Financial Shared Service Center and Corporate Investment Value: The Empirical Research Based on A-Share Listed Companies in Shanghai and Shenzhen

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Financial Shared Service Center and Corporate Investment Value: The Empirical Research Based on A-Share Listed Companies in Shanghai and Shenzhen

Dissertation Submitted to

The University of Geneva

in partial fulfillment of the requirement

for the professional degree of

Doctorate of Advanced Professional Studies in Applied Finance, with Specialization in Wealth Management

by

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August, 2023

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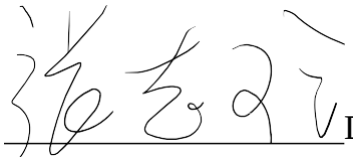
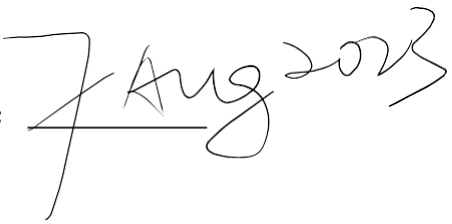
Signature：  Date： 

Abstract

With the development of society, domestic companies are being exposed to fiercer market competition and more complicated operation environment, and are pushed to consider digital transition from the perspective of strategy. As vital back-office department, with the help of cutting-edged technologies such as “Next-generation information” and theories such as Business Process Re-engineering, finance department has new breakthroughs: Shared Service Center. Finance gradually moving from back office to front side by integrating massive amounts of financial data, stimulating the innovation-driven potential of data. Finance is currently in the era of digital transformation, and is expected to provide sufficient theoretical basis for enterprises' business decisions and creating value. Finance shared service center has been more and more welcomed since it was introduced to China at the beginning of this century, and the number of researches on finance shared service center in China is increasing. The results of existing studies are relatively consistent. Current study about finance shared service center is mostly about the internal impact, while the study for the impact of finance shared service center on external evaluation of enterprises is limited.

With the calculation for the market response after the company applied finance shared service center, it is found that the company has significant and positive market response in three years after the destruction. In addition, using the two enterprise characteristics, geographic dispersion, and business diversification, to classify the sample, it is found that companies with high geographic dispersion or low business diversification have more positive market response after applying finance shared service center. However, using the two indicators as explanatory variable, it is found that geographic dispersion does not have significant correlation with market response, and business diversification has significant negative correlation with market response. This may be due to that investors are not clear with the mechanism of finance shared service center with the problems when companies apply geographic dispersion, and business diversification.

With more domestic enterprises implementing financial digital transformation, the impact of finance shared service center on comprehensive aspects of enterprises requires more in-depth understanding to make theoretical research guide enterprises. Furthermore, when enterprises plan to implement or operate finance shared service center, they need to adapt with companies’ own characteristics to maximize the

utility of finance shared service center. Finally, the capital market needs to be more aware of how finance shared service center works, and can then have more comprehensive judgement about the enterprise performance after companies apply finance shared service center.

Key words: Finance shared service center; Market response; Business diversification; Geographical dispersion.

Content

1. Introduction

1.1 Financial Shared Service Center and Corporate Investment Value

Nowadays, with the rapid development of the global economy, the scale of enterprises is constantly expanding, and the internal structure has become more complex and changeable, which makes the traditional financial management mode difficult to adapt to the needs of enterprises under the new situation. Traditional enterprises need to set up a separate financial department in each branch organization to conduct financial audit. This model has problems such as inconvenient management and information island, which can also easily lead to the increase of fraud among branches. In order to solve these problems, the financial sharing center has emerged. However, most of the existing literature focuses on the application of financial sharing services and the construction and optimization of financial sharing centers, but there are relatively few studies on the role of financial sharing centers in improving enterprise value.

Since Ford established the world's first financial shared service center in 1984, the history of financial shared service center has exceeded 40 years, and the related research is also very rich. Since its introduction into China at the beginning of this century, financial shared service center has gradually become the choice of many enterprises. At the same time, China attaches great importance to the process of financial digital transformation, and actively promotes the financial sharing process of central enterprises, and leads the reform of financial digital transformation.

Financial sharing is still in the stage of rapid development. At present, relevant research topics focus on the impact of financial sharing on the enterprise. The empirical research on the impact of financial sharing on the external evaluation of enterprises is still very scarce.

Financial sharing requires a large amount of manpower and capital investment in the initial stage, which will affect the company's operating conditions in the short term, but it is expected to greatly improve the performance and competitiveness of the company in the future. Its advantage lies in improving efficiency of the internal control, and it may affect the long-term operation of the enterprise, and then affect the reaction of the market.

In general, the financial sharing center is an effective financial management mode, whose core advantages lie in the centralized management, process standardization and the application of information means. In today's complex and changeable business environment, the establishment of financial sharing center can help enterprises improve the efficiency of financial management, improve the accuracy and timeliness of financial decisions, so as to lay a solid foundation for the long-term development of enterprises.

Enterprise value creation refers to the process in which the enterprise increases the value of resources such as property and equity held by the enterprise through production and operation activities. Enterprise value is the evaluation that an enterprise obtains in the market, which depends on the enterprise's business decision, asset allocation, operational efficiency and other factors. Therefore, enterprise value creation is an important part of enterprise business objectives. In this paper, enterprise value creation is an important goal of the construction of financial sharing center. The financial sharing center is established to solve the problem of financial sharing difficulties among various branches and organizations within the enterprise. Through the centralized processing and management of the financial data of each branch and organization, the financial data sharing is realized, so as to improve the efficiency of financial management. This paper aims to explore the influence of financial sharing center on enterprise value, so as to provide guiding suggestions for enterprises and improve their competitiveness.

Based on the previous research, this paper focuses on the impact of the financial sharing service center on enterprise performance. Generally speaking, performance can be divided into three aspects: operation, profit and growth. On one thing, after the enterprise implements the management mode of financial sharing service, and after the process re-engineering and other optimization measures, help improve the operational efficiency. On second course, the management mode of financial sharing service also helps enterprises identify redundant, repetitive business links, and simplify business processes and organizational structure, and also help to save costs, and improve the profitability of the enterprise. Thirdly, when the enterprise implements the financial sharing services, and when the non-value-added links are removed, then the enterprise can have more manpower, material resources and capital that are invested into the core value-added business links. The management mode of superimposed financial sharing service can help enterprises to save the energy of repeatedly setting up financial departments when expanding

the scale. Therefore, the financial sharing service can help enterprises improve their ability to expand their business and gain market share.

In the process of enterprise value creation, enterprises need to pay attention to the allocation of resources and the improvement of operational efficiency. The financial sharing center can effectively solve the problem of financial data sharing among various branches of the enterprise, reduce the cost of financial data processing and management, and improve the operational efficiency. In addition, the financial sharing center can also provide more accurate financial data analysis and decision support for enterprises, so as to optimize enterprise resource allocation and enhance their financial value. In short, enterprise value creation is an important goal of enterprise business activities. As a new management mode to improve the efficiency of enterprise financial management, the financial sharing center is of great significance in optimizing the allocation of enterprise resources, improving operational efficiency and enhancing the financial value of enterprises.

1.2 Literature Review

Philipp Clemens Richter And Rolf Bruhl [1] (2016) sorted out the relevant literature of SSC (Shared Service Center) and divided them into four types, which also correspond to the four processes of enterprise development of financial sharing mode, namely, theoretical conception, center construction, operation control and performance evaluation.

Triplett A. And Scheumann J. [2] (2000) define the original intention of establishing financial sharing as to control costs.

Jan Lindvall And Einar Iveroth [3] (2011) made a case study about Ericsson's transformation from 2004 to 2006 , analyzed the Ericsson how through the IT technology applied to the organization reform, made the financial process standardization and establish a global sharing service center will lose organizations around the world become coordinated control structure, finally realized the cost control, improve efficiency, and greatly improve the flexibility and adaptability of the enterprise. At the same time, the study also points out that such changes will not be achieved overnight, but need continuous coordination of new information technology with organizational changes, which is a spiral rather than a result.

Lianhua Jin and Wang Hua [4] (2016) found that after the implementation of financial sharing, enterprises reduced the cost input and increased the proportion of

core business in profits, which was in line with the expectation of establishing financial sharing. Financial sharing has a greater positive impact on large enterprises, which may be due to the financial sharing needs a lot of investment in the early stage, and its effect has a lag.

Li Licheng, Fu Mengran and Li Yanqing [5] (2020) through the system dynamic theory analysis of financial sharing for the enterprise, established a simulation model, found that financial sharing can effectively control the cost and improve efficiency, but had negative effects on internal control, especially staff communication and staff training satisfaction, etc.

Ma Jian and Li Lianjun [6] (2020), through the horizontal comparison of the established financial sharing enterprises in the building decoration industry, found that after the establishment of the financial sharing model, the operation and profitability of the enterprises were greatly improved compared with the industry level under the poor industry environment.

Liu Menghui and Liu Xintian [7] (2019) studied the impact of financial sharing on enterprise performance from the perspective of enterprise market and finance, and found that financial sharing can have a positive impact on the market and financial performance of enterprises, but reduce the rate of return of human input. This may be because financial sharing puts forward higher requirements on the quality of financial personnel, and the initial manpower investment is too high.

Wang Yufa et al. [8] (2019) believe that the implementation of financial sharing services has a significant positive impact on corporate profitability and corporate value, that is, financial sharing can play a direct role in corporate performance. Li Licheng et al. [5] (2020) believes that the financial sharing service center reduces the total cost of the enterprise; improves the operation efficiency of the enterprise by improving the success rate of payment and document processing efficiency; improves the recovery rate of enterprise funds and improves the ability of capital management. In general, the literature believes that the role of the financial sharing center is to reduce cost and increase efficiency. Zheng Ruyu [9] (2021) found that financial sharing could improve the quality of financial information, the emergence of sharing center could effectively avoid subsidiary data not standardized, fraud, fake information, sharing center with its unified accounting system, standardized business processes, independent status, also could guarantee the accuracy and financial information usability.

Wang Jiali [10] (2022) believes that the disadvantages of the traditional financial management mode of state-owned enterprises restrict the sustainable development, so the financial sharing mode needs to be applied in the internal control work of state-owned enterprises. The literature discusses the effective internal control strategy to improve the application effect of the financial sharing mode of state-owned enterprises, so as to improve the management level of state-owned enterprises. This literature believed that the establishment of financial sharing mode of state-owned enterprises could help enterprises break through the development bottleneck caused by the traditional miscellaneous management mode, and focused on what internal control strategy state-owned enterprises should adopt. Su Long et al. [11] (2022) believed that China's large international companies and groups could establish an international financial sharing service platform with the help of digital technology, and promoted information sharing, integration of industry and financial resources, and internal and external interconnection, which was an important support for improving the quality and efficiency of enterprise operations. This document is intended to discuss the feasibility mechanism of the transformation of large multinational companies through the digital financial sharing platform, and to put forward the transformation path and countermeasures. Liu Bo, Lin Mengchun [12] (2021) and Yu Hui [13] (2022) believe that because of the large scale, most manufacturing industry resources are fully utilized after the implementation of financial sharing services, which just solves the problem of "data island", reduces the enterprise management expense ratio, greatly improves the operation efficiency of enterprises, and then improves enterprise performance.

Generally speaking, investors' expectations for an enterprise are based on enterprise performance, and high enterprise performance will make the market respond more positively. Therefore, the paper is expected to verify this conjecture. In addition, considering the large initial investment in financial sharing, which is expected to bring a positive impact on enterprises in the long term, which is similar to the nature of R&D expenditure, this paper refers to the market reaction study on R&D expenditure.

For R&D information, Chan L. K. C., Lakonishok J., and Sougiannis T. [14] (2001) found that excess yields in the capital market were high only if R&D spending was high relative to stock value. Narayanan V. K., Pinches G. E., and Kelm K. M. et al. [15] (2000) found that voluntary disclosure of quantitative R&D information could reduce information asymmetry and explain the excess returns generated by R&D project announcements.

Secondly, financial sharing is essentially a means of internal management of enterprises, which has the role of strengthening the internal control of enterprises. Therefore, this paper also refers to part of the market reaction research on internal control. Yang Qingxiang, Yu Lin and Song Li [16] (2012) found that companies with strong internal control had a more positive market response after disclosure, and vice versa.

2. Methodology

First, this paper uses the event research method to calculate the long-term market response (BHAR, purchase and hold excess yield) in the 12 months, 24 months and 36 months after the implementation of financial sharing.

Secondly, this paper calculates the geographical dispersion (lnGeo, the proportion of subsidiaries in other provinces) and business diversification (EI, converted Herfindahl index), and groups samples to compare the market response of different samples of enterprises after financial sharing.

Finally, the indicators of geographical dispersion and business diversification are taken as the explanatory variables, the market response as the explained variables, and plus several control variables for multiple regression analysis, and this paper wants to verify whether there is a linear relationship between the two characteristics of enterprises and the market response after the implementation of financial sharing.

2.1 Calculation of the Market Reaction

Market reaction, that is, the price of securities in the capital market to certain specific events, is studied by the event research method. The event research method is based on the efficient market hypothesis, first proposed by Fama et al. [17], to measures the reaction of the price of securities in the capital market at the time of a particular event.

The principle is to set a fixed interval at a certain time, observe the abnormal income generated by the stock of the listed company during this period, and judge whether it is related to the event.

There are two key points of event research method: choose the right time window, namely the time point, and choose the right window length. In short, the market reaction examines the reaction of capital to an event.

There are several mature formulas for the measure of market response. First, the CAR formula (Cumulated Abnormal Return, cumulative excess return rate), which is commonly used in the short-term market response, calculates the daily excess return rate, and then accumulates to get the cumulative excess return rate.

Secondly, the formula for calculating the long-term market response is BHAR (Buy-and-hold Abnormal Return, buying and holding the excess yield). Compared with CAR, the formula adopts the formula of multiplying rather than accumulating, minus the multiplication of the monthly purchase and holding yield of the market,

to get the excess yield.

Among them, the BHAR method is a measure of the long-term market response of enterprises. Its advantage is that it will not be affected by the stock price fluctuations of the investigated companies during the investigation period, and can effectively evaluate the long-term performance of listed companies after the adoption of financial sharing.

The BHAR method generally measures the long-term market response of enterprises for more than 3 years, which is very in line with the characteristics of large financial sharing investment in the early stage and long-term benefits. Therefore, this paper uses this method to calculate the market response. The concept of BHAR method is the yield of individual stocks minus the corresponding market yield of multiplication.

The specific formula is as follows:

$$BHAR_{it} = \prod_{t=1}^{T}(1 + R_{it}) - \prod_{t=1}^{T}(1 + R_{mt}) \quad (2\text{-}1)$$

The formula represents the excess rate of return obtained from the continuous holding of the company's shares for t months after the company implements the financial sharing. Among them, R_{it} represents the company's yield in t month, and R_{mt} represents the corresponding market yield for that month.

According to the characteristics of the BHAR method, the window period for events is set to (0,12) months, (0,24) months and (0,36) months, after financial sharing: BHAR12, BHAR24 and BHAR36.

2.2 Construction of Geographic Dispersion Index

Wu Dejun and Hu Qihao [18] (2021) used the values 1-31 to assign the provinces of the participating or holding companies, and took the natural logarithm as an indicator of the degree of geographical dispersion.

Since the geographical location of enterprises and subsidiary companies in the database can only be unified to provinces, municipalities directly under the Central Government or autonomous regions, and overseas companies can only be counted to countries, this paper chooses to be adopted some adjustments have been made. Statistics on the distance of the geographical location relative to the parent company in other provinces / countries. Finally, in order to reduce the effect of the extreme value, the proportion is added by one logarithm, the specific formula is as follows:

$$lnGeo_{pj} = ln(\frac{\sum_{j=1}^{n} Dpj}{n} + 1) \quad (2\text{-}2)$$

Where the letter p represents the parent company in the sample; the letter j represents the subsidiary of the parent company p; Dpj indicates whether the subsidiary is outside the province, yes 1 and no 0.

2.3 Business Diversification Index Construction

Compared with geographical dispersion, there are two ways to measure business diversification, using the Herfindahl index or the diversification entropy index (EI).

Herfindahl Index is a diversified index with a wide range of applications. Its formula is as follows: [19]

$$HHI = \sum_{i=1}^{n} p_i^2 \quad (2\text{-}3)$$

Among them, p_i refers to the ratio of the revenue in industry i to the total operating income of its listed companies. Smaller HHI companies represent a higher complexity of the industry.

In order to achieve consistent, in the regression model, the EI index is used in this paper, which is formulated as follows: [20]

$$EI = \sum_{i=1}^{n} p_i ln(\frac{1}{p_i}) \quad (2\text{-}4)$$

Companies with a larger EI index represent a higher complexity in the industry.

3. Assumptions and Expected Results

3.1 Study Hypothesis

Nowadays, financial sharing has been developed for decades. In addition to the research on its operation mode, there are enough data for empirical research, but the current relevant empirical research basically focuses on several fields such as financial indicators, enterprise performance or enterprise competitiveness.

According to previous literature, the role of financial sharing on enterprise performance is reflected in both positive and negative aspects. Financial sharing can control costs for enterprises, improve operational efficiency, and thus improve enterprise performance. On the other hand, if there are problems in the internal control of the enterprise, it may cause problems to the enterprise performance in the long run. Therefore, the impact of financial sharing on the market reaction may not only be generally optimistic because of the good performance, but also may become worse because of the internal and external resistance generated by the construction of financial sharing.

Due to the introduction of the domestic financial sharing model in only 20 years, the data richness is limited, and the relevant empirical research is only relatively prosperous in recent years. The relationship between financial sharing and market reaction is not involved in previous research. Based on the study of the literature on both sides, some ideas can be inferred. From the impact of financial sharing on enterprises, it is generally positive. First of all, the implementation of financial sharing service can be seen as a good development of the enterprise, and it needs to re-engineer the financial process to adapt to the future expansion.

At the same time, generally speaking, investors' expectations for the enterprise are based on the enterprise performance, and the high enterprise performance will make the market respond more positively. Therefore, the paper is expected to verify the suspect.

In addition, considering the large early investment in financial sharing, which is expected to bring a positive impact on enterprises in the long term, which is similar to the nature of R&D expenditure, this paper refers to the market reaction study on R&D expenditure. For R&D information, Chan L. K. C., Lakonishok J., and Sougiannis T. [14] (2001) found that excess yields in the capital market were higher only if r & d spending was high relative to stock value. Narayanan V. K., Pinches G. E., and Kelm K. M. et al. [15] (2000) found that voluntary disclosure of quantitative R&D information could reduce information asymmetry and explain

the excess returns generated by R&D project announcements. Secondly, financial sharing is essentially a means of internal management of enterprises, which has the role of strengthening the internal control of enterprises. Therefore, this paper also refers to part of the market reaction research on internal control. For example, Yang Qingxiang, Yu Lin and Song Li [16] (2012) found that companies with strong internal control had a more positive market response after disclosure, and vice versa.

Disclosure of R&D spending can also have a positive impact on m arketreaction. Third, enterprises with strong internal control can also have a better market performance. Therefore, this paper expects that after enterprises adopt financial sharing, the market reaction will be positive. Accordingly, the first hypothesis is proposed:

H1: The market reaction of enterprises after implementing financial sharing is positive.

Secondly, financial sharing is the evolution of the internal organizational structure of an enterprise, which requires long-term planning and daily operation. From the perspective of the relevant empirical research of financial sharing, its impact on enterprises is to control the cost directly and improve the efficiency. With the passage of time, its influence gradually spreads to the performance, competitiveness and market value of the whole enterprise. In a word, the impact of financial sharing on enterprises is increasing and increasing over time. Therefore, the second hypothesis is proposed:

H2: The longer the implementation of financial sharing time, the more positive the market reaction of the enterprises.

In addition, in order to further analyze the reasons for the formation of market response after the implementation of financial sharing, this paper compares the impact of different characteristics of enterprises on the market response after the implementation of financial sharing.

Financial sharing itself is a new model emerging from the increasingly complex organizational structure, which is characterized by cross-regional and highly standard processes. As companies grow, they expand, such as doing business in multiple regions, or in multiple industries. This can expand the market and spread the risk, but it can also create new operational risks. Financial sharing is an expected solution, but whether it can solve the new problems generated in the operation process of the enterprise, escort the enterprise, and obtain a positive response from the market, has not been determined. Therefore, this paper further analyzes the impact of geographical dispersion and business diversification on the market

reaction after the implementation of financial sharing.

Geographic dispersion is a research perspective gradually introduced in recent years. With the gradual deepening of the research in the field of finance, the content of geo-economics has been introduced in previous studies. Because of the geographical dispersion, the management of the company will be greatly affected. On the one hand, the geographical separation of parent and subsidiary companies will affect the efficiency of information transmission, and there are problems of distorted information and insufficient timeliness. On the other hand, the internal and external risks of enterprises will increase significantly.

The previous related studies on geographical dispersion are more about the capital market. Generally speaking, enterprises with small geographical dispersion can have more resources because they are concentrated in a region, and have higher market returns, which seems to have a negative relationship with the market reaction. For example, Diego Garcia and Øyvind Norli [21] (2012) measured the geographical dispersion of enterprises through a number of American listed companies involved in the file, and studied the market of the local (including only two states) enterprises and geographically more dispersed enterprises to the gap, and found that local companies higher market returns, may be due to investors of such companies (usually smaller) awareness is not enough. In addition, direct geographical distance is also related to the return on investment, such as mutual funds can obtain large returns by investing in local (geographically close) enterprises, due to the access to more information.

Secondly, there are also many studies on the relationship between the geographic dispersion of enterprises and their financial indicators. From the existing research, the enterprise value of enterprises with large geographical dispersion is lower. This is mainly because the geographical dispersion of enterprises is large, the agency problem will be more serious, and the valuation difficulty will also increase. However, the management level of the enterprise will affect this process, and simply, enterprises with strong management ability can offset this negative effect to a certain extent. For cash holding in financial indicators, previous research has found that for government-related enterprises, external financing opportunities are richer. Internal financing can make full use of internal cash due to market differences in different industries, so diversified operation can reduce the cash holding level of enterprises. In addition, some studies have found that geographical dispersion has an enhanced effect on the positive impact of corporate R&D investment on corporate performance. Companies with large geographical dispersion can choose the right resources or opportunities in a wider

range to promote the contribution of corporate R&D investment to corporate performance. In a word, the geographical dispersion is the management problem that enterprises will encounter in the degree of expansion. On the one hand, the geographical dispersion itself implies a good situation of the gradual growth of enterprises. But on the other hand, it also puts forward new challenges to the management of enterprises, and its specific impact on the enterprise needs to be further analyzed.

From the perspective of market response research, geographical dispersion tends to have a negative relationship; from the perspective of financial indicators, geographical dispersion has both advantages and disadvantages; from the perspective of financial sharing, the problems caused by geographical dispersion are effectively alleviated. Considering that there are both positive and negative factors, this paper does not speculate on the tendency, but only sets the assumptions as follows:

H3: After the implementation of financial sharing, enterprises with high degree of geographical dispersion responded more actively than those with low degree of geographical dispersion.

At the same time, the enterprise may consider carrying out diversified business. The so-called diversification refers to operating a variety of businesses or commodities at the same time. There are many benefits to diversification, such as effectively diversifying business risks through your portfolio and covering multiple markets to gain more business opportunities. But on the other hand, diversification also brings more risks. First of all, the diversified operation greatly improves the complexity of the organizational structure of enterprises, and puts forward high requirements for the management level of enterprises. Secondly, even if implementing diversified business, the enterprise needs to have some emphasis on certain industries. Many enterprises do not have a clear plan for the future. After only seeing the benefits of diversification, they rashly venture into completely unfamiliar fields, increasing their operational risks significantly. It is not uncommon for enterprises that have been crushed due to diversification.

There is a lot of related research on business diversification. The first is the research related to financial management. The impact of diversified operation on enterprise value is more complex. Some studies have found that it has a negative impact on the financial indicators. For example, some studies have found that industry concentration has a negative impact on the timeliness of accounting surplus of enterprises. Some studies have also found that the higher the degree of diversification, the worse the quality of enterprise accounting information. The

higher the degree of information asymmetry inside and outside the enterprise, the harder it is for external investors and regulators to understand the enterprise information, which also makes it easier for managers to whitewash the accounting information. But on the other hand, diversification can reduce the financial risk of enterprises. Luo Fubi and Deng Getao [20] (2020) found that the degree of diversification of state-owned enterprises is negatively related to the cash holding level of enterprises, which is the possibility that diversification can effectively share risks and form internal financing.

In short, based on previous research, diversified operation can indeed bring benefits to enterprises, reduce financial risks and operational risks, and create new opportunities. But at the same time, diversification also aggravates the negative impact of information asymmetry and agency problems. After the implementation of financial sharing, enterprises can theoretically alleviate the potential risks of diversification, but there is no empirical result for the impact of external market reaction. Therefore, without predicting the impact of business diversification, the assumptions are set as follows:

H4: After the implementation of financial sharing, enterprises with high degree of business diversification responded more actively than those with low degree of business diversification.

3.2 Samples and Data Sources

The research object of this paper are the Shanghai and Shenzhen listed enterprises that implement financial sharing from 2004 to 2022. First, collect the list of companies implementing financial sharing through web crawler, ZTE new cloud SSC database and manual collection. In order to measure the BHAR value in the three years after the implementation of financial sharing, this paper only selects the enterprises that started to implement financial sharing in 2019 and before.

Secondly, the basic information and financial information of Shanghai and Shenzhen listed companies were obtained through the CSMAR (Guotai'an) database, and the list of ST, ST * companies and the enterprises with missing data in the three years were excluded. Ultimately, the sample size was 147 companies.

Thirdly, for the two indicators, the statistical method is as follows: for the geographical dispersion indicators, the longitude and latitude of the parent company is collected through the CSMAR database, and the content of the annual report is

collected manually to supplement some missing data. Due to the large gap in the interval, considering the uniformity of statistics, the same province or municipality in China uses the same longitude and latitude, and the same country uses the same longitude and latitude. For the business diversification indicators, the operating revenue of enterprises in various industries is collected through the CSMAR database.

Finally, this paper measures the impact of different factors of the enterprise on the implementation of financial sharing, so for all the control variables and explanatory variables, the statistical time interval of this paper is the year before the financial sharing of the company.

3.3 Construction of Regression Model Indicators

In order to further analyze the indicators of geographical diversification and business diversification, this paper plans to use these two indicators to group samples and calculate the market reaction of each sub-sample for comparison, and conduct a supplementary regression analysis to deeply analyze the impact of the two indicators on the market reaction after the implementation of financial sharing. In addition to the explanatory variables and the explained variables, this paper also refers to previous studies and adds three control variables related to the financial sharing and market response studied in this paper.

(1) Asset-liability ratio LEV: The asset-liability ratio measures the solvency of an enterprise, which is the financing ability of an enterprise and a measure of the asset structure.

(2) Number of employees Staff: According to previous research, the enterprise scale has an impact on the effect of financial sharing. If the enterprise is large, the greater the scale economy effect of the financial sharing, and the better the effect can improve the efficiency and performance of the enterprise. This article uses the number of employees to represent the size of the enterprise.

(3) Whether it is manufacturing Man: the performance of enterprises and the effect of financial sharing. Among them, whether the manufacturing industry is mentioned many times in the related research of financial and financial sharing, so the control variable is added. The industry data used in this paper refer to the industry classification of the CSMAR database.

Finally, to control for the results of the regression, year fixed effects were included μ.

The composition of the regression model is detailed in Table 3-1, and the regression model is constructed as shown in Equation 3-1:

$$BHAR_i = \alpha + \beta_1 * Geo_i + \beta_2 * EI_i + \gamma_1 * LEV_i + \gamma_2 * Staff_i + \gamma_3 * Man_i + \mu_i + \varepsilon_i \quad (3\text{-}1)$$

Where the suffix i, which represents company i, α are constant term and ε is residual.

Table 3-1
Composition and Definition of Multiple Regression Models

Type of Variable	Variable Name	Variable Symbol	Variable Declaration
Explained Variable	Market Reaction	BHAR	Excess yield BHAR for buying and holding shares
Explanatory Variable	Geographical Dispersion	InGeo	*See formula 2-2*
	Multi-Business Diversification	EI	*See formula 2-4*
Controlled Variable	Asset-Liability Ratio	LEV	Total assets / total liabilities
	Number of Employees	Staff	Take the natural logarithm of the headcount
	Is it Manufacturing	Man	When the enterprise is classified as manufacturing, 1 is taken and the rest industries are 0

3.4 Descriptive Statistics

Descriptive statistics of the study samples are shown in Table 3-2:

Table 3-2
Descriptive Statistics of the Sample Data

		(1)	(2)	(3)	(4)	(5)
Variables	Chinese Name	Obs	Mean	SD	Min	Max
lnGeo	Geographical Dispersion	147	0.5453	0.2923	-	1.0000
EI	Multi-Business Diversification	147	0.3850	0.4600	-	1.7191
LEV	Asset-Liability Ratio	147	0.5621	0.1954	0.0556	0.9794
Staff	Number of Employees	147	9.5358	1.2640	6.6174	13.1397
Man	Is it Manufacturing	147	0.5578	0.4983	-	1.0000

The first is the explanatory variables. In terms of geographical dispersion index, the minimum value is 0 (both parent and subsidiary companies are in the same province or country), the maximum is 1 (all subsidiaries are in other provinces), and the degree of geographical dispersion is large; in terms of business diversification, the minimum value is 0 (engaged in a single industry), the maximum is 1, and the level of business diversification is large. Therefore, these two indicators are grouped and then regression.

In terms of control variables, in terms of industry, more than 55% of the enterprises are manufacturing, which proves that the manufacturing industry has a relatively high proportion. Manufacturing processes are easier to standardize and may be more likely to implement financial sharing.

4. Empirical Analysis and Expected Results

4.1 Measure Market Reaction

By calculating the BHAR within 3 years, it was found to be positive within 3 years and gradually increased over time, as shown in Table 4-1. At the same time, through the T-test (as shown in Table 4-2), its significance has also increased annually. The market response in the first year was not significant, proving that it was not unusually above the market average. In the second year, the market response was significant at 95%; in the third year, the market response was significant at 99%, proving that relative to the market average. This verifies the hypothesis that the H 1.

Table 4-1
BHAR of the Calculation Results

Variable Name	Number	Mean	Standard Deviation	Least Value	Crest Value
BHAR12	147	0.0480	0.3810	-0.5413	1.9774
BHAR24	147	0.1227	0.7388	-1.0973	3.6498
BHAR36	147	0.2290	1.1063	-1.6579	7.5249

Table 4-2
Results of the B HAR Test

Variable Name	Time	Mean	T Test Value	And the 95% Confidence Interval	
BHAR12	12 months	0.0480	1.3428	-2.1000	1.9684
BHAR24	24 months	0.1227**	2.3284	-1.9778	1.9703
BHAR36	36 months	0.2290***	2.8589	-2.1289	1.7469

Data analysis was performed using Stata software, where, * * * indicates p<.01,
** representation p<.05,* representation p<.1

Figure 4-1 also shows that the positive impact of financial sharing on enterprise market response is increasing over time, verifying hypothesis H2.

To sum up, after the implementation of financial sharing, the market response is significantly positive, and the significance and absolute value increase with time. This proves that after the implementation of financial sharing, the market expectation is positive and more optimistic with the increase of time. At the same time, in the first year of the implementation of financial sharing, the market reaction was not significant, and gradually became significant in the following two years,

which also proved that the capital market was not optimistic in the initial stage of the implementation of financial sharing, but after the operation of the enterprise, the view became positive. Combined with the improvement of enterprises after the implementation of financial sharing, the market is optimistic about financial sharing. It is speculated that the performance of the enterprise itself does improve through financial sharing, so the market gradually regards enterprise financial sharing as a positive expectation. In general, in the long term, the market recognizes the promotion of financial sharing on enterprises.

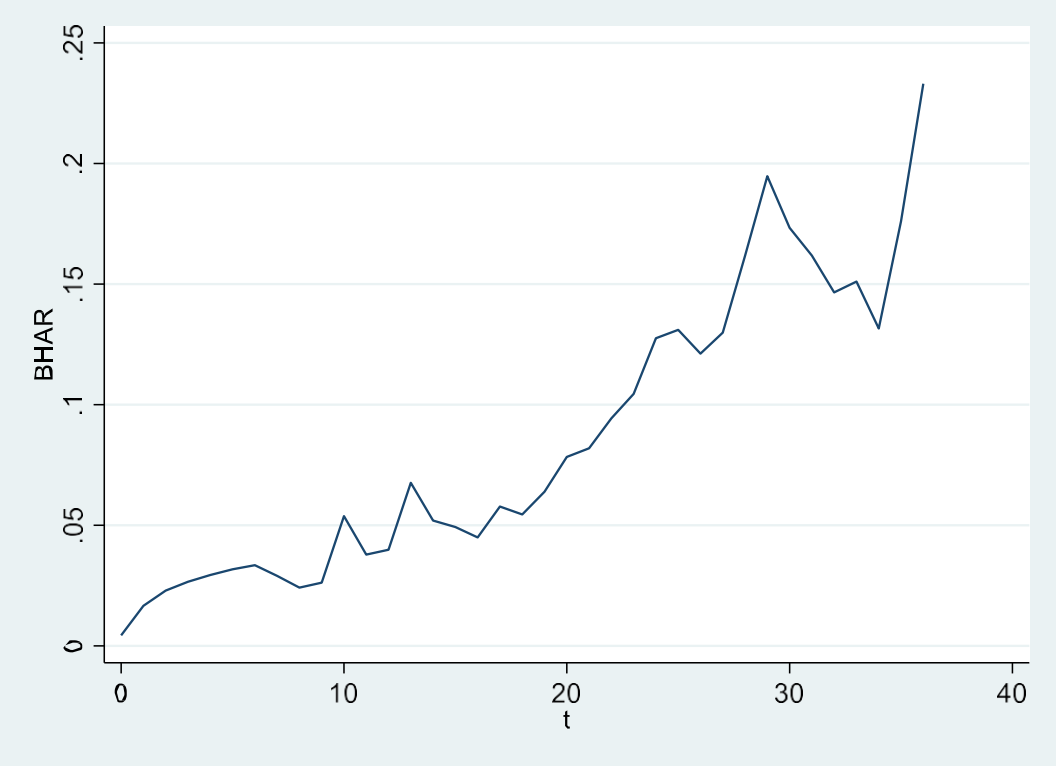


Fig.4-1 BHAR Chart

4.2 Comparison of Market Reactions of Grouped Samples

By calculating the market reaction of enterprises within three years of the implementation of financial sharing, it can be found that after the implementation of financial sharing, the market reaction of enterprises is significantly positive, and with the increase of time, the market reaction is more positive. In order to further study the influence of enterprise characteristics on the market response after the implementation of financial sharing, this paper uses two enterprise characteristics of geographical dispersion and business diversification to divide the total sample of enterprises and compare the gap of market response.

4.2.1 Geographic Dispersion

The results of BHAR-values and T-test are shown in Table 4-3 to Table 4-6:

Table 4-3

BHAR Calculation Results of Enterprises with High Geographic Dispersion

Variable Name	Number	Mean	Standard Deviation	Least Value	Crest Value
BHAR12	73	0.1059	0.4300	-0.4613	1.9774
BHAR24	73	0.1688	0.8360	-0.9590	3.6498
BHAR36	73	0.3041	1.3485	-2.5063	7.5249

Table 4-4

BHAR Test Results of Enterprises with High Geographic Dispersion Status

Variable Name	Time	Mean	T Test Value	And the 95% Confidence Interval	
BHAR12	12 months	0.1059***	2.4575	-2.0332	1.8490
BHAR24	24 months	0.1688**	2.0109	-2.0483	1.9284
BHAR36	36 months	0.3041**	2.4246	-2.8532	1.9473

Data analysis was performed using Stata software, where, * * * indicates p<.01,
** representation p<.05,* representation p<.1

Table 4-5

BHAR Calculation Results of Enterprises with Low Geographic Dispersion

Variable Name	Number	Mean	Standard Deviation	Least Value	Crest Value
BHAR12	74	- 0.0075	0.3397	-0.5413	1.3714
BHAR24	74	0.0477	0.5721	-0.8172	2.5863
BHAR36	74	0.1615	0.9063	-0.8766	3.1796

Table 4-6

BHAR Test Results of Low Geographic Dispersion Enterprises

Variable Name	Time	Mean	T Test Value	And the 95% Confidence Interval	
BHAR12	12 months	- 0.0075	0.3397	-2.0340	1.9449
BHAR24	24 months	0.0477	0.5721	-2.1973	1.9726
BHAR36	36 months	0.1615*	0.9063	-1.7643	2.0340

Data analysis was performed using Stata software, where, * * * indicates p<.01,
** representation p<.05,* representation p<.1

First of all, it can be seen that the BHAR of enterprises with a large average distance between the parent and subsidiary companies is at least 5%, the market reaction increases with time. This proves that the parent average distance large enterprises after the implementation of financial sharing and significantly market reaction, and parent average distance small enterprises after the implementation of financial sharing market reaction although also increase with time, but compared with the market average, abnormal positive reaction is not so significant. Secondly, both from the average and from the overall trend, the enterprises with a large average distance between the parent and subsidiary companies have a more positive market response, and with the development of financial sharing work, the market reaction is increasing. This verifies the hypothesis H3, that after the implementation of financial sharing, enterprises with high geographic dispersion respond more positively than those with low geographical dispersion.

In short, the long-term market response of enterprises with a large average distance between the parent and subsidiary companies is significantly increased compared with a small average distance between the parent and subsidiary companies. This is in line with the idea of enterprises building financial sharing, that is, financial sharing can overcome geographical obstacles and improve operational efficiency. At the same time, it proves that the market recognizes the role of financial sharing among enterprises with high geographical dispersion, and the expectation of the performance of enterprises with large average distance between the parent and subsidiary companies is more positive.

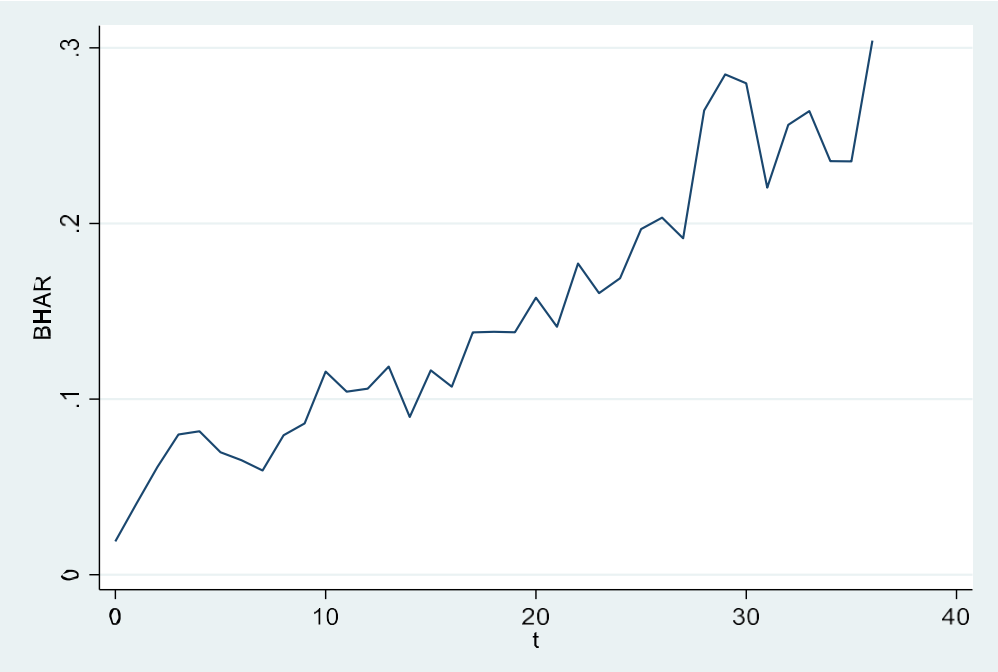


Fig.4-2 BHAR Chart for Companies with Higher Geographic Dispersion

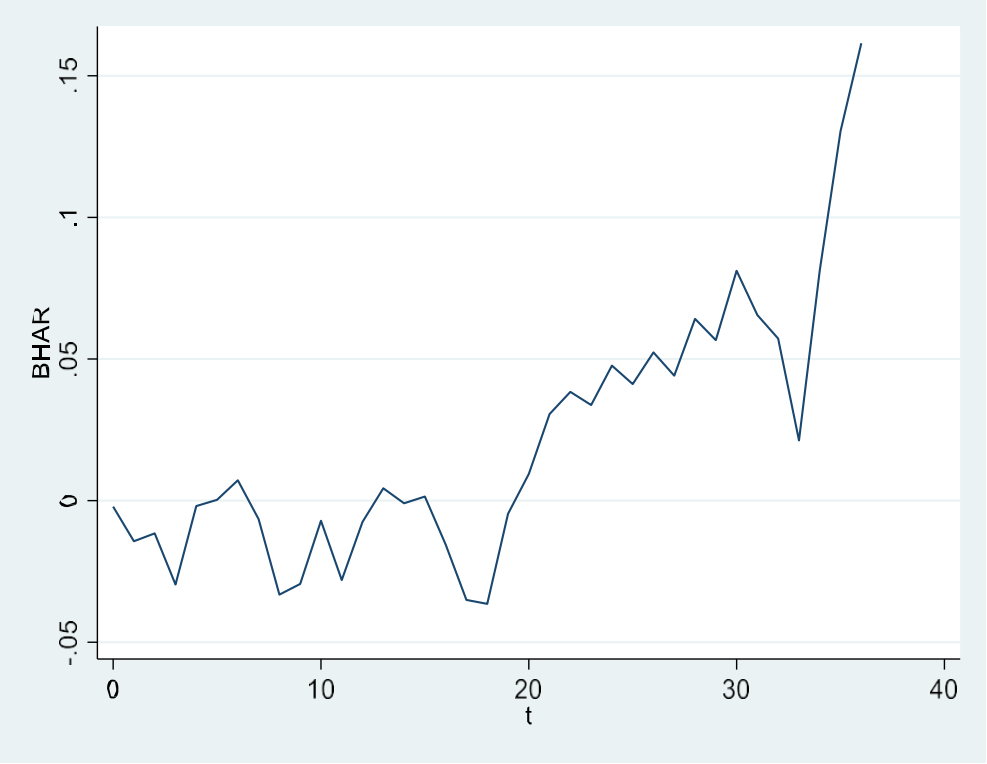


Fig.4-3 BHAR Chart for Companies with Lower Geographic Dispersion

4.2.2 Business Diversification

The market response BHAR-values and significance tests for both groups are shown in Table 4-7 to Table 4-10:

Table 4-7
BHAR Calculation Results of Low-Business Diversified Enterprises

Variable Name	Number	Mean	Standard Deviation	Least Value	Crest Value
BHAR12	73	0.0684	0.4088	-0.4638	1.9774
BHAR24	73	0.1707	0.7756	-0.8172	3.6498
BHAR36	73	0.4707	1.4879	-0.8766	7.5249

Table 4-8
BHAR Rest Results

Variable Name	Time	Mean	T Test Value	And the 95% Confidence Interval	
BHAR12	12 months	0.0684	1.6180	-1.9560	1.9312
BHAR24	24 months	0.1707**	2.2631	-2.1910	1.9646
BHAR36	36 months	0.4707***	3.5072	-2.2208	1.9191

Table 4-9
BHAR Calculation Results of High-Business Diversification Enterprises

Variable name	Number	Mean	Standard Deviation	Least Value	Crest Value
BHAR12	74	0.0156	0.3665	-0.5413	1.3714
BHAR24	74	0.0835	0.6856	-0.9590	2.5863
BHAR36	74	0.0100	0.7325	-2.5063	2.0267

Table 4-10
BHAR Test Results Table of High-Business Diversified Enterprises

Variable Name	Time	Mean	T Test Value	And the 95% Confidence Interval	
BHAR12	12 months	0.0156	0.4038	-2.1462	1.8684
BHAR24	24 months	0.0835	1.1512	-1.8778	1.9795
BHAR36	36 months	0.0100	0.1308	-1.9457	2.0527

Data analysis was performed using Stata software, where, * * * indicates p<.01,
** representation p<.05,* representation p<.1

First, the BHAR of companies with low business diversification was significant at 5% in both two years and three years later, and became more significant over time. This proves that enterprises with low business diversification have significant positive market reaction after the implementation of financial sharing, while the market reaction of enterprises with high business diversification after the implementation of financial sharing does not increase with the increase of time, but decreased. Second, in both average and overall trend, companies with low business diversification have a more positive market response, and the increase of the market increases as financial sharing continues. This argues against the hypothesis H4, that is to say, that after the implementation of financial sharing, enterprises with low business diversification will not respond more actively than enterprises with high business diversification. From the perspective of theoretical research, the implementation of financial sharing can help enterprises with high degree of business diversification to alleviate the high financial risks brought by diversification, so that they can develop their strengths and avoid their weaknesses. However, from the perspective of empirical research, the market prefers the enterprises with low business diversification. The reason that because one of the constructions of financial sharing service center is highly standardized, high diversification enterprises building financial sharing service center, its complexity far more than low diversification enterprise, operational risk is higher, because not fully standardized, cannot produce the scale effect, so the market reaction is not good.

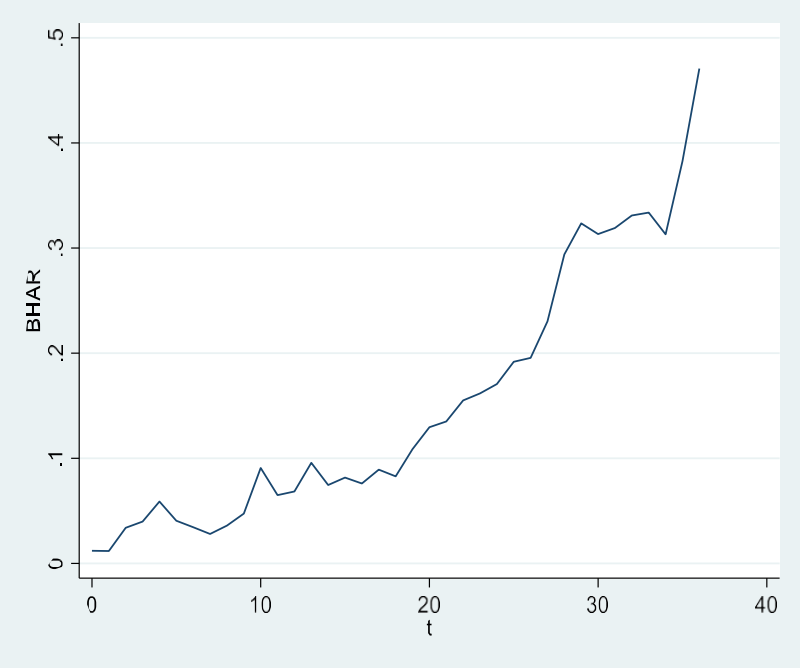


Fig.4-4 BHAR Chart for Companies with Lower Business Diversification

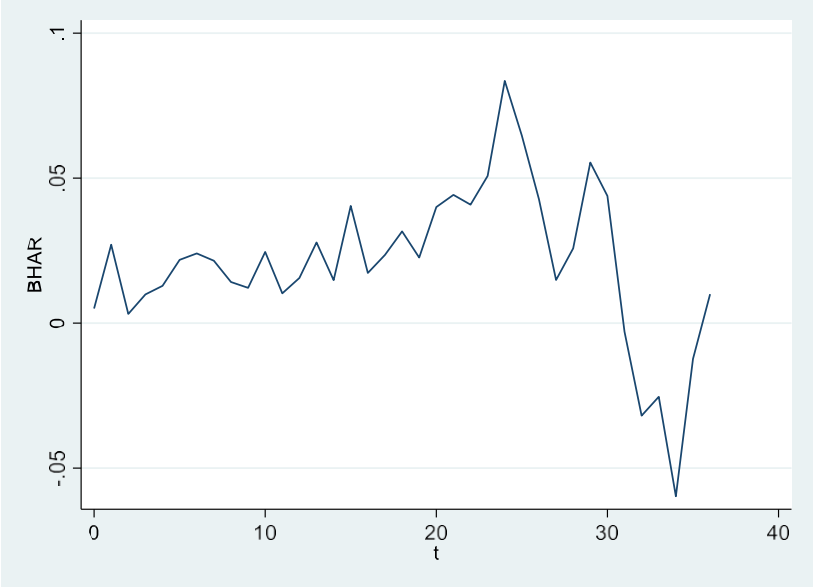


Fig.4-5 BHAR Chart for Companies with Higher Business Diversification

In short, enterprises with low business diversification can increase significantly compared with the average market level after the implementation of financial sharing. The principle of financial sharing is to standardize the financial process. The higher the complexity of the industry, the more that companies involved in multiple industries, their financial process are more complex and more difficult to standardize. At the same time, the diversification of business increases the complexity of the enterprise, which is easy to cause the asymmetry of information inside and outside the enterprise, and produce agency problems. Therefore, investors have better expectations for enterprises with low business diversification.

4.3 Multiple Regression Analysis

In this paper, the two indicators of geographical diversification and business diversification were used to group enterprise samples. After comparing market reactions, it was found that enterprises with high geographical diversification or low business diversification responded more actively after the implementation of financial sharing. In order to explore the relationship between these two indicators and enterprises, this paper uses regression.

4.3.1 Correlation Test

In order to confirm that there is no multiple co-linearity between the explanatory variables and the explained variables, affecting the results of the multiple regression, Pear son (lower left) correlation tests and Spear man (top right) coefficients tests, and multiple co-linearity tests were performed.

First, as shown in Tables 4-11, the correlation coefficients between the explanatory variables and the control variables were all less than 0.1, with no problem of multiple co-linearity. Among the explanatory variables, whether there is a significant negative relationship between manufacturing industry and enterprise asset-liability ratio.

Table 4-11
Results of the Correlation Test

	BHAR12	BHAR24	BHAR36	lnGeo	EI	LEV	S taff	Man
BHAR12	1	0.66*	0.52*	0.17*	-0.01	-0.11	0.15	0.08
BHAR24	0.60*	1	0.74*	0.01	-0.01	-0.12	0.04	0.07
BHAR36	0.31*	0.65*	1	0.12	-0.11	-0.10	0.07	0.05
lnGeo	0.22*	0.08	0.10	1	-0.01	0.08	0.20*	-0.07
EI	-0.06	-0.04	-0.17*	-0.04	1	0.03	0.02	-0.14
LEV	-0.13	-0.12	-0.13	0.10	0.02	1	0.35*	-0.38*
Staff	0.06	0.06	-0.11	0.23*	0.04	0.35*	1	-0.22*
Man	0.08	0.13	0.10	-0.07	-0.12	-0.38*	-0.24*	1

Data analysis was performed using Stata software, where, * * * indicates p <.01,

** representation p<.05,* representation p<.1

Secondly, the variance inflation factor (VIF) method is used, and the results are shown in Table 4-12. Among them, the VIF value of no variable exceeded 10, proving that the multiple linear regression model does not have a multiple co-linearity problem.

Table 4-12
Variance Inflation Factor (VIF) Test

Variable Name	VIF	1/VIF
lnGeo	1.06	0.9438
EI	1.02	0.9827
LEV	1.27	0.7855
Staff	1.21	0.8250
Man	1.2	0.8316
lnGeo	1.06	0.9438

4.3.2 Analysis of Multiple Regression Results

The results of the multiple regression are shown in Table 4-13:

Table 4-13
Results of Multiple Regression

	(1)	(2)	(3)
	BHAR12	BHAR24	BHAR36
InGeo	0.546***	0.366	0.502
	(3.122)	(1.155)	(1.173)
EI	-0.018	-0.056	-0.414**
	(-0.283)	(-0.371)	(-2.228)
LEV	-0.191	-0.554	-0.637
	(-0.950)	(-1.238)	(-1.041)
Staff	0.028	0.079	-0.090
	(0.950)	(1.130)	(-0.658)
Man	0.053	0.176	-0.016
	(0.717)	(1.143)	(-0.074)
Year fixed effect	Y	Y	Y
_cons	-0.243	-0.320	1.072
	(-0.956)	(-0.610)	0.935
N	147	147	147

Data analysis was performed using Stata software, where, * * * indicates p <.01, ** representation p<.05,* representation p<.1

It can be found from the above table that the geographical dispersion index of enterprises and the market reaction within 12 months after the implementation of financial sharing, there is no significant relationship. However, there is a significant negative relationship between the business diversification and the enterprise market reaction at the 5% level within 36 months after the implementation of financial sharing.

In addition, by comparing the market reaction results of 12 months, 24 months and 36 months after the implementation of financial sharing as the dependent variables, it can be found that the relationship between enterprises with different characteristics and the market reaction changes with the change of time. Among them, 12 months after the implementation of financial sharing, enterprises with more geographical dispersion have a more positive market response, etc. In less than a year, financial sharing has a positive impact on the market response of enterprises. However, the relationship between the degree of business diversification and the market reaction is more backward. After 36 months, the enterprise business diversification and the market reaction show a significant negative relationship.

The business diversification index is consistent with the results of the previous dispersed sample, that is, enterprises with low business diversification have a more positive market reaction after the implementation of financial sharing than enterprises with high business diversification. This may be because enterprises with a high degree of business diversification have higher financial risk and higher risk of daily operations. At the same time, the essence of financial sharing lies in a high degree of standardization, business diversification means more complex financial processes, less standardized processes, and a greater challenge for enterprises to implement financial sharing, and the effect of economies of scale is less than that of enterprises with more single business. Therefore, after the implementation of financial sharing, enterprises with low business diversification can have a better market response. Enterprises with high degree of diversification have worse market response after the implementation of financial sharing, which may be because investors believe that enterprises with high degree of diversification have high operational risks, and the implementation of financial sharing cannot effectively alleviate their financial risks, and their profitability will be affected.

The regression results of geographical dispersion indicators are not significant in the long term, perhaps because the implementation of financial sharing is still shallow, investors do not understand the contribution of financial sharing to enterprises with large geographical dispersion, and the advantages of financial sharing for more geographically dispersed enterprises have not yet emerged. At the same time, the comparison of the market reaction of the previous grouped samples indicated that the geographical dispersion has a significant impact on the market reaction of enterprises after the implementation of financial sharing. The reason why this tendency cannot be reflected in the return may be that enterprises with high geographical dispersion have already enjoyed the benefits of financial sharing, but the market's positive response to these enterprises is not due to geographical dispersion. It is speculated that enterprises with high geographical dispersion may have significantly improved their comprehensive strength through financial sharing, while the capital market is optimistic about these enterprises not because of their high geographical dispersion, but based on other indicators of the enterprise. Therefore, the market will be optimistic about the enterprises with high geographical dispersion to implement financial sharing, but there is no significant linear relationship between the market reaction and the geographical dispersion indicators.

In order to deeply analyze the reasons why there is no significant relationship between enterprise geographical dispersion and market reaction, this paper selects indicators to interact with geographical dispersion indicators to understand whether there are other factors affecting the relationship between geographical dispersion and market reaction. Based on the characteristics of geographical dispersion and financial sharing, the work process of manufacturing industry is complex, and the manufacturing industry is closely related to the economic level and logistics level of the region, so its geographical distribution will have more factors. Moreover, as mentioned earlier, manufacturing accounts for more than half of the enterprise sample, so it is meaningful to use "manufacturing" as an interaction indicator. The model of the multiple regression analysis is modified as follows:

$$BHAR_i = \alpha + \beta_1 * Geo_i + \beta_2 * Geo_i * Man_i + \beta_3 * EI_i + \gamma_1 * LEV_i + \gamma_2 * Staff_i + \gamma_3 * Man_i + \mu_i + \varepsilon_i \quad (4\text{-}1)$$

The modified model, the results of multiple regression are shown in Table 4-14:

Table 4-14
Results of the adjusted multiple regression

	(1)	(2)	(3)
	BHAR12	BHAR24	BHAR36
lnGeo *Man	0.579***	0.694	1.160*
	2.662	1.382	1.732
EI	-0.034	-0.064	-0.425**
	(-0.507)	(-0.432)	(-2.270)
LEV	-0.149	-0.517	-0.581
	(-0.734)	(-1.180)	(-0.962)
Staff	0.039	0.083	-0.086
	1.345	1.199	(-0.655)
Man	-0.186*	-0.111	-0.494
	(-1.822)	(-0.534)	(-1.489)
Year fixed effect	Y	Y	Y
_cons	-0.359	-0.373	0.998
	(-1.379)	(-0.728)	0.911
N	147	147	147

Data analysis was performed using Stata software, where, * * * indicates p <.01,
** representation p<.05,* representation p<.1

By adding whether the enterprise is the interactive item of manufacturing industry, it is found that the geographical dispersion of enterprises has a significant positive relationship with the market reaction of enterprises in 12 months and 36 months after the implementation of financial sharing. First of all, it can be inferred that for manufacturing enterprises, the impact of financial sharing on the market reaction will have a significant positive impact in the initial stage of implementation, and will gradually have a positive impact in the long term (36 months). This may be because of the manufacturing industry itself, as an asset-heavy enterprise, the higher the degree of geographical dispersion, the more complex the market environment, and the potential financial risk will be higher than the normal enterprises. From another point of view, financial sharing may play a greater role in it, so after the implementation of financial sharing, the market response will be more positive.

4.4 Robustness Test

As following, the robustness test was performed. According to the method of Ji Jiajia[22] (2018), the robustness of the research results is tested by changing the window period of market response. The original window periods were (0,12), (0,24) and (0,36) months, and they were changed to (0,10), (0,26) and (0,34) months.

First, calculate the market response in the new window. As shown in Table 4-15, the results are still significant and positive, but they are not as significant as the window period selected in the text. To prove that the market response of enterprises is significantly positive within three years of the implementation of financial sharing, and the absolute value of the market response increases with the passage of time, the previous research results are credible.

Table 4-15
Calculation Results of the New Window Period B HAR

Variable Name	Number	Mean	Standard Deviation	Least Value	Crest Value	T Test Value
BHAR10	147	0.0503*	0.4203	-0.5075	3.0180	1.7004
BHAR26	147	0.1198*	0.8393	-2.0289	4.0601	1.9342
BHAR34	147	0.1326*	0.9889	-3.0125	6.4637	1.8460

Data analysis was performed using Stata software, where, * * * indicates p <.01,
** representation p<.05,* representation p<.1

Secondly, the enterprise samples are grouped with geographical diversification and business diversification indicators, and the market response is calculated with the new window period. As can be seen from Table 4-16 to Table 4-19, the two indicators are used to calculate the market reaction, and the results are slightly different, but the tendency is consistent. That is to say, enterprises with high geographical dispersion or low business diversification are significantly positive after the implementation of financial sharing service center, and with the time, the absolute value of the market response gradually increases, which proves that the previous research results are credible.

Table 4-16

BHAR Calculation Results of the New Window Period of High Geographic Dispersion Enterprises

Variable Name	Number	Mean	Standard Deviation	Least Value	Crest Value	T Test Value
BHAR10	73	0.1161***	0.4820	-0.4611	3.0180	2.7006
BHAR26	73	0.2018***	1.0157	-2.0289	4.0601	1.9490
BHAR34	73	0.2353***	1.1956	-3.0125	6.4637	1.9950

Table 4-17

BHAR Calculation Results of the New Window Period of Low Geographic Dispersion Enterprises

Variable Name	Number	Mean	Standard Deviation	Least Value	Crest Value	T Test Value
BHAR10	74	-0.0246	0.3472	-0.5817	1.8926	-05222
BHAR26	74	0.0491	-0.9127	-0.9127	2.2361	0.7411
BHAR34	74	0.0254	0.7196	-0.9631	2.5264	0.3404

Data analysis was performed using Stata software, where, * * * indicates p <.01,

** representation p<.05,* representation p<.1

Table 4-18

BHAR Calculation Results of the New Window Period of Low Business Diversification Enterprises

Variable Name	Number	Mean	Standard Deviation	Least Value	Crest Value	T Test Value
BHAR10	73	0.0591	0.3497	-0.4034	1.8926	1.6734
BHAR26	73	0.2067***	0.8755	-0.8073	4.0601	2.4494
BHAR34	73	0.3248***	1.2077	-0.9631	6.4637	2.9076

Table 4-19

BHAR Calculation Results of the New Window Period of High Business Diversified Enterprises

Variable Name	Number	Mean	Standard Deviation	Least Value	Crest Value	T Test Value
BHAR10	74	0.0156	0.3640	-0.5413	1.3714	0.4038
BHAR26	74	0.0835	0.6810	-0.9590	2.5863	1.1512
BHAR34	74	0.01080	0.7275	-2.5063	2.0267	0.1308

Data analysis was performed using Stata software, where, * * * indicates p <.01,

** representation p<.05,* representation p<.1

Finally, the long-term market response BHAR34 in the new window period was regressed out again as the explained variable. As shown in Table 4-20, there is still a significant negative relationship between business diversification and market response, and the regression results are stable and credible.

In conclusion, the results of the market response and grouped sample comparison are stable.

Table 4-20

Results of Multiple Regression of BHAR in the New Window Period

	(1)	(2)	(3)
	BHAR9	BHAR25	BHAR33
lnGeo*Man	0.462**	0.668	0.967*
	2.562	1.380	1.716
EI	-0.031	-0.108	-0.313*
	(-0.526)	(-0.741)	(-1.698)
LEV	-0.086	-0.506	-0.544
	(-0.532)	(-1.204)	(-1.142)
Staff	0.016	0.082	0.049
	0.844	1.161	0.372
Man	-0.166*	-0.151	-0.227
	(-1.891)	(-0.727)	(-0.823)
Year Fixed Effect	Y	Y	Y
_cons	-0.144	-0.37	0.1
	(-0.643)	(-0.682)	0.097
N	147	147	147

Data analysis was performed using Stata software, where, * * * indicates p <.01, ** representation p<.05,* representation p<.1

First of all, this part calculates the market reaction of enterprises within three years after the implementation of financial sharing, and finds that it is significant and positive growth, which proves that after the implementation of financial sharing, the expectation of the external capital market is in a long-term positive direction, and there is a better and better trend. Secondly, this part uses the two indicators of geographical diversification and business diversification to group the enterprise samples and compare the market reactions of different enterprises after the implementation of financial sharing. The results found that enterprises with high geographical dispersion or low business diversification had more positive and significant abnormal market reactions after the implementation of financial sharing.

By comparing with the characteristics of financial sharing itself, it can be found that this is in line with the characteristics of financial sharing itself: cross-regional and highly standardized.

5. **Conclusion**

On the basis of summarizing and integrating previous research results, it is not difficult to see that first, in the establishment of the financial sharing service center, the company will standardize the process and realize the purpose of improving the operation efficiency and reduce the production cost of the company; second, after the standardization, the requirement for the total amount of financial personnel is significantly reduced, which can greatly reduce the cost of human resources; third, after the adoption of the financial sharing service management mode, the company can free a large number of senior financial personnel from the complicated work, focusing more on the core business construction of the enterprise and enhance the core competitiveness of the enterprise. Fourth, the financial sharing service center is more suitable for managing some large companies with frequent restructuring, merger and transformation. Before the implementation of the financial sharing service center, the company each established a new branch, must allocate certain financial management, human resources and so on, and when the implementation of the financial sharing service center, the public service center can solve the financial management of the newly established company and other departments. Therefore, financial sharing services center can minimize the investment into new markets, thus increasing the flexibility of enterprise mergers and expansion, and more capable of scale expansion.

However, after enterprises choose to carry out and apply the financial sharing service center, they will often face a fairly long process, and the embodiment of its impact on the performance will not be achieved overnight. This paper holds that in the early stage of financial sharing services, enterprises need to invest a lot of resources and costs, and at the same time, the original accounting personnel have weakened the original work enthusiasm due to the changes in the working environment or content. Subsequently, the financial sharing service center model may be gradually recognized and accepted by enterprises or employees. Thus, there is a time-lag effect.

On one hand, the financial sharing service center can be used for a long time, during the process, the enterprise gradually adapted and optimized the operation of the financial process, the training, and made the mode run more smoothly; on the other hand, the financial sharing service center absorbed the internal and external data from all aspects of the enterprise. In IT era, companies need to consider not only business processes, but also architecture, technology, and so on. Based on

sharing financial center data, after structured, labeling, modeling process, realize the data analysis, which makes that the value of financial sharing center is no longer just a process center, accounting center or tax center, and gradually transition to the data center in the near future, help enterprises complete tactical decision and daily efficient, accurate and scientific decision-making. Based on these two factors, the impact of financial sharing services on enterprise performance is not only in the current period, that is, there is a sustainable effect.

With more domestic enterprises begin financial digital transformation, the impact of finance shared service center on comprehensive aspects of enterprises requires more in-depth understanding to make theoretical research keep pace with or even guide enterprise. Furthermore, when enterprises plan to implement or operate finance shared service center, they need to adapt with companies' own characteristics to maximize the utility of finance shared service center. Finally, the capital market needs to be more aware of how finance shared service center works and can then have more comprehensive judgement about the enterprise performance after companies apply finance shared service center.

With the calculation for the market response after the company applied finance shared service center, we maybe find that the company has significant and positive market response in three years after the application. In addition, using the two enterprise characteristics, geographic dispersion, and business diversification, to classify the sample, it should be found that companies with high geographic dispersion or low business diversification have more positive market response after applying finance shared service center.

Of course, we also want to know if FSSC application help us to find better investment target in Shanghai and Shenzhen A share market. Through the research of this paper, we find that with the application of financial sharing services, the market response of companies with high regional dispersion and business concentration is more positive, which provides a feasible perspective for us to choose investment targets.

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Appendix

$$BHAR_{it} = \prod_{t=1}^{T}(1 + R_{it}) - \prod_{t=1}^{T}(1 + R_{mt}) \quad (2\text{-}1)$$

$$lnGeo_{pj} = ln(\frac{\sum_{j=1}^{n} Dpj}{n} + 1) \quad (2\text{-}2)$$

$$HHI = \sum_{i=1}^{n} p_i^2 \quad (2\text{-}3)$$

$$EI = \sum_{i=1}^{n} p_i ln(\frac{1}{p_i}) \quad (2\text{-}4)$$

$$BHAR_i = \alpha + \beta_1 * Geo_i + \beta_2 * EI_i + \gamma_1 * LEV_i + \gamma_2 * Staff_i + \gamma_3 * Man_i + \mu_i + \varepsilon_i \quad (3\text{-}1)$$

$$BHAR_i = \alpha + \beta_1 * Geo_i + \beta_2 * Geo_i * Man_i + \beta_3 * EI_i + \gamma_1 * LEV_i + \gamma_2 * Staff_i + \gamma_3 * Man_i + \mu_i + \varepsilon_i \quad (4\text{-}1)$$

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