management* (02), 73-87. doi:10.19616/j.cnki.bmj.2022.02.005.
- [59] Sun, Zhaoxian. (2022). Corporate financialization, nature of property rights and technological innovation. *Modern Business* (01), 123-125. doi:10.14097/j.cnki.5392/2022.01.039.
- [60] Tao WJ, Jin ZM. Research on the relationship between CSR information disclosure and corporate financial performance under media attention and insights--an empirical study based on CSR reports of A-share listed companies in China[J]. *China Management Science*, 2013, 21(04):162-170. DOI:10.16381/j.cnki.is.
- [61] Tian ZQ, Li ShengNan, Du YangYang. Financialization of manufacturing and firm innovation - based on macroeconomic policy uncertainty and the nature of property rights perspective[J].
- [62] *Macroeconomic Research*, 2020(03):32-40. DOI:10.16304/j.cnki.11-3952/f.2020.03.004.
- [63] Wang YH. Government Subsidies, R&D Investment and Firms' Innovation Performance - A Study Based on Ownership, Firm Experience and Regional Differences[J]. *Exploring Economic Issues*, 2013 (07):138-143.
- [64] Wen, Chunhui, Ren, Guoliang. Study on the development of virtual economy and real economy separation--Evidence from Chinese listed companies from 2006-2013[J]. *China Industrial Economics*, 2015(12):115-129. DOI:10.19581/j.cnki.ciejournal.2015.12.009.
- [65] Wang, H.J., Cao, Y.Q., Yang, Q. & Yang, Z.. (2017). Does financialization of real firms promote or inhibit corporate innovation--an empirical study based on Chinese listed manufacturing firms. *Nankai Management Review* (01), 155-166.
- [66] Wu, Jian, Tian, Zhilong, Long, Xiaofeng, Xiong, Qi. The impact of government subsidies on firm innovation in strategic emerging industries[J]. *Scientology Research*, 2018, 36(01):158-166. DOI:10.16192/j.cnki.1003-2053.2018.01.018.
- [67] Wang Yue. Financialization of manufacturing, government subsidies and technological innovation [D]. Shandong University, 2020. DOI:10.27272/d.cnki.gshdu.2020.002546.

- [68] Wu W.W.,Zhang T.I.. A study on the asymmetric effects of non-R&D subsidies and R&D subsidies on innovation output of start-up firms[J]. *Management World*,2021,37(03):137-160+10.DOI:10.19744/j.cnki.11-1235/f.2021.0040.
- [69] Wang, H. J., Feng, Y. & Song, X. W.. (2022). Financialization, executive incentives and R&D intensity of high-tech firms. *Finance and Economics* (10), 49-60. doi:10.19622/j.cnki.cn36-1005/f.2022.10.005.
- [70] Xie, Wei-Min, Tang, Qing-Quan & Lu, Shan-Shan. (2009). Government R&D funding, corporate R&D spending and independent innovation: Empirical evidence from Chinese listed companies. *Financial Studies* (06), 86-99.
- [71] Xu Jing-Chang, Zeng Xue-Yun. Fair value measurement and management compensation contracts[J]. *Accounting Research*,2010(03):12-19+96.
- [72] Xie, J. Z., Wang, W. T., Jiang, Y.. Financialization of manufacturing, government control and technological innovation[J]. *Economic Dynamics*,2014(11):78-88.
- [73] Xie, Zhen & Ai, Chunrong. (2014). Analyst attention and firm R&D investment:An analysis based on Chinese GEM firms. *Financial Research* (02), 108-119. doi:10.16538/j.cnki.jfe.2014.02.008.
- [74] Xu, Bao-Chang & Xie, Jian-Guo. (2015). Government Quality, Government Subsidies, and Total Factor Productivity of Firms. *Economic Review* (04), 45-56+69. doi:10.19361/j.er.2015.04.004.
- [75] Xu Yun, Ling, Shiao-Ting & Dai, D.M.. (2022). Does financial asset allocation by real firms promote R&D investment. *Journal of Shanxi University of Finance and Economics* (02), 63-75. doi:10.13781/j.cnki.1007-9556.2022.02.005.
- [76] Yang, J. D.. (2007). Does the media influence investor behavior? --A reflection based on the literature. *Financial Studies* (11), 93-102.
- [77] Yu M. Gui, Pan H. Bo. Political relations, institutional environment and private enterprise bank loans[J]. *Management World*,2008(08):9-21+39+187.DOI:10.19744/j.cnki.11-1235/f.2008.08.002.
- [78] You, Jiaying, Wu, Jing. The spiral of silence:media sentiment and asset mispricing[J]. *Economic Research*,2012,47(07):141-152.
- [79] Yang Yang, Wei Jiang, Luo Laijun. Who is using government subsidies for innovation? -- Joint regulatory effects of ownership and factor market distortions[J]. *Management World*,2015(01):75-86+98+188.DOI:10.19744/j.cnki.11-1235/f.2015.01.009.
- [80] Yang, Songling, Niu, Deng-Yun, Liu, Ting-Li & Wang, Zhi-Hua. (2019). Financialization, analyst concerns and internal innovation drivers in real firms. *Management Science* (02), 3-18.
- [81] Yang Yan,Jing Fengjie. The impact of start-up assets on marketing performance of micro and small enterprises[J]. *Scientific Research Management*,2019,40(10):250-258.DOI:10.19571/j.cnki.1000-2995.2019.10.023.
- [82] Zhang, J., Chen, C.Y., Yang, L.S., and Xinfu. Performance assessment of innovation subsidy policies in China:theory and evidence[J]. *Economic Research*,2015,50(10):4-17+33.
- [83] Zhang, Chengsi & Zhang, Buzhan. (2016). The mystery of declining industrial investment rate in China:A financialization perspective of the economy. *Economic Research* (12), 32-46.
- [84] Zhu, J. J.. The dynamics of regional innovation - an interactive evolutionary perspective based on innovation and absorptive capacity[J]. *Research on Finance and Economics*,2017(03):11-18.
- [85] Zhang, Yuan, Cheng, Yu, She, Guoman. Can government subsidies promote independent innovation in high-tech enterprises? -- Evidence from Zhongguancun[J]. *Financial Research*,2018(10):123-140.
- [86] Zhang, C.-C. & Ren, H.-H.-X. (2020). Government subsidies, rent-seeking and firms' R&D human capital investment. *Journal of Yunnan University of Finance and Economics* (03), 92-103. doi:10.16537/j.cnki.jynufe.000568.
- [87] Zhang Zhongshou & Zhu Xuqiang. 2011 A new species of the genus *Phyllostachys* (Hymenoptera, Braconidae) from China. (2022). A study on the relationship between innovation capability and IPO, profitability, capital structure and firm size of Chinese technology firms. *Macroeconomic Research* (02), 147-154. doi:10.16304/j.cnki.11-3952/f.2022.02.010.