The Influence of Digital Inclusive Finance on Business Performances —— Based on Small and Median-sized Enterprises in the Chinese Stock Market

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Abstract. In recent years, digital inclusive finance is growing rapidly in China. Based on the 5030 samples from the SME board and ChiNext board from 2011 to 2020, this paper discovered the incremental effect of digital inclusive finance on firm performance through panel data regression models. By using the digital inclusive finance development index to represent the level of digital inclusive finance and using return on equity to measure the business performances, this paper successfully figures out the quantitative relationship between these two variables. The digital financial inclusion, coverage breadth, and depth of usage all enhance the business performances of those companies. For SMEs in the eastern region, non-manufacturing industries, or with strong internal control capabilities, the development of digital inclusive finance will lead to the improvement of the business performance as well. The results not only enrich the relevant literature on the economic effect of digital inclusive finance but also provide empirical evidence for government and enterprises to stimulate economic growth.

Keywords: Digital Inclusive Finance, Business Performances, Small and Medium-sized Enterprises, External Environment, Internal Characteristics.

1. Introduction

With the quick development of economic growth in China, many people choose to start a business on their own, leading to a boost in small and median-sized enterprises. According to a report by International Labor Organization in 2019, 70% of employment opportunities come from small and media enterprises and self-employed businesses, but their survival and development still face many limits and risks. According to Xu's article, they include low technological level, bad labor quality, high cost of human resource development, etc. [1]. Among them, one of the key problems is the large restrictions in financing because of their blank credit and low-value collateral. Besides, facing uncertain economic situations is also a severe damage. During the COVID-19, SMEs experienced a black moment due to their weak ability to resist risks. After the Spring Festival in 2020, 72.7% of them were unable to operate normally or forced to suspend work. [2] Thus, how to effectively promote the growth and survival of SMEs becomes one of the main focuses of government policy and academic research.

Under these circumstances, the development of digital inclusive finance in China theoretically provides a feasible solution for SMEs to ease financing constraints and get out of development difficulties. Since the establishment of the Global Alliance for Financial Inclusion (AFI) in 2008, inclusive finance has been growing for a long time. With the advancement of digitization in recent years, digital inclusive finance has become a new approach. In general, digital inclusive finance is a way to promote information sharing, reduce transaction costs and service thresholds by building a data-based risk control system using big data, cloud computing and other Internet technologies.

The "Decision on Some Major Issues about Comprehensively Deepening Reform" which was adopted in November 2013, clarified the concept of establishing inclusive finance [3]. In the meantime, the "Plan for Promoting the Development of Small and Medium-sized Enterprises (2016-2020)" also proposed to strengthen financing guarantees for those SMEs [4]. Statistics show that the central government allocated 46.7 billion yuan for inclusive finance development from 2016 to 2020.

By the end of 2020, the loans for small and medium entities were 76 trillion yuan, including 15.1 trillion yuan for small and median inclusive businesses.

Due to the great policy environment in China, digital inclusive finance has grown pretty well in recent years. Many financial institutions put forward various different financial technology products targeted at SMEs like intelligent investment agencies and micro branches established by traditional commercial banks. Tencent has set up the WeBank as well, which is the first domestic private Internet bank in China. During the epidemic, 40.5% of enterprises with financing needs chose Internet banks as financing channels, indicating a wide usage of digital inclusive finance nowadays.

Generally speaking, based on the quick promotion of digital inclusive finance and the positive role it plays theoretically, whether and how large digital inclusive finance can really help SMEs improve their business conditions in reality has become a question worthy of research.

Thus, this paper focuses on discovering the incremental effect of digital inclusive finance on the business performance of SMEs by empirical analysis based on the samples from the SME board and ChiNext board in China from 2011 to 2020. Using the digital inclusive finance development index and return on equity to measure the level of digital inclusive finance and the business performances respectively, this paper successfully figures out the positive casual effect between these two variables.

The main contributions are as follows: firstly, this paper expands research on corporate performance from the standpoint of digital financial inclusion, and also enrich the index measuring digital finance by focusing on the coverage breadth and use depth index, which further examines the impact in detail. Moreover, this paper solves the questions from the perspective of SMEs. Previous articles focus on the whole Chinese stock market rather than the real beneficiaries - small and medium-sized enterprises. Thus, their data selection may lead to unrepresentative results for their studies. Last, this paper further conducts grouping regression for heterogeneity test according to the quality of internal governance, which expands a new approach for us to find the different impacts among groups.

The follow-up content of this paper is mainly divided into four parts: literature review and hypothesis, research design, empirical analysis, ultimate conclusions and recommendations.

2. Literature Review

2.1 Digital inclusive finance

Scholars argue endlessly about whether digital inclusive finance can bring benefits to the microeconomic behaviors of enterprises. From the perspective of most researchers, this paper finds that they all hold an optimistic attitude toward the positive effect of digital inclusive finance.

First, digital inclusive finance eases corporate financing constraints. According to Lu et al.'s opinion, local banks and digital inclusive finance can help SMEs overcome financing challenges and increase their investment efficiency [6]. Additionally, digital inclusive finance can boost corporate innovation. Yang and Zhao noticed that digital inclusive finance diminishes the crowding-out effect of financial investment on innovation, particularly for small and medium-sized businesses, non-state-owned businesses, and vulnerable businesses with a high reliance on financing [7].

2.2 Business performances

Business performance is a concept combining profitability, operational capability, debt repayment capability, etc. and the measurements in the existing literature mainly include financial performance indicators (ROE, ROA) and marketing performance indicators (Tobin Q, market value, EVA) [8]. The construction of marketing indicators is based on the effectiveness of the capital market. However, financial indicators can better reflect the situation of enterprises, so this paper chooses financial indicators as the measurement basis. To search for the operational efficiency and shareholders' equity, this paper proposes to use the return on equity (ROE), an indicator commonly used in relevant literature like Cai et al. [9], to judge the performance of listed SMEs and mainly focus on the two dimensions below:

First, corporate financing structure will have an impact on corporate performance. Based on Andreas et al.'s analysis, if the enterprise cannot establish a suitable financing structure, it will have a passive impact on the performance of the enterprise [10]. Second, corporate innovation helps improve corporate performance. Hans found that the more input of enterprise innovation, the higher level of enterprise performance [11].

In conclusion, better financing structures and innovation ability of a firm will do a good job in stimulating corporate development.

3. Hypothesizes

From the previous literature review, we find a trend that digital inclusive finance helps relieve the pressure of financing and promote innovation for SMEs. In the meantime, the better financing structure and higher innovation capacity accelerate firms' growth. Therefore, taking financing structure and innovation as mediating variables, it is apparent that digital inclusive finance and business performance have a beneficial relationship. In this way, this paper makes the first hypothesis as follows:

Hypothesis 1: the development of digital inclusive finance plays a role in promoting the operating performance of those small and medium listed companies.

Besides, one of the largest challenges SMEs faces is the digital divide. Thus, the coverage breath and use of depth play an essential role for them. Increasing coverage and depth of the usage for digital inclusive finance is conducive to reducing the gap in economic development levels, which makes for the upward trend of economic growth. As a result, this paper puts forward the second hypothesis:

Hypothesis 2: the wider breadth of coverage and deeper usage will contribute to larger benefits for the SMEs.

4. Research Design

4.1 Sample selection and data resource

Considering the availability of data comprehensiveness, the systems of listed companies are more standardized and transparent. For the reason that China clearly put forward the definition for the SMEs after July 2011, this paper selects the sample data on the SME board and ChiNext board from 2011 to 2020 for research, which is closer to the definitions. Finally, this paper establishes panel data in which the data about companies are from CSMAR and WIND while the data about the digital inclusive finance are from the Digital Financial Inclusion Index established by Perking University. To garantee the accuracy and representativeness of the data, this paper processes the firm data as follows:

a. Exclude ST and ST* listed companies;

b. Exclude financial industry listed companies;

c. Exclude listed companies with missing data.

Ultimately, there are 503 companies and 5030 observations and they cover all 31 provinces in mainland China and vary from 16 different industries, including 376 companies in manufacturing, 52 companies from wholesale and retail trade, 11 enterprises from electricity and heat industries, etc.

4.2 Variable Explanations

4.2.1 Explained variable

Based on the analysis in the literature review above [8, 9], this paper chooses return on equity (ROE) as the explained variable to judge the business performances of small and median-sized enterprises.

4.2.2 Explanatory variables

To quantify the progress of digital inclusive finance, this article uses Peking University's digital financial inclusion index, coverage breath index, and depth of usage index from 2011 to 2020. The "Peking University Digital Inclusive Financial Index" is a set of data covering the whole country, all provinces and counties in China from 2011 to 2020 and varying for different regions across time. Except for the total development level, it also considers three key dimensions for digital financial inclusion--coverage breadth, depth of use, and degree of digitization. In terms of coverage breadth, it is reflected by the number of electronic accounts. As for the use depth of digital finance, it's determined by the applications of Internet financial services, including the total use index (such as the number of individuals using payment and credit services per 10,000 Alipay users), the user activity index (number of transactions per capita) and the use depth (transaction amount per capita). Considering the short time interval of the index at the district and county levels, this paper uses the data at the province level to complete the research.

4.2.3 Control variables

To better explain the relationship between the main variables, this paper adds growth ability (GROW), operating capacity (OC), film size (SIZE), ownership concentration (TOPs), financial leverage (LEV), and company age (Age) as the control variables in this paper. In order to manage the influence of year and industry on corporate performance, it also introduces the year dummy variable and industry dummy variable to the models. Considering the dimensional differences and unit differences for firm size, the Digital Financial Inclusive Index and its two first-level dimensions, this paper takes the logarithm for them. All the definitions of variables are listed in Table 1.

Table.1. Variable definitions

Variable type	*Symbols*	*Variable names*	*Variable meanings*
Explanatory Variable	*ROE*	*Return on Equity*	*Net income / total assets*
Explained Variable	*DIFI*	*The development level of the digital inclusive finance index*	*The logarithm of the development level of digital inclusive finance*
	COV	*The breadth of coverage index*	*The logarithm of coverage breadth from the Digital Financial Inclusion Index*
	Usde	*Use depth index*	*The logarithm of use depth from the Digital Financial Inclusion Index*
Control Variable	*Age*	*Firm's age*	*Observation year-establish year+1*
	LEV	*Leverage ratio*	*Total liability / Total assets*
	TOPs	*Ownership concentration*	*The shareholding ratio of the largest shareholder*
	GROW	*Business growth*	*(Current operating income -prior period operating income) / prior period operating income*
	SIZE	*Firm's size*	*The logarithm of total assets at the end of the period*
	OC	*Operation Capacity*	*Total cash recovery rate*
	δ	*Year*	*Year dummy variable*
	α	*Industrial*	*According to the classification standard of the China Securities Regulatory Commission in 2012*

4.3 Model construction

This paper constructs three models, and use the panel data regression to process analysis. The first model is:

$$ROE_{it} = \beta_0 + \beta_1 DIFI_{it} + \beta_2 TOPs_{it} + \beta_3 Age_{it} + \beta_4 GROW_{it} + \beta_5 LEV_{it} + \beta_6 SIZE_{it} + \beta_7 OC_{it} + \alpha_i + \delta_t + u_{it}. \quad (1)$$

In this equation, the subscript *i* indicates the selected companies, and the subscript *t* donates the year. Thus, ROE_{it} means the return on equity of company *i* in year *t*. In addition, this paper uses the coverage breadth index (COV), and the depth index (Usde) to replace the digital financial inclusion index (DIFI) for regression. The constructed models are as follows:

$$ROE_{it} = \gamma_0 + \gamma_1 COV_{it} + \gamma_2 TOPs_{it} + \gamma_3 Age_{it} + \gamma_4 GROW_{it} + \gamma_5 LEV_{it} + \gamma_6 SIZE_{it} + \beta_7 OC_{it} + \alpha_i + \delta_t + u_{it}. \quad (2)$$

$$ROE_{it} = \tau_0 + \tau_1 Usde_{it} + \tau_2 TOPs_{it} + \tau_3 Age_{it} + \tau_4 GROW_{it} + \tau_5 LEV_{it} + \tau_6 SIZE_{it} + \beta_7 OC_{it} + \alpha_i + \delta_t + u_{it}. \quad (3)$$

5. Empirical Analyses

5.1 Descriptive statistics

This study counted the number of samples, standard deviation, mean, maximum and minimum values of each variable, and summarized them in Table 2 to get a basic comprehension of the entire data.

Table. 2. Descriptive statistics

Variable	*Observations*	*Mean*	*Sd*	*Min*	*Max*
ROE	5030	0.092	0.083	-1.035	1.294
DIFI	5030	2.323	0.254	1.210	2.635
COV	5030	2.278	0.282	0.486	2.599
Usde	5030	2.339	0.235	1.106	2.689
Age	5030	17.643	5.937	1.036	65.296
LEV	5030	0.350	0.185	0.008	0.916
GROW	5030	0.294	1.854	-1.243	72.067
TOPs	5030	0.331	0.142	0.029	0.865
OC	5030	0.055	0.067	-0.313	0.488
SIZE	5030	21.941	1.003	18.921	26.388

According to the results, the average ROE of the SMEs is 0.092 and the standard deviation is 0.083, showing that the overall return on equity of different SMEs is pretty close, and the business performance fluctuates within a small range. It may due to the similar scales and semblable operating conditions for those samples. Moreover, there's a large disparity between the maximum and minimum value of DIFI, implying that there are still large gaps in the development level of digital inclusive finance in different regions. In terms of the remaining key variables Age, GROW, LEV, OC, SIZE and TOPs, they fluctuate little and are relatively centralized except for the large gaps in the firm's age.

5.2 Pearson correlation analysis

To avoid the influence of multicollinearity, Pearson correlation analysis needs to be carried out on all variables before the regression analysis, and the results are shown in Table 3.

Table. 3. Correlation coefficients of variables

	ROE	***DIFI***	***COV***	***Usde***	***Age***	***TOPs***	***GROW***	***LEV***	***OC***	***SIZE***
ROE	1									
DIFI	-0.005**	1								
COV	0.006	0.983***	1							
Usde	0.014	0.971***	0.940***	1						
Age	-0.007	0.437***	0.429***	0.431***	1					
TOPs	0.014	-0.163***	-0.157***	-0.161***	-0.100***	1				
GROW	0.125***	-0.030**	-0.025*	-0.041***	-0.022	0.024*	1			
LEV	-0.036**	0.155***	0.138***	0.149***	0.157***	-0.006	0.053***	1		
OC	0.358***	0.164***	0.153***	0.163***	0.085***	0.013	-0.029**	-0.150***	1	
SIZE	0.089***	-0.177***	-0.176***	-0.196***	-0.090***	0.148***	0.075***	0.377***	-0.002	1

According to Zhang & Li [12] and Xu & Liang's [13] researches, multicollinearity happens if the correlation coefficients are higher than 0.7. Although the coefficients between DIFI, COV, and Usde are highly positive and larger than 0.7, they will not appear in the same regression and we don't need to worry about the multicollinearity between them. Besides, the correlations between other variables are far less than 0.7, so there is no obvious relationship and it's unlikely that multicollinearity occurs. The results also show that most of the variables are significantly correlated, indicating a certain degree of reliability for those control variables. Furthermore, DIFI and ROE are substantially connected at the 5% level. LEV and ROE also have a significant negative relationship, the magnitude was -0.036. Ultimately, the coefficients between ROE and GROW, OC, SIZE are 0.125, 0.358 and 0.089 respectively, which perfectly matches the theoretical assumptions in reality.

5.3 Regression analysis

Correlation analysis can only prove the correlation between variables, but cannot determine the causal relationships. Therefore, using the STATA 16.0 to run the regression model above, this paper gets the initial regression estimates in Table 4.

Table. 4. Digital financial inclusion and SME business performance: benchmark regression results

Variables	*(1)* *ROE*	*(2)* *ROE*	*(3)* *ROE*
DIFI	0.0482***		
	(3.289)		
COV		0.0299***	
		(3.299)	
Usde			0.0608***
			(4.648)
LEV	-0.0146**	-0.0145**	-0.0144**
	(-2.118)	(-2.099)	(-2.104)
GROW	0.0059***	0.0059***	0.0060***
	(10.395)	(10.355)	(10.467)
TOPs	-0.0067	-0.0068	-0.0063
	(-0.872)	(-0.884)	(-0.824)
OC	0.4576***	0.4584***	0.4561***
	(27.745)	(27.791)	(27.672)
SIZE	0.0124***	0.0124***	0.0123***
	(9.100)	(9.096)	(9.054)
Age	-0.0005**	-0.0005**	-0.0005**
	(-2.305)	(-2.304)	(-2.379)
_cons	-0.2483***	-0.2149***	-0.2730***
	(-6.497)	(-6.584)	(-7.371)
Observations	5,030	5,030	5,030
R-squared	0.193	0.193	0.195
Year	YES	YES	YES
Industry	YES	YES	YES

Notes: t-statistics in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

From the results, the regression coefficient of the digital financial inclusion index on the performance of SMEs is 0.0482, p<0.01, which suggests that at a 1% level, digital financial inclusion has a considerable positive impact. Besides, the impacts of coverage breadth and use depth on enterprise performance are also significant, and the use depth indicators have the greatest influence while the impact by coverage breath ranks the last one.

In terms of the control variables, the company's growth ability (GROW) and operation capacity (OC) definitely have significant positive correlations with business performance. And since larger enterprises always have stronger market competitiveness and stable business patterns, we witness a positive relationship between firm size and ROE as well. As for the leverage ratio, it is obvious that the large debt will put a heavy burden on the firms' financial situation. Thus, the higher leverage ratio has a significant negative influence on the ROE at the 5% level, which is consistent with most empirical findings nowadays. Moreover, in terms of firms' age, we see a significantly negative correlation at the 5% level, mainly because of the small scale and insufficient growth potential for those SMEs. But when it comes to the shareholding ratio of the largest shareholder (TOPs), there are no significant correlations.

In summary, this paper successfully proves the two hypotheses above that the performance of SMEs will be significantly improved with the advancement of digital inclusive finance.

5.4 Heterogeneity analysis

According to the report of the Digital Inclusive Financial Index from Peking University, the influence of digital financial inclusion will be different among different natures. Therefore, this paper

further conducts a heterogeneity analysis based on the original sample of small and medium-sized enterprises.

5.4.1 The SMEs in the different external environments

Since differences are likely to exist in different regions due to the problem of unbalanced regional development, this paper separates the provinces in China into eastern, central, western areas, then conducts a sub-sample regression on SMEs in the different regions to do regression analysis. Beijing, Tianjin, Hebei, Liaoning, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, and Hainan are in the eastern portion, Jilin, Heilongjiang, Anhui, Shanxi, Jiangxi, Hubei, Henan and Hunan are in the center part while the western region includes other 12 areas except those in eastern and central zones. The results are shown in Table 5.

Table. 5. The heterogeneity for SMEs in different regions

Variables	*ROE (Whole Samples)*	*ROE (Eastern Area)*	*ROE (Central Area)*	*ROE (Western Area)*
DIFI	0.0482***	0.0516**	0.0612	0.0682
	(3.289)	(2.129)	(0.554)	(0.857)
LEV	-0.0146**	-0.0035	-0.0252	-0.0557**
	(-2.118)	(-0.441)	(-1.508)	(-2.154)
GROW	0.0059***	0.0084***	0.0020	-0.0006
	(10.395)	(12.283)	(1.427)	(-0.402)
TOPs	-0.0067	-0.0179**	0.0378**	-0.0247
	(-0.872)	(-2.030)	(2.009)	(-0.936)
OC	0.4576***	0.4380***	0.4554***	0.5364***
	(27.745)	(23.551)	(11.230)	(8.362)
SIZE	0.0124***	0.0135***	0.0128***	0.0055
	(9.100)	(8.778)	(3.383)	(1.151)
Age	-0.0005**	-0.0005**	-0.0009	-0.0015
	(-2.305)	(-2.006)	(-1.466)	(-1.394)
_cons	-0.2483***	-0.2799***	-0.2628	-0.1059
	(-6.497)	(-5.102)	(-1.470)	(-0.697)
Observations	5,030	3,840	690	500
R-squared	0.193	0.201	0.320	0.228
Year	YES	YES	YES	YES
Industry	YES	YES	YES	YES

Notes: t-statistics in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

From the table above, we conclude that for the eastern regions, DIFI has a coefficient of 0.0516, which is significant at the 5% level. It implies that the development of digital inclusive finance will contribute to the improvement of business performance. When it comes to the value of the coefficient, the western part takes the first place among these three, mainly for the reason that it is an underdeveloped region. But we also witness an insignificant relationship at a 90% confidence interval, probably due to the small scale of samples there. In addition, the influence of digital inclusive finance on business performance is also insignificant in the central area.

5.4.2 The SMEs in the different internal characteristics (internal control & industries)

According to the analysis of Song, the companies in different industries will have different behaviors when receiving digital inclusive financial services [14]. Thus, this paper divides the whole sample into two groups: one for manufacturing firms and the other for non-manufacturing enterprises to further test the benefit. Besides, for enterprises with different internal controls, the impacts of digital inclusive finance will also have great otherness. Referring to the practice of Wang, this article uses the "Internal Control Index of Chinese Listed Companies" from Shenzhen Dibo Company to

measure the quality of the internal governance environment [15]. Grouping is done by comparing the annual medians. Firms above or equal to the median indicate good internal control quality, while firms below the median are grouped with poor internal control quality. The results are displayed in Table 6.

Table. 6. The heterogeneity for SMEs in different industries and internal controls

Variables	*a. ROE (Manufacturing Firms)*	*b. ROE (Non-manufacturing Firms)*	*c. ROE (Good Internal Control)*	*d. ROE (Poor Internal Control)*
DIFI	0.0230	0.1421***	0.0450***	0.0258
	(1.443)	(4.212)	(2.593)	(1.131)
LEV	0.0044	-0.0744***	0.0219**	-0.0432***
	(0.582)	(-4.737)	(2.469)	(-4.391)
GROW	0.0067***	-0.0003	0.0029***	0.0082***
	(11.676)	(-0.152)	(3.677)	(10.758)
TOPs	-0.0216***	0.0507***	-0.0107	-0.0092
	(-2.620)	(2.711)	(-1.125)	(-0.811)
OC	0.4651***	0.4285***	0.4556***	0.3872***
	(25.743)	(11.441)	(22.646)	(15.279)
SIZE	0.0118***	0.0141***	0.0125***	0.0062***
	(7.930)	(4.394)	(7.463)	(2.993)
Age	-0.0005**	-0.0007	-0.0006**	-0.0001
	(-2.299)	(-0.964)	(-2.073)	(-0.483)
_cons	-0.1894***	-0.4515***	-0.2559***	-0.0628
	(-4.554)	(-4.959)	(-5.566)	(-1.056)
Observations	3,760	1.270	2,511	2,519
R-squared	0.208	0.200	0.257	0.179
Year	YES	YES	YES	YES
Industry	YES	YES	YES	YES

Notes: t-statistics in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

From columns (a) and (b) we notice that the growth of digital inclusive finance significantly improves the business performance of non-manufacturing enterprises, but has no significant impact on manufacturing enterprises. As China vigorously promotes the development of the manufacturing industry, manufacturing firms face fewer financing constraints while non-manufacturing SMEs suffered from greater difficulties. Therefore, the availability of digital inclusive finance can help to relieve financial constraints and improve the operating performance of those non-manufacturing SMEs.

In addition, from column (c) and column (d) we find that the impact of digital financial inclusion on SMEs with high governance quality is positively enormous at a 99% confidence interval, but has no significant influence on the poor governance quality group. If the internal control quality and information disclosure are poor, the fund providers can obtain relatively less internal information, thus, those companies will face serious financing difficulties because of information asymmetry, even covering the benefits of digital inclusive finance. As a result, digital financial inclusion plays a major role in helping SMEs with greater internal governance improve their business performance.

5.5 Robustness

To further improve the reliability of the above results, this article adopts two methods for the robustness test, one is replacing explanatory variables to control the endogeneity, and the other is replacing the explained variables.

5.5.1 Replacing the explanatory variable to test the endogeneity

This study uses the digital financial inclusion index with a lag period as the explanatory variable to lessen the impact of endogeneity between digital financial inclusion and the business performance. The test results are shown in Table 7.

Table. 7. The robustness test when replacing the explanatory variable

Variables	*(1)* *ROE*	*(2)* *ROE*	*(3)* *ROE*
DIFI (t-1)	0.0449***		
	(3.107)		
COV (t-1)		0.0233***	
		(2.625)	
Usde (t-1)			0.0420***
			(3.214)
LEV	-0.0069	-0.0071	-0.0072
	(-0.974)	(-0.995)	(-1.021)
GROW	0.0070***	0.0070***	0.0070***
	(11.052)	(11.032)	(11.069)
TOPs	-0.0129	-0.0131*	-0.0127
	(-1.630)	(-1.649)	(-1.600)
OC	0.4792***	0.4799***	0.4783***
	(27.823)	(27.857)	(27.760)
SIZE	0.0112***	0.0113***	0.0112***
	(8.021)	(8.039)	(8.008)
Age	-0.0005**	-0.0005**	-0.0005**
	(-2.326)	(-2.291)	(-2.313)
_cons	-0.2570***	-0.2189***	-0.2548***
	(-6.649)	(-6.569)	(-6.751)
Observations	4,527	4,527	4,527
R-squared	0.206	0.205	0.206
Year	YES	YES	YES
Industry	YES	YES	YES

Notes: t-statistics in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

In this table, the coefficients of DIFI, COV and Usde with one lag behind are 0.0449, 0.0233 and 0.0420, which are all positively significant at a 1% level. Compared with the initial regression results above, we can easily prove the significance and coefficient of the variables, indicating the robustness of the previous conclusion.

5.5.2 Replacing the explained variable

To increase the reliability of the conclusion, this paper uses return on assets (ROA) instead of the return on equity (ROE) to test the robustness of the business performance. The results are presented in Table 8.

Table. 8. The robustness test when replacing the explained variable

Variables	*(1)* *ROA*	*(2)* *ROA*	*(3)* *ROA*
DIFI	0.0232***		
	(2.702)		
COV		0.0131**	
		(2.457)	
Usde			0.0285***
			(3.708)
LEV	-0.0846***	-0.0846***	-0.0845***
	(-20.954)	(-20.947)	(-20.977)
GROW	0.0023***	0.0023***	0.0023***
	(6.969)	(6.938)	(7.021)
TOPs	-0.0066	-0.0067	-0.0065
	(-1.471)	(-1.482)	(-1.433)
OC	0.3145***	0.3148***	0.3138***
	(32.501)	(32.533)	(32.437)
SIZE	0.0072***	0.0072***	0.0072***
	(9.007)	(9.010)	(8.971)
Age	-0.0003***	-0.0003***	-0.0003***
	(-2.692)	(-2.673)	(-2.746)
_cons	-0.1000***	-0.0817***	-0.1104***
	(-4.458)	(-4.268)	(-5.079)
Observations	5,030	5,030	5,030
R-squared	0.305	0.305	0.306
Year	YES	YES	YES
Industry	YES	YES	YES

Notes: t-statistics in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

In this table, the regression coefficients of DIFI, COV and Usde on the business performance ROA are all significantly positive at 95% confidence interval. Thus, the variables' significance and coefficients have not altered significantly. showing that the conclusions are robust and creditable.

6. Conclusion and Suggestions

Digital inclusive finance has become a trend nowadays. Based on the performance of SME and ChiNext listed companies and the digital financial inclusion index from 2011 to 2020, this article studies whether the rise of digital financial inclusion, the expansion of coverage, and the advancement of the depth of use will have a favorable impact on SMEs' performance. The conclusions are drawn below:

a. The development of digital inclusive finance has an essential role in promoting the operating performance of listed small and median-sized companies.

b. For SMEs in the eastern region, the advancement of digital inclusive finance will lead to the improvement of the overall business performance, but in the western or central enterprises, there's no obvious effect.

c. The development of digital inclusive finance increases the business performance of non-manufacturing enterprises and companies with strong internal control capabilities tremendously, but has no significant impact on manufacturing enterprises and those firms with poor internal governance.

Based on the above research, this paper puts up the following recommendations: Firstly, develop digital inclusive finance vigorously. Focusing on the deep integration of digital inclusive finance will have a long-term beneficial impact on SMEs. Moreover, it is a great necessity for the government to pay attention to the regional imbalance of development and growth for non-manufacturing firms,

promoting the coordinated progress of every industry and improving the application of digital inclusive finance in the central and western areas. Last, enterprises should build a better management system, strengthen the quality of information disclosure and enhance internal control, thereby creating more targeted digital inclusive financial services.

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