WEP Warwick Evans Publishing

Transactions on Economics, Business and Management Research
ISSN: 2960-1789, eISSN: 2960-2254 | Volume 7
EDMI 2024

Intelligent Transformation and Corporate Financialization

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Abstract. Based on the data of manufacturing enterprises listed in the Shanghai and Shenzhen A-shares from 2007 to 2021, this paper empirically examines the impact of intelligent transformation on corporate financialization, its mechanisms, and the moderating effects on their relationship. The study finds that intelligent transformation has a significant negative impact on corporate financialization, namely, intelligent transformation inhibits the degree of corporate financialization. The results of the moderating effect regression show that the inhibitory effect of intelligent transformation on financialization activities is more pronounced in state-owned enterprises and firms with greater financing constraints; a highly competitive market negatively moderates the inhibitory effect of intelligent transformation on corporate financialization activities. Mechanism tests prove that intelligent transformation can inhibit corporate financialization by increasing the return on investment in the real sector and curbing the scale of shadow banking activities of enterprises, thereby changing the flow of capital between the real and financial sectors. This paper supplements the economic consequences of intelligent transformation from the perspective of corporate financialization and provides empirical evidence for government policies on intelligent transformation and corporate strategies for intelligent innovation.

Keywords: Intelligent Transformation; Corporate Financialization; Real Investment; Shadow Banking.

1. Introduction

Manufacturing, being the bedrock of the real economy, is pivotal to the nation's economic lifeblood, and is fundamental to the nation's foundation and strength. However, in recent years, Chinese manufacturing firms listed on the stock market, in pursuit of high returns from financial markets, have increasingly deviated from their main business operations, reallocating resources intended for operational matters to financial assets—a phenomenon that has been frequently observed. According to Wind Information data, from January to December 2022, a total of 1,089 A-share companies invested in financial products, with a combined subscription amount reaching 1,069.738 billion yuan. Over ninety percent of these companies subscribed to multiple financial products, with substantial investments emerging frequently, the highest reaching tens of billions of yuan. Particularly, when real sector enterprises shift their focus from research and development and innovation to financial markets, there may be a reduction in R&D investment and a consequent decline in innovation capacity, thereby leading to the hollowing out of the real economy (Zhang Donghui, 2015). This negative outcome can be detrimental to the manufacturing sector, which relies heavily on technological progress (Stockhammer, 2004). The phenomenon of the economy's shift from tangible to intangible has garnered significant attention from the Chinese government. During an inspection in Guangdong in October 2018, Leader emphasized the need to "vigorously develop the real economy, eliminate ineffective supply, cultivate innovation drivers, reduce operating costs, and promote the manufacturing industry's rapid transition to digitalization, networking, and intelligence." Report of the 20th National Congress of the Communist Party of China further underscored the importance of "focusing on the real economy as the mainstay of economic development," and "promoting high-end, intelligent, and green development in the manufacturing sector." It is evident that to better promote the growth and high-quality development of the real economy, exploring the influencing factors of financialization in China's manufacturing enterprises and their restraining strategies has significant practical significance.

Since the onset of the Fourth Industrial Revolution, emerging information technologies such as the Internet of Things (IoT), big data, cloud computing, and artificial intelligence have been propelling society's transition from an industrial economy to a digital economy, inducing profound transformations in manufacturing production methods. The "Made in China 2025" plan, issued by the Chinese government, specifically calls for "accelerating the deep integration of new-generation information technologies with the manufacturing industry, with a primary focus on advancing intelligent manufacturing." The transformation of manufacturing enterprises towards intelligence refers to the process by which traditional manufacturing entities introduce and integrate advanced information technologies, automation equipment, intelligent systems, and data analytics to shift from labor-intensive and technology-intensive to intelligence-intensive operations (Schwab, 2016). This concept is closely related to ideas such as Industry 4.0 (Kagermann et al., 2013), intelligent manufacturing (Lee et al., 2015), and digital twin (Grieves, 2014), all aiming to promote innovation and development in the manufacturing sector through technological advancements. Specifically, intelligent transformation encompasses not only the automation and smartening of the manufacturing process itself but also the digitalization and intelligent upgrade of product design, supply chain management, marketing, and customer service.

Existing research primarily investigates the economic consequences of enterprise intelligence transformation from a micro-perspective. Through the adoption of intelligent transformation, enterprises can introduce technologies such as automated production lines, machine learning, and artificial intelligence, which may reduce labor costs and error rates, significantly enhance production efficiency, lower production costs, and increase output (Brynjolfsson et al., 2014). Intelligent technologies can assist companies in more accurately analyzing and forecasting market trends, improving decision-making processes, enhancing the ability to adapt to market changes, and reducing operational risks (Davenport, 2013; Tang Haodan et al., 2022). Intelligent technologies can increase supply chain transparency, reduce inventory and logistics costs, and improve the overall efficiency and responsiveness of supply chains through accurate forecasting and automated processes (Li Qi et al., 2021). Intelligent transformation aids in the more efficient use of resources, reducing waste and emissions, and contributing to enterprises' pursuit of green and sustainable development (Cao Yu et al., 2023). While the existing literature provides a rich basis for understanding the economic outcomes of intelligence transformation, it has yet to explore the impact of this transformation on the financialization of companies. The latter is an important micro-financial indicator for grasping the dynamics of industrial development, promoting the optimization and upgrading of industrial structure, and preventing financial risks.

Based on this, the present study selects listed manufacturing companies in China's A-share market as the research sample to explore the impact mechanism and action mechanism of corporate intelligent transformation on its financialization. The potential marginal contributions of this article are as follows: Firstly, it expands the understanding of the impact of intelligent transformation on corporate financialization. This paper, from the perspective of internal decision-making of micro-subjects, reveals the negative impact of intelligent transformation on corporate financialization, namely that the intelligent transformation of manufacturing enterprises can effectively inhibit the phenomenon of financialization and promote the return of corporate investment to operational management. This finding provides new insights and decision-making basis for business managers and policy makers. Secondly, it analyzes the mechanism of action through which intelligent transformation affects corporate financialization. Intelligent transformation suppresses corporate financialization by enhancing the entities' profitability and restraining the motivation for financialization. This conclusion enriches and extends the research on the microeconomic consequences of intelligent transformation. Thirdly, it investigates the moderating effects of intelligent transformation across different types of enterprises and market environments. The study finds that the impact of intelligent transformation on financialization activities is subject to a comprehensive modulation by enterprise type and market environment. This paper explores the moderating effects of intelligent transformation on financialization in manufacturing enterprises from three aspects: enterprise ownership nature,

financing constraints, and market competition. It provides financialization control paths tailored for different types of enterprises and market environments, which can help manufacturing enterprises to undergo intelligent transformation more flexibly.

2. Theoretical Analysis and Research Hypothesis

Corporate financialization refers to the process whereby traditional non-financial corporations, especially manufacturing enterprises, begin to allocate more resources and attention towards financial market activities, rather than focusing on their core business operations (Krippner, 2005; Zhang Chengsi et al., 2016). There has been substantial discussion in the existing literature regarding the motives for corporate financialization, which are mainly as follows: The "reservoir" theory (Orhangazi, 2008) suggests that enterprises engage in financialization primarily to establish a "reservoir" of financial assets to buffer operational risks and enhance liquidity in the face of unstable market environments and cash flow. This strategy can help companies to maintain operations or make necessary investments using existing financial assets during economic downturns or when financing is constrained. The "investment substitution" theory (Demir, 2009) posits that corporate financialization occurs because financial investments, compared to real economy investments, offer higher returns and liquidity, leading enterprises to shift resources from traditional productive investments to financial assets. This motive is influenced by the pursuit of short-term profit maximization, as corporate managers may prefer to quickly enhance the company's financial performance and market value through financial investments. The "real-sector intermediary" theory (Froud et al., 2000; Wang Hongjian et al., 2017) emphasizes that under the trend of financialization, enterprises gradually take on the role of traditional financial institutions, directly participating in financial markets for funding activities. This not only allows them to profit from financial markets but also reduces reliance on external financial intermediaries, thereby lowering financing costs.

Intelligent transformation can curb the financialization tendencies of manufacturing enterprises and enable them to refocus on their core businesses through the following two mechanisms:

First, intelligent transformation can promote the return of corporate capital to the real sector by improving the profitability of the enterprise—namely, the return on investment in physical assets—thereby inhibiting corporate financialization. Initially, intelligent transformation typically involves the automation and informatization of production processes (Brynjolfsson et al., 2000). This significantly enhances production efficiency and reduces operational costs, thereby improving the cost-benefit ratio of products. In the market, the improved cost-benefit ratio allows enterprises to offer products and services at more competitive prices, directly enhancing the company's revenue and profits (Porter et al., 2014), and thus increasing the return on investment in physical assets. Moreover, according to New Institutional Economics, the institutional environment influences corporate behavior. Intelligent transformation is accompanied by policy support and institutional innovation, such as tax incentives and technical innovation grants. These institutional incentives can further enhance enterprises' willingness to invest in the real sector, thereby increasing the return on physical investments and reducing their dependence on financial investments (Gu Leilei et al., 2020). Furthermore, intelligent transformation helps optimize supply chain management, reduce inventory backlog and logistics costs, and enhance the responsiveness and flexibility of the entire supply chain. An optimized supply chain can better meet market changes, reduce losses due to market fluctuations, and improve the company's market adaptability, thereby enhancing the return on physical investments. In the long run, with the enhancement of the profitability of the real sector, enterprises will reallocate more capital and resources back into their core physical businesses, rather than dispersing them into non-core areas such as financial investments. This capital return helps to stabilize the company's main business, enhance its market position, and improve its risk resistance (Gu Haifeng et al., 2022).

From the perspective of the "reservoir" theory (Orhangazi, 2008), a part of the motive for enterprises to maintain financial assets originates from the risk management of future cash flow fluctuations. However, when intelligent transformation enhances the profitability of the real sector and reduces

operational risks and cash flow volatility, the demand for financial assets correspondingly decreases. Enterprises then have more motivation and resources to invest funds into the real sector to achieve long-term growth and profitability (Li Qiumei et al., 2020). Under the framework of the "investment substitution" theory (Stockhammer, 2004), if intelligent transformation effectively improves the return on investment in the real sector, corporate management will reassess the relative attractiveness of financial investments versus real economic investments. Since intelligent transformation brings about productive investments with higher marginal output, corporate capital will naturally tend to withdraw from relatively inefficient financial investments and instead invest in more productive real activities. In the long term, this reallocation of capital helps the enterprise achieve sustainable growth and alleviates the tendency of excessive reliance on financial markets, reducing the enterprise's sensitivity to financial market fluctuations and promoting the effective allocation of corporate resources (Lazonick, 2014; Liu Huihao et al., 2021).

Secondly, intelligent transformation can curtail the financialization motives of enterprises—the scale of shadow banking activities—thereby impeding capital flows to the financial sector and thus inhibiting corporate financialization. Initially, intelligent transformation can enhance an enterprise's ability to process and analyze financial data, contributing to the establishment of more transparent and robust financial governance mechanisms (Wu Fei et al., 2021). This transformation can reduce the demand for complex financial products and shadow banking services, leading enterprises to prefer formal financial channels or internal financing, thus diminishing the market size of shadow banking. This is because shadow banking products and services often lack transparency and may increase operational risks for businesses (Adrian and Ashcraft, 2012). Furthermore, intelligent transformation can bolster an enterprise's profitability and cash flow. As profits increase, the need for external financing diminishes, and correspondingly, the provision of shadow banking financing services decreases (Schularick and Taylor, 2012). At the same time, a robust cash flow aids internal financing, reducing the demand for high-risk external financial products, which directly impacts the scale and growth of shadow banking activities. In addition, intelligent transformation encourages enterprises to focus on their core competencies, concentrating more on the development of their main business. This transformation advocates for businesses to reduce non-core financial investment activities, particularly those conducted through shadow banking channels (Han Xun et al., 2017). When enterprises become more focused on their primary operations, the motives for financialization are reduced, and the scale of shadow banking activities likewise decreases.

Based on the "investment substitution" theory of financialization motives, enterprises weigh the trade-offs between real investments and financial investments, and an expansion in the scale of shadow banking activities may lead to a resource allocation bias towards financial investments. This is because shadow banking can offer returns higher than traditional bank deposits and real economic projects, attracting enterprises to channel more of their free cash flow into high-yield financial assets instead of expanding production or technological innovation. This shift in investment preferences exacerbates the tendency towards corporate financialization, causing resources to flow from the real economy to financial markets, rather than promoting productive investments. According to the "real intermediation" theory of financialization motives, with the rise of shadow banking, the role of enterprises in financial markets has shifted from traditional demanders of funds to providers of financial capital and investors. Enterprises participate in financial markets through shadow banking not only to obtain funding but also to garner excess profits through speculative financial activities. Therefore, the activities of shadow banking expand the space for corporate financialization, making enterprises more reliant on financial markets for profit maximization (Zhou Bole et al., 2020).

Based on the foregoing analysis, the following hypotheses are proposed:

H1: Intelligent transformation has an inhibitory effect on the financialization of manufacturing enterprises.

H2a: Intelligent transformation can promote the return of corporate capital to the real sector by improving the return on investment in physical assets, thereby inhibiting corporate financialization.

H2b: Intelligent transformation can curb the scale of shadow banking activities of enterprises, hindering capital flows to the financial sector, and thus inhibiting corporate financialization.

3. Research Design

3.1. Sample Selection and Data Sources

This paper selects data from China's A-share listed manufacturing companies for the years 2007-2021 as the initial research sample, with data sourced from the CSMAR database, WIND database, and listed companies' annual reports. To ensure the accuracy and reliability of the study results, the following data processing steps were taken: (1) Companies with ST or *ST status were excluded; (2) Cases with missing values for primary variables were omitted; (3) To prevent extreme data values from affecting the test results, all variables were winsorized at the 1% and 99% quantile levels, resulting in 14,038 valid observations.

3.2. Research Variable Design

1.Dependent Variable: Corporate Financialization (Fin). Following the research of Du Yong et al. (2019) and Wu Jun et al. (2018), this paper measures the degree of corporate financialization based on the proportion of financial assets to total assets. Financial assets include trading financial assets, derivative financial assets, loans and advances, available-for-sale financial assets, held-to-maturity investments, and investment properties. Considering that owning investment properties is aimed at appreciation rather than production and operational activities, which indicates financialization motives, this study includes investment properties in the financial assets category.

Table 1. Variable Definitions

Variable Name	Variable Symbol	Measurement
Corporate Financialization	Fin	Financial assets of the company / Total assets of the company
Intelligent Transformation	Intell	ln(Frequency of intelligent transformation keywords + 1)
Company Size	Size	ln(Total assets at the end of the period + 1)
Company Age	Age	Current fiscal year - Year of company establishment
CEO-Chairman Duality	Dual	Value is 1 if the chairman and CEO are the same person, otherwise 0
Return on Total Assets	Roa	Net profit for the period / Total assets at the end of the period
Proportion of Independent Directors	Id	Number of independent directors / Total number of board members
Cash Flow from Operations	Fcf	Net cash flow from operating activities / Total assets
Asset-Liability Ratio	Lev	Total liabilities at the end of the period / Total assets at the end of the period
Company Growth	Growth	Increase in total assets at the end of the year / Total assets at the beginning of the year
Ownership Concentration	First	Shareholding percentage of the largest shareholder
Board Size	Bsize	ln(Total number of board members at the end of the period + 1)
Supply Chain Pressure	Pres	(Net accounts receivable - Net prepaid expenses) / Operating revenue

2.Independent Variable: Intelligent Transformation (Intell). This paper, drawing on the measurement methods of Chen Qingjiang et al. (2021) and Li Wan Hong and Wang Fan (2022), consulted a team of experts on intelligent transformation to determine a list of 29 keywords related to intelligent transformation in manufacturing enterprises. Textual analysis using Python's "Jieba" was implemented to sum the frequency of the categorized intelligent transformation keywords, resulting in an intelligent transformation index. Since the index constructed in this way exhibits right-skewness, with a long right tail including some extremely high values, a log transformation (logarithm of the index plus one) was performed to mitigate the impact of outliers, ultimately obtaining the Intelligent Transformation Index (Intell).

3.Control Variables. Based on existing literature and the content of this study, the following control variables were selected: company size (*Size*), company age (*Age*), CEO duality (*Dual*), return on total assets (*Roa*), proportion of independent directors (*Id*), cash flow from operating activities (*Fcf*), asset-liability ratio (*Lev*), company growth (*Growth*), ownership concentration (*First*), board size (*Bsize*), and supply chain pressure (*Pres*).

3.3. Model Construction

To test Hypothesis H1, namely the impact of intelligent transformation (*Intell*) on corporate financialization (*Fin*), this study constructs the following empirical model

$$Fin_{i,t} = \alpha_0 + \alpha_1 Intell_{i,t} + \alpha_2 Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (1)$$

In this model, i represents the firm, and t represents the year. The dependent variable $Fin_{i,t}$ represents the proportion of financial assets to total assets for firm i in year t, while $Intell_{i,t}$ refers to the level of intelligent transformation for firm i in year t. The coefficient α_1 signifies the degree of impact that intelligent transformation has on corporate financialization. $Controls_{i,t}$ denotes the set of control variables for firm i in year t, and $\varepsilon_{i,t}$ is the random error term. To alleviate the endogeneity problem arising from omitted variables in the model, this study uses a two-way fixed effects model for empirical testing, where $\sum Industry$ represents the industry fixed effects, and $\sum Year$ represents the year fixed effects.

4. Empirical Results and Analysis

4.1. Descriptive Statistics

Table 2. Descriptive Statistics

Variable	Sample Size	Mean	Standard Deviation	Minimum	Median	Maximum
Fin	14038	0.041	0.077	0.000	0.009	0.422
Intell	14038	1.906	1.298	0.000	1.946	4.997
Size	14038	22.365	1.434	19.684	22.149	26.709
Age	14038	17.708	5.560	6.000	17.000	32.000
Dual	14038	0.261	0.439	0.000	0.000	1.000
Roa	14038	0.036	0.067	-0.308	0.038	0.200
Id	14038	0.376	0.054	0.308	0.364	0.571
Fcf	14038	0.048	0.070	-0.163	0.047	0.250
Lev	14038	0.454	0.210	0.059	0.453	0.944
Growth	14038	0.196	0.453	-0.575	0.123	2.966
First	14038	0.347	0.152	0.078	0.326	0.748
Bsize	14038	2.248	0.183	1.792	2.303	2.773
Pres	14038	0.193	0.239	-0.306	0.137	1.145

The descriptive statistical results for the main variables are shown in Table 2. After sample selection and data cleaning, the empirical testing section includes a total of 14,038 samples. It can be observed that the mean and standard deviation of corporate financialization (*Fin*) are 0.041 and 0.077, respectively, with a minimum value of 0 and a maximum value of 0.422. This indicates that there is a significant variation in the degree of financialization among different manufacturing firms. The mean and standard deviation for intelligent transformation (*Intell*) are 1.906 and 1.298, respectively, with a minimum value of 0 and a maximum value of 4.977. This suggests that there is a wide range of values for the degree of digital transformation among firms, presenting an unbalanced state. Some manufacturing firms listed on the stock market have made rapid progress in digital transformation, while others have not yet begun their digital transformation. The statistical analysis of the other control variables is generally consistent with existing research and falls within a reasonable range.

4.2. Analysis of the Baseline Regression Results

Table 3. Baseline Regression Results

Variable	(1)	(2)	(3)
	fin	fin	fin
Intell	-0.003***	-0.004***	-0.006***
	(-6.256)	(-6.725)	(-8.982)
Size		0.001	-0.000
		(1.095)	(-0.272)
Age		0.002***	0.001***
		(19.842)	(9.943)
Dual		-0.001	-0.002
		(-0.519)	(-1.106)
Roa		0.000	0.006
		(0.036)	(0.549)
Id		0.007	0.018
		(0.533)	(1.300)
Fcf		-0.061***	-0.042***
		(-6.143)	(-4.287)
Lev		-0.059***	-0.070***
		(-14.861)	(-16.526)
Growth		-0.005***	-0.006***
		(-3.255)	(-3.997)
First		0.000	0.000**
		(0.674)	(2.022)
Bsize		-0.033***	-0.018***
		(-7.447)	(-3.993)
Pres		-0.042***	-0.037***
		(-14.880)	(-11.746)
_cons	0.048***	0.100***	0.083***
	(36.893)	(6.649)	(4.667)
Time Fixed Effects	NO	NO	YES
Industry Fixed Effects	NO	NO	YES
N	14038	14038	14038
R^2	0.103	0.072	0.156

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, the same below

Table 3 presents the baseline regression results of the primary test. Column (1) includes the basic model that comprises the dependent variable corporate financialization (*Fin*) and the core explanatory variable intelligent transformation (*Intell*). The results show that the coefficient of intelligent transformation is -0.003 and is significant at the 1% level, indicating that intelligent transformation has a significant negative impact on corporate financialization.

In Column (2), based on the model in Column (1), a series of control variables such as firm size, firm age, and CEO duality are introduced to control for other factors that might affect corporate financialization. Under this more complex model setting, the coefficient of intelligent transformation is -0.004 and remains significant at the 1% level, indicating that the impact of intelligent transformation on corporate financialization is still significant and negative even after controlling for other factors.

Column (3) further includes industry and year fixed effects. In this model, the impact of intelligent transformation not only remains significant, but its negative effect is further strengthened (regression coefficient of -0.006). This suggests that the negative impact of intelligent transformation on corporate financialization is robust under stricter statistical controls. The empirical results support Hypothesis H1, which posits that intelligent transformation negatively affects the level of corporate financialization.

4.3. Robustness Test

1.Variable Replacement. To avoid errors caused by different measurement methods of the dependent variable, this study follows the approach of Wu Jun et al. (2018) by altering the measurement of financial assets. The method includes short-term investments, interest receivables, dividend receivables, and other current assets while replacing loans and advances with repurchase financial assets. The level of corporate financialization (FA) is still measured by the ratio of financial assets to total assets. The results are shown in Table 4, Column (1), where the regression coefficient for the independent variable, intelligent transformation, is -0.007, significant at the 1% level. This continues to support the research hypothesis H1 that intelligent transformation has a restraining effect on financialization in the manufacturing sector.

2.Changing the Sample Interval. Considering the stock market crash in 2015, which led to increased volatility in the prices of financial assets and may have significantly increased the domestic firms' exposure to financial market risks, the allocation of financial assets by firms could be significantly affected. Therefore, data after 2015 was excluded, and a regression was conducted again. The regression results are shown in Table 4, Column (2), where the regression coefficient for intelligent transformation is significantly negative at the 1% level, consistent with the baseline regression results.

Table 4. Robustness Test

Variable	(1)	(2)
	substituting variables	changing the sample interval
	FA	Fin
Intell	-0.007***	-0.006***
	(-8.843)	(-7.477)
_cons	0.132***	0.032
	(6.047)	(1.388)
Controls	YES	YES
Time Fixed Effects	YES	YES
Industry Fixed Effects	YES	YES
N	14038	7195
R^2	0.196	0.174

4.4. Analysis of Moderating Effects

In state-owned enterprises (SOEs), the move towards intelligent transformation has an especially pronounced inhibitory effect on financialization activities. This is because these enterprises often possess stable policy support and resource advantages, and tend to prioritize efficiency improvements through technological advancements and industrial structural upgrades rather than seeking short-term gains through financialization. For companies facing significant financing constraints, intelligent transformation becomes a key strategy to enhance productivity and alleviate capital shortages; hence, they are more proactive in reducing financialization behaviors during this transition. However, in a highly competitive market environment, enterprises may rely on financialization to swiftly adjust asset allocation and reduce financing costs in order to maintain competitiveness and manage uncertainty. Therefore, in markets with high levels of competition, the restraining effect of intelligent transformation on financialization activities may be negatively moderated. Therefore, in markets with high levels of competition, the restraining effect of intelligent transformation on financialization activities may be negatively moderated.

Table 5. Moderating Effect Regression Results

Variable	(1)	(2)	(3)	(4)
	Baseline Regression	Ownership Nature	Financing Constraints	Intra-industry Competition
	Fin	Fin	Fin	Fin
Intell	-0.006***	-0.004***	-0.003***	-0.007***
	(-8.982)	(-4.911)	(-3.767)	(-7.629)
SOE		0.018***		
		(6.546)		
SOE*Intell		-0.006***		
		(-5.751)		
KZ			0.009***	
			(3.275)	
KZ*Intell			-0.005***	
			(-5.757)	
HHI				-0.007**
				(-2.128)
HHI*Intell				0.002*
				(1.774)
_cons	0.083***	0.092***	0.073***	0.088***
	(4.667)	(4.947)	(4.139)	(4.906)
Controls	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
N	14038	13927	14038	14038
R^2	0.156	0.159	0.158	0.156

Table 5 presents the moderation effect regression results, showing the extent of the impact of intelligent transformation (*Intell*) on corporate financialization activities (*Fin*) under different scenarios. Column (1) indicates that intelligent transformation has a significant negative impact on corporate financialization activities, meaning that as firms increase their investment in intelligent technologies, the degree of their financialization activities tends to decrease. Column (2) reveals the interaction between property rights (*SOE*) and intelligent transformation (*Intell*). The interaction term *SOE*Intell* is negative and significant at the 1% level, indicating that the inhibitory effect of intelligent transformation on financialization activities is stronger in state-owned enterprises. Column (3) considers the impact of firms' financing constraints (measured by the KZ index) on the relationship between intelligent transformation and financialization. The interaction term (*KZ*Intell*) is negative and significant at the 1% level, indicating that firms with greater financing constraints exhibit a more pronounced trend of reducing financialization activities during intelligent transformation. Column (4) analyzes the impact of the degree of market competition (measured by the HHI index) on the aforementioned relationship. The interaction term (*HHI*Intell*) is significantly positive, indicating that a high degree of competition in the market negatively moderates the inhibitory effect of intelligent transformation on corporate financialization activities.

5. Mechanism Test

According to the analysis above, the mechanisms through which intelligent transformation reduces a firm's level of financialization may be reflected in two aspects. First, intelligent transformation can improve the profitability of a firm's physical operations—including the return on physical investment—thereby promoting the return of capital to the physical sector and thus inhibiting corporate financialization. Second, intelligent transformation can suppress the motivation for corporate financialization—including the scale of shadow banking activities—thus hindering capital flow to the financial sector and, consequently, inhibiting corporate financialization.

Referencing Zhang Chengsi and Zhang Butan (2016), the return on physical investment (denoted by the variable PR) is measured as (operating income - operating costs - taxes and surcharges - period expenses - asset impairment losses) / (the total net value of long-term assets such as fixed assets, working capital, and intangible assets). Referencing Li Jianjun and Han Xun (2019), the scale of shadow banking activities (denoted by the variable SB) is proxied by the sum of other current assets, other receivables, entrusted wealth management, and entrusted loans as a proportion of the total assets of the firm.

Table 6 presents the regression results of the mechanism analysis. Column (1) is the mechanism test for the return on physical investment, which shows that the coefficient for intelligent transformation is 0.005, significant at the 5% level, indicating that intelligent transformation has increased the return on physical investment for manufacturing firms, thus supporting hypothesis H2a. Column (2) is the mechanism test for the scale of shadow banking activities, where the coefficient for intelligent transformation is -0.003, significant at the 1% level, showing that intelligent transformation has suppressed the scale of shadow banking activities for manufacturing firms, which confirms hypothesis H2b.

As firms in the physical sector enhance their profitability, they will have greater motivation and capability to invest capital into their core business, rather than turning to financial markets in search of short-term and potentially high-risk financial returns. Therefore, intelligent transformation can promote the return of capital to the physical economy by improving the return on physical investments, helping to inhibit corporate financialization. Shadow banking activities, which often seek short-term high returns, may induce myopic behavior in corporate management, leading them to focus excessively on the short-term profits brought by financial investments while neglecting the long-term physical operation and development of the firm, thereby exacerbating the degree of corporate financialization.

Table 6. Mechanism Test Results

Variable	(1)	(2)
	PR	SB
Intell	0.005**	-0.003***
	(2.301)	(-4.560)
_cons	0.039	0.107***
	(0.745)	(7.077)
Controls	YES	YES
Time Fixed Effects	YES	YES
Industry Fixed Effects	YES	YES
N	13571	14038
R^2	0.208	0.125

6. Conclusion and Policy Recommendations

6.1. Research Conclusion

This study uses a sample of manufacturing companies listed on the Shanghai and Shenzhen A-shares from 2007 to 2021 to explore the impact of intelligent transformation on corporate financialization, its mechanisms, and the moderating effects on their relationship. The following conclusions are reached: (1) Baseline regression results indicate that intelligent transformation has a significant negative impact on corporate financialization, that is, it inhibits the degree of corporate financialization. (2) Modifying effects regression results show that the inhibitory effect of intelligent transformation on financialization activities is more pronounced in state-owned enterprises and enterprises with greater financing constraints; highly competitive markets negatively moderate the inhibitory effect of intelligent transformation on corporate financialization activities. (3) Mechanism test results suggest that intelligent transformation can inhibit corporate financialization by improving the rate of return on physical investments, thereby promoting the return of capital to the physical sector, and by suppressing the scale of shadow banking activities, thus impeding capital flow to the financial sector.

6.2. Policy Recommendations

Firstly, strengthen policy support for intelligent transformation to encourage enterprises to shift from financial asset investment to physical economy investment. Offer targeted tax incentives and fiscal subsidies, especially for investments in key technical areas such as intelligent manufacturing, automation, and data analytics. Establish national-level intelligent transformation funds to specifically support technological upgrades and innovations in small and medium-sized enterprises. Release guidelines for intelligent transformation, clarifying industry targets and key tasks, and providing specific implementation roadmaps.

Secondly, in response to the findings on moderating effects, policies should particularly support the intelligent transformation of state-owned enterprises, leveraging their leadership position in key industries to promote the application of broadband infrastructure and advanced manufacturing technologies. For enterprises with significant financing constraints, the government may provide special funds to help them overcome initial capital barriers and advance the implementation of intelligent projects. Establish innovation loan and guarantee mechanisms, especially for small and medium-sized enterprises willing to invest in intelligent transformation but limited by funds. Initiate industry collaborative intelligent transformation plans, encouraging enterprises in highly competitive

industries to develop shared technology platforms through cooperation, reduce transformation costs, and collectively enhance industry efficiency and competitiveness.

Thirdly, in response to the conclusions of the mechanism test, support enterprises in optimizing production processes and product quality through intelligent transformation, enhance operational efficiency and market responsiveness, and thus increase the rate of return on investment. Strengthen financial regulation, particularly regarding financialization investment activities conducted through the shadow banking system, to ensure the transparency and compliance of these activities. At the same time, provide more support through formal financial channels, particularly offering low-cost financing for small and medium-sized enterprises, reducing their reliance on the shadow banking system.

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