Digital Transformation of Enterprises and Corporate Financialization

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Abstract. With the rapid evolution of digital technology, corporate digitization has emerged as a major strategy for accelerating China's economic transformation. However, economic transformation is not without obstacles. Since the amount of financialization in firms increases during the digital transformation, compounding the issue of enterprises "moving away from the real economy." Based on data from Chinese listed non-financial firms from 2011 to 2022, this article explores the influence of digital transformation on non-financial enterprises' financialization. The results reveal that digital transformation promotes non-financial firms to increase holdings of financial products, boosting the extent of financialization. Through further theoretical analysis, it is found that digital technology facilitates enterprise access to capital markets and stimulates the motivation for financialization through the avenues of "reserve motive" and "investment substitution". This paper provides empirical evidence for the exacerbation of financialization in non-financial enterprises due to digital transformation, and theoretically elucidates the underlying mechanisms, offering valuable insights for the sound evolution of enterprise digital transformation.

Keywords: Digitalization; Financial Behavior; Real Economy.

1. Introduction

With the continuous escalation of international economic frictions and a significant slowdown in domestic economic growth, China's real economy has encountered multifaceted challenges. Industrial investment has been stagnant, and the return on investment has shown a downward trend. And China's financial industry has continued to thrive, deepening the interconnection between industrial and financial capital. Non-financial enterprises have progressively shifted focus away from traditional industries, diverting substantial capital towards financial assets, resulting in a conspicuous "hollowing-out of the real economy" phenomenon. Data from CSMAR statistics show that from 2011 to 2022, the share of financial assets in total corporate assets more than doubled for Chinese non-financial corporations, increasing from 16.27% to 37.48%. Enterprises allocating limited resources into the financial market may lead to crowding-out effects on real investments, thereby dampening real economic development[1]. Moreover, it can significantly curb the incentive for enterprises to engage in technological innovation[2], which can support their long-term sustainable development. Additionally, from a societal perspective, the overfinancialization weakens the stimulative effect of monetary policy on industrial investment[3]. This exacerbates the sensitivity of enterprises to fluctuations in financial market returns and risks, undermining financial market stability[4].

Simultaneously, the digital economy is flourishing and is transforming the existing economic development model. The digital transformation of enterprises can significantly enhance their total factor productivity, reduce financing costs, alleviate financing constraints, and improve the efficiency of enterprise fund management[5][6][7]. However, digital transformation may also increase the operating management costs of enterprises[8]. Introducing digital technology is a long-run procedure, involving a significant amount of time costs[5], and the high implicit costs undermine the effect of digital transformation on how the business performs.

Enterprise "hollowing-out of the real economy" is not only a major symptom of the current market chaos but also a key issue in China's economic development, which is of significant importance for understanding corporate behavior and promoting economic development. Based on these research gaps, our marginal contributions are mainly as follows: Firstly, we empirically investigated the impact of non-financial enterprise digital transformation on their financialization using data from Chinese

listed companies, providing empirical evidence for the exacerbation of enterprise financialization due to digital transformation. Secondly, through theoretical analysis, the process by which enterprise digital transformation intensifies financialization have been examined both from the perspectives of the "reserve motive" and "investment substitution," providing insights and methodological references for further in-depth research.

2. Literature Review

The definition and measurement of financialization in non-financial enterprises mainly involve two approaches. Firstly, from an investment perspective, it is characterized by an increasing proportion of corporate financial investment. Secondly, from a profit perspective, it is manifested by the majority of corporate profits coming from financial channels[9][10]. Currently, academic research on corporate financialization mainly focuses on two aspects: its motives and influencing factors. Previous research indicates that non-financial enterprises hold financial assets for two primary reasons: firstly, for "reserve motives," aiming to mitigate potential cash flow shocks in the future[11]; secondly, due to "investment substitution" to maximize profits, wherein enterprises allocate more resources to financial assets when returns on real investments decline[12]. Additionally, a substantial corpus of literature examines the factors influencing corporate financialization from both macroeconomic and microeconomic perspectives. Macro factors include economic policy uncertainty and macroeconomic conditions[13][14], while micro factors primarily encompass CEO financial backgrounds, corporate social responsibility, and financing constraints[15][16].

Digital transformation of enterprises is the process of utilizing next-generation information technology to facilitate the flow of data elements across the entire business process, breaking down barriers to data exchange. On one hand, it leverages data to drive intelligent workflow, helping companies improve production efficiency and overall performance. On the other hand, it fosters breakthrough innovations in internal management through avenues such as organizational structure, marketing models, and production modes[17][18]. However, while digital transformation creates new value sources for businesses, it also brings adverse effects. The significant risks of major errors during the digital transformation process increase audit costs, and its high hidden costs may offset its positive effects[19][8].

In summary, current investigation into the phenomenon of the financialisation of non-financial enterprises primarily focuses on enterprise motivations and economic consequences. Similarly, the extant literature on the economic outcomes of enterprise digital transformation focuses primarily on corporate performance and organizational management, with few studies connecting these two major phenomena and investigating the impact of enterprise digital transformation on financial asset allocation. This paper aims to explore the impact of non-financial enterprise digital transformation on financialization from both theoretical analysis and empirical testing perspectives, providing policy insights to promote the transition of enterprises from virtual to real and optimize enterprise digital transformation.

3. Research Design

3.1. Selection of Research Variables

Dependent Variable: Financialization of Enterprises (Fin). Based on the investment perspective, this paper uses the ratio of financial assets to total assets at the end of the period to measure the corporate financialization, drawing on the measure proposed by Du Yong et al[20].

Independent Variable: Corporate Digital Transformation Index ($Digital$). This paper uses the "China Listed Firm's Digital Transformation Research Database", which constructs an evaluation system for the corporate digital transformation index based on strategic guidance, technological drive, organizational empowerment, digitalization achievements and applications at the company level, and macro-level environmental support. This enables a relatively comprehensive and objective

measurement of the level of corporate digitalization. This paper uses the digital transformation index from the database as the main analytical indicator, supplemented by indicators of digital application, for robustness testing.

Control Variables: This paper selects a series of control variables based on existing research. Specifically, under the background of strict financial regulation, bank credit tends to flow to enterprises with low credit risk and ample collateral assets. Some larger-scale and financially sound enterprises are more likely to obtain credit support. The differences in corporate resource endowments exacerbate the two-tier differentiation in credit resource allocation. Large-scale enterprises with abundant cash and good financial conditions begin to play the role of financial intermediaries, redistributing affluent funds to small and medium businesses, achieving the redistribution of credit resources[21]. Therefore, this paper selects enterprise size ($Size$), debt-to-equity ratio ($Debt$), and cash recovery rate ($Cash$) as proxy variables for enterprise size, debt capacity, and cash flow status respectively. Additionally, Froud et al. argue that corporate financialization behavior stems from stagnation in real economic growth[22]. When the return on real investments is low, non-financial enterprises are motivated to hold more financial assets in pursuit of short-term profitability[23]. As a result, this paper selects the proportion of fixed assets to total assets ($Fixed$) and return on assets (Roa) as proxy variables for the physical investment status and profitability of enterprises (shown in Table 1).

Table 1. Definition of main variables

Variable Name	Symbol	Variable Description
Corporate Financialization	Fin	Financial Assets / Total Assets
Digital Transformation	$Digital$	Digital Transformation Index from the " China Listed Firm's Digital Transformation Research Database "
Digital Application	Dig_App	Digital Application Index from the "China Listed Firm's Digital Transformation Research Database"
Enterprise Size	$Size$	Natural logarithm of total assets of the enterprise
Debt-to-Equity Ratio	$Debt$	Total Liabilities / Total Assets
Fixed Asset Ratio	$Fixed$	Net Fixed Assets / Total Assets
Return on Assets	Roa	Net Profit / Total Assets
Cash Recovery Rate	$Cash$	Net Cash Flow generated from operating activities / Total Assets

3.2. Model Setup

This paper employs an empirical model for regression as follows:

$$Fin_{i,t} = \beta_0 + \beta_1 Digital_{i,t} + \beta_2 Control_{i,t} + \mu_i + e_t + \varepsilon_{i,t} \quad (1)$$

In Equation (1), i represents the individual enterprise, and t represents the year. Fin denotes the level of corporate financialization, while $Digital$ represents the corporate digital transformation index. $Control$ refers to the control variables above, μ and e are entity and time-fixed effects, and ε represents the random disturbance term.

3.3. Data Sources

This study conducts empirical research based on a dataset of Chinese A-share listed companies from 2011 to 2022. Corporate financial data are collected and computed from the CSMAR, while data on corporate digital transformation are obtained from the "China Listed Firm's Digital Transformation Research Database" jointly developed by the CSMAR team and the School of Business Administration at East China Normal University. Based on this, the data undergo the following treatments: (1) exclusion of companies in the financial sector and ST-type enterprises; (2) to ensure data coherence, this study selects companies that have operated continuously from 2011 to

2022 as the research objects. A total of 1,699 companies meeting these criteria are identified, resulting in 20,388 valid samples.

4. Results

4.1. Descriptive Analysis

The mean of the dependent variable, Corporate Financial Assets (Fin), is 3.9872, with a standard deviation of 7.7900 (Table 2). There is a wide range of values for the proportion of financial assets among non-financial enterprises, suggesting a high degree of differentiation. For the explanatory variable Corporate Digital Transformation Index ($Digital$) and its alternative, Corporate Digital Application Index (Dig_App), the means are 37.1274 and 36.0784, respectively. The standard deviations are 10.9019 and 16.0380, respectively. This indicates that the digital transformation process varies significantly among non-financial enterprises in China.

Table 2. Descriptive Statistics

Variable	Sample Size	Mean	Standard Deviation	Minimum	Maximum
Fin	20,388	3.9872	7.7900	-0.0200	88.3800
$Digital$	20,388	37.1274	10.9019	21.3774	80.0403
Dig_App	20,388	36.0784	16.0380	24.9097	100
$Size$	20,388	22.5395	1.3718	18.8108	28.6364
$Debt$	20,388	0.4359	0.2007	0.0075	1.0564
$Fixed$	20,388	0.2161	0.1651	9.00e-06	0.9709
Roa	20,388	0.0364	0.0636	-1.0570	0.7586
$Cash$	20,388	0.0482	0.0699	-0.7443	0.8759

4.2. Benchmark Regression Results

This section investigates the effect of corporate digital transformation on corporate financialization, (Table 3). According to the results in columns (1) to (3) of the table, without adding control variables and without controlling for entity and time-fixed effects, the regression coefficient of the Corporate Digital Transformation Index is 0.0361, and it is significant. Sequentially adding control variables and controlling for fixed effects, the coefficient remains positive and significant, indicating a significant promotional effect of corporate digital transformation on corporate financialization. Furthermore, to study the long-term impact and dynamic effect, as well as to mitigate potential reverse causality or estimation biases due to omitted important variables, this study conducts benchmark regressions with a lag of one to two periods for the independent variable. With the addition of control variables and fixed effects, both the one-period and two-period lagged Corporate Digital Transformation Indexes significantly promote corporate financialization at the 1% significance level, and their promotional effects exhibit a trend of increasing over time, indicating the long-term existence of this promotional effect. This promotion effect of corporate digital transformation on financialization can be explained from two perspectives: the "reserve motive" for corporate investment in financial products and "investment substitution."

From the perspective of the "reserve motive," enterprises utilize digital technologies to break technological barriers, improve information flow efficiency, and effectively reduce information asymmetry between lenders and borrowers. This, in turn, lowers the estimated cost of market risk and helps mitigate loan risks[24]. It also alleviates firms' financing constraints, enabling them to obtain more external financing for liquidity reserves. Moreover, the process of digital transformation inevitably involves technological innovation and infrastructure investment, presenting numerous potential investment opportunities. This strengthens the enterprise's "reserve motive".

Based on the "investment substitution" perspective, given the current challenges in real economic development and the expansion of financial services, enterprises engaged in traditional industries may allocate more resources to higher-yielding financial assets under the auspices of digital technology[25]. Additionally, since digital transformation requires a substantial allocation of resources and incurs significant costs, the short-term performance of enterprises may decline. Faced with pressure from investors, enterprises may opt to purchase financial assets to gain short-run benefits.

At the same time, digital technology optimizes enterprise risk assessment systems, reducing the barriers and costs of capital operations and providing technical support for entry into capital markets. The accessibility and timeliness of information brought about by digitization enable enterprises to obtain real-time operational information, reinforcing the peer effect of enterprise financial asset allocation[26]. The stock market performance of enterprise financial asset allocation may lead to a ripple effect, thereby generating a phenomenon of financial investment convergence.

Table 3. Benchmark Regression

Variable	(1) Fin	(2) Fin	(3) Fin	(4) Fin	(5) Fin
$Digital$	0.0361***	0.0172**	0.0250***		
	(7.23)	(2.00)	(2.87)		
$Digital_{-1}$				0.0329***	
				(3.55)	
$Digital_{-2}$					0.0470***
					(4.75)
$Controls$	No	No	Yes	Yes	Yes
$Fixed\ effects$	No	Yes	Yes	Yes	Yes
N	20,388	20,388	20,388	18,689	16,990
$Adj.R^2$	0.0026	0.5888	0.5925	0.6336	0.6427
F	52.31	3.98	29.34	25.50	24.23

Noted: *, **, and *** represent significance levels of 10%, 5%, and 1%.

4.3. Robustness Check

To further verify the robustness of the results, this section conducts robustness checks using the following methods (Table 4):

Variable Replacement: The enterprise digital application index involves three aspects, technological innovation, process innovation, and business innovation driven by digital transformation. This study replaces the explanatory variables of the base model with the situation of enterprise digital applications to conduct robustness checks. Column (1) presents the regression results of the enterprise digital application index on enterprise financialization. The coefficient is significant, indicating that enterprise digital transformation intensifies the degree of financialization, consistent with the previous conclusion.

Trimming: This study truncates the continuous variables at the 1% level to remove outliers and anomalies from the data. The results of the robustness check are shown in column (2). The regression coefficient is positive and significant, consistent with the previous conclusion.

Sample Adjustment: This study takes the year 2015 when China released the "Guiding Opinions of the State Council on Actively Promoting the 'Internet Plus' Action" as the starting point and excludes the impact of the COVID-19. The sample interval for the robustness check is set as 2015-2019. The results are shown in column (3). The regression coefficient is significant, confirming that digital transformation increases the allocation of financial assets and promotes financialization.

Table 4. Robustness Check

Variable	(1) Variable Replacement	(2) Trimming	(3) Sample Adjustment
	Fin	Fin	Fin
$Digital\_App$	0.0123***		
	(3.76)		
$Digital$		0.0274***	0.0337**
		(3.41)	(1.99)
$Controls$	Yes	Yes	Yes
$Fixed\ effects$	Yes	Yes	Yes
N	20,388	20,388	10,194
$Adj.R^2$	0.5926	0.6098	0.6470
F	30.33	30.80	11,19

5. Conclusions and Recommendations

While digital transformation results in an improvement in economic value creation and accelerates industrial transformation, it also brings about new problems. Based on data from non-financial listed companies in China from 2011 to 2022, this study explores the impact of enterprise digital transformation on corporate financialization. The results indicate that non-financial enterprise digital transformation has spurred a motive for enterprises to increase holdings of financial products, exacerbating the degree of corporate financialization and distorting investment behavior to some extent, thereby increasing operational risks for enterprises.

The policy recommendations of this study are as follows: (1) At the government level, it is necessary to improve relevant laws and regulations, strengthen disclosure requirements, and enhance supervision of financial activities of non-financial enterprises during the digital transformation process to prevent them from deviating from their core business and causing 'hollowing-out of the real economy.' (2) At the enterprise level, management needs to allocate resources reasonably, focusing funds on core businesses, innovation capabilities, and sustainable development, to avoid excessive pursuit of immediate profits that would be detrimental to the long-term growth of enterprise. Enterprise owners also need to establish relevant incentive and regulatory policies to help enterprises embrace a sustainable development perspective, preventing excessive flow of resources into the financial sector and neglecting the cultivation of core competitiveness.

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