Empirical Analysis of the Impact of Data Assets on Corporate Financialization Propensity

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Abstract. With the development of modern information technology, data assets have emerged and grown and have even become a key factor in the turnaround of some businesses. As known, the real economy is the lifeblood of a country's economy, and the emergence of data assets seems to be upsetting the balance between the real and virtual economies. Using five typical companies in the computer, communication and other electronic equipment manufacturing industry (CCOEEMI) as a sample, this paper applies multiple linear regression analysis to verify that the expansion of data asset size contributes to the financialization of firms. The results of the test indicate that as the size of the data assets continues to expand, the level of financialization of the firm also expands. In response to the findings, this paper also puts forward some feasible suggestions, hoping to shed some light on the management and development of data assets in the future.

Keywords: Data Assets, Electronic Equipment Manufacturing Industry, Enterprise Financialization.

1. Introduction

With the development of the big intelligence, mobile cloud and physical chain, the digital transformation of enterprises has been a general trend, whether in the emerging high-tech industries or traditional manufacturing industry, modern information technology is playing an increasingly important role in the production and management activities of enterprises, from which the concept of data assets also came into being. With the growth of the scale of data assets, it is undoubtedly for the development of enterprises to inject a new impetus, but it must be mentioned that the prosperity of data assets has also brought a series of new problems for the development of the economy. In recent years, the trend of financialization of enterprises has become a hot topic. As the lifeblood of a country's economy, will the development of the real economy be affected by data assets.

As far as data assets are concerned, there are many scholars discussing the relationship between data resourcing, data assetization and data capitalization [1,2]. On this basis, some scholars have proposed that the financialization of data certainly has its inevitability, but it should be based on the large-scale circulation and application of data assets, and the value embedded in the data has been effectively released, but in China's data market, the phenomenon of early financialization of data has appeared [3]. As far as a country's economic development is concerned, many scholars have also discussed the importance of the real economy and the path of the digital economy to boost the development of the real economy from the perspective of digital-real integration [4, 5]. However, from the current research results, few researchers have discussed the negative impact of the development of data assets on the development of the real economy. Based on this, this paper explores the relationship between the expansion of the scale of data assets and the decision-making preference of enterprises' financialization, which is of practical significance in promoting the sustainable and healthy development of data assets in the future.

This paper adopts the method of multiple linear regression to analyze and argue that with the accumulation of data assets, enterprises gradually begin to become more preferential to financial decision-making, taking five typical companies in the computer, communication and other electronic equipment manufacturing industry (CCOEEMI) as samples in China's A-share listed companies. Although data assets have not yet posed a great threat to balancing the real and virtual economy from the perspective of the current economic development, the research results of this paper can, to a

certain extent, cause people to rethink the relationship between data assets and the real economy and take preventive measures for it in advance.

2. Theoretical Foundations and Research Hypotheses

Data is people in order to realize the production and operation, management decision-making and other economic and social goals, consciously invest human and material resources to obtain records that can reflect the essential characteristics of objective things, in the enterprise engaged in the production and operation management and the government to exercise the administrative functions of the traditional business process, may be directly or indirectly generate some production and operation data and administrative records data [6]. Data assets are often characterized by non-physical, non-consumptive and non-competitive, which determines that they have very high value elasticity [7].

The high value elasticity of data assets attracts financial capital and influences its valuation of the speculative value of data, thus allowing financial capital to gradually dominate when the use and speculative value of data increases significantly with platform scale. And finance capital's pursuit of excess profits and the logic of speculative value for data assets is likely to lead to a growing corporate preference for financialized decisions. In addition, in order to maximize digital returns, digital financial capital continues to transform digital modes of existence and expand new avenues of digital returns, maintaining a balance between liquidity and proliferation [8]. When this effect continues to accumulate, it will lead to the "de-virtualization" of enterprises, thus causing different degrees of negative impact on the economic development of a country.

Based on the above analysis, the following hypotheses are proposed in this paper:

H1: The size of a firm's data assets positively affects the degree of preference for financial decisions with the firm.

3. Empirical Research Design

3.1. Sample Selection and Data Sources

Based on the content of this paper and the availability of data, this paper selects the financial data of five leading companies in the electronics industry, Industrial Fortune (601138), Lixun Precision (002475), Geer (002241), Shennan Electric Road (002916), and Weir (603501) for the period of 2010-2023, and removes the indicatorsThe missing samples, a total of 48 samples of data, using most of the data from the CSMAR database, part of the data through manual collection of annual report information obtained.

3.2. Description of Variables

3.2.1. Explained Variable

The explained variable in this paper is the firm's financial decision preference (Fin). This paper argues that corporate financialization is a subjective capital operation behavior of enterprises for the purpose of optimizing resource allocation, and the proportion of financial assets can intuitively reflect the degree of financial decision-making preference of corporate management, so this paper draws on research results to measure the level of corporate financialization by the proportion of financial assets to total assets [9]. Financial assets specifically comprise marketable securities actively traded in capital markets, fixed-term investment portfolios designated for maturity retention, non-trading liquid holdings classified as available-for-sale, income-generating real estate holdings categorized as investment properties, and strategic equity positions maintained for extended operational horizons.

3.2.2. Explanatory Variables

The explanatory variable in this paper is the size of the firm's data assets (Data Asset). On September 8, 2023, the CRA formulated the Guidance on Data Asset Valuation, which states that data resources in an enterprise that comply with ASBE No. 6 - Intangible Assets can be recognized as intangible assets, and the remaining data assets can be considered as inventories. However, as of the research time of this paper is unknown, the implementation of data assets such as the number of subject enterprises is limited, and the final value of data assets in the table and the total value of data assets owned by the enterprise there is a certain gap, cannot accurately insight into the size of the enterprise's data assets. Secondly, many scholars at home and abroad have analyzed the frequency of words related to "data asset keywords" in the annual reports of enterprises to measure the degree of data assetization of enterprises, but this paper argues that this approach can only explore the degree of attention paid by enterprises to the development of data assets, but cannot represent the real scale of enterprise data assets. Therefore, this paper uses the income approach to measure the value of data assets, while referring to Veldkamp's method of measuring the value of data assets using the gap between the market value and book value of the enterprise [10]. The calculation formula is shown in Equation (1). The calculation formula is as follows:

$$DataAsset = ln\,(MarketValue - FixedAsset - FinancialAsset - IntangibleAsset) \quad (1)$$

The market value of a corporation is typically quantified through its stock market capitalization. In contrast, the carrying value comprises three core components: (1) Net fixed assets representing the value of long-term assets after deducting depreciation; (2) Aggregate financial assets encompassing trading financial instruments, derivative financial products, net loans and advances issued, available-for-sale financial assets (net), held-to-maturity investments (net), and investment properties (net); (3) Net intangible assets including amortized residual value of non-physical assets such as trademarks, patents, and intellectual property rights. This integrated valuation framework systematically accounts for depreciation mechanisms, amortization processes, and diversified financial holdings to present a comprehensive financial profile.

3.2.3. Control Variable

The results of existing studies have shown that internal and external factors such as company characteristics, governance mechanisms, and external environments have an impact on the financialization decision preference of enterprises [11]. In order to increase the credibility of the research, this paper uses the research methods of other scholars for reference, and adds a series of control variables [12, 13].

To summarize, the control variables in this study include Company Scale (natural logarithm of the number of employees), Enterprise Age (natural logarithm of the number of years of establishment), Audit Opinion, Capital Intensity, Asset Liability Ratio, Management Fee Rate, Cashflow, Tobin Q, Profitability.

3.3. Modelling

Through the above theoretical analysis, this paper constructs the model (2) to test the effect of corporate data asset size on the degree of preference in corporate financial decision-making:

$$Fin_{i,t} = \alpha_0 + \alpha \mathrm{DataAsset}_{i,t} + \lambda \mathrm{Control} + \varepsilon \quad (2)$$

Where Fin represents the degree of financialization of enterprises, i.e., the degree of enterprises' preference for financial decision-making; DataAsset represents the scale of enterprise data assets; Control represents the control variables such as enterprise size; ε represents the random error term. If the result of empirical analysis is that the coefficient of data assets is significantly positive, then it shows that the expansion of enterprise data assets does increase the financial decision preference of

enterprises, conversely, it indicates that the expansion of enterprise data asset size significantly weakens the degree of enterprises' preference for financial decision-making.

4. Empirical Results and Analysis

4.1. Descriptive Statistics

Table 1 shows the descriptive statistics of the main variables, the mean value of the enterprise's financial decision-making preference degree (Fin) is 0.016, the maximum value is 0.09, the mean value is much smaller than half of the maximum value, which indicates that the overall level of the five enterprises on the degree of preference for financial decision-making is not high, and the standard deviation of 0.018 is very small, which indicates that there is not a big difference in the degree of preference for financial decision-making between the five enterprises, this further illustrates the rationality of this article's preliminary exploration of the impact of financial decision-making and data asset size on electronic industry enterprises, represented by these five companies. The mean value of enterprise data asset size of 24.707 and the maximum value of 26.795 can be seen, as China's digitalization level increases, the enterprise data asset size is also higher, in line with the reality of the situation, indicating that this selection of the sample has a high degree of representativeness, the same research conclusions on behalf of a contributing role. There is also a significant difference between the minimum and maximum values of a series of control variables, which can play a better control role for this study.

Table 1. Descriptive statistics.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Fin	48	0.016	0.018	0	0.09
Data Asset	48	24.707	1.374	22.089	26.795
Enterprise Age	48	2.863	0.815	0.693	3.829
Audit Opinion	48	0	0	0	0
Capital Intensity	48	1.114	0.359	0.483	2.024
Management Fee Rate	48	0.049	0.03	0.007	0.112
Cashflow	47	5.275e+09	8.040e+09	-1.993e+09	4.308e+10
Asset Liability Ratio	48	0.512	0.086	0.165	0.643
Profitability	48	1.139	0.41	0.576	2.379
Tobin Q	48	2.696	1.599	1.044	8.545
Company Scale	48	10.319	1.492	6.688	12.438

4.2. Benchmark Regression

Table 2 reports the benchmark regression results of model (2). According to the data in Table 2, the coefficient of the explanatory variable Data Asset is 0.06, which is significant at the 10% level. That is to say, after controlling the influence of other factors, the financial decision-making preference of enterprises will still be affected by the expansion of enterprise data assets, and this influence shows a positive correlation.

Table 2. Benchmark regression results.

	(1)	(2)
	Fin	Fin
Enterprise Age	-0.004	-0.003
	(-0.860)	(-0.556)
Audit Apinion	0.000	0.000
	(0.000)	(0.000)
Capital Intensity	-0.015	-0.021
	(-0.730)	(-0.992)
Management FeeRate	-0.015	0.080
	(-0.135)	(0.668)
Asset Liability ratio	0.016	-0.024
	(0.354)	(-0.474)
Cashflow	0.000***	0.000**
	(3.256)	(2.425)
Profitability	-0.025	-0.022
	(-1.139)	(-1.045)
Tobin Q	0.001	-0.001
	(0.899)	(-0.583)
Company Scale	0.002	-0.001
	(0.855)	(-0.415)
Data Asset	—	0.007*
	—	(1.705)
_cons	0.031	-0.077
	(0.480)	(-0.851)

Note: Values in parentheses represent standard errors; ***p<0.01, **p<0.05, *p<0.10.

4.3. Robustness Check

To make the research results more trustworthy, this paper further tests the robustness of the above research results.

4.3.1. Change Interpretation Variables

The market value of an enterprise is usually measured by the total market value of the stock, reflecting the investors' expectation of the future profitability of the enterprise. However, when considering data assets, relying on market value alone may lead to measurement distortion, because market value is affected by many factors, including macroeconomic conditions, industry trends, investor sentiment, etc. The scale of assets (Data Asset) measured only by the difference between the fixed assets financial assets and intangible assets of enterprises and market value may be affected by the different business scales among enterprises. Therefore, this paper replaces the explanatory variable data asset size (Data Asset) with the ratio of the difference between the firm's market value and book value to the firm's market value (Data Asset ratio).

4.3.2. Change the Explained Variable

After FinLn, the financial assets are regressed. Table 3 shows the robustness test results obtained in this paper. Column (1) and column (2) are the regression results after replacing explanatory variables and explanatory variables respectively: after the replacement variables, the coefficient sign and significance of the explanatory variables have not changed, and the expansion of the enterprise's data assets scale still has a very significant negative impact on the enterprise's financial decision-making preference. It shows that the conclusion of this paper is basically stable.

Table 3. Robustness test results.

	(1)	(2)
	Fin	Finln
Data Asset ratio	0.039**	—
	(2.095)	—
Enterprise Age	-0.004	-1.443
	(-0.940)	(-1.304)
Audit Opinion	0.000	0.000
	(0.000)	(0.000)
Capital Intensity	-0.016	-12.344**
	(-0.780)	(-2.436)
Management Fee Rate	-0.019	42.714
	(-0.185)	(1.464)
Cashflow	0.000**	-0.000
	(2.551)	(-0.587)
Asset Liability Ratio	0.016	9.776
	(0.364)	(0.797)
Profitability	-0.013	-14.868***
	(-0.616)	(-2.831)
Tobin Q	-0.002	-1.560***
	(-1.034)	(-2.941)
Company Scale	-0.000	-0.815
	(-0.020)	(-0.984)
Data Asset	—	5.031***
	—	(5.128)
_cons	0.034	-65.740***
	(0.543)	(-2.997)

Note: Values in parentheses represent standard errors; ***p<0.01, **p<0.05, *p<0.10.

5. Conclusions

Based on A sample of five typical companies in CCOEEMI of China's A-share listed companies, based on the multiple linear regression analysis, the expansion of data assets scale will promote the decision-making preference of enterprises' financialization, to some extent, it impacts the development of the real economy, and poses a threat to a country's economy. Therefore, this paper believes that enterprises should pay more attention to the risk management of data assets such as security risk, circulation risk and price fluctuation while enjoying the dividend brought by the vigorous development of data assets. The government has increased the capital market transaction and pricing control of data assets, to maximize the avoidance of enterprises with the unique characteristics of data assets, making excessive and irrational speculative decisions, so as to consolidate the foundation of the real economy, so as to promote the healthy development of the national economy. This paper demonstrates the relationship between the development of data assets and the financialization of enterprises, and points out that the expansion of data assets may promote the enterprises that were originally in the manufacturing industry to turn to enter the capital market, which is not conducive to the stable development of the economy. It can cause widespread concern on this phenomenon from the academic, enterprise operation, government regulation and other levels, so as to better cope with the changes in the future economic situation.

This paper only takes 5 typical companies in CCOEEMI as an example, whether the research conclusions are universal in all industries remains to be demonstrated. In addition, there may be endogenous variables in the research model set in this paper, which is not discussed in depth. In the future, with this paper as a clue, the author can continue to analyze the internal logical relationship between data assets and enterprise financialization; This paper mainly focuses on one aspect of the negative impact of data assets on the development of the real economy. Under a comprehensive consideration, which is the greater advantage and disadvantage of data assets on the development of the real economy is also an important direction for further research in the future.

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