Effect of Diversification on Enterprise Performance

-- Taking Agricultural Listed Companies as Example

Xuemin Xiang

School of Finance, Anhui University of Finance and Economics, Bengbu 233030, China

Abstract

This paper takes the trend of diversified management of agricultural listed companies as the starting point, selects the agricultural listed companies with A shares in Shanghai and Shenzhen in 2015-2019 as the research object, classifies the companies according to the degree of diversification, and establishes the multiple linear regression model of company performance and diversification management according to the different degree of diversification. First of all, after the overall regression analysis on the impact of diversified business on enterprise performance, the linear regression analysis and comparison between single business company and multi-business company are made respectively, and then the linear regression analysis and comparison between leading business company and non-correlated business company are made. Chemical management has a significant negative effect on the performance of agricultural listed companies, and the performance of single business companies is better than that of leading business companies. Finally, it puts forward the suggestion that Chinese agricultural listed companies should adopt diversified management mode carefully.

Keywords

Diversification; Enterprise Performance; Agricultural Enterprise.

1. Introduction

Agricultural development has always been in a basic position in the process of China's economic development, and it is the food security guarantee for China's population of 1.4 billion.Among them, China's listed agricultural companies are the main driving force to promote agricultural modernization development and improve farmers' income level. However, due to the limitations of weak profitability and low degree of specialization in agricultural development, in order to improve economic benefits and disperse risks, many listed agricultural listed companies began to choose to expand their business scale and increase their business scope, involving diversified business models of a variety of products.But can the diversification of listed agricultural companies optimize enterprise performance? Compared with specialized operations, do diversified agricultural listed companies perform better? In order to answer these questions, this paper will conduct empirical tests on the diversification of listed agricultural listed companies and company performance to judge the impact of diversification on company performance.

2. Literature Review and Assumptions

As far as the relationship between diversified business model and enterprise performance is concerned, the conclusions of domestic and foreign researchers are different. On the one hand, J. Zhu (1999) pointed out that there is no significant correlation between the performance of diversified enterprises participating in the conference, and the increase in the degree of diversification of the company will result in a relatively stable business profit level [5]. On the

other hand, there are many scholars who agree that diversification is negatively related to company performance. D.L. Hong (2006) believes that controlling endogenousity may deepen the degree of diversification that harms the performance of listed companies in China [8]. So far, most scholars at home and abroad support the theory of diversification discount, and many scholars in China also take China's listed companies as a sample to carry out empirical research on the impact of diversification and corporate performance. Domestic scholars J. Yao, Y. Lu, M.L. Lan (2012) [1], D.W. Su (2005) [6], F.H. Xiong (2009) [4], etc. tested the negative correlation between diversification and performance from the perspective of enterprise innovation. The empirical test of S.M. Li (2006) shows that the level of diversification will significantly reduce corporate performance, accounting performance and long-term market performance after mergers and acquisitions [7]. Of course, there are many scholars research shows that the relationship between diversification and enterprise performance is complex, cannot accurately draw the conclusion that diversification must be beneficial or unfavorable to enterprise performance, some scholars such as W. Xin (2003) think that the research of diversification needs to demonstrate the reliability of diversified discount degree from different sides, while he points out that diversification discount theory itself lacks a large number of research arguments [2]. X. Su, H.L. Liu (2017) from the degree of industry diversification and product diversification of the impact of the impact of enterprise performance, found that different types of diversification, the impact on the performance of listed companies is significantly different [3].

All three of these points of view take different samples and measures, and the researchers also consider different factors to come up with very different views. Therefore, we need to make empirical research based on the differences in selection samples, indicators, etc., to test the impact of diversified management on the performance of China's agricultural listed companies. Based on the above analysis, this paper puts forward two hypotheses:

H1: Diversification has no negative impact on corporate performance.

H2: Leading business-oriented agricultural listed companies can improve the performance of enterprises, non-related business-oriented agricultural listed companies will harm the performance of enterprises.

3. Research Samples,Diversification Indicators and Corporate Performance Measures

3.1. Sample Selection and Data Sources

Business counting is often used abroad to measure the degree of diversification of enterprises. In order to better compare the degree of diversification of enterprises, this paper chooses to use Wrigley's diversification type classification method to classify agricultural listed companies. Sample data for this study are from the Oriental Wealth Data Center, Cathay Pacific CSMAR database, and public financial information of agricultural listed companies. In this paper, 42 agricultural listed companies in Shanghai and Shenzhen A-shares were selected as research samples, and the financial data of agricultural listed companies in 2015-2019 were selected after screening. As can be seen from the operating conditions of these enterprises in the last five years, the diversified business model of China's agricultural listed companies is more and more common, and more and more, the industries are operating construction, medical equipment, furniture industry, food processing and so on. There are two reasons for this phenomenon, on the one hand, because agricultural development is greatly affected by natural conditions, there are greater operational risks, agricultural listed companies will often adopt diversified development strategies, expand the scope of business to spread the risk; On the other hand, China is in a critical period of economic transformation, in order to achieve the government's multiple objectives, agricultural listed companies in the government

intervention, adjust the single business development model, and gradually towards a diversified business model.

Table 1. Diversification of listed agricultural companies

Diversification of listed agricultural companies in 2015-2019						
	Degree of diversification	2015	2016	2017	2018	2019
Single business type	RS≥95%	14	10	9	10	11
Dominant business	70%≦RS<95%	9	12	12	12	13
Related business type	RS<70% and RR≥70%	17	17	18	18	17
Non-relevant business type	RS<70% and RR<70%	2	3	3	2	0
Total number of listed companies		42	42	42	42	41

Note: RS represents the specialization ratio: RS is 100% of the sales/total sales × of the single largest business; RR represents the correlation ratio: RR - sales/total sales of the largest related business × 100%.

3.2. Research Variables and Explanations

3.2.1. The Explained Variable

Common financial indicators to evaluate corporate performance include return on net assets, return on total assets, and Tobin's Q. As Tobin's Q indicator may have market subjective defects, it reflects that the company's performance is not accurate enough. Therefore, this article selects the return on equity (ROE) to evaluate the performance of listed agricultural companies.

3.2.2. Explaining Variables

This article studies diversification, choosing the degree of diversification to distinguish the degree of diversification of each listed agricultural company. The degree of diversification is measured by the Herfindahl Index (HHI), and the calculation formula is: $H = \sum_{i=1}^{N} p_i^2$; where N represents the total number of industries operated by listed agricultural companies, and i is the type of industry. And Pi represents the proportion of the sales revenue of the i-th industry in the total revenue.

3.2.3. Control Variables

Table 2. Variables and measurement of variables

variables	Specific variables	Variable measurement
Explained variable	Return on equity (ROE)	ROE= Net profit / Owners' equity ×100%
Explanatory variables	Herfindahl-Hirschman Index (HHI)	$H = \sum_{i=1}^{N} p_i^2$; Refers to the proportion of the i-th department's sales revenue to the total revenue, which is inversely proportional to the company's diversification
Control variable	Company Size (SIZE)	The company's total assets take the natural logarithm
	Listing years (AGE)	Listed years of agricultural listed companies
	Financial risk (RISK)	Asset-liability ratio = total assets / total liabilities × 100%

Compared with independent variables, the role of control variables cannot be ignored. Only by controlling related variables in empirical research can the possibility of increased errors in research results be avoided. The control variables selected in this article include company size (SIZE), listing age (AGE), and financial risk (RISK). Since the debt-to-asset ratio can assess whether a company has sufficient funds for operation and management, and whether it has the

ability to apply for loans from banks to expand the company's scale, the debt-to-asset ratio is used to evaluate the company's financial risks. The specific meaning and measurement of each variable are shown in Table 2.

3.3. Model Design

$$\text{Regression model: } ROE = a + bHHI + c_1SIZE + c_3RISK + c_4GROWTH + \varepsilon \qquad (1)$$

Among them, ROE represents the rate of return on net assets; a: constant term; ε: error term; c_1, c_2, c_3, and c_4 are the coefficients of each variable, respectively.

4. Research Results and Analysis

4.1. Descriptive Statistical Analysis

If only the return on net assets is selected as an indicator to measure corporate performance, there may be a problem of inaccurate test results due to single data. Therefore, this article also chooses two indicators of return on total assets (ROA) and earnings per share (EPS) to measure the company's performance, so as to more accurately judge the relationship between diversified business models and corporate performance. As shown in Table 3 and Table 4.

It can be seen from Table 3 that the average value of HHI for a single service type is 0.9676, and the average value of HHI for multiple service types is 0.5415. The average values of ROE, ROA, and EPS of a single-business agricultural listed company are higher than the corresponding indicators of a diversified business. This shows that the operating performance of a single-business enterprise is significantly better than that of a diversified enterprise, that is, diversification will damage the performance of the company. This result obviously rejects Hypothesis 1. It can be seen from Table 4 that, compared with the diversified business type, the average values of ROE and ROA of the leading type are higher than that of the diversified business type company; the average value of the return on net assets and the return on total assets of the non-related business type companies are respectively They are -1.0215 and -0.0328. The average return on equity and return on total assets of a multi-business company are -0.0949 and -0.0188, respectively. The former is significantly smaller than the latter. This shows that the dominant business diversification has a positive impact on the performance of agricultural listed companies, while non-related diversification will damage the operating performance of agricultural listed companies. On the whole, the performance of a single agricultural listed company is better than that of a leading agricultural company. This shows that diversification may reduce corporate performance under certain conditions, but this result is only described and analyzed by rough data statistics, and accurate empirical tests are still needed to determine whether there is a functional relationship between the degree of diversification and corporate performance.

Table 3. Descriptive statistics of single and multiple types

	Min		Max		Avg		δ		δ^2	
	Single type	Diversified	Single type	Diversified	Single type	Diversified	Single type	Diversified	Single type	Diversified
HHI	0.912	0.301	1	0.888	0.968	0.542	0.028	0.160	0.008	0.026
ROE	-0.272	-2.071	0.836	0.832	0.122	-0.095	0.271	0.459	0.074	0.211
ROA	-0.258	-0.735	0.547	0.675	0.052	-0.019	0.183	0.207	0.034	0.043

4.2. Regression Analysis

This article uses Eviews 9.0 to perform a linear regression analysis on the data of 42 listed agricultural companies from 2015 to 2019. The overall analysis results of the agricultural industry are shown in Table 5.

Table 4. Descriptive statistics of dominant and irrelevant types

	Min		Max		Avg		δ		δ^2	
	Dominant	Irrelevant	Dominant	Irrelevant	Dominant	Irrelevant	Dominant	Irrelevant	Dominant	Irrelevant
HHI	0.540	0.445	0.888	0.540	0.688	0.493	0.116	0.125	0.014	0.016
ROE	-0.416	0.008	0.832	0.017	0.016	-1.022	0.269	0.365	0.073	0.133
ROA	-0.735	0.004	0.675	0.005	0.017	-0.033	0.211	0.169	0.045	0.029
EPS	-1.291	0.013	3.791	0.026	0.140	0.019	1.127	1.024	1.269	1.048

Table 5. The impact of HHI on the overall regression

variable	Coe		Std		t		p	
	Without HHI	Add HHI	Without HHI	Add HHI	Without HHI	Add HHI	Without HHI	Add HHI
C	-2.5093	-2.8728	0.0748	0.0348	-2.3346	-3.6957	0.0026	0.0007
HHI		0.0524		0.0325		2.7541		0.0008
RISK	-0.0163	-0.0291	0.0062	0.0201	-2.6060	4.5162	0.0003	0.0000
SIZE	3.5638	2.5531	1.3446	2.0047	-2.6505	-6.2541	0.0001	0.0000
AGE	0.0161	0.0307	0.0095	0.0277	0.7023	0.8953	0.8524	0.8321

Note: When HHI is not added in the table, R^2=0.1832, AR^2=0.1524, F=22.2516, P=0.0000; When HHI is added, R^2=0.1904, AR^2=0.1921, F=21.8546, P=0.0000.

It can be seen from Table 5 that after adding the Herfindahl index HHI, both the coefficient of determination and the modified coefficient of determination have increased, indicating that the degree of diversification has a significant impact on corporate performance. In order to eliminate the problem of multicollinearity, the data needs to be tested to better judge the relationship between the explanatory variable and the explained variable. From the data in Table 5, F=21.8546, P=0.0000, at the 5% significance level, hypothesis 1 is rejected. And HHI, RISK, and SIZE all passed the t test; at the 5% significance level, the P value is close to zero, indicating that the Herfindahl index, financial risk, and company size have a significant impact on corporate performance. However, the P value corresponding to AGE is 0.8321, which shows that the listed agricultural company's listing years as an independent variable has no significant impact on corporate performance. Therefore, the AGE variable will be eliminated and the impact of other variables on ROE will be analyzed. After excluding the AGE variable, linea regression is performed on the adjusted data again, and the test results in Table 6 are obtained, as shown in Table 6:

ROE=-4.4525+2.0885HHI-0.0028RISK-3.8710SIZE

From the results in Table 6, we can see that |t|>2 of all variables passed the t test, indicating that the coefficients of this model are significant. Among them, the multiple coefficient of determination and the modified multiple coefficient of determination are 0.1959 and 0.1836 respectively, indicating the overall significance of the model.

Table 6. Adjusted overall linear regression results

Variable	Coe	Std	t	P
C	-4.4525	0.6594	-6.7526	0.0000
HHI	2.0884	0.4106	5.0862	0.0006
RISK	-0.0028	0.0008	-3.3412	0.0000
SIZE	3.8710	0.5269	-7.3470	0.0000

Note: in the table, R^2=0.1959, AR^2=0.1836, F=81.17487, P=0.0000.

In order to further analyze the relationship between diversified operations and corporate performance, this article will compare the linear regression results of single and multiple types, as shown in Table 7.

Table 7. Single-type and multiple-type regression analysis results

Var	Coe		Std		t		P	
	Single type	Diversified	Single type	Diversified	Single type	Diversified	Single type	Diversified
C	-0.5114	-0.0414	4.4054	2.8979	-0.1161	3.1199	0.0126	0.0197
HHI	0.3204	2.2461	2.3029	1.9866	0.1391	1.1305	0.0712	0.0061
SIZE	0.0056	1.3898	0.1383	0.4001	6.0403	3.4732	0.0000	0.0015
RISK	-1.6023	-6.5785	4.7182	1.6542	-2.3396	-3.9768	0.0006	0.0000

Note: In the single-type analysis in Table 7: R^2=0.4914, AR^2=0.3544, F=13.2207, P=0.0000; In multivariate analysis: $R^2 = 0.1502$, AR^2=0.1716, F=11.8272, P=0.0000.

In the unitary linear regression analysis, the F value was 13.2207, and the corresponding P value was 0.0000, indicating that the explanatory variable has a significant influence on the explained variable. Both RISK and SIZE passed the 5% significance level t test, indicating that these two variables have a significant impact on ROE. The coefficient of determination is 0.4914, and the modified coefficient of determination is 0.3544, which is an increase compared to the overall linear regression result. In the multiple linear regression analysis, F is 11.8272 and P is 0.0000, indicating that the explanatory variable has a significant influence on the explained variable. The coefficient of determination is reduced compared to the overall regression analysis. According to Table 7, deepening the degree of diversification will reduce the degree of fit of the model. The above analysis shows that diversification has a negative effect on company performance, which verifies the rationality of Hypothesis 1.

Table 8. Results of dominant and uncorrelated regression analysis

Var	Coe		Std		t		P	
	Dominant	Irrelevant	Dominant	Irrelevant	Dominant	Irrelevant	Dominant	Irrelevant
C	1.0921	-0.0414	0.0613	0.0721	0.5354	3.1199	0.6870	0.3109
HHI	-0.2637	0.0201	1.7055	0.1595	-0.1546	1.1305	0.2712	0.6614
SIZE	0.1122	0.1453	0.0263	0.0214	5.1403	4.3247	0.0000	0.0000
RISK	-0.2343	-0.2215	0.0658	0.1203	-3.3396	-2.1968	0.0010	0.0012

Note: In the single-type analysis in Table 7: R^2=0.1785, AR^2=0.1540, F=9.1237, P=0.0000; In multivariate analysis: $R^2 = 0.2052$, AR^2=0.1766, F=8.1277, P=0.0001.

Same as Hypothesis 1, in order to test Hypothesis 2, that is, a single business type can improve corporate performance more than a dominant business type. This article will continue to perform linear regression analysis on the data of dominant and non-related business types. As shown in Table 8.

In the dominant regression analysis, the F value is 9.1237, and the corresponding P value is 0, which is significantly less than 0.05. Therefore, the null hypothesis is rejected, and the explanatory variable has a significant effect on the overall variable. Among them, the corresponding T values of SIZE and RISK passed the t test at the 5% confidence level, indicating that these two variables have a significant impact on the ROE of the explained variable. HHI is negative and has a negative correlation with ROE. In the uncorrelated regression analysis, the F value was 8.1277, and the corresponding P value was 0.0001, indicating that the independent variable has a significant influence on the dependent variable. As far as the T test is concerned, both SIZE and RISK passed the t test, indicating that SIZE and RISK have a significant impact on ROE. But HHI is 0.0201, which has no significant effect on ROE. Therefore, it is not possible to accurately judge the influence of dominant and non-correlated types on company performance.

5. Research Conclusions and Recommendations

Through empirical analysis in this article, we can see that for my country's agricultural listed companies, diversification will reduce company performance. Through the results of descriptive variable analysis, it is found that the explanatory variable HHI has a significant impact on corporate performance. Then, a linear regression comparison of single-type and diversified business companies is performed. Compared with franchised companies, the degree of diversification is higher. Company performance is low. Verify that Hypothesis 1 is true. Because the data in this paper has a relatively single problem, it is impossible to judge the impact of dominant diversification and unrelated diversification on corporate performance, so Hypothesis 2 cannot be tested.

Specifically, from the regression results of a single company in Table 7, it can be seen that an appropriate company size has a significant positive impact on corporate performance, and financial risk has a negative impact on corporate performance; it has a positive impact on corporate performance of diversified agricultural listed companies. What affects the size of the company, financial risk also has a negative impact on corporate performance, but compared with a single company, financial risk has a greater negative impact on the performance of diversified companies. For leading and unrelated agricultural listed companies, company size is positively correlated with corporate performance. The higher the financial risk, the worse the company's performance.

The empirical test results of this article have a certain guiding effect on the practice management of listed agricultural companies in my country. The research results show that under a certain background, the degree of diversification can not improve the performance of listed agricultural companies, but will decentralize the accumulation of company operating profits. With the market economy system becoming more and more perfect and competition among economies becoming more intense, many Chinese companies choose to diversify their operations to avoid risks and improve competitiveness, but this measure cannot be followed blindly. my country's agricultural listed companies should take into account their own development, focus on the development of leading main businesses, and highlight the characteristics of corporate products. Therefore, the company should consider a diversified business development model on the premise that it already has core competitiveness advantages. If agricultural listed companies blindly switch to a diversified business model and easily abandon their unique natural advantages and corporate resources, they may hinder corporate development. Moreover, research shows that company size has a positive effect on

company performance, so listed agricultural companies can appropriately expand company scale and reduce corporate financial risks.

References

[1] J. Yao, Y. Lu, M.L. Lan, An Empirical Study on the Relationship between Diversification and Economic Performance of Listed Companies in my country [J]. Management World, Vol. 20 (2004) No.11, p.119-125+135.

[2] Z. Xin. Diversified Management and Diversified Discount--New Progress in the Study of Enterprise Diversification[J]. China Industrial Economy, Vol. 21 (2003) No.12, p.72-78.

[3] X. Su, H.L. Liu. The impact of diversified operations on corporate performance: the moderating effect of executive shareholding [J]. Economic Issues, Vol. 39 (2017) No.04, p.100-107.

[4] F.H. Xiong, J. Peng. An empirical study on the impact of diversified operations of listed agricultural companies on their performance [J]. Finance and Accounting Monthly, Vol. 30 (2009) No.27, p.17-20.

[5] J. Zhu. Diversification strategy and operating performance of listed companies in my country [J]. Economic Research, Vol. 45 (1999) No.11, p.54-61.

[6] D.W. Su. An Empirical Analysis of Diversification and Corporate Value of my country's Listed Companies' Diversification Premium [J]. Economics, Vol. 5 (2005) No. S1, p.135-158.

[7] S.M. Li, M.T. Zhou, P.Y. Yu. Research on the impact of the nature of ultimate ownership and governance mechanism on corporate performance [J]. Management Science, Vol. 20 (2006) No.05, p.9-16.

[8] D.L. Hong, D.H. Xiong. China's listed company diversification and corporate performance analysis-based on the endogenous investigation [J]. Financial Research, Vol. 49 (2006) No.11, p.33-43.