An explanation of factors related to the acquiring firm’s 
abnormal returns from M&A activities

By
Xia Zhangliang

A Research Project Submitted to 
Saint Mary's University, Halifax, Nova Scotia 
In Partial Fulfillment of the Requirements for 
The Degree of Master of Finance

December, 2015, Halifax, Nova Scotia

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Approved: Dr. Colin Dodds 
MFin Director
Approved:

Date: December 31, 2015
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Abstract

This paper firstly estimates the abnormal returns from merger and acquisition
activities. To obtain the abnormal returns, I used the S&P500, which is considered as
market return, and firm returns to calculate the normal returns. The excess returns can
be regarded as abnormal returns. Secondly, I performed a regression analysis to test
the relationship between abnormal returns and explanatory factors. This paper
examines these relationships and provides suggestions to companies which would
participate in merger and acquisition activities.

December 31, 2015
## Contents

Chapter 1 Introduction ................................................................................................. 1

1.1 Background ........................................................................................................... 1

1.2 Research objectives .............................................................................................. 2

1.3 Limitations of the research .................................................................................. 2

1.4 Structure of the research ...................................................................................... 3

Chapter 2 Literature Review ....................................................................................... 4

2.1 Why companies participate in merger and acquisition activities ..................... 4

2.2 The relationship between synergy and abnormal returns ................................. 5

2.3 Event study .......................................................................................................... 6

2.4 The factors related to the abnormal returns ....................................................... 7

2.4.1 Size effect ....................................................................................................... 7

2.4.2 Payment method of mergers and acquisitions ............................................. 8

2.4.3 Liquidity of target firm .................................................................................. 10

Chapter 3 Methodology and Data Collection .......................................................... 11

3.1 Methodology ....................................................................................................... 11

3.1.1 Abnormal returns from Merger and Acquisition activities ......................... 11

3.1.2 Testing of the relationship between cumulative abnormal returns and
the factors covered in Chapter 2 ................................................................. 12

3.2 Data collection ....................................................................................... 12

Chapter 4 Analysis ....................................................................................... 13

4.1 Cumulative abnormal return from merger and acquisition announcements
......................................................................................................................... 13

4.2 The correlation between profitability of target firm and abnormal returns
from M&A activities ............................................................................................ 15

4.3 Size effect and abnormal returns of M&A activities ................................. 16

4.4 Influence of payment method and abnormal returns from M&A .............. 18

4.5 Influence of target liquidity and abnormal returns from M&A ............... 20

4.6 Effect of target intangible assets and abnormal returns from M&A ......... 20

Chapter 5 Conclusions .................................................................................. 22

References ..................................................................................................... 23
Chapter 1

Introduction

1.1 Background

One of the ways to increase the value of a firm is to accumulate the earnings, but it will take a long period, like decades. However, there is a more efficient way which includes Mergers and Acquisitions (M&A). This strategy can grow the firm rapidly compared to the reinvestment long-run strategy.

Companies over the past hundred years or so have participated in merger and acquisition activities to increase market power or other business strategies. An acquisition can be defined as a transaction that one company, called the acquirer, uses cash and/or stocks to buy a substantial part or all of the assets or stocks of a target firm. Takeovers, including cross border, are the most general M&A activity in the global economy. Normally the transactions are that the acquirers buy a specific division or all the voting shares of the target firm.

After the 2007-2009 financial crisis, the global economy passed the trough stage and entered into an expansion stage. The takeover boom returned as a preferred strategy compared to building a new division, because of its potential low cost.

There were a total of 178,199 deals of mergers and acquisitions that have happened since January 1st, 2010. Most of that deals (154,959) were completed with 7058 of these being mergers and acquisitions between public companies. For North
America 44% were public deals, with 151 deals being in the technology industry.

**1.2 Research objectives**

The objectives of this research are as follows:

1. To analyze the abnormal returns from merger and acquisition activities from 2010 to 2014 and how much shareholders wealth was created as a result.

2. To analyze the correlation between the profitability of the target firm and the abnormal returns from the M&A activity.

3. To measure the size effect to the abnormal returns from the M&A activity.

4. To measure the payment method (cash, stock) effect to the abnormal returns from the M&A activity.

5. To measure the impact of the liquidity of the target firm to the abnormal returns from the M&A activity.

6. To evaluation whether the intangible assets will affect the abnormal returns from the M&A activity in the technology industry.

**1.3 Limitations of the research**

Because of the data limitations, when testing the correlation between the factors and abnormal returns, many indicators cannot be used, such as ROE, debt to equity ratio. Another limitation is the payment type. For a single type of the payment, such as cash only or stock only, it is easy to test with a dummy variable in the empirical
model. However, for some transactions, both cash and stock were used, so one cannot use a dummy variable to imply these payment types. So when testing the effect of payment type, I eliminated the transactions that paid both cash and stock.

1.4 Structure of the research

This chapter has introduced the background of mergers and acquisitions activity, the objectives and the limitations of this research. Chapter 2 reviews the previous literature which tests the abnormal returns and the factors that result in the abnormal returns on the M&A field. Chapter 3 explains the data sources and the research methodology. In Chapter 4 I examine the results of the regression analysis and the last chapter provides a conclusion and suggests the potential application of this research.
2.1 Why companies participate in merger and acquisition activities.

Zhang, (2012) states that with the development of the global economy, the competition among various industries has intensified, including the high-tech sector, which is a capital, labour and technology. High-tech companies are the symbol of national pride, especially the well-known company like Apple. And the whole technology industry plays a crucial role in the strength and competitiveness of a country. However, when the competition goes fiercer, it is tough to remain as a single company. Therefore, mergers and acquisitions become a preferred strategy compared to accumulating the earnings by themselves to achieve synergies such as economies of scale and scope. (Zhang, 2012).

Yan, (2013) suggests that the accumulation of internal resources and the absorption of external resources are two ways to grow an enterprise. M&A is the most popular external form, and the advantage is that it enables enterprises to grow rapidly. He concludes that the condition of using M&A to grow a company, there must be a probability of achieving positive synergies or abnormal returns. (Yan, 2013).
2.2 The relationship between synergy and abnormal returns

Huyghebaert and Luypaert, (2013) suggest that the abnormal returns during an merger and acquisition announcement period are caused by the potential synergies. To test whether synergies and abnormal returns are related, they calculated direct measures of financial synergies, as well as operational synergies, based on the consolidated financial statements of the acquirer companies and the industry peer groups before and after M&A. They found that the operating synergies are mostly created by cutting down investment expenditures.

In the 1990’s, the cost-based synergies and the revenue-enhancement synergies are very important for acquirer companies when they consider whether to conduct acquisition activities. Their results showed that the sales growth rate of acquirer firms were reasonably larger than the expectations. At the same time, the acquirer firms also integrated their business quickly. The operating costs decreased an extra 1.53% as percentage of sales compared to their estimates. Because of merger activity, the default risk of the combined firm decreased, which meant that they could increase long-term debt and they could increase their economies of scale by issuing more debt. This research showed that the synergies are positively correlated with the abnormal returns from mergers and acquisition announcements. (Huyghebaert & Luypaert, 2013).
2.3 Event study

Chang and Tsai (2013) state that the average cumulative abnormal return of all acquirers is 0.013 on day 0, which is the announcement day. The highest cumulative abnormal return after the merger and acquisition announcement is 0.021 from day 0 to day 2. The cumulative abnormal returns near the mergers and acquisitions announcement are positive and statistically significant at the 1% significance level. Which means the investors can obtain positive abnormal return, on average, in the short-run. However, when they extended the cumulative abnormal return test period, they found that it became insignificant at the 60th day and negative at day 252 at the 1% significance level. They conclude that there are positive abnormal returns in the short-run but negative abnormal returns in the long-run for acquirers. This is consistent with the over-confidence of investors and the correction of the market.

Richard (2006) argued that if investors expect a wild range of M&A activities to create positive synergies, then they can obtain positive abnormal returns from merger announcements. When more investors expect the mergers are based on an optimistic scenario rather than based on reality, the returns of stock in the short-run may be boosted, but this will be reversed in the long-run. He gave another point why the abnormal returns in the long-run are negative namely that if the manager is rewarded by the company because of good performance in short-run, they probably will be willing to participate in a bad acquisition to get the short-term positive returns. So
managerial motivations and incentives are reasons that the abnormal returns are positive in the short-run response to merger and acquisition announcements, but negative in the long-run. (Richard, 2006)

The results of Shah & Arora (2014) shows different results. Their hypothesis test results fail to reject the null hypothesis that there are no abnormal returns from mergers and acquisitions. This indicates that there is no increase in value for the shareholders of an acquirer company. They generated p-values for different event windows. The average p-values for all event windows (32.8%) show the probability of don’t reject the null hypothesis that the M&A announcements don’t create value for acquirer shareholders is very high. Hence, the tests were run at 1%, 5% and 10% significance levels. All the test fail to reject the null hypothesis, indicating that announcements do not affect the value of acquirer shareholders. They also used a t-test, and all the t-statistic value for all event windows do not lie in the reject region of the normal distribution graph and the null hypothesis cannot be rejected. These results are similar with the earlier studies, Swaminathan et al. (2008) and Chakraborty (2010), who found that the acquirer firm is exposed to high risks from acquisition transactions.

2.4 The factors related to the abnormal returns

2.4.1 Size effect

Mulherin, and Boone (2000) performed an event study for acquisition and
divestiture activities of 1305 firms from the Value Line service. From 1990 to 1999, their results showed that the majority of these 1305 companies created wealth by acquisition and divestiture activities. For combined bidding firms and target stock price, the announcement achieved an average target return of about 20 percent in 3 day event windows with slightly insignificant negative bidder returns. They find that the total returns are significantly related to the ratio which divided the target value by transaction value. They concluded that the size effect is a direct reason of the wealth created by acquisitions activities. Their results are coincident with some other studies. For example, Andrade et al. (2001) and Jensen and Ruback. (1983).

2.4.2 Payment method of mergers and acquisitions

Rhodes-Kropf & Viswanathan (2004) explained that the asymmetric information approach argues that managers of acquiring firms preferred to use stock as payment when their stock is overvalued, as this result in a lower cost. However, we can pose the question, why would the managers of target firms accept overvalued stock? They suggest two reasons. The first is that they expect to leave the firm soon, so they don’t care about whether the stock is over or undervalued. Another one is that the acquirer managers would compensate them when the deal is completed, such as, keeping them in the same position and or pay them compensation. Travlos (1987) argues using stock as payment is a negative signal that the acquirer firm’s stock is overvalued. Whereas,
a cash deal is a positive signal by the target firm.

Chang (1998) found a positive abnormal return for the acquiring shareholders from acquisitions by stock. This phenomenon was explained by the controlling counterbalance by blockholder. The target firm would like to accept the acquirer’s stock if their valuation to the acquirer firm is positive. Officer et al. (2009) explain that using stock allows acquirers to deliver some risk to the target shareholders, especially when the target firms are difficult to value, such as private firm. This is also one determinant of the positive abnormal return from the merger and acquisition.

Feito-Ruiz et al. (2015) suggest that their research differs from others which paid more attention on the use of stock as a payment. They found that the cumulative abnormal returns of acquirers from mergers and acquisitions announcements which used cash are positive and greater than the announcement paid by stock. This holds for when the ultimate shareholder of the acquirer has only less than 10% ownership or the acquirer’s headquarters are in a country with high shareholder protection, self-shareholder protection, creditor protection and high levels of KKZ index. This index is calculated as the average of six indicators for each country, including political stability, regulatory quality, voice and accountability in the political system, rule of law, government effectiveness and control of corruption.

The higher level of ownership concentration, the less probability of paying cash by acquirers. The same impact was found where there was a strong legal environment
in an acquirer’s country. Normally, a major reason that acquirers choose to pay by cash is because they feel that is a way to avoid diluting their ownership. But for the concentrated ownership acquirer companies, they don’t perceive to be paid by cash as a way to avoid diluting the ownership of the company. So, for these kind of acquirer companies, the reason they choose to pay cash is that they have a high expectation of the synergies from the merger this merger and acquisition.

2.4.3 Liquidity of target firm

Fuller et al. (2002) performed research into the excess returns achieved by acquiring firms. They state that the acquisition activity in a relatively illiquid market will give bargaining power to the buyers. As a result the acquirer firm’s assets will have a liquidity discount and the shareholders of the acquiring firm will benefit from this and achieve a takeover premium.
Chapter 3  
Methodology and Data Collection

3.1 Methodology

3.1.1 Abnormal returns from Merger and Acquisition activities

At first, I introduce the methodology part of event study to obtain the abnormal returns from mergers and acquisitions activities. This methodology can provide an estimation of expected synergies by the announcement.

Event studies are based on an assumption that the financial market is semi-strong form efficient, which means that the price and return reflect all publicly available information. So I can estimate the normal returns without mergers and acquisitions activity by the pre-event window. After that, I can use the normal returns to calculate the excess returns during the event window which is cumulative abnormal return.

Testing for significance:

I will test whether the average abnormal return of each stock is statistically different from zero.

\[ t - \text{value} = \frac{\text{cumulative abnormal return}}{\text{abnormal return standard deviation} \sqrt{N}} \ldots \ldots \ldots \ldots \ldots \ldots \text{3.1.} \]

If the t value of test is larger than 1.96 or smaller than -1.96, then the average abnormal return of the stock is significantly different from 0 at the 5% significance level. The 95% distribution of value from the standard normal distribution with zero mean and standard deviation of 1 is between ±1.96.
3.1.2 Testing of the relationship between cumulative abnormal returns and the factors covered in Chapter 2

From statistical theories, the test results should follow a normal distribution. I chose 51 mergers and acquisitions transactions to be my sample, and use regression analysis to test the correlation between cumulative abnormal returns and the explanatory factors previously discussed.

3.2 Data collection

I used the WRDS and Bloomberg databases to gather the data of completed mergers and acquisitions transactions for high-tech firms in North America in the period 2010-2014. In order to collect all data listed before, I selected criteria to choose the sample. First, the industry chosen is technology. Second, the bidder and target firms are all public companies in North America. Third, the transaction payment method is only cash or shares (no mixed payment). As mentioned earlier, since I choose a dummy variable to identify the payment method, it is hard to identify a mixed payment and especially the proportion of each kind of payment.

Table 3.1. Annual distribution of Mergers and Acquisitions Sample.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>13</td>
<td>25.49%</td>
</tr>
<tr>
<td>2011</td>
<td>10</td>
<td>19.61%</td>
</tr>
<tr>
<td>2012</td>
<td>10</td>
<td>19.61%</td>
</tr>
<tr>
<td>2013</td>
<td>11</td>
<td>21.57%</td>
</tr>
<tr>
<td>2014</td>
<td>7</td>
<td>13.72%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>51</td>
<td>1</td>
</tr>
</tbody>
</table>
Chapter 4

Analysis

4.1 Cumulative abnormal return from merger and acquisition announcements

In this section, I examine the market initial reactions to merger and acquisition announcements and I use cross sectional analysis to do this.

At first, I chose the time interval of 60 to 30 days before the mergers and acquisitions event date to be the estimation window. Then, I selected five days after the announcement to be the event window. Combining the stock return and market return during the estimation window, I could predict the normal return at the event window. Comparing the actual stock returns and predicted normal returns, the differences were abnormal returns. Adding them up, finally I obtain the cumulative abnormal returns (CAR)

\[
CAR = \sum_{t=0}^{4} (ret - predicted\; return) \quad \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots 4.1
\]

where \( ret \) is the actual stock return of each stock, the predicted return is the normal return I predict at the event window.
Table 4.1. Regression results of abnormal returns

<table>
<thead>
<tr>
<th>DAY</th>
<th>Means</th>
<th>Max</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-0.00000993</td>
<td>-0.1481516</td>
<td>-0.1481516</td>
</tr>
<tr>
<td></td>
<td>(.0378106)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0.0032002</td>
<td>0.1385266</td>
<td>-0.0900588</td>
</tr>
<tr>
<td></td>
<td>(.0327086)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-0.0049008</td>
<td>0.0871215</td>
<td>-0.1296519</td>
</tr>
<tr>
<td></td>
<td>(.0318232)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.0047858</td>
<td>0.1017047</td>
<td>-0.0794512</td>
</tr>
<tr>
<td></td>
<td>(.0244478)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.000556</td>
<td>0.0802717</td>
<td>-0.0286363</td>
</tr>
<tr>
<td></td>
<td>(.0180186)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAR</td>
<td>0.0036312</td>
<td>0.2301502</td>
<td>-0.2914565</td>
</tr>
<tr>
<td></td>
<td>(.078247)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test value</td>
<td>2.230781</td>
<td>6.827696</td>
<td>.0563119</td>
</tr>
<tr>
<td></td>
<td>(1.695781)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The t-test value is 2.23 which is larger than 1.96. This result shows that the 5-day cumulative average abnormal return is significantly different from zero at the 95% confidence level.

From the event study, I calculated that the average cumulative abnormal return for each company is 0.36%. These returns are five trading days after the mergers and acquisitions announcement, which is 18.3% after being annualized.
4.2 The correlation between profitability of target firm and abnormal returns from M&A activities

For an enterprise, it should create positive synergies by absorbing a profitable department. So in this section, I will test if this assumption is true, and if so, what is the correlation between the abnormal return and the profitability of the target firm.

To test this relationship, I chose indicators to perform the regression. At first, I used the cumulative average abnormal returns calculated in Equation 4.1. Next, I decided to use ROA, ROE and the PE ratio to stand for the profitability of the target firm. ROA and ROE are the indicators used by other researchers to show the profitability of a firm traditionally. The PE ratio is price divided by earnings per share, which is also an indicator of the profitability of a firm.

Table 4.2. The regression results.

<table>
<thead>
<tr>
<th>Regression</th>
<th>Coef.</th>
<th>T-test</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.0004769</td>
<td>0.23</td>
<td>0.816</td>
</tr>
<tr>
<td></td>
<td>(0.0020437)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.0015691</td>
<td>0.13</td>
<td>0.894</td>
</tr>
<tr>
<td></td>
<td>(0.0117488)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>-0.014471</td>
<td>-2.88</td>
<td>0.006</td>
</tr>
<tr>
<td></td>
<td>(0.0050294)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE</td>
<td>0.0000037</td>
<td>0.49</td>
<td>0.626</td>
</tr>
<tr>
<td></td>
<td>(0.0000076)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the regression results, the coefficients of ROA and PE ratio are positive, but they are too small, and the t-value are smaller than 1.96. As a result there is no confidence to state that the correlation between these two indicators and abnormal
returns can be proven. The coefficient of ROE is negative and significantly different from zero. This shows a negative relationship between the abnormal returns and profitability of a target firm. The reason why the relationship is negative is that when the target firm has ‘good’ profitability, the shareholders of the target firm will expect more returns to sell their shares to the acquirer. So they will require more of a premium. Thus, the acquirers will not benefit from the good profitability of target firm in this acquisition. Compared to ROE, the ROA contains the returns to debtholders. This is why shareholders care more about ROE. So the indicator, ROA, cannot show a statistically significant result.

4.3 Size effect and abnormal returns of M&A activities

The previous studies have examined that the wealth created by mergers and acquisitions activities is significantly related to the target value divided by transaction value, which is the premium of the transaction.

In this section, I will test the relationship between wealth created and other relative size effects.

At first, I use the ratio of the target firm value to acquirer firm value. When a big company acquires a small company, the management of the acquirer firm can decide on the strategy of the combined firm which could indicate allowing the managers of the target firm to keep doing what they did. The operating efficiency will not reduce.
Even for the target part, the management efficiency will increase, because the management skills of the acquirer firm’s manager are more developed. However, if the merger and acquisition deal occurred between two companies which have similar market capitalization, the operating efficiency will almost be reduced. From earlier empirical studies, we know that there is a negative relationship between operating efficiency and the changing of management. The more similar their size, the more an agency problem will happen. So I make an assumption that the target market capitalization to acquirer’s market capitalization ratio is negatively related to the abnormal returns from merger and acquisition activities. The second ratio is deal size to acquirer firm value. The results are shown in Tables 4.3 and 4.4.

Table 4.3 Regression Results

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs = 51</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>.000702502</td>
<td>1</td>
<td>.000702502</td>
<td>F(1, 49) = 2.98</td>
</tr>
<tr>
<td>Residual</td>
<td>.011542691</td>
<td>49</td>
<td>.000235565</td>
<td>Prob &gt; F = 0.0905</td>
</tr>
<tr>
<td>Total</td>
<td>.012245193</td>
<td>50</td>
<td>.000244904</td>
<td>R-squared = 0.0574</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adj R-squared = 0.0381</td>
</tr>
</tbody>
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<tr>
<td>Total</td>
<td>.012245193</td>
<td>50</td>
<td>.000244904</td>
<td>R-squared = 0.0574</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adj R-squared = 0.0381</td>
</tr>
</tbody>
</table>

| CAAR           | Coef.        | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|----------------|--------------|-----------|-------|------|----------------------|
| target_mc_to_acquiring_mc | -.0141664   | .0082033  | -1.73 | 0.090| -.0306516 , .0023188 |
| _cons          | .0031318     | .0025611  | 1.22  | 0.227| -.002015 , .0082785  |
Table 4.4 Regression Results

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs</th>
<th>=</th>
<th>51</th>
<th>F(1, 49)</th>
<th>=</th>
<th>1.11</th>
<th>Prob &gt; F</th>
<th>=</th>
<th>0.2972</th>
<th>R-squared</th>
<th>=</th>
<th>0.0222</th>
<th>Adj R-squared</th>
<th>=</th>
<th>0.0022</th>
<th>Root MSE</th>
<th>=</th>
<th>0.01563</th>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Residual</td>
<td>0.011973876</td>
<td>49</td>
<td>0.000244365</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.012245193</td>
<td>50</td>
<td>0.000244904</td>
<td></td>
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<td></td>
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</tbody>
</table>

From my test results, the coefficient of target market capitalization to acquirer’s market capitalization is negative and statistically significant. The t-value is equal -1.73 and the p-value is 0.09, which means that the coefficient of target market capitalization to acquirer’s market capitalization is different from zero at the 90% confidence level.

4.4 Influence of payment method and abnormal returns from M&A

From previous empirical studies, I have found that the payment method is a signal of asymmetric information. If the acquirer’s management is concerned that the actual stock price of target firm is not fully reflecting the intrinsic value of company, they prefer a cash offer. This is because they believe the stock price will improve under their management, and the acquirer’s shareholders will derive more benefit than being acquired by stock. But if they think the target firm was overvalued, then their will prefer a stock exchange offer to share risk with the target shareholders.
In addition, these two payment offers have different tax purposes. Cash offers will create tax obligations for target shareholders and increase the depreciation expense to the acquirers. Stock offers are technically tax-free transactions. The target shareholders will only realize a capital gain when they sell the stock, which means their tax obligations are deferred. Due to the difference of tax treatment, the premium of acquisition is higher in the case of a cash payment compared to a stock payment. This will affect the abnormal return from mergers and acquisitions activities.

As covered in Chapter 3, I chose to use dummy variables to indicate the payment method of acquisitions. Dummy payment equals 1 if it is a cash offer and 0 if it is a stock offer.

### Table 4.5 Regression results (dummy variable)

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs = 51</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>.000515654</td>
<td>1</td>
<td>.000515654</td>
<td>F(1, 49) = 2.15</td>
</tr>
<tr>
<td>Residual</td>
<td>.01172954</td>
<td>49</td>
<td>.000239378</td>
<td>Prob &gt; F = 0.1486</td>
</tr>
<tr>
<td>Total</td>
<td>.012245193</td>
<td>50</td>
<td>.000244904</td>
<td>R-squared = 0.0421</td>
</tr>
<tr>
<td></td>
<td>Source</td>
<td></td>
<td></td>
<td>Adj R-squared = 0.0226</td>
</tr>
</tbody>
</table>

| CAAR       | Coef.         | Std. Err. | t    | P>|t|    | [95% Conf. Interval] |
|------------|---------------|-----------|------|--------|---------------------|
| dummy_payment      | .008341       | .0056831  | 1.47 | 0.149  | -.0030795 - .0197615 |
| _cons        | -.0061428     | .0051573  | -1.19| 0.239  | -.0165068 - .0042211 |

The regression results show that cash payments have a positive effect on abnormal returns from mergers and acquisitions activities and for use of the stock payment method, the opposite.
4.5 Influence of target liquidity and abnormal returns from M&A

Previous research has examined that when a company acquire a private firm, the liquidity of the target will affect the deal price. The liquidity discount will increase for firms with lower liquidity. Nevertheless, how about a public company? When acquirers take over a public company with low liquidity and solvency, it may cost a large part of cash flows to improve the operation of the target firm.

From the regression analysis, I obtained a positive, but insignificant coefficient of debt to assets ratio, and the R-squared is 0.0275, which means this sample cannot examine the relationship between DA ratio and abnormal returns from M&A activities. The t-value of beta is 1.18, the p-value is 0.245.

4.6 Effect of target intangible assets and abnormal returns from M&A

In accounting terms, intangible assets include patents, trademarks, goodwill, franchise rights and some other costs the company incurred for providing future profits. Normally, patents, trademarks and goodwill are three of the most common intangible assets in a company’s balance sheet.

Goodwill is the excess of purchase price over the fair value of the company’s equity in an acquisition. Thus, it can also be considered that the acquirer can earn more wealth over the fair value of the target firm.
Patents are an important resource to the high-tech industry. In 2011, Google announced that they took over Motorola. The most attractive part for Google was Motorola’s patents. After the transaction, Google received 12500 authorized patents and 7500 patent applications, which can give Google more competitive power.

So “intangible assets” is an important part to be considered when the bidding firm makes an M&A offer. But it is hard to define how do intangible assets affect the transaction.

I used cumulative average abnormal returns and intangible assets to total assets of target firm perform the regression. The results are presented into Table 4.6.

**Table 4.6 Regression results**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coef.</th>
<th>T-test</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.001364</td>
<td>0.49</td>
<td>0.627</td>
</tr>
<tr>
<td>IATA</td>
<td>-0.0045368</td>
<td>-0.38</td>
<td>0.709</td>
</tr>
</tbody>
</table>

where IATA is Intangible Assets to Total Assets of target firm. The results show a negative but insignificant relationship between the abnormal returns and the proportion of intangible assets to total assets of the target firm.
Chapter 5

Conclusions

In this paper, I tested the relationship between abnormal returns of bidding firms from merger and acquisition activities and many explanatory factors. I found that during the period 2010 to 2014, the acquirer companies obtained annualized abnormal returns of 18.3% during five trading days after the announcement date on average in North America. Many factors can affect the abnormal returns of acquirers. First, the profitability of target firm is negatively correlated to the abnormal returns of acquirers. Second, a cash offer has a positive effect on the abnormal returns. Third, the larger the difference between firm size of target and acquirer, the greater the abnormal returns. Finally, the larger proportion of intangible assets to total assets of target firm, result in lower abnormal returns from mergers and acquisitions activities.
References


Wansley, J., Lane, W. & Yang, H. (1983). Abnormal returns to Acquired firms by
