



An Empirical Analysis on the Determinants of Cross-Border Mergers and Acquisitions of Chinese Enterprises

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Abstract. On the basis of sorting out and analyzing the background of China's cross-border Mergers and Acquisitions (M&A) and combing relevant literature and theoretical knowledge, this paper selects 47 cross-border M&A data of listed companies on the Shanghai and Shenzhen Stock Exchanges from January 1st, 2019 to December 31st, 2017 and constructs binary Logit model. Eviews software were used to conduct empirical analysis of the factors affecting the success of Chinese companies' cross-border M&A. The result shows that the enterprise scale and R&D investment are positively related to the possibility of successful cross-border M&A. The nature of enterprise has a significant impact on the possibility of successful cross-border M&A. The three factors of enterprise growth capacity, international M&A experience and share ownership of M&A have not been tested.

Keywords: Cross-border M&A · Enterprise scale · Enterprise R&D investment · Enterprise nature

1 Introduction

In recent years, the promotion and implementation of the “the Belt and Road” strategy has given new incentives to cross-border M&A of Chinese enterprises. Macroeconomic growth has promoted and helped the pace of cross-border M&A of Chinese enterprises [1]. The transaction behavior of cross-border M&A is also affected by the factors of enterprises themselves [2]. Therefore, the research and analysis of the influencing factors of cross-border M&A of Chinese enterprises can find indicators that have an important impact on the success of cross-border M&A, more intuitively and clearly reflect the degree of impact of factors on cross-border M&A and draw more convincing conclusions.

2 Sample Selection and Variable Design

2.1 Sample Selection

The sample subject is selected as a listed company on the Shanghai and Shenzhen main boards in China. Conduct data queries in the Wind China M&A database, with the following conditions: buyer indicator: select “Listed Company - Shanghai and Shenzhen

Main Board Company” for listing status and select all provinces and municipalities in China except for Hong Kong, Macau and Taiwan for geographical location; Transaction plan indicators: Select “complete/fail” for transaction progress and “outbound M&A” for cross-border M&A. According to the above criteria, there were a total of 94 cross-border M&A during this period.

2.2 Variable Design

Explanatory Variable.

This article focuses on the influencing factors of cross-border M&A of Chinese enterprises for argumentation and analysis. Therefore, the results of cross-border M&A are defined as the dependent variable in the article, represented by Y . At the same time, the number “1” represents Y to indicate the success of cross-border M&A and the number “0” represents Y to indicate the failure of cross-border M&A.

Explanatory Variables.

Based on the theoretical analysis of the influencing factors obtained, six explanatory variables are set up based on the above assumptions [3]. These explanatory variables are enterprise size GM , enterprise growth capacity CZ , enterprise R&D investment YF , enterprise internationalization M&A experience JY , enterprise M&A equity share GQ and enterprise nature XZ .

3 Modeling and Data Analysis

3.1 Modeling

The dependent variable studied in this article, which is the independent variable, is the result of cross-border M&A of enterprises. It is a binary choice variable, which means either success or failure. Therefore, this article chooses the binomial Logit model to construct a model to measure the results of cross-border M&A as follows:

$$Y^* = \beta_0 + \beta_1 GM + \beta_2 CZ + \beta_3 YF + \beta_4 JY + \beta_5 GQ + \beta_6 XZ + \varepsilon \quad (1)$$

Among them, Y^* is the unobservable latent variable of Y (i.e. Logit estimate).

3.2 Data Analysis

In order to ensure the accuracy of empirical results, collinearity test should be conducted on explanatory variables before regression analysis, so correlation coefficient analysis should be conducted. Except for the correlation coefficient of enterprise scale GM and enterprise international M&A experience JY , which is 0.704, all other correlation coefficients are less than 0.65, which means that although the indicators selected by each coefficient are correlated, it can be determined that there is no collinearity between their variables. The value of variance expansion factor (VIF) of all variables is less than 5, that is, less than 10, which can eliminate the collinearity problem between enterprise scale GM and enterprise internationalization experience JY .

4 Regressive Analysis

4.1 First Regressive Analysis

Perform the first regression analysis on all explanatory variables and the output results are shown in Table 1. From the P-value perspective, the P-values of the four explanatory variables of enterprise size GM, enterprise growth ability CZ, enterprise internationalization experience JY and enterprise merger and acquisition equity share GQ are 0.0618, 0.4801, 0.8504 and 0.2259, respectively, which are greater than the 95% significance level. However, the P-value of enterprise size GM reaches the 90% significance level, which is acceptable. Therefore, by removing the three explanatory variables CZ, JY and GQ that did not reach the 90% significance level, the model was re-estimated to obtain new regression results. From the positive and negative coefficients of each variable, among the three excluded variables, the experience of international M&A (JY) of enterprises is directly proportional to the success of cross-border M&A, while the growth CZ of enterprises and the equity share GQ of M&A are inversely proportional to the success of cross-border M&A.

Table 1. Output Results of the First Model Regression

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.714256	1.595393	-1.074504	0.2826
GM	1.53E-06	8.20E-07	1.868068	0.0618
CZ	-1.130668	1.601160	-0.706156	0.4801
YF	41.54897	18.71944	2.219562	0.0264
JY	0.084679	0.449081	0.188562	0.8504
GQ	-3.440635	2.841304	-1.210935	0.2259
XZ	-10.72030	5.325325	-2.013079	0.0441
McFadden R-squared	0.546683	Mean dependent var		0.829787
S.D. dependent var	0.379883	S.E. of regression		0.285063
Akaike info criterion	0.711500	Sum squared resid		3.250433
Schwarz criterion	0.987054	Log likelihood		-9.720249
Hannan-Quinn criter.	0.815193	Restr. Log likelihood		-21.44250
LR statistic	23.44450	Avg. Log likelihood		-0.206814
Prob(LR statistic)	0.000660			
Obs with Dep = 0	8	Total obs		47
Obs with Dep = 1	39			

Table 2. Output results of the second model regression

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.584175	1.357986	-1.902947	0.0570
GM	1.03E-06	5.56E-07	1.855621	0.0635
YF	28.70208	10.81546	2.653801	0.0080
XZ	-7.516819	3.199445	-2.349413	0.0188
McFadden R-squared	0.498880	Mean dependent var		0.829787
S.D. dependent var	0.379883	S.E. of regression		0.282650
Akaike info criterion	0.627458	Sum squared resid		3.435305
Schwarz criterion	0.784918	Log likelihood		-10.74527
Hannan-Quinn criter.	0.686711	Restr. Log likelihood		-21.44250
LR statistic	21.39445	Avg. Log likelihood		-0.228623
Prob(LR statistic)	0.000087			
Obs with Dep = 0	8	Total obs		47
Obs with Dep = 1	39			

4.2 Second Regressive Analysis

According to the second regression results in Table 2, from the P-value perspective, except for the enterprise size GM reaching the 90% significance level, all other explanatory variables have already reached the 95% significance level; From the positive and negative coefficients of each variable, it can be seen that the success of cross-border M&A is directly proportional to the size of the enterprise GM and the R&D investment YF, with coefficients of 1.03E-06 and 28.70208, respectively; The coefficient of Enterprise Property XZ is -7.516819.

5 Result Analysis

Observing the regression results data, it can also be observed that there are two coefficient values that are quite special. One is that the coefficient value of enterprise size GM is very small and observation data can speculate that it is because the indicator measuring enterprise size is the average of the total assets invested in the year and the total assets of the previous year, which is relatively large and has an impact on subsequent regression results; Another factor is that the coefficient of enterprise R&D YF is much higher than other coefficients, with a value of 28.70208. This is mainly because in the 47 sample observations in this article, most enterprises are inclined towards technology R&D enterprises. From the original data, it can be seen that in the column of enterprise R&D investment, there are 24 enterprises with a value greater than 20%, accounting for 50% of all enterprises. Therefore, the strong correlation between R&D investment and results is also reflected in the regression.

From this, the model can be organized as:

$$Y^* = -2.584175 + 1.03E - 06GM + 28.70208YF + 7.516819XZ \\ (-1.902947) (1.855621) (2.653801) (-2.349413) \quad (2)$$

From the above analysis, it can be concluded that the growth capacity CZ of enterprises, the experience of international M&A JY of enterprises and the equity share GQ of enterprise M&A have not passed the test. However, although the experience of international M&A and the equity share of enterprise M&A have not passed the test, the coefficient sign of merger and acquisition experience is positive and the coefficient sign of equity share is negative.

For the growth ability of enterprises, not only has it not passed the test, but its coefficient sign is negative. Based on the summary of previous research, it can be explained that using the year-on-year growth rate indicator of a company's operating revenue to measure its growth ability is not very cautious [4]. The operating revenue of a company may be attributed to past M&A and the buyer may include the target party's operating revenue in their own financial statements, resulting in data bias and thus affecting the empirical results [5].

6 Conclusions

Enterprises should appropriately expand their scale. Enterprises should actively strengthen their own development, improve their economic strength and market competitiveness, seize market opportunities and appropriately expand their scale [6]. At the same time, the difficulty of successful cross-border M&A cannot be determined solely by the size of the enterprise [7]. It is necessary to analyze specific problems based on the actual situation [8].

Technological enterprises need to increase investment in research and development. Mastering advanced production and research technologies means that enterprises have the opportunity to be at the forefront of their industry and have a first mover advantage in the market [9]. Therefore, enterprises should attach importance to technological research and development while maintaining balanced development and support it with practical actions, that is, invest necessary manpower and funds to achieve the goal of increasing investment in enterprise research and development [10].

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