

The digital Economy and Degree of Corporate Financialization: Evidence from China's Listed Companies

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Abstract: Based on the data about the Shanghai and Shenzhen A-share companies, from 2011 to 2018, and digital financial inclusion data, this paper researches relationship and the impact between financial digitalization and the financialization of corporate. It is found that because of the advantages of digital finance, such as convenience and low cost, when financial digitalization grows or becomes more widespread, it has a significant impact on the financialization of businesses, especially for larger firms. Through the data, this paper finds that for every unit increase in the Digital Financial Inclusion Index, the level of corporate financialization will increase by approximately 0.05%. However, excessive corporate financialization can easily have a bad impact on the real economy. This paper argues that the government should introduce relevant policies to restrict companies from using digital finance to complete the financialization of corporate.

1. Introduction

Financial digital has been popular all over the world, using big numbers as a basis, through the development of the Internet. This service has entered the Chinese market and has experienced nearly thirty years of development. The most significant advances in China before 2003 were the electrification of securities and the electrification of banks, which was the first development of financial digitization technology (Huang, 2018). After 2003, the creation of two internationally famous financial digitization platforms – Alipay and WeChat, pushed China's financial digitization into a new stage of development. The two areas of online payments and online transactions, began to develop rapidly, represented by Alipay and WeChat. Recent research showed that both Alipay and WeChat already have more than one billion users (Du, 2020). Further research has proved that the development of digital finance is increasing across China, and the difference in the development of digital finance between the advanced and backward areas become smaller (Huang, 2018). Additionally, other related goods have been developed in addition to online payments. Digital finance reduces the barriers to financial services and provides more opportunities for businesses to raise capital (Zhang, Zhong, Yang, 2022). For example, new financial models such as internet loans and crowd financing platforms are being developed and implemented. Digital finance uses big data to alleviate asymmetries information in the market and provide all investors with the right information about companies (Wan, Zhou, Xiao, 2020). Users can use these apps to obtain small loans for a variety of purposes such as business start-ups, investments, and so on. Instead of traditional banks, which can only provide huge loans, these models are more convenient and reach a wider audience, allowing small and medium businesses to survive and flourish by providing them with small loans.

Different academics have different perspectives and judgments on the impact of corporate financialization. Some academics feel that the financialization of businesses suffocates real-estate investment capital and threatens the long-term viability of businesses. Another finding of academics

is that proper financialization conduct will boost the economic advantages of businesses, resulting in profits. As a result, the financialization of businesses has both beneficial and bad consequences.

The short-term gains of real enterprises in the financial market are at the expense of the long-term development of normal operations, according to a large number of research reports, and research focusing on the financialization of enterprises will crowd out enterprise innovation and industrial investment. Furthermore, the financialization of businesses will result in an increase in systemic vulnerabilities in the economy, as seen by the emergence of shadow banking. On the one hand, many small businesses will confront funding challenges while seeking funding. When the market's general real economy is low, however, many manufacturing industries will take capital from businesses for financial investment (Hu, Wang, Zhang, 2017).

However, the financialization of businesses has a good influence on businesses. During the sluggish market economic climate, businesses can prevent business risks by modifying their investment portfolios and obtaining investment income to support their operations. However, firms will face risks as a result of the shift in macroeconomic policy. When the economy is steady, businesses can make financial investments to obtain profits in an uncertain market environment or stock price, and then use the cash for industrial expansion (William, 2010).

In the current stage of enterprise development, the problem of financial digitalization based on innovative development is relevant.

Rudenko M.V proposes to consider the category of "digitization" from different perspectives: from the perspective of scientists, this is an evolution process of socioeconomic, social, industrial, technological and technological relationships caused by the development of information and communication technology; from a practical perspective, a mechanism to change business models to improve operational efficiency; the saturation of national — society and digital devices and the interexchange of information between them; from a social perspective, it is a new paradigm of life process development, based on digital technology (R M.V, 2018).

Ligonenko L.O., Hripko A.V. thinks digital as one of the "card" of the new economy — a new social and economic structure, gradually formed in the post-industrial period of economic development through the introduction of scientific and technological progress and innovation management methods, intelligent human capital, using advanced technology, accelerate the development of high-tech branch, priority manufacturing knowledge and services, innovation, effective and sustainable business mentality development(L.O, A.V, A.O, 2018).

Generally speaking, financial digitization in enterprise financialization is a process that seems to stop. The number of areas, industries and specific companies is growing. Therefore, the current stage of enterprise activities is directly proportional to the digital transformation. The development of digital technology on the basis of innovation and development needs to improve enterprise management and the effective use of modern data technology, including the automation of business processes and the introduction of new business models (O, J.P.D, 2014).

In summary, both financial digital and financialization of businesses are currently popular business structures, and they can be of great value to businesses and the economy. At the same time, they have a close relationship and connection. In terms of marketing development, the integration of the financialization of businesses into digital financialization may be a very developed or valuable model for the future. For example, the digitalization of finance with innovative technologies such as the Internet, big data, to provide more platforms and methods for the financialization of businesses, and so on. However, if non-financial enterprises over finance their assets, it will very damaging. Many large companies are in the process of expanding and working capital, they can expand their funds through bank loans. And make some financial investments. Financial investments became the largest area of corporate capital outflow. This was a devastating blow to the real economy, with most of the capital active in the financial sector, profits and investments in the real sector decreasing, the production of products becoming less efficient and the real economy starting to grow slowly. These issues are important for non-financial companies, they mainly depend on the real industry for their profits and they will face bankruptcy if the problems become serious. At the same time, too much money is invested in the financial sector and the lack of capital in some industrial or farming industries

will lead to an increase in the price of necessities or raw materials, the economy of the whole country will also face problems. This paper will discuss and analyze how the development of financial digitalization affects the degree of corporate financialization and whether financial digitalization has heterogeneous effects on companies of different sizes.

The structure of this paper is: the second part introduces the research design, the third part is the empirical results, the fourth part is the test and the fifth part is the conclusion.

2. Research Design

2.1 Data Source

The data about digital financial inclusion in this paper comes from the Peking University Digital financial inclusion index, which was completed by the Institute of Digital Finance, Peking University, and Ant Financial Services Group. The "Peking University Digital Financial Inclusion Index" consists of data from 2011 to 2015 and 2016 to 2018. This index covers 31 provinces and 337 cities in China. Research showed that through the figures, it was found that digital inclusive finance has developed quickly from 2011 to 2018, with significant changes (Guo, Wang, F Wang, Kong, Zhang, Cheng, 2019). Our article will select data from 2011 to 2018 from these two parts. In addition, the data on Shanghai and Shenzhen A-share companies used in our article is sourced from the WIND Financial Terminal, also using data from 2011 to 2018. WIND is a large financial data warehouse with data provided by Chinese financial and data service companies. It has the most authoritative and reliable data on different areas like stocks, securities, funds, and so on.

The initial samples were screened on the following principles:

Excluding samples of companies in the financial industry; Sample samples of ST and * ST; Excluding samples with missing values of variables; Considering the influence of extreme values, a two-sided tail reduction treatment of 1% of the main continuous variables were winsorized.

2.2 Model and Variable

Data for this paper are obtained from the Peking University Digital Inclusive Finance Index, In this index compiled the national mainland 31 provinces (municipalities, autonomous regions, "province"), 337 prefecture-level cities (regions, autonomous states, league, etc., "city"), as well as about 2800 counties (counties, flags, municipal jurisdiction, "county") three digital inclusive financial index, provincial and city index period is 2011-2020, county index period is 2014-2020. Based on the general index, the index of coverage breadth, use depth and digital degree of digital inclusive finance, as well as payment, insurance, money fund, credit services, investment, and credit, are also compiled from different dimensions.

2.2.1 Model Specification

This paper mainly uses a linear regression model to analyses the effect between the financial digital and the financialization of businesses. The linear regression model is as follows:

$$DoF_{it} = \alpha + Digitization\ Level_{ct} + \mathbf{x}_{it}\boldsymbol{\beta} + \varepsilon_{it} \quad (1)$$

In the formula, DoF_{it} is the dependent variable, \mathbf{x}_{it} is enterprise characteristics varying over time, $Digitization\ Level_{ct}$ is the financial degree of digitization in prefecture-level cities at c time t, ε_{it} is error.

2.2.2 Variable definition

In terms of digital degree, convenience and cost are the main factors affecting users' use of digital financial services, which effectively reflects the low cost and low threshold advantages of digital financial services. The more convenient digital financial services (e. g. higher mobility) and lower costs (e. g. lower loan rates), the more demand for financial services, and vice versa.

The financialization of the enterprise is measured by using the proportion of the financial assets held by the enterprise to the total assets at the end of the period. Financial assets are defined as the sum of trading financial assets, derivative financial assets, net loans issued and advances, net financial assets available for sale, a net investment held to maturity, and net investment real estate.

Referring to the previous literature, control variables include Asset, Debt, Age, Top1, Stated-Owned Enterprise (SOE)=1, Foreign=1, Board Size, No. of Independent Director, Salary and ROA, The definition of these variables is: Total assets at the year-end, Total debt at the end of the term, The length of time for companies to go public, the largest shareholder holds (%), State-owned enterprise =1, otherwise, 0, Foreign capital enterprise =1, otherwise 0, Board size, Number of independent directors, Executive compensation, and the return on assets.

2.2.3 Descriptive statistical analysis

Descriptive statistics of the variables are given in Table 1. From Table 1, we can know that the mean value of the Digitization Level is 200.7504, the standard deviation in Digitization Level is 81.4126, also, the minimum is 3.39, and the maximum is 581.23. So, statistically, the mean value is extremely large, so the level difference of the digitization is also large. After that, the mean value of the Degree of Financialization is 0.0324, the standard deviation in Degree of Financialization is 0.0695, and the minimum is 0, the maximum is 0.5748. So, both the mean value and the standard deviation are equally low, the maximum and minimum values are also about the same. Thus, the difference in the degree of financialization is not significant. Specific test results will be given in the estimation in the next part.

Table 1. Descriptive Statistics.

Variable	Mean	Std. Dev.	Min	Max
Digitization Level	200.7504	81.4126	3.39	581.23
Degree of Financialization	.0324	.0695	0	.5748
Asset, unit: 10000 Yuan	1309503	4177095.3	18657.975	45434239
Debt, unit: 10000 Yuan	802120.3	2967420.7	3627.572	33624640
Age	9.5128	7.2835	0	25
top1	35.082	15.2319	.29	99
SOE=1	.3766	.4845	0	1
Foreign=1	.0482	.2141	0	1
Board Size	8.6247	1.7189	5	15
No. of Independent Director	3.1852	.5694	2	5
Salary, unit: 10000 Yuan	370.8776	357.9202	15.7712	2411.08
ROA, %	4.4138	6.3487	-32.8121	23.4179

3. Empirical results

The impact of the degree of digital financialization on the degree of corporate financialization is seen in Table 1. The degree of influence of the four companies will be examined using the benchmark regression findings and heterogeneity analysis in this study. In benchmark regression and heterogeneity analyses, full samples (unbalanced panels) were employed. In the robustness testing, balanced panels and FE estimates were used.

3.1 Benchmark Results

The estimated results of the impact of digital finance development and corporate financialization are presented in Table 1. To estimate and acquire the results, a complete sample (unbalanced panel) approach was applied. The length of the company's listing period, the size of the board of directors, the number of independent directors, executive compensation, total assets at the end of the period, total liabilities at the end of the period, the largest shareholder's shareholding ratio, and so on are all control

variables. It's a parabola if these control variables are positive integers, and the quadratic term is substantial, indicating that enterprise financialization is positively connected with the age variables.

The variables in column (4) will be examined first, as the (4) table controls all of the variables that may be controlled, and the time dummy variable, and the industry dummy variable, is the most comprehensive model. As a result, the standard for analysis and comparison will be column (4).

The estimated coefficient of the variable digital financial inclusion index of interest in the estimation in column (4) is 0.0005, which is significant at the 1% level. The computation reveals that the marginal effect of digitalization degree is 0.0005 indicating that in column (4) The level of corporate financialization will increase by 0.05 percent for every one-unit increase in the Digital Financial Inclusion Index. This implies that the higher the degree of digitalization, the more likely the firm will be financial zed. A one-unit increase in the digital financial inclusion index would result in a 0.04 percent increase in the level of corporate financialization in the table in column (2). The proportions in Tables (1) and (2) are 0.01% and 0.02%, respectively. Both are significant at the 1% confidence level.

Table 2. Benchmark regression.

VARIABLES	(1) OLS DoF	(2) OLS DoF	(3) OLS DoF	(4) OLS DoF
Digitization Level	0.0001*** (0.0000)	0.0004*** (0.0000)	0.0002*** (0.0000)	0.0005*** (0.0000)
Age		0.0021*** (0.0003)		0.0028*** (0.0003)
Age-sq		0.0000*** (0.0000)		-0.0000 (0.0000)
Ln asset		0.0066*** (0.0013)		0.0100*** (0.0013)
Ln debt		-0.0078*** (0.0010)		-0.0111*** (0.0010)
top1		0.0000 (0.0000)		0.0000 (0.0000)
SOE=1		-0.0081*** (0.0014)		-0.0037** (0.0015)
Foreign=1		0.0099*** (0.0030)		0.0105*** (0.0028)
Board Size		-0.0026*** (0.0004)		-0.0017*** (0.0004)
No. of Independent Director		0.0033*** (0.0012)		0.0025** (0.0012)
Ln salary		0.0025*** (0.0008)		0.0002 (0.0008)
ROA, %		-0.0003*** (0.0001)		-0.0003*** (0.0001)
Constant	0.0171*** (0.0012)	-0.0077 (0.0137)	0.0225*** (0.0047)	0.0301** (0.0148)
Observations	18,854	18,854	18,854	18,854
R-squared	0.0080	0.0951	0.1030	0.1609
Data	Unbalanced	Unbalanced	Unbalanced	Unbalanced
Industry Dummy	No	No	Yes	Yes
Year Dummy	No	No	Yes	Yes

3.2 Analysis of heterogeneity

The goal of the heterogeneity study is to see if the degree of financial digitalization has a varied impact on the degree of financialization of various-sized businesses. Next, we mainly study the impact of corporate financialization on large and small enterprises. According to the findings, the expansion of digital banking has a stronger influence on small and medium-sized businesses, making it simpler for them to "deviate from the real to the virtual." As a result, SMEs are extremely important in China, contributing a significant amount of GDP and jobs. If the interaction term is positive, it indicates that the growth of digital finance has a stronger influence on large-scale businesses. This result has significant policy consequences as well. Large-scale firms, particularly in high-end sectors, will increase product quality and technology if they continue to undertake physical business. However, if it involves the financial industry and devolves into shadow banking, the real economy would suffer. The virtual economy's development must be founded on the real economy, and its magnitude is frequently positively associated with the actual economy. The rise of the virtual economy may help the actual economy by providing financial support and better promoting its growth. Excessive expansion of the virtual economy will provide a false sense of wealth for a time, but the bubbles will inevitably collapse. It's critical to grow healthily and avoid traveling "from the real to the virtual."

Table 2 presents the estimated results of the impact of corporate financialization on large and small enterprises.

The influence of digital finance development on large and small firms is examined in Table 2. Dummy signifies the company's total assets for the year are greater than the 50th percentile, in which case it is 1, otherwise, it is 0. A large-scale enterprise with a Dummy of 1 is considered a large-scale enterprise, while a small and medium-sized enterprise with a Dummy of 0 is considered a small and medium-sized enterprise.

It demonstrates that the growth of digital finance has a greater impact on big businesses.

Table 3. Heterogeneity Analysis.

VARIABLES	(1)	(2)	(3)	(4)
	OLS DoF	OLS DoF	OLS DoF	OLS DoF
Digitization Level	0.0001*** (0.0000)	0.0003*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)
Dummy	-0.1816*** (0.0341)	-0.2157*** (0.0334)	-0.1670*** (0.0338)	-0.1976*** (0.0335)
Dummy × Digitization Level	0.0006*** (0.0001)	0.0007*** (0.0001)	0.0006*** (0.0001)	0.0006*** (0.0001)
Constant	0.0177*** (0.0013)	-0.0131 (0.0139)	0.0243*** (0.0047)	0.0274* (0.0151)
Observations	18,854	18,854	18,854	18,854
R-squared	0.0097	0.0978	0.1042	0.1630
Data	Unbalanced	Unbalanced	Unbalanced	Unbalanced
Controls	No	Yes	No	Yes
Industry Dummy	No	No	Yes	Yes
Year Dummy	No	No	Yes	Yes

4. Robustness test

This section uses the method of balanced panel data and Panel FE to further test the robustness of the impact results of financial digitization on enterprise financialization. Empirical results are shown

in Table 4 below, to save space only attention variables were reported and the results for control variables were not reported.

Same as 3. Empirical Findings, the estimated coefficient of the variable digital financial inclusion index of interest in the estimation in column (4) is 0.0006, which is significant at the 0.01% level. The computation reveals that the marginal effect of digitalization degree is 0.05, indicating that in column (4) The level of corporate financialization will increase by 0.06 percent for every one-unit increase in the Digital Financial Inclusion Index. This implies that the higher the degree of digitalization, the more likely the firm will be financial zed. A one-unit increase in the digital financial inclusion index would result in a 0.05 percent increase in the level of corporate financialization in the table in column (2). The proportions in Tables (1) and (3) are 0.03% and 0.07%, respectively. Both are significant at the 0.01% confidence level.

Table 4. Robustness test.

VARIABLES	(1)	(2)	(3)	(4)
	Panel FE DoF	Panel FE DoF	Panel FE DoF	Panel FE DoF
Digitization Level	0.0003*** (0.0000)	0.0005*** (0.0000)	0.0007*** (0.0000)	0.0006*** (0.0000)
Constant	0.0132*** (0.0016)	0.1011*** (0.0322)	0.0150 (0.0102)	0.1315*** (0.0363)
Observations	13,344	13,344	13,344	13,344
Number of id	1,668	1,668	1,668	1,668
Data	Balanced	Balanced	Balanced	Balanced
Controls	No	Yes	No	Yes
Year Dummy	No	No	Yes	Yes

5. Conclusions

Based on the "Peking University Digital Financial Inclusion Index" the digital financial inclusion index from 2011 to 2018 is used in this article, as well as data from Shanghai and Shenzhen A-share businesses from the WIND financial terminal. The data spans the years 2011 to 2018. The effects of corporate financialization on businesses are investigated. This paper examines the digital level has an impact on the financialization of real corporate. The findings reveal that, on average, the financialization of physical businesses is connected to the degree of digitization of businesses.

To assist businesses, the government should maximize technological innovation financing. The relationship between financial support and financial risk avoidance must be handled properly. Because enterprise technology innovation necessitates a large amount of cash, we must engage in financial innovation; nonetheless, financial innovation is fraught with dangers. It will slow down the growth of corporate innovation if it is not handled effectively. Instead of directly replicating the development experience of foreign firms, deal with the links between the financial system and technical progress. The government helps with policy. Because enterprise innovation necessitates a lot of resources, and emerging entity enterprises have fewer resources, the state should implement policies to encourage the development of emerging enterprise innovation, such as lowering or eliminating innovation costs for emerging entity enterprises, providing innovation venues and channels, and improving innovative talent. Wages and other advantages.

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