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SYNERGY EFFECT OF M&A HETEROGENEITY AND ALLIANCE HOMOGENEITY ON STOCK MARKET

Abstract:

Since Merger and Acquisition (M&A) and Strategic Alliance have been regarded as essential parts of successful strategies for profitable growth till date, none of previous researches investigated stock market's response toward the synergy effect of M&A strategy and Strategic Alliance from the perspective of behavioral economics—more precisely—prospect theory. Therefore, by examining the synergy effect of M&A and Strategic Alliance and applying 'prospect theory' to stock price response, the goal of our research is to empirically test unconventional responses of stock market and 'synergetic relation' between M&A and Strategic Alliance. By doing so, this research will prove that two strategies can work together for better performance in the stock market.

Keywords:

Synergy effect ,Merger and Acquisition (M&A), Strategic Alliance, portfolio theory, prospect theory, loss aversion.

JEL Classification: M10

1. INTRODUCTION

Firms can use multiple methods to make changes, including internal developments, discrete market exchanges, and interactions with other organizations through acquisition or alliance (Karim & Mitchell, 2000). Since Merger and Acquisition (M&A) and Strategic Alliance have been regarded as essential parts of successful strategies for profitable growth till date, methods drawing on external resources seems salient (Wang and Zajac 2007).

Although a considerable size of managerial and academic insights has been accumulated regarding the effects of M&A strategy and Strategic Alliance respectively, none of previous researches investigated stock market's response toward the synergy effect of M&A strategy and Strategic Alliance from the perspective of behavioral economics—more precisely—prospect theory.

Examining the synergy effect of M&A strategy and Strategic Alliance is important. Wang and Zajac (2007) reported that M&A strategy is more likely to be used in case of resource similarity between two firms, while Strategic Alliance is likely to be used in case of resource complementarity between two firms. However, no prior researches have examined how both two strategies work together for the firm. Also, this paper differentiates itself from other researches in that it incorporates ideas not only from strategic management and finance fields, but also from traditional marketing areas (behavioral economics). This distinction is significant because stock market's response could yield unconventional results when it is predicted from the perspective of behavioral economics.

Therefore, by examining the synergy effect of M&A and Strategic Alliance and applying 'prospect theory' to stock price response, the goal of our research is to empirically test possible unconventional responses of stock market and 'synergetic relation' between M&A and Strategic Alliance. By doing so, it will prove that two strategies can work together for better performance in the stock market.

2. HYPOTHESIS DEVELOPMENT

M&A between same industry sectors (**M&A Homogeneity**) results in economies of scale by focusing on their existing products and services. On the other hand, M&A between different industry sectors (**M&A Heterogeneity**) enriches the acquiring firm's knowledge base which contributes to innovativeness through learning (Ghoshal, 1987; Hitt et al., 1996; Cohen and Levinthal, 1989; Griliches, 1990; Pakes and Griliches, 1984; Cloudt et al., 2006). Therefore we suggest that both types of M&A will positively relate to stock price.

However, these opposing views are also present in finance and marketing (behavioral economics) fields. Portfolio theory, a mathematical formulation of the diversification strategy in investing, claims that it reduces unsystematic risks by owning various types of stocks which are heterogeneous to each other. Thus, if portfolio strategy is executed successfully, investors will be less likely to be affected by an event or drastic change in the market. This leads us to postulate that, contrary to the predictions from prospect theory, investors will favorably evaluate M&A Heterogeneity over M&A Homogeneity in terms of reducing unsystematic risks of the firm.

However, M&A Heterogeneity can be a double-edged sword. M&A Heterogeneity and innovation from this activity make it possible for the firm to modify business activities

in ways that accommodate changes to customer's varying demands, technological requirements, economic conditions, etc. (Torben, 2009). However M&A Heterogeneity often accompanies changes which sometimes bring eccentric products which are sometimes excessively unfamiliar in the existing market. This, to the investor's eyes, may seem riskier even though it diversifies its product lines. Consequently, investors are more likely to perceive the possibility of 'loss' than they evaluate M&A with homogenous firms which expand its market share stably. This argument is more corroborated when we are reminded of Kahneman and Tversky (1979)'s prospect theory. The essence of renowned prospect theory tells us that people have strong tendency to prefer avoiding losses to acquiring losses (loss aversion).

Therefore, based on prospect theory's concept of loss aversion, we predict that investor would prefer stability (M&A Homogeneity) to possible risk (M&A Heterogeneity) because investors are more sensitive to possible losses. In sum, we suggest that stock prices will be less positively reflected by the announcements of M&A Heterogeneity than by those of M&A Homogeneity.

Formally,

Hypothesis 1: M&A Heterogeneity between pair firms will be less positively related to stock price variation than M&A Homogeneity between pair firms will be.

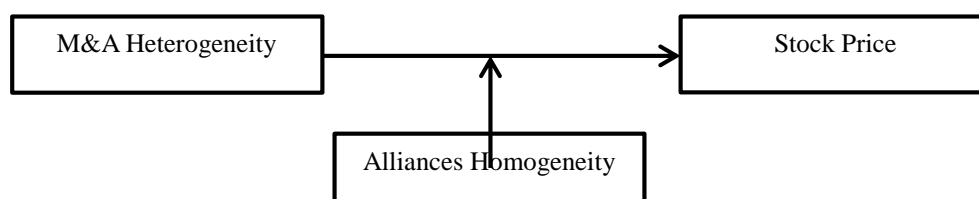
Tanriverdi and Venkatraman (2005) proposed that the economic benefits of resource combination typically result from both similarity and complementarity of two firms' resources. Indeed, prior researches have found that a high level of business relatedness is beneficial to firms in M&A and strategic alliance (Seth, 1990; Datta and Puia, 1995; Mowery et al., 1996; Dyer and Singh, 1998; Stuart, 2000). And other researches also found that complementarity between two firms can generate economic benefits for two firms when they combine their resources (Gulati, 1995; Stuart, 1998; Chung et al., 2000; Wang and Zajac, 2005).

Therefore, we suggest that when two focal firms execute M&A Heterogeneity, alliance with homogenous firms can alleviate potential risks of innovation with M&A Heterogeneity, which could give positive signal to investors. In other words, investors will perceive M&A Heterogeneity less risky by the announcements of alliance with other homogenous firms.

Thus, we suggest the following hypothesis.

Hypothesis 2: Homogenous alliances with other firms will positively moderate the relationship between the M&A heterogeneity and stock price.

Research Model



3. METHOD

Data and Sample

We collected all of acquisition and alliance cases completed in the manufacturing industry from 2004 to 2014 in U.S. using the Securities Data Corporation (SDC) database. As a result, we get 3,123 M&A cases and 225 alliance cases by eliminating outliers and some data which do not have information about stock price or value of transaction.

Dependent Variable

Stock price: We measured the change rate of stock prices of acquirers starting from the announcement date of M&A for 7 days.

Thus,

$$\text{Stock price} = \frac{\text{Stock price after a week} - \text{Stock price on announcement date}}{\text{Stock price on announcement date}}$$

Independent Variable

M&A Heterogeneity: We measured M&A heterogeneity by comparing SIC codes between paired firms. Thus, if the acquisition occurs in different industry sectors, then we regarded it as '1', otherwise, '0'.

Moderate Variable

Alliance Homogeneity: We measured alliance homogeneity by dividing the number of SIC codes of focal firms into the number of SIC codes of participants.

Thus,

$$\text{Alliance Homogeneity} = \frac{\text{The number of SIC code of focal firm}}{\text{The number of SIC code of participants}}$$

Control Variables

Industry sector: There are external factors that influence strategic implementation. These factors change over time and can significantly influence the pattern of M&A and alliance.

Value of transaction: Value strategies such as value of transaction relates to acquirers' willingness and behavior to buy (Grewal et al., 1998). And this strategy might vary across segments because some segments are sensitive to price (Lichtenstein et al., 1990; Shapiro et al., 1987; Grewal et al., 1998).

4. RESULT

Table 1 shows the descriptive statistics of data set. The number of M&A heterogeneity is 929 cases, and the number of M&A cases which occur in same industry sector is 2194. From the 2-digit SIC codes, we can confirm similar patterns about the number of cases for both M&A and alliance.

Table 1. Descriptive Statistics

M&A				Alliance	
Year	Number	SIC code	Number	SIC code	Number
2004	341	15	24	15	1
2005	384	16	16	16	1
2006	375	17	41	17	6
2007	412	20	200	20	16
2008	377	21	10	21	1
2009	218	22	17	22	1
2010	274	23	53	23	6
2011	291	24	23	24	2
2012	241	25	46	25	2
2013	210	26	34	26	5
Total	3123	28	408	28	28
Heterogeneity	Number	30	36	30	6
Yes	929	31	44	31	5
No	2194	32	12	32	-
Total	3123	33	104	33	7
		34	45	34	2
		35	540	35	37
		36	495	36	33
		37	160	37	11
		38	438	38	30
		39	50	39	4
		73	327	73	20
		Total	3123	Total	225

Table 2 shows the result of the mean, standard deviation, and correlation among the

variables. Value of transaction and M&A heterogeneity show a positive, significant correlation.

Table 2. Correlation Matrix ^a

	Mean	s.d.	1	2	3	4
Value of Transaction(\$mil)	672.69	2658.27	1.00	0.07**	-0.02	0.02
M&A Heterogeneity	0.70	0.46	0.07**	1.00	-0.08	-0.02
Allian Diversity	0.47	0.24	-0.02	-0.08	1.00	0.00
Stock price	0.01	0.16	0.02	-0.02	0.00	1.00

^a N=3123. †p<0.10; *p<0.05; **p<0.01; ***p<0.001.

In this paper, the independent sample t-tests are carried out in order to test H1 and H2. In Table 3a the group statistics with M, s and Standard Error Mean is presented. In Table 3b the independent sample t-test results are illustrated. There is not a significant difference in stock prices for independent value level 1 (M=0.01, sd=0.13) and independent value level 2 (M=0.01, sd=0.21) conditions; t(3120)=-1.05, p=0.30. Thus, hypothesis 1 is rejected.

Table 3a. Result of Group Statistics

	M&A Heterogeneity	N	Mean	Std. Deviation	Std. Error Mean
Stock Price	0	2194.00	0.01	0.13	0.00
	1	928.00	0.01	0.21	0.01

Table 3b. Result of Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean		
										Lower	Upper
Stock Price	Equal variances assumed	0.99	0.32	-1.05	3120.00	0.30	-0.01	0.01	-0.02	0.01	
	Equal variances not assumed			-0.87	1229.76	0.39	-0.01	0.01	-0.02	0.01	

The method of analysis is hierarchical regression analysis, and the results are shown in Table 4. Model 1 shows the results of the first-stage regression with the control variables. Model 2 shows the results of the main effects between the M&A heterogeneity and stock prices as a second-stage regression analysis. Model 3 shows the moderating effect of alliance homogeneity on the main effect. The moderating effect of alliance homogeneity positively affects the main effect between M&A heterogeneity and stock price. Thus, hypothesis 2 is supported.

Table 4. Result of Regression Analysis ^a

	Model1	Model2	Model3
(constant)			
dummy1	(yes)	(yes)	(yes)
dummy2	(yes)	(yes)	(yes)
dummy4	(yes)	(yes)	(yes)
Value of Transaction(\$mil)	0.02	0.02	0.02
M&A Heterogeneity		0.00	-0.01
M&A H.*Alliance D.			0.06 †
Adjusted R-square	.001	.001	.003
F-value	1.573	1.263	2.056 †

^a N=3123. †p<0.10; *p<0.05; **p<0.01; ***p<0.001.

Dependent variable is stock price.

5. IMPLICATION AND FUTURE RESEARCH

This research tried to synthesize three theories each from strategic management field, behavioral economics and finance to investigate three hypotheses we presented. However, we were not able to statistically justify hypothesis 1. We presume following two reasons for this. First, we could not completely control variables that might have affected investor's decision and business field which accompany M&A and strategic alliance. Second, it is probable that investors still resorted to portfolio strategy rather than to prospect theory when they evaluate M&A heterogeneity.

Several issues remain. Most importantly, there may be a debate on the appropriateness of the measurement we applied here in this research. Future research needs to be designed based on environmental characteristics such as dynamisms and complexity (McArthur & Nystrom, 1991), or concentrated or competitive industry, etc. (Knott & Posen, 2009). We will continue our research by incorporating and controlling other variables that can affect our hypotheses, thereby we will also elaborate and develop our research model.

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