

# The Impact of Digital Finance on Corporate Performance: From the Perspective of Corporate Financial Constraints

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**Abstract:** Based on the financial management rules and conditions of enterprises, this paper selects more than 3,000 Shanghai and Shenzhen A-share listed companies from 2010 to 2021 as data samples, uses the digital inclusive financial index and its one-dimensional index as explanatory variables, and makes regression analysis on the market performance of listed enterprises in the national level and eastern, central and western regions. Moreover, the enterprise financing constraint index constructed by operating net cash flow, cash holdings, payout level, debt degree and growth is used as the intermediary variable to test the transmission path of the impact of digital economy on real enterprises. It is verified that digital economy has a significant impact on the improvement of enterprise market value, and the effect of the eastern region is more obvious. The development of digital inclusive finance mainly affects the financial constraints of enterprises by broadening the depth of the use of finance, alleviating financing constraints and thus enhancing corporate value.

**Keywords:** Digital Finance; Financial Restraint; Market Performance

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## 1. Introduction

The rapid development of Internet technology has brought about the rapid development of digital economy. With the gradual expansion of the application scope of digital finance in enterprises, its influence on enterprise value has gradually been paid attention by scholars at home and abroad. Scholars generally believe that digital finance can have a positive impact on enterprise value. However, there are few researches focusing on the effect and mechanism of digital finance on enterprise value.

The contribution of this paper is to explore the impact of digital finance on the market performance of enterprises from the perspective of financial constraints, analyze the differences between different regions, clarify the mechanism of the impact of digital economy on real enterprises, enrich and improve the path of impact on the market performance of enterprises, and provide empirical evidence for promoting the high-quality development of enterprises.

## 2. Theoretical analysis and research hypothesis

Value maximization is one of the goals of enterprises. Digital inclusive finance can reduce the information asymmetry between enterprises and investors by virtue of the advantages of the Internet and big data, improve the efficiency of capital matching, and provide a new way for enterprises to raise external financing. On the other hand, it can improve the efficiency of capital use of enterprises through informatization, reduce cost and increase efficiency, and thus improve enterprise value.

Enterprise value is largely affected by financing constraints. Kaplan and Zingales (1997) took five factors, such as operating net cash flow, cash holdings, payout level, debt degree and growth, as proxy variables representing financing constraints, and constructed a KZ index to measure the degree of corporate financing constraints. The larger the KZ index is, the higher the degree of financing constraint the listed company faces. Enterprises in areas with higher level of economic development, better institutional environment and better financial ecological environment are often easier to obtain bank loans and commercial credit to get out of financial difficulties.

Based on this, this paper proposes the following hypothesis:

H1: The development of digital inclusive finance helps to enhance enterprise value.

H2: Digital inclusion finance has an impact on enterprise value through financing constraints.

H3: Digital financial inclusion has heterogeneity at the regional level.

### 3. Empirical test

#### 3.1 Variable selection

Based on the financial management rules and conditions of enterprises, this paper selects the data of 3,418 listed companies in Shanghai and Shenzhen A-shares from 2010 to 2021. After excluding ST, \*ST, financial anomalies, missing values and companies listed within three years, A total of 18,399 data samples are obtained after data processing. The data comes from Wind financial terminal and CSMAR database of Gutai 'an. In order to avoid the influence of data magnitude and extreme value, all continuous variables are reduced by 1%.

##### 3.1.1 Explained variable

Tobin's Q is the ratio between the market value of capital and the replacement cost. It is a widely used variable to measure corporate performance in the world. Tobin's Q is selected as the proxy variable of corporate value by referring to previous scholars' methods.

##### 3.1.2 Explanatory variable

Digital inclusive Finance Index, the Digital inclusive finance index compiled by the Digital Finance Research Center of Peking University is often taken as the proxy variable of digital finance, which includes the total index of digital inclusive finance (DIFI), depth, coverage, digital and other indicators. This paper takes the municipal digital inclusion finance index as explanatory variable to represent the development level of digital finance in the region where the sample listed companies are located.

##### 3.1.3 Control variable

Enterprise size (size), financial leverage (lever), revenue growth (growth), enterprise age (age) and equity concentration (indep) were selected as control variables.

#### 3.2 Model construction

##### 3.2.1 Basic regression

$$TQ_{it} = \beta_0 + \beta_1 DIFI_{it} + \beta_2 controls_{it} + \sum year + \sum industry + \varepsilon_{it}$$

##### 3.2.2 Intermediate effect test

$$TQ_{it} = \beta_0 + \beta_1 DIFI_{it} + \beta_2 controls_{it} + \sum year + \sum industry + \varepsilon_{it}$$

$$KZ_{it} = \mu_0 + \mu_1 DIFI_{it} + \mu_2 controls_{it} + \sum year + \sum industry + \varepsilon_{it}$$

$$TQ_{it} = \beta_0 + \gamma_1 DIFI_{it} + \gamma_2 KZ_{it} + \gamma_3 controls_{it} + \sum year + \sum industry + \varepsilon_{it}$$

Wherein, the intermediary effect is  $(\mu_1 \times \gamma_2)$ .

##### 3.2.3 Heterogeneity test

In order to further test the influence of inclusive financial digital index on financing constraint (KZ), depth, coverage and digital are used as the first-order dimensions of inclusive financial digital index (DIFI) to make a basic regression of financing constraint (KZ).

In order to test the heterogeneity of digital financial inclusion at the regional level, the districts where listed companies are located are divided into eastern, central and western regions, and regression is conducted respectively.

### 3.3 Basic regression

	(1)	(2)	(3)	(4)
DIFI	0.123*** -8.999			
coverage		0.170*** -9.617		
depth			0.003 -0.239	
digital				0.094*** -12.32
controls	YES	YES	YES	YES
_cons	4.769***	4.696***	4.664***	4.985***
	-25.238	-24.732	-23.816	-25.846
N	18399	18399	18399	18399

t statistics in parentheses

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

Model (1) uses the total index of digital inclusive finance to regression enterprise value, and the coefficient is 0.123 and significantly positive, which indicates that the development of digital finance has a positive impact on enterprise value. Model (2) to (4) uses one-dimensional index to regression, and the results show that, coverage and digitization of digital finance have a significant positive impact on enterprise value, while depth has a positive but insignificant impact.

### 3.4 Intermediate effect test

	(1)	(2)	(3)
	TQ	KZ	TQ
DIFI	0.225*** -13.967	-0.521* (-1.868)	0.198*** -12.918
KZ			-0.045*** -7.724
controls	YES	YES	YES
N	16640	16640	16640

Model (1) tests the impact of digital economy on the market value of enterprises. The regression coefficient is 0.225 and significantly positive, indicating that the digital economy can promote the improvement of the market value of enterprises. Model (2) tests the impact of digital economy on corporate financing constraints, and the coefficient is -0.521, which is significantly negative, indicating that digital economy has indeed eased corporate financing constraints. In model (3), mediating variables and explanatory variables are added, and the coefficient signs are consistent and some mediating effects exist.

### 3.5 Heterogeneity analysis

The first-level dimension of the Inclusive financial digital Index (DIFI) uses depth, coverage and digital to make a basic regression of financing constraint KZ. The results show that the use depth of digital finance has the most significant impact on the financial constraint of enterprises (-0.544\*\*\*). This may be because financial instruments and products meet the effective needs of the corresponding real economy. At the same time, when analyzing the heterogeneity of east, middle and west regions, the digital economy in eastern region has a significantly stronger impact on enterprise value.

	东部	西部	中部
	TQ	TQ	TQ
DIFI	0.267***	0.171***	0.159***
	-16.953	-7.879	-5.964
controls	YES	YES	YES
N	11425	2363	2852

#### 4. Main conclusion

Based on the financial management rules and conditions of enterprises, this paper selects more than 3,000 A-share listed companies in Shanghai and Shenzhen from 2010 to 2021 as data samples, uses the digital inclusive financial index and its one-dimensional index as explanatory variables, and makes regression analysis on the value of listed enterprises in the national level and eastern, central and western regions. Moreover, the enterprise financing constraint index constructed by operating net cash flow, cash holdings, payout level, debt degree and growth is used as the intermediary variable to test the transmission path of the impact of digital economy on real enterprises. Three basic assumptions are verified, digital economy has a significant impact on the increase of enterprise value, and the eastern region is more obvious. The development of digital inclusive finance mainly affects the financial constraints of enterprises by broadening the depth of the use of finance, alleviating financing constraints and thus enhancing corporate value.

Based on the above empirical results, there is still a big gap in the development of digital finance in different regions of China. Improving financial ecology plays an important role and significance in broadening the financing channels of enterprises, increasing the cash flow of enterprises and enhancing the vitality of enterprises.

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