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The Effects of Merger and Acquisition Announcements on the Security Prices of Bidding Firms and Target Firms in Asia

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Abstract

With the rise of the Asian financial crisis in 1997 and the smash of IT bubbles in 2000, there has been an increase in the number of corporate takeovers and mergers. In light of these events, we investigate the effects of acquisition announcements on the pricing behavior of the Asian bidding and target firms using the data of mergers or acquisitions announcements from the Bloomberg Database and Reuters Business Database fpr Hong Kong, China, Taiwan, Singapore, South Korea and Japan over the period from 1 January 2000 to 31 December 2007. Our result indicates that information concerning a forthcoming corporate takeover is considered good news for the shareholders of bidding firms but not regarded as good news for the shareholders of the target firms. In addition, we confirm the hypothesis that the abnormal return for the shareholders of bidding firms during the post-announcement period depends on the type of acquisition.

Keywords: Mergers, Acquisitions, Announcement effect, China, Japan, Taiwan, Korea, Singapore, Hong Kong

1. Introduction

Merger and acquisitions (M&A) activities have been a common form, staple transaction activity for more than four decades in North American and European markets before reaching its mature stage in the 1990s. In Asia, most of the M&A activities have taken place only after the Asian financial crisis in 1997. M&A activities have not only captured the interest and attention of a broad segment of the community but have also attracted the scrutiny of governments in Asian economies. The reasons are that: first, most of the Asian governments encouraged the M&A of companies so as to raise competitiveness and to reduce cost. Economic power would be concentrated to a few multinational enterprises (MNCs) due to M&A activities. Secondly, as the Asian stock markets become more developed, shareholders' knowledge about the market has improved substantially. Small investors are often in a dilemma when they are forced to decide whether or not to sell their shares in facing of a bid as they do not have the knowledge about the gain-loss circumstances of the M&A game. By the same token, managers of a target company might not know if there exists any gain when they face a bid. Most of the time, it is the preferences of bidding firm managers and target firm managers who have the controlling rights that determine the form of payment in an acquisition. (see Ghosh and Ruland (1998)). [1] In general, risk reduction and value acquisition are the main reasons for bidding firms to launch takeovers.

So far, most studies about the effects of M&A announcements focus on North American and European markets, there were few studies on M&As and their resulting abnormal returns in Asian markets. The objectives of this study are to examine empirically whether M&A activitiy creates abnormal returns to shareholders of companies concerned around the M&A announcement period in Asian markets, including Hong Kong, China, Taiwan, Singapore, South Korea and Japan, over the period from 1 January 2000, to 31 December 2007. Our result indicates that information concerning a forthcoming corporate takeover is considered good news for the shareholders of bidding firms but not regarded as good news for the shareholders of the target firms. In addition, we confirm the hypothesis that the abnormal return for both the shareholders of bidding firms and target firms at the announcement period do not depend on the type of acquisition, form of target firms or mode of payment.

The study is organized as follows. Section 2 reviews the literature and hypotheses. Section 3 shows the methodology and section 4 describes the data. Section 5 presents the estimated results. Conclusion are presented in section 6.

2. Literature Review and Hypotheses

There are a number of studies about the effects of M&A announcements. Dodd and Ruback (1977) analyzed abnormal returns around the time of a takeover announcement and found that both the target and bidding firms' shareholders earned

positive and significant gains from a successful takeover. Langetieg (1978) measured shareholder gains from the mergers and found an insignificant post-merger excess returns. Asquith and Kim (1982) examined returns to stock holders of target firms around the date of the initial announcement or completion of a merger. They concluded that the stockholders of target firms gained, while those of bidding firms did not. Jensen and Ruback (1983) reviewed 13 studies on the abnormal returns around takeover announcements. They found that the average excess returns to target firms' stockholders are of 30% and 20% for the successful tender offers and mergers, respectively; while bidding firms' stockholders gained an average of 4% around tender offers but no abnormal return around the merger. Frank et al. (1991), however, found no evidence to support significant abnormal returns of acquiring firms over a three-year period after the bid date. Agrawal et al. (1992) concluded that bidding firms lost from the acquisitions over several years but Ruback (1977), Kummer and Hoffmeister (1978) and Dodd (1980) indicated that bidding firms gained from the acquisitions.

Travlos and Papaioannou (1991) examined the impacts of method of payment on bidding firms' stock return at the initial announcement of takeover bids. They found that the abnormal return of bidding firms on the announcement day were -1.3% for stock exchange and -0.8% for cash offers. Suk and Sung (1997) looked at the effects of method of payment, form of acquisition and type of offer on target firms' abnormal returns around the takeover announcement. They showed that there was no difference in premiums between a stock offers and a cash offers. Chang (1998) examined bidder returns at the announcement of a takeover proposal when target firms were privately held. He indicated that bidders experienced no abnormal return in cash offers but a positive abnormal return in stock offers. The monitoring activities and information asymmetries were reasons for a positive wealth effect. Knapp (2006) concluded that post-merger abnormal return of bank related companies was significantly larger as compared with the industry mean in the first 5 years after a merger. Recently, Al-Sharkas et al (2008) showed that mergers could improve the cost and profit efficiencies of banks and provided an economic rational for future mergers in the banking industry.

Who gained and who lost in the M&A game? The results are somewhat mixed. The objective of this study is to test if the firms concerned in Asia experience abnormal returns around M&A announcement periods (no matter if the M&A activities were completed or not), thus we propose the following hypotheses:

Hypothesis 1. The average abnormal returns (AAR) across all securities for any individual time period t in the event period are positive.

Hypothesis 2. The cumulative average abnormal returns (CAAR) across all securities for any individual time period t in the event period are positive.

Hypothesis 3. The cumulative abnormal returns (CAR) of the bidding firms for any individual time period t surrounding the announcement period depends on the type of acquisitions, the mode of payment and the form of target firms.

We hope that the results will provide important implications to all those involved in the M&A game in Asia.

3. Methodology

3.1 Market Model

The market model which is one of the benchmarks in measuring abnormal returns[2] with daily data is employed, with adjustments of daily closing prices for stock dividends and splits. The market model which indicates a linear relationship between security returns and returns on a market portfolio is given below:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \mu_{jt} \quad (1)$$

where

R_{jt} = the daily rate of return on security j on day t,

R_{mt} = the daily rate of return on market index on day t.

β_j = a covariance between R_{jt} and R_{mt} divided by a variance of R_{mt}.

i.e., covariance (R_{jt}, R_{mt}) / Var (R_{mt})

α_j = expected value of ($R_j - \beta_j R_m$), and

μ_{jt} = model error term of security j on day t, with expected value equal to zero.

The daily closing rates of return are calculated by:

$$R_{it} = [(P_t - P_{t-1} + D_{it}) / P_{t-1}] \times 100\% \quad (2)$$

where

R_{it} = the rate of return on security i on day t,

P_{it} = the closing price on security i on day t,

P_{it-1} = the closing price on security i on day t-1 and

D_{it} = the cash dividend on security i on the ex-dividend day concerned

The daily closing rates of market indices are calculated by:

$$R_{mt} = [(P_{mt} - P_{mt-1}) / P_{mt-1}] \text{ X } 100\% \quad (3)$$

where

R_{mt} = the rate of return on the market index on day t,

P_{mt} = the closing market index on day t and,

P_{mt-1} = the closing market index on day t-1.

In order to capture the abnormal returns, it is necessary to determine the expected normal return in the observation period. A set of observation periods and event periods are initially established. From this initially established set, we observe whether or not abnormality happens in various sub-periods. Correspondingly, the data from any sub-periods exhibiting abnormality are analyzed.

We followed the methodology used by Huang and Walkling (1987) that a maximum of 351 daily return observations are used for the period around the event at time t, starting at day t -300 and ending at day t +50. The estimation period is, thus, from trading day t -300 through trading day t-51, where t is an initial date of acquisition announcement. The following 101 days (-50 through +50) is designated as the event period. The pre-announcement period is from day -50 to day -2. The announcement period is from day -1 to day 0. The post-announcement period is from day +1 to day +50. The following diagram illustrates those periods in detail.

(Insert Figure 1 here)

Abnormal returns are computed as the difference between actual returns and estimated expected returns:

$$AR_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_j R_{mt}) \quad (4)$$

where R_{jt} is the daily rate of return on security j over day t, $\hat{\alpha}_j$ and $\hat{\beta}_j$ are estimated parameters α_j *and* β_j. AR_{jt} is the estimated abnormal return for security *j* over day t and t is the tth day of the analysis period, measured in relation to the initial acquisition announcement date.

The average abnormal return (AAR) across all securities for any individual time period t in the estimation period is obtained by aggregating all abnormal returns of firms (with return data) on day t divided by N (the number of firms with return data on day t):

$$AAR_t = \frac{1}{N_t} \sum_{j=1}^{N_t} AR_{jt} \quad (5)$$

In order to examine the cumulative effect of events, the cumulative average abnormal returns (CAAR) are produced.

$$CAAR_{(T1,T2)} = \sum_{t=T1}^{T2} AAR_t \quad (6)$$

where T1 is the first day of an event period in which the AAR_t are accumulated and T2 is the last day of an event period in which the AAR_t are accumulated.

Finally, to test if each individual period's abnormal return AAR_t is significant in the event period, the test statistic, ϕ, is obtained by dividing AAR_t by the estimated standard deviation.

$$\text{i.e.} \quad \phi = AAR_t / SE \quad (7)$$

where SE is the standard deviation of average abnormal returns of each security during the estimation period and is estimated by[3]:

$$SE = \sum_{t=T1}^{T2} [(AAR_t - \overline{AAR})^2 / (T-1)]^{1/2} \quad (8)$$

where T is the number of days in the observation period, T1 and T2 are the first and last day in the estimation period. AAR_t is average abnormal returns across all securities for any individual time period t in the estimation period and $\overline{AAR}$ is the average abnormal return across all the securities during the estimation period and is calculated by:

$$\overline{AAR} = \frac{1}{N} \sum_{t=T1}^{T2} AAR_t \quad (9)$$

Thus we test Hypothesis 1: H_0: $AAR_t = 0$

H_1: $AAR_t \neq 0$

where AAR_t is average abnormal returns across all securities for any individual time period t in the event period.

In order to test the significance of cumulative average abnormal return (CAAR) over a certain period, the test statistic, ϕ_C, for CAAR is used:

$$\phi_C = CAAR / [SE(n)^{1/2}] \quad (10)$$

n is the number of trading days from starting to ending over which the average abnormal return is calculated. (where n can be as little as two days or as large as the entire event period.)

thus we have Hypothesis 2: H_0: $CAAR_{y1y2} = 0$

H_1: $CAAR_{y1y2} \neq 0$

where y_1 is the first day of the pre-announcement period, the announcement period or the post-announcement period and y_2 is the last day of the corresponding period in which the cumulative average abnormal return is calculated.

3.2 Regression Model

The following model is used to test if the type of acquisition, the type of target firm and the mode of payment would affect the CAR of bidding firms. We used the dummy variables for the type of acquisition, the type of target firm and the mode of payment and the market size of bidding firms. In addition, the relative size of the market value of the target to bidder and the market size of bidding firms are included as the control variables.

$$CAR_{y1y2} = \alpha_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 RMZ + \beta_5 M + \mu_i \quad (11)$$

where:

CAR_{y1y2} = cumulative abnormal return from day y_1 to day y_2[4]

D_1 = 1 if the type is acquisition

D_1 = 0 otherwise

D_2 = 1 if target firm is private

D_2 = 0 otherwise

D_3 = 1 if mode of payment is cash

D_3 = 0 otherwise

RMZ = relative size of the market value of the target to bidder (in US$) at announcement date

M = market size of bidding firms (in US$) at announcement date

(which is calculated by the product of number of outstanding share and closing price at announcement date)

μ_i = error terms

The test of hypothesis 3 is equivalent to the test of:

H_3: $\beta_1 = 0$ (acquisitions vs. mergers)

H_4: $\beta_2 = 0$ (public target firms vs. private target firms)

H_5: $\beta_3 = 0$ (cash offer vs. share offer)

4. Data Description

This study covers all M&A deals with public firms in China, Japan, Hong Kong, Singapore, South Korea and Taiwan during the 1990s, irrespective of whether they are successful or not. These economies are chosen because they are major economic centers in Asia with well- developed stock markets. The sample covers all the merger or acquisition announcements rather than lists of completed acquisitions so as to decrease the ex-post selection and classification bias. Information on merger or acquisition announcements over the period from 1 January 2000 to 31 December 2007 are contained from the Bloomberg and Reuter Business Database, including Hong Kong, China, Taiwan, Singapore, South Korea and Japan. There are 95 mergers and 563 acquisitions for the overall sample in which 203 public (target) firms and 455 private (target) firms are involved. Cash is the major payment method in the entire sample. The announcement must be the first notice to the public. If a stock has more than ten missing returns in the estimation period, or any missing return in the event period, it is eliminated from the sample. We divided the sample into six subsets according to their listing location. Announcements are classified by type of acquisition (merger or acquisition) and form of target firms (private or public companies) and mode of payment (cash or share) in our study.

With cases in Hong Kong, the daily closing rates of return for securities and market indices of the Hong Kong Stock Exchange are used. Hong Kong Hang Seng Index is used as a proxy for the market returns for securities listed on the Stock Exchange of Hong Kong. In China, the daily closing rates of return for securities and market indices of the

Shanghai Stock Exchange are used. In Taiwan, the daily closing rates of return for securities and market indices of the Taiwan Stock Exchange are used. Taiwan Stock Exchange Weighted Average Index is used as a proxy for the market returns. In Japan, the daily closing rates of return for securities and market indices of Japan Stock Exchange are used. The Nikkei Average 500 Index is used as a proxy for the market returns. In Singapore, the daily closing rates of return for securities and market indices of Singapore Stock Exchange are used. Singapore Stock Exchange All Share (SGP) Index is used as a proxy for the market returns. In South Korea, the daily closing rates of return for securities and market indices of South Korea Stock Exchange are used. The KOSPI Composite Index is used as a proxy for the market returns.

5. Estimated Result

5.1 Abnormal Returns on Bidding Firms

During the study period from January 2000 to Dec 2007, there are 95 mergers and 563 acquisitions for the overall sample in which 203 public (target) firms and 455 private (target) firms are involved. Table 1 shows the number of M&A announcements over study the period. Most of the M&A activities are in the Japan, Singapore and Hong Kong during the study period. Cash is the major payment method of M&A transaction; about 90% of acquisitions are pure cash transactions in the entire sample.

(Insert Table 1 here)

Cumulative average abnormal return (CAAR) on bidding firms and on target firms for the various announcement period is summarized in Table 2. During the pre-announcement period, majority of bidding firms have positive CAAR: the Japanese bidders scoring the highest CAAR of 8.2%, followed by Singaporean (6.9%), Hong Kong's (4.5%), Taiwanese (4.7%), Chinese (-3.3%) and South Korean (-6.18%). The CAAR of Hong Kong, Taiwan, Singapore and Japan are statistically significant at 5% level or above. For all bidding firms as a whole, the CAAR is positive (2.72%) and statistically significant at 10% significant level. Most bidding firms in various economies enjoy a positive CAAR because stock investors overestimate the bidding firms on the future efficiency of the target firms on the merge. Hence, they are more willing to hold more stocks. As more information release in stock markets such as financial information of firms involved in the M&A and the terms and conditions of merger proposals, some stock investors change their minds. Japan is the economy with the most bidding firms (70%) that earns positive CAAR during the pre-announcement period.

For the announcement period (day -1 to 0), only Singapore and Japanese bidding firms enjoy a positive CAAR of 0.5% and 0.25% respectively. The CAAR for other bidding firms is negative and statistically insignificant. This reflects that announcement effect of M&A to market is not strong enough to influence stock prices during the announcement period as stock investors may hold difference views on the merge. Some of them are optimistic, some are pessimistic and some are waiting for further information before taking any action. Different responses to the M&A announcement would cancel out each other. Singapore is the economy with the most bidding firms (62%) that earns positive CAAR during the announcement period.

At the post-announcement period (day 1 to 50), South Korea obtains the highest CAAR of 43%, followed by Chinese (11%), Singaporean (8%), Taiwanese (5%) and Japanese (4%). All estimated CAAR are statistically significant except China. China is the economy with the most bidding firms (67%) that earns positive CAAR during the post-announcement period. It is due to the fact that most companies in China which become a target are facing mounting loans and their asset values have depreciated subsequent to the Asia Financial Crisis and the break of IT bubbles. Therefore, it is favorable to the bidding firms to acquire them. If M&A activities are successful and bidding firms improve the target firms' performance, it is profitable for both the bidding firms and the target firms. Compared with the pre-announcement period and announcement period, the CAAR to all bidders is 9.2% during this period and is statistically significant at one percent level. The result reflects that M&A announcements create positive effect to most enterprises in Asian economies during the post-announcement period.

(Insert Table 2 here)

However, the CAAR to target firms for the above three periods is -2.5%, -0.24%, and -5.2%, respectively, and are statistically insignificant. The CAAR drops due to the fact that investors and speculators overbuy the target stocks at the first place and the performance of target firms does not match the market expectations. Investors sell their stocks, which results in stock prices of target firms dropping dramatically in the post-announcement period. In addition, speculators buy the stock of target firms in advance of the announcement on an expectation that the stock prices will rise due to M&A announcement. However, some M&A attempts would fail to complete, so profit-making investors and speculators sell their shares of target firms.

5.2 Factors Affecting Cumulative Average Abnormal Return (CAAR)

The distribution of CAAR of bidding firms by countries during the announcement period is displayed in Table 3.

In Hong Kong, the CAAR for acquisitions is -0.4% and that for mergers is -0.03%. The CAAR for cash offers on

average is -0.39% and that for stock offers is -0.04%. Offers involved in public firms have abnormal return averaging -0.03% but that for private firms is -0.4%.

In Taiwan, bidding firms enjoy a -0.65% and –0.04% of CAAR for acquisitions and mergers respectively, while that CAAR for cash and stock offers on average is -0.67% and 0.2%. Offers involving public firms have abnormal return averaging -0.55% but those involving private firms are -0.14%.

In China, the CAAR for acquisitions is -0.8% and the CAAR for mergers is -0.24%. Residuals for both cash offers and stock offers, on average, are -0.52%. Offers involving public firms have abnormal return averaging 0.2% but those involving private firms are -0.3%.

In Singapore, the CAAR for acquisitions, is 0.61% and the CAAR for mergers is 0.03%. The residual for cash offers on average is 0.61% and the residual for stock offers is 0.03%. Offers involving public firms have abnormal return averaging 0.1% but those involving private firms are 0.55%.

In Japan, the CAAR for acquisitions is 0.18% and the CAAR for mergers is -0.06%. The residual for cash offers on average is 0.02% and the residual for stock offers is 0.2%. Offers involving public firms have abnormal returns averaging 0.05% but those involving private firms are 0.19%.

In South Korea, the CAAR for acquisitions is -0.98% and the CAAR for mergers is -0.4%. The residual for cash offers on average is –1.16% and the residual for stock offers is 0.2%. Offers involving public firms have abnormal return averaging -0.24% but those involving private firms are -0.96%.

(Insert Table 3 here)

To sum up, these results show that different types of acquisitions, modes of payment and types of target firms cause different results of CAAR to shareholders of bidding firms.

For target firms, the CAAR of acquisitions and mergers are displayed in the Table 4. The CAAR of target firms for acquisitions is -0.25% and that for mergers is -0.03%. The residual for cash offers on average is –0.26% and the residual for stock offers is 0.3%.

(Insert Table 4 here)

5.3 Regression Results

Table 5 reports the estimated results of equation (11) for various time periods for the cumulative abnormal return (CAR) of bidding firms as a function of types of acquisition, types of target firms and forms of payment[5]. From regression A, we find that none of the coefficients of the dummy variables is statistically significant at a 10 percent significance level. This implies that the type of acquisitions, type of target firms and mode of payment, do not affect the CAR of bidding firms during the pre-announcement period. We find similar results for regressions B. This implies that the type of acquisitions, type of target firms and mode of payment do not affect the CAR of bidding firms during announcement period as well. We combine both the pre-announcement period and announcement period together and the result does not change much. We thus can conclude that the type of acquisitions, type of target firms and mode of payment do not affect the CAR of the bidding firms during pre-announcement period and announcement period.

(Insert Table 5 here)

The coefficient of $\widehat{\beta}_1$ is statistically significant at a one percent level in regression C. This indicates that the CAR of bidding firms is affected by the type of acquisition at post-announcement period. A similar result is found in regression E for the period between announcement and post-announcement. We, thus, can assert that the type of acquisition would affect the consequence of CAR of bidding firms during announcement period and post-announcement period.

6. Conclusion

This paper examines whether firms involved in M&A activities experience abnormal return around M&A announcement periods and tests if abnormal return on the stock holdings of these firms would be affected by the types of acquisition, the modes of payment or the types of target firms by using the data from six Asian key markets. We find that there exists significantly negative average residuals for target firms around the M&A announcement period. This indicates that market reaction of target firms to takeovers in Asia is negative. Thus we can conclude that the terms and conditions of the takeovers are not in favor to the shareholders of target firms. They are grieved to have the deals. At the same time, the unusual price reactions in the form of CAAR for target firms during the pre-announcement period (-2.5%), the announcement period (-2.4%) and the post-announcement period (-5.2%) are negative but not statistically significant. Thus, there is no abnormal return on target firms at the time surrounding the announcement period.

By contrast, we find that the CAAR facing shareholders of bidding firms is positive at the post-announcement period. This indicates that the information concerning a forthcoming corporate takeover is not considered as good news for shareholders of target firms, as opposed to that of bidding firms. This might be due to the poor performance of target firms before a takeover announcement. Further study is aspired to judge this argument. The changes in share prices

prior to the announcement or after announcement might be due to the information leakage to the markets, profit performance of firms involved, or acquiring prices which may be different from market expectation. Evidence on the significantly positive changes of abnormal return suggests that the shareholders of bidding firms support M&A deals as they expect future efficiency of the merger and thus gain from the M&A activity.

One limitation of our study is that the study period is not long enough, so the merger effect, if any, on target and bidding firms is not apparent. From 2000 to 2007, Asian countries faced the the break of IT bubbles and prices of most stocks flunctated devastatingly. Most of sample countries selected are open to international markets and upon a global economic enviroment, so most of the listed firms in these countries face a considerable fall in their stock price. Hence, the result might be affected by the financial crisis. One thing, that is certain, is the financial crisis causing a series of M&A activities. Some companies aim to enjoy synergy gain or others aim at saving their subsidiaries that were trapped in the financial crisis. In general, there is a lack of regulation about M&A activities in Asian countries, but the investigation of regulations about M&A activities is not the objective of the study. In particular, the determinant of factors that affect abnormal returns of bidding firms and target firms around the announcement period is a topic that deserves future research.

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Notes

Note 1 Ghosh and Ruland (1998) found that managers of target firms were more likely to choose stock offer rather than cash in order to keep their jobs in combined firms.

Note 2. The market model is used because it is better than other benchmarks such as mean adjusted return model and market adjusted return model in measuring abnormal return with daily data (see Brown and Warner (1985), Dodd and Ruback (1977) and Dodd (1980)).

Note 3. see Brown and Warner 1985.

Note 4. y_1 is the first day of the pre-announcement period, announcement period or post-announcement period and y_2 is the last day of the pre-announcement period, announcement period or post-announcement period

Note 5. The estimation of the CAR of the target firms will be skipped because in our sample, it happens that all target firms are public firms and all M&A activities are of cash offers

Table 1. M&A announcements in Asian markets for the period 2000-2007

	Hong Kong	China	Taiwan	Singapore	Japan	South Korea	Total.	%
2000	12	1	35	46	27	10	131	20%
2001	40	6	33	40	9	6	134	20%
2002	35	8	2	32	20	13	110	17%
2003	18	2	0	22	61	3	106	16%
2004	13	1	0	5	14	0	33	5%
2005	23	10	5	8	20	5	71	11%
2006	4	12	4	6	10	3	39	6%
2007	5	11	5	6	5	2	34	5%
Total	150	51	84	165	166	42		
						Total:	658	100%

Source: Bloomberg and Reuter Business Database

Table 2. Summary of CAAR and t-statistics of bidding firms and target firms involved in M&A activity.

	Bidding firms							Target firms
	Hong Kong	China	Taiwan	Singapore	Japan	South Korea	All firms	All firms
***Panel A: Pre-announcement period* (day-50 to –2)**								
CAAR	4.5%	-3.3%	4.7%	6.9%	8.2%	-6.18%	2.72%	-2.5%
T- statistics	2.65***	-0.14	1.98**	4.31***	3.11***	-0.71	1.67	-0.97
% of firms with positive CAAR	49%	46%	41%	59%	70%	63%	52%	N.A.
***Panel B: Announcement period* day-1 to 0)**								
CAAR	-0.33%	-1.5%	-0.55%	0.5%	0.25%	-1.13%	-0.38%	-0.24%
T- statistics	-1.36	-1.57	-1.81*	2.32***	0.89	-1.35	-1.52	-0.89
% of firms with positive CAAR	39%	61%	42%	62%	59%	51%	52%	N.A.
***Panel C: Post-announcement period* (day1 to 50)**								
CAAR	-11%	11%	5%	8%	4%	43%	9.2%	-5.2%
T-statistics	-2.3***	0.22	2.55***	2.11***	2.19***	2.12***	2.12***	-1.56
% of firms with positive CAAR	29%	67%	38%	48%	41%	38%	42%	23%

Notes: Calculated by the authors

***, ** and * denote statistical significance in 2-tailed test at 1%, 5% and 10% levels respectively.

N.A. is for "not available"

Table 3. Distributions of CAAR of bidding firms by type of acquisition, mode of payment and type of target firm by country.

Country	Type	Number of firms	Cumulative average abnormal return
Hong Kong			
Type of acquisition	Acquisition	137	-0.4%
	Merger	13	-0.3%
Mode of payment method	Cash	130	-0.39%
	Stock	20	-0.04%
Type of target firm	Public target firm	16	-0.03%
	Private target firm	134	-0.4%
Taiwan			
Type of acquisition	Acquisition	75	-0.65%
	Merger	9	-0.05%
Mode of payment method	Cash	82	-0.67%
	Stock	2	0.2%
Type of target firm	Public target firm	67	-0.55%
	Private target firm	17	-0.14%
China			
Type of acquisition	Acquisition	45	-0.8%
	Merger	6	-0.24%
Mode of payment method	Cash	31	-0.52%
	Stock	20	-0.52%
Type of target firm	Public target firm	1	0.2%
	Private target firm	50	-0.3%
Singapore			
Type of acquisition	Acquisition	152	0.61%
	Merger	13	0.03%
Mode of payment method	Cash	135	0.61%
	Stock	30	0.03%
Type of target firm	Public target firm	50	0.1%
	Private target firm	115	0.55%
Japan			
Type of acquisition	Acquisition	128	0.18%
	Merger	38	0.06%
Mode of payment method	Cash	136	0.22%
	Stock	30	0.2%
Type of target firm	Public target firm	25	0.1%
	Private target firm	141	0.19%
South Korea			
Type of acquisition	Acquisition	32	-0.98%
	Merger	10	-0.22%
Mode of payment method	Cash	39	-1.18%
	Stock	3	0.2%
Type of target firm	Public target firm	1	-0.24%
	Private target firm	41	-0.96%

Source: Bloomberg and Reuter Business Database and calculated by the authors

Table 4. Distribution of CAAR of target firms by type of acquisition and mode of payment

Type of acquisition	Number of firms	Cumulative average abnormal return
Acquisition	569	-0.25%
Merger	89	-0.03%
Payment method		
Cash	553	-0.26%
Stock	105	0.12%

Source: Ibid

Table 5. Regression results of CAR of bidding firms around M&A announcements for the period between January 2000 and December 2007.

$$CAR_{y1y2} = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 M + \mu_i$$

Regression	$\hat{\beta}_0$	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	$\hat{\beta}_4$	Adjusted R-square	F-test
A	-0.063 (-1.29)	-0.084 (-0.62)	0.043 (0.041)	-0.005 (-0.31)	0.0002 (0.567)	0.001	0.06
B	-0.003 (- 0.169)	0.012 (1.01)	-0.010 (-1.32)	-0.003 (-0.11)	0.358 (0.52)	0.01	0.55 .
C	0.576 (1.55)	-0.752 (-3.11)***	0.091 (0.623)	0.159 (0.29)	-0.177 (-0.132)	0.014	2.68
D	0.615 (0.61)	-0.096 (-1.15)	0.030 (0.650)	-0.006 (-0.045)	0.126 (0.32)	0.003	0.59
E	-2.181 (-1.36)	2. 362 (2.18)***	-0.012 (-0.072)	-0.348 (-0.51)	-0.0002 (-0.019)	0.008	1.98

Notes:

Regression A: on the pre-announcement period

Regression B: on the announcement-period.

Regression C: on the post-announcement-period.

Regression D: on the pre-announcement plus announcement period.

Regression E: on the post-announcement plus announcement period.

$\hat{\beta}_1$ **:** estimated coefficient of Type of Acquisition

$\hat{\beta}_2$ **:** estimated coefficient of Type of Target Firm

$\hat{\beta}_3$ **:** estimated coefficient of Form of Payment

$\hat{\beta}_4$ **:** estimated coefficient of Market Size of Bidding Firms

t-statistics were shown in parentheses. ***, ** and * denote statistical significance in 2-tailed test at 1%, 5% and 10% levels respectively.

Market size of bidding firms at announcement date was calculated by the product of number of outstanding share and closing price at announcement date

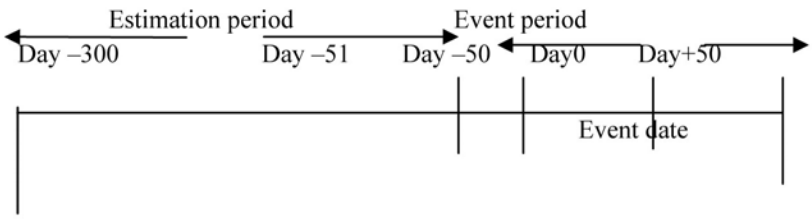

Figure 1. The time periods surrounding the announcements of M&A