



**CEO Ownership and SMEs M&A: Does The Combination Increase  
SMEs Long-Term Performance?**

**Master Thesis**

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## **Abstract**

This thesis examines the relation between SMEs' M&A activity given CEO shares ownership and how it links to SMEs' performance after the M&A announcement. This thesis makes use of data of acquisitions done by publicly listed U.S. SMEs in the period of 2007 to 2011. This thesis examines the relationship between an M&A and the CEO ownership by using an M&A announcement and the proportion of shares owned by the CEO during their tenure. SMEs performance is examined based on the abnormal return, as represented by alphas from Fama French's Three-Factor model. This thesis finds no evidence on the relation between SME CEOs' ownership and M&A decision. It is also found that SMEs is significantly underperformed in the 5 years period after the M&A announcement and its performance is lower compared to the same period before the announcement. Overall, SMEs' shareholders should consider M&A opportunities very carefully.

Keywords: M&A, SME, CEO ownership, performance, abnormal return, Fama French – Three-Factor Model.

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## 1. Introduction

Merger and acquisition (M&A) is considered a strategic move to increase the size of a firm or to acquire new competency. It is estimated there are 11,300 M&A deals worldwide in 2015 which amounted to a total value of over US\$ 4 trillion (Prakash and Bolotnikova., 2016). Firms involved in M&A deals are not limited to a particular size given that small and medium firms (SMEs) also participate in M&A deals.

In SMEs, the manager typically has ownership over the firm (Demsetz and Lehn, 1985). They are either family members or the founder of the firm. As one of the shareholders, SME's managers have particular concern over their firm growth and profitability. When considering to engage in M&A deals, SMEs have the goal to either increase their profitability (Arvanatis and Stucki, 2015), to increase their market power or efficiency (Gugler, Klaus, et al. 2003), or to acquire new knowledge base (Cloudt et al., 2006).

SMEs are different from large firms in terms of their corporate governance structure. SMEs have particular similarities to family firms. The Chief Executive Officer (CEO) or the chairman of the board of SMEs usually own a significant proportion of the company's shares. Previous research finds that CEO and top management team tend to become risk averse and exhibit less strategic change when they own a substantial portion of the company's share (George et al., 2005; Brunninge et al., 2007). It has also been found by Miller et al. (2010) that family ownership and the number of acquisition have an inverse relation. Family-controlled firms are less likely to make an acquisition than non-family controlled firms (Caprio et al., 2011).

M&A activities consume significant effort and resources from the firms that are involved. SMEs face greater challenges than large firms when they plan to engage in an M&A deal as they have limited resources. However, the fact that some SMEs still choose to do an M&A deal shows despite their limited resources and risk aversion suggest that SMEs CEO perceived that an M&A could add value to these companies. This then raises some questions about the relationship between CEO's ownership and the decision to engage in M&A as well as the long run performance of SMEs that engage in M&A deals. Is SMEs CEO decision to do M&A related to their ownership of the firm? Is the decision for SMEs to involve in M&A really beneficial for SMEs shareholders?

The answer to these questions will help shareholders of SME to evaluate M&A opportunities given by their CEO. This thesis tries to investigate these questions.

The objective of this thesis is to discover the relation between M&A decision on SMEs, CEO's ownership, and SMEs' performance after M&A. The result of this thesis should be relevant to CEO of small companies because M&A can serve as an alternative growth strategy for SMEs. SMEs shareholders could use this thesis finding to consider an opportunity to do M&A. This thesis also contributes to the theoretical discussion on SMEs corporate governance and SMEs performance after M&A.

This thesis proposes that CEO's ownership of the company is not strongly related to their decision to do an M&A deal and the SMEs' performance after M&A will underperform as compared to other firms in US stock market. However, the non-significant result suggests that our first hypothesis on the negative relation between CEO ownership and M&A announcement is not supported. Contrary to the second hypothesis, SMEs shares exhibit a significant negative abnormal return after M&A announcement. These findings suggest that CEO's decision to engage in M&A is not influenced by their ownership over SME. CEO decision to do M&A is not beneficial for the shareholders because it leads to a negative return on their shares.

This thesis focuses on M&A activities of listed US SMEs in the year 2007 – 2011. I retrieved data of M&A activities and CEO shares ownership from ThomsonOne database. SMEs yearly financial data is taken from Compustat database while CRSP database provides monthly data on stock return and Fama-French model. The hypotheses are tested using logit and OLS regression accordingly.

The rest of this thesis is organized as follows. Chapter 2 presents the overview of the literature on the subject of CEO ownership, the problem within it and its relation to M&A decision. A review of firms performance after M&A and hypotheses developed from the theories also presented in chapter 2. Research design, description on the data that are used, details description of the proxy for each variable will be used in the regression, and the methods used to test the hypotheses are explained in Chapter 3. Chapter 4 reports the empirical results from data analysis. Lastly, the conclusion of the results, research limitations, and suggestion for future research can be found in Chapter 5.



## **2. Literature Review and Hypothesis Development**

This chapter discusses relevant literature on CEOs' ownership of SME and M&A decision. First, the chapter starts with the discussion of CEO ownership based on the agency theory. It explores the potential problems behind CEO decision and how CEO decision may be influenced by their ownership over the firm. Further discussion on CEO ownership and their decision can be found in the second section of this chapter. This section is focusing on M&A decision made by CEO and how is the tendency of CEO over M&A based on their ownership. The third part of this chapter will then review recent studies on firms' performance after M&A, which is the result of CEO decision. These first three sections provide a framework for understanding CEO ownership in SMEs and M&A decision made by CEO of an SME. The fourth section will provide a review of SMEs and their M&A activities. This chapter ends with hypotheses regarding the relation between SMEs CEO ownership and M&A decision, and how will SMEs perform after M&A, developed from the previous discussion.

### **2.1. CEO's role in agency theory**

In most firms, CEO is in charge of the daily operation of the firm and has the authority to make important decisions for the firm. On the other hand, shareholders are the people who invest their capital into the firm. Shareholders expect that the CEO will manage the invested capital well so as to provide them with financial return. In the agency theory, the CEO is referred to as the agent while shareholders of the firm are the principal. While the objectives of the agent and the principal are similar in terms of maximizing their utilities, potential problems could arise when decisions that are made by the agent are not in the interest of the principal. Often times, this happens when agents put their self-interest above the interest of the principals.

Jensen and Meckling (1976) describe the relation between managers and their shareholders as a contract in which the principal employ and delegates some authorities to the agent. Under this arrangement, shareholders grant managers the authority to manage firms' resources and make decisions for the firm. As shareholders have already delegated their task in controlling the firm to the manager, they now only need to control the manager's decisions. The agency problem arises due to the fact that the manager's wealth is not affected by the decision they made (Fama and Jensen, 1983). Hence, principals need to control the actions of the manager to ensure that the

manager act in the best interest of the principal. The principals attempt to control the agent through incentives so as to encourage the agent to take desirable decisions that are in line with the interest of the principals.

In a firm where the control and the decision are done separately by principals and agent, the agent has limited claim over firm's return. Although the return of the firm is a result of managers' decisions, their claim is limited to the compensation that has been promised to them based on the contract with shareholders. However, when managers' decisions are taken based on an incentive that can increase their compensation, Jensen (1986) suggests that managers will attempt to grow the firm beyond its optimal size. The growth allows managers to have control over the relatively large firm's resource which leads to a higher compensation. An acquisition is one way to increase the size of a firm.

### **2.1.1. CEO as a combination of agent and principal**

While role separation was common in many firms, there are many firms in which the CEO holds a significant or even a controlling portion of the shares of the firm. In a situation where a firm is entirely owned and managed by the owner, the owner will make decisions that maximize his benefits (Jensen and Meckling, 1976). This situation typically pertains to family firms. A family firm can be described as a firm which is managed by family members to achieve family goals as the dominant controller of the firm (Chrisman et al. 2005). In a family firm, the founder, directors, and the blockholder will comprise of individuals who are related either by blood or marriage. (Villalonga and Amit, 2006; Anderson and Reeb, 2003). In this way, a family firm ensures an alignment of the interest of agents and principals. Agents' claim on firm's return is no longer limited to their compensation as specified in the contract, but their wealth is now directly affected by the firm's financial return. As agent pursues an increase in their wealth, they can make decisions which are actually not beneficial for the firm. For example, they are less likely to invest in projects that increase firm's efficiency because of the high uncertainty nature of these projects (Fama and Jensen, 1983). An alignment of interest does not necessarily guarantee that the agent has the same attitude towards growth opportunity and risk as the principals. Therefore, managers can make a decision that does not make economic sense (Schulze et al., 2001). Family firms also have known to be risk averse and more likely to be operated conservatively (Caprio et al., 2011).

## **2.2. CEO and M&A**

A firm's shareholders give the authority to operate and to make decisions about the firm to the CEO. One of the concerns of the CEO is to make the firm grow. Merger and acquisition (M&A) is one strategic option to ensure firm growth. As CEO has more information about the firm and its environment than other people inside the firm, the majority of M&A decisions is made or recommended by the CEO. The motivation to conduct an M&A deal is either be for their own interest or for the benefit of the firm. Some benefits of an M&A for the firm include diversifying into a new business, making use of new intangible assets (such as technology, patent, brand), or obtaining a new market share.

One of CEO motivation to conduct an M&A deal is to get a bonus upon the completion of the deal. Grinstein and Hribar (2004) found that CEOs were given a large bonus when they make a large M&A deal. The power that a CEO holds in the firm determines whether they can influence the amount of bonus they will receive in such situation. A powerful CEO has the tendency to make a deal that is relatively large compared to the size of their own firm to gain this incentive.

According to Richard Roll (1986), a CEO tend to bid above the market price for the target firm. In an efficient financial market, market price should reflect all information about the firm. When making M&A decision, a CEO believes that the target firm holds more value than what is represented by its market price. CEOs expect the premium they paid during acquisition gives the firm more benefits which will eventually increase the value of the firm. Unfortunately, it is reported that only 20-30% of all acquisitions manage to create value and high financial return for the acquiring firm (Grubb and Lamb, 2000; Brunner, 2002). Researchers characterize this as overconfidence. CEOs tend to be overconfidence when doing an M&A deal, especially when they have abundant internal financial resources or intended to diversify their portfolios. However, they would be less confident when they have to rely on external financing for the acquisition (Malmandier and Tate, 2005, 2008). Brown and Sarma (2007) found that CEOs' dominance over the firm also has the similar influence as overconfidence in an M&A decision.

### **2.2.1. M&A in a concentrated ownership**

In family firms, it is possible for CEOs to hold a significant portion of the share or voting power that put them in control over the decision of M&A. CEOs of family firms tend to manage

their firm in a risk-averse manner given that they also invest a substantial portion of their money in their firm, i.e. they have a concentrated investment portfolio. In order to minimize the risk of a concentrated investment portfolio, CEOs of family firms will diversify their firms business through acquisitions. These CEOs also prefer fewer numbers of acquisition and lower deal value (Miller et al., 2010). Caprio et al. (2011) suggest that family firms will make acquisition decision that ensures the family still have major control over the firm. They also discovered that although family firms have lower tendency to make acquisitions than non-family firms, firms' growth was not affected. Miller (2010) speculates that market value of these family firms remain the same as before the acquisition because their CEOs are very selective in their acquisition decisions and focused on maintaining a certain level of return.

### **2.3. Firm performance upon completion of M&A**

The goal of conducting an M&A is to create additional value for the shareholders. Researchers use various measures to identify whether M&A is able to create value for the firm and its shareholders. Brunner (2001) stated that to determine whether a value has been created from an M&A transaction, the result must be analysed using an economic measure. An economic measure is used to avoid subjective indicators – such as gaining new technologies, increasing competitiveness, and because it can be used to compare transactions between firms and events.

One economic measure for firm performance that is commonly used is sales and profitability. Guggler et al. (2003) found that majority of M&A deals around the world results in an increase in profit but a decrease in sales in the five-year period. This result is typical for most large firms that engaged in M&A deals. For smaller firms, there is an increase in both sales and profit. According to Palepu and Ruback (1992), firms that merged show higher asset productivity which leads to higher cash flow returns from operating activities.

Another measure that is typically used by researchers is stock returns. For public firms, their performance can be linked to the return their shareholders received from their shares. Andre et al. (2004) found that the stock return for firms that engaged in high-value M&A deals, which were financed by firm equity, tend to underperform as compared to the stock return for firms that engaged in moderate value M&A deals, which were financed by cash. Large firms also tend to pay a higher premium for their acquisition than smaller firms, which make their shareholders lose their

wealth. On the other hand, smaller firms tend to get higher returns from their acquisition regardless of the financing method they used. Large firms can have a slightly improved performance if they finance their acquisition by using equity (Mooler et al., 2004).

#### **2.4. M&A and SMEs**

SMEs have a major role in the economy in almost every country, but especially in developing countries. The World Bank (2015) estimated that nearly 40% of national income is derived from SMEs' economic activities. Most SMEs' CEOs are either the founder of the firm or they have a family relation to the founder of the firm. CEOs of SMEs usually hold a substantial portion of the shares of the firm, which tie their personal wealth to the firm. Due to the size of their firm, often SMEs do not separate the decision maker, i.e. the CEO, from the controller, i.e. board of directors. The two roles are done by the CEO and as such, they have complete control of the company. According to O'Regan et al.(2005), SMEs that are under complete control and ownership of their CEO have better performance than a subsidiary firm of a relatively same size. SMEs superior performance can be attributed to their CEOs' ability to use firms' resources efficiently and to manage firms' operation effectively. However, these firms may have a lower initiative to engage in strategic changes to their operation (Brunninge et al., 2007). This condition may occur because SMEs' CEOs lack the skill or knowledge to anticipate the change in their environment. A fresh external knowledge and insight can help the top management team to mitigate this problem.

Like larger firms, SMEs also engage in M&A activities as a way to further their strategic interest. However, SMEs face several difficulties in doing M&A deals. Financial constraints limit their M&A options (Hussinger, 2010). After successfully acquired a new business, the integration process is also a challenge for SMEs as it will take a substantial amount of efforts and resources (Bauer et al., 2017). Fahlenbrach (2009) found that in SMEs in which the founder is also the CEO, these SMEs will typically only target a small firm in their acquisition deal. CEOs are also more likely to target new business from the same industry that their company operates in.

#### **2.5. Hypothesis Development**

Agency theory predicts that there will be a conflict of interest when CEOs decide to engage in M&A deals. Although there are a number of research on this issue, they were mainly in the context of large firms. When considering SMEs, one needs to consider that CEOs in SMEs are

typically the founder or have family ties with the founder of the company. They also tend to have a significant portion of shares of the company. These CEOs will have an inclination to be risk-averse given that the performance of the company directly links to their personal wealth. Their risk aversion reduces their willingness to engage in acquisition deals given the high risk involved in such a transaction.

The main challenge for SMEs in deciding to go with an M&A deal is in their financial capability and the availability of the potential target firms given their financial limitation. Nevertheless, there are a number of M&A deal was done by SMEs. Considering that an M&A transaction is a risky investment and consumes relatively large resources of SMEs, the decision is supposed to be one of CEO primary concern. I argue that this should be true particularly for CEOs who have significant shares in their companies. However, I propose that for those CEOs who have limited proportion of the company's shares, they would more likely act in a similar way as those CEOs in large companies that prefer to have more M&A deals. As such, I proposed that:

**H1: There is a negative relation between CEOs' ownership and M&A announcement.**

CEOs are concerned with the impact of their decisions on the firm's performance. The decision to do an M&A will have a larger impact on SMEs than to large firms. Previous research found that the financial return after an M&A deal for small firms is better than for large firms (Andre et al., 2004; Moeller et al., 2004). Firms investigated in those studies were small size firms and they were not necessarily considered as SMEs. As SMEs is more likely being controlled by their founder or a person with family ties to their founder, making these SMEs similar to family firms, these SMEs would be very selective in choosing potential M&A target. I expect that SMEs that engage in M&A transactions would have a good performance after the completion of such transaction because these companies have limited resources and therefore their CEOs would be particularly concerned with their firm's performance after M&A. This effect can also occur even when the M&A deal is not completed. This leads to my second hypothesis that:

**H2: There is a positive SME performance after M&A announcement.**

### 3. Research Design

This chapter explains the data collecting procedures, the definition of variables, and the model that is used to examine all the hypotheses and answer the research questions.

#### 3.1. Sample and data collection

The main focus of this research is SMEs' CEO and M&A decisions. OECD (2005) defines SMEs as non-subsidary, independent firms which employ fewer than 250 people – United States set the number to be less than 500 employees. Besides the number of employees, to be categorized as an SME, firms' turnover and balance sheet must not exceed EUR 50 million and EUR 43 million, respectively.

I retrieved the U.S. publicly listed firms accounting data from Compustat and filtered them by looking only firm with an employee number below 500 and has total assets below \$59 million<sup>1</sup> in the period of 2007 to 2011, in line with the definition of an SME as previously described. Next, I matched firms from Compustat data with CSR data to obtain data on firms' return. To observe the effect of M&A announcement on long-term firm return, I retrieved firms' return data from CSR in the period of 2002 to 2016. I use 5 years as the long-term period for observation before and after M&A announcement. The M&A announcement should be made between 2007 and 2011. I excluded firms with no total assets data and firms with zero total assets. Lastly, I manually collected the data on CEOs' share ownership of their firm from ThomsonOne database. I eliminate all the firms that do not have any data of their executives and board members during the observation years. This procedure resulted in 555 firms with 2,154 firm-year observations from Compustat and 19,640 firm-month observations from CSR.

I extracted M&A transactions from ThomsonOne database based on observations in the period between 2007 and 2011. I matched these transactions with firms sample I obtained from Compustat and CSR database. The data showed 196 M&A announcements were made by SMEs in the period of 2007 to 2011.

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<sup>1</sup> Exchange rate €1 = \$1.3705; average Euro-USD exchange rates in 2007 according to European Central Bank [https://www.ecb.europa.eu/stats/policy\\_and\\_exchange\\_rates/euro\\_reference\\_exchange\\_rates/html/eurofxref-graph-usd.en.html](https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/eurofxref-graph-usd.en.html)

To examine firms' long-term performance after M&A announcement, I use Fama-French three research factors as a benchmark for the U.S. market return from Ken French website<sup>2</sup>. The data is also available in CSRP database from the same resource. I extracted firms return data from CSRP monthly stock report.

### 3.2. Research Method

In this research, I run a separate model for each hypothesis. I followed the approach proposed by Malmandier and Tate (2008) for my first hypothesis while I followed the approach by Andre et al. (2004) for my second hypothesis. The models and variables used are described below.

#### 3.2.1. CEO ownership and M&A decision

In this research, I analyzed the relationship between CEOs' ownership and CEOs' decision to do an M&A. Based on the related literature, I assumed CEOs' wealth to be more affected when they have more ownership of firm they are in charge with. When CEO announced an M&A deal, regardless of whether they will complete it, the decision will still affect the firm and also their wealth. To test H1 hypothesis, I followed Malmandier and Tate (2008) prediction test as follows:

$$\begin{aligned} \mathbf{Merger}_{it} = & \beta_1 + \beta_2 \mathbf{Ownership}_{it} + \beta_3 \mathbf{Leverage}_{it} + \beta_4 \mathbf{FCF}_{it} + \beta_5 \mathbf{FirmSize}_{it} \\ & + \beta_6 \mathbf{TobinQ}_{it} + e \end{aligned}$$

The dependent variable Merger is a variable for M&A announcement made by CEO of SME. To identify CEOs' decision for M&A, I assigned 1 for every firm-year when there was at least one announcement of M&A in a year, and 0 otherwise. I do not differentiate M&A announcement that was eventually completed from the one that was not as both results are assumed to affect firm future performance. The independent variable Ownership is defined as the proportion of firm's shares owned by the CEO out of the total outstanding shares express in percentage. This shares must be owned by the CEO during their tenure.

Free cash flow (FCF) is cash flow in excess of that required to fund all projects with positive net present values discounted at the relevant cost of capital (Jensen, 1986). According to Jensen, the CEO has the opportunity to use FCF generated by a firm to finance CEO's preference

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<sup>2</sup> [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)



investment. As FCF is under the control of the CEO, the availability of FCF enables CEOs to finance M&A transaction. I used FCF as a control variable in this model. To calculate firms' FCF and make it comparable to other firms, I use FCF ratio which is obtained from net operating cash flow subtracted by the capital expenditure of the firm and then divided by firm total assets.

Debt is another source to finance firm's investment. A CEO has the authority to take debt to fund firm's operation and investment. Although for public firms it is relatively easy to obtain debt financing, it puts more restrictions on the CEO's ability to run the firm as the CEO now needs to engage creditors as well. Using debt also make CEOs more conscious of their firms' cash flow and profitability. I measure the level of debt-financing in the firm by using Leverage, which is the ratio of total long and short-term debt of the firm to firms' total assets. Leverage serves as another control variable for testing H1.

Another control variables for M&A announcement are firm size and Tobin's Q (Malmandier and Tate, 2008). Here Tobin's Q is used to represent investment opportunities of the firm. Tobin's Q is measured as the ratio of market value of firms to its total assets (Chung and Pruitt, 1994). Firms' size is measure by a logarithm of firms' total assets.

### **3.2.2. Long-term performance after M&A announcement**

M&A decision will have a long-term effect on firms' performance. If CEOs' wealth is affected by their ownership of the firm, CEOs' decision to announce M&A transactions should link to the impact of the decision to their wealth. Following Andre et al. (2008), I tested firms' long-term performance after M&A announcement by using Fama-French Three-Factors method. The model used to test H2 is as follow:

$$(R_{pt} - R_{ft}) = \alpha_p + \beta_p(R_{mt} - R_{ft}) + s_pSMB_t + h_pHML_t + e_{pt}$$

Fama (1986) suggests the use of average monthly return to test the long-term performance of the firm. The dependent variable is the monthly excess return of SMEs ( $R_{pt} - R_{ft}$ ) with M&A which is derived from one-month holding period return of the SME portfolios ( $R_{pt}$ ) subtracts the risk-free rate (one month Treasury bill rate).

The independent variable is the excess return on the market ( $R_{mt} - R_{ft}$ ), High Minus Low (HML), Small Minus Big (SMB). Excess return on the market is calculated as the value-weight

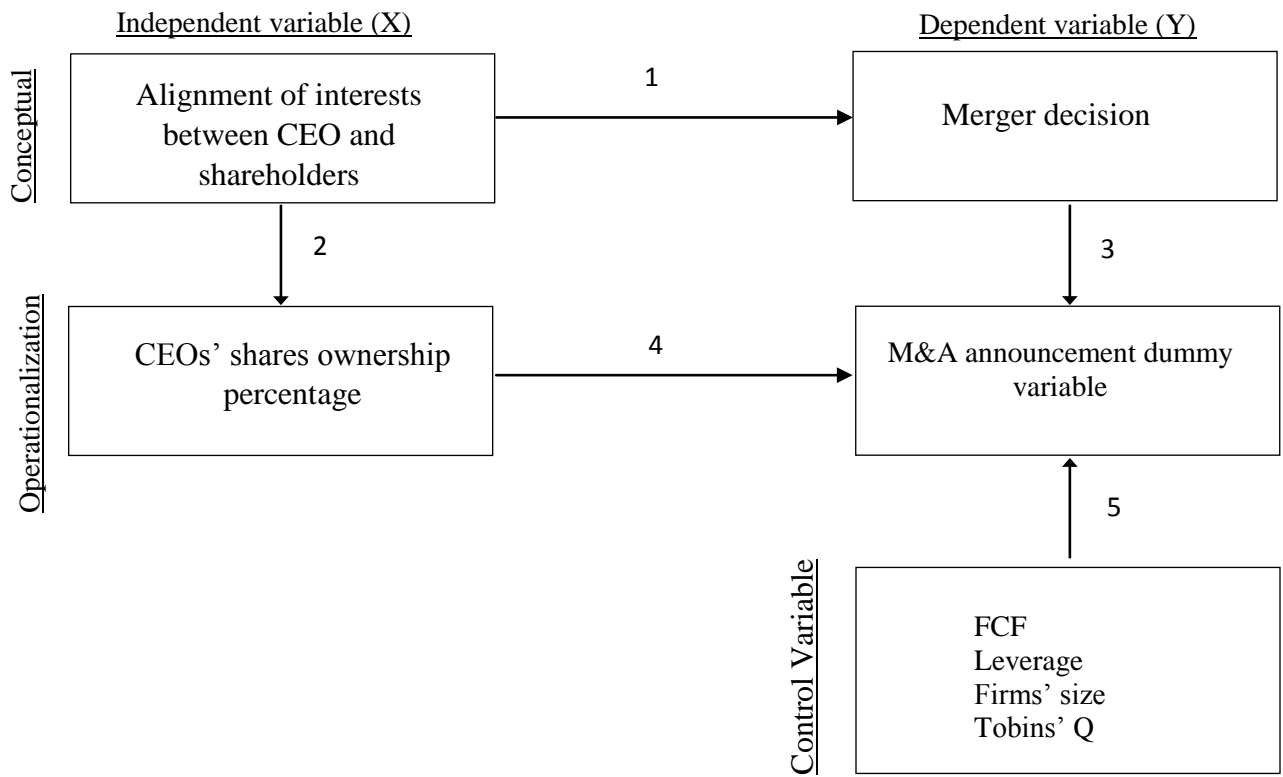
return of all stock in CSRP database minus one month Treasury bill rate. HML is the average return of the two value portfolios minus the average return of the two growth portfolios. SMB is the average return of the three small portfolios minus the average return of the three big portfolios<sup>3</sup>.

Alpha ( $\alpha$ ) is the average abnormal return of the firm. To test firms' long-term performance after M&A announcement, I compare  $\alpha$  before and after the M&A announcement for one, three, and five years period.

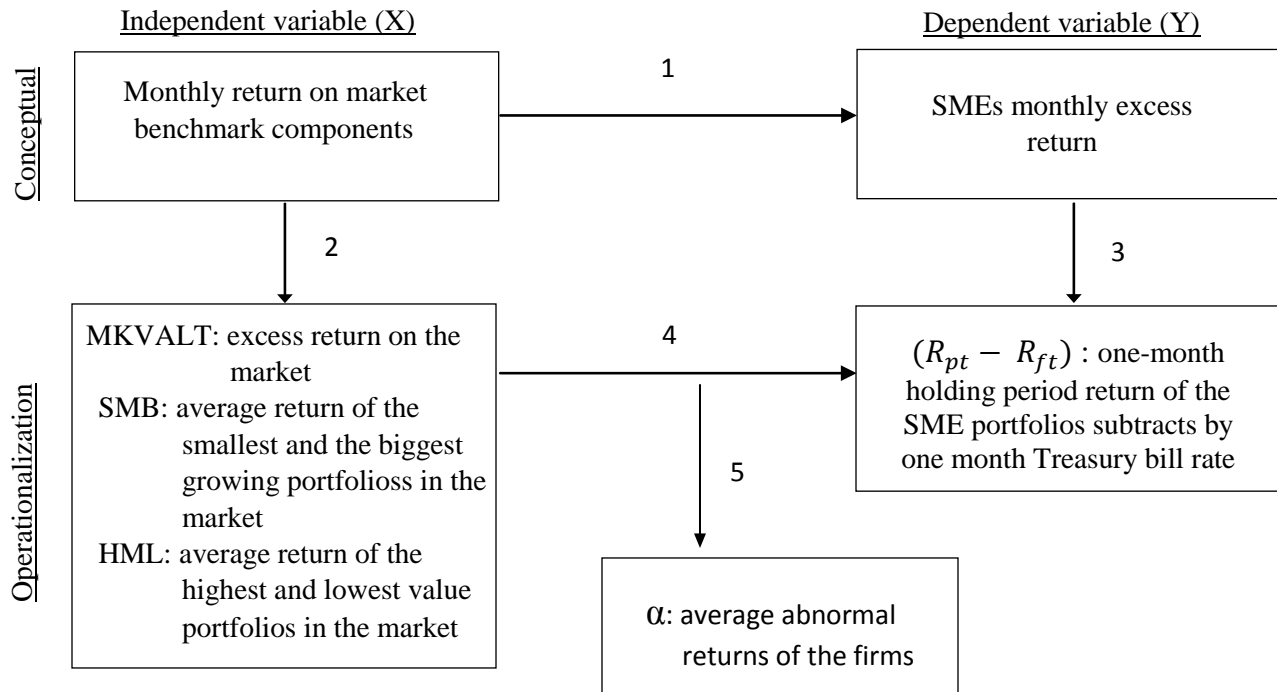
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<sup>3</sup> Ibid.

**Figure 1: Predictive Validity Framework for Hypothesis 1**



**Figure 2: Fama-French Three-Factors Model Framework**



## 4. Empirical Result and Analysis

This chapter presents the empirical result of the regression model and shows the analysis of those results. The chapter starts with a descriptive analysis of the variables. Subsequently, collinearity test is used to test for correlation between all the variables. The regression models, both the logistic and OLS models, are presented in the third section. The chapter ends with the discussion of the results.

### 4.1. Descriptive Statistics

Table 1 describes the sample of SMEs on each year for observation. Column 4 provides information on the number of firms that have at least one M&A announcement in a given year. The number of firms that completed and did not complete the M&A transactions is shown in Column 5 and 6 respectively.

**Table 1: Sample distribution**

Year	Total Firm	Firm without M&A	Firm Announce M&A	M&A Complete	M&A Uncomplete
2007	427	392	35	32	3
2008	457	415	42	35	7
2009	447	420	27	23	4
2010	423	386	37	32	5
2011	400	369	31	27	4
Total	2154	1982	172	149	23

This table presents sample distribution through the year 2007 – 2011. Total firm is the total of a firm who do not have M&A activities and who have announce M&A deals. The firms who announce M&A deals are divided into firms who complete their deals and the one who did not complete it.

Table 2 presents the descriptive statistics of every variable use to test the hypotheses. It contains the total observation of the sample, standard deviation, mean, minimum, and maximum value of each of the variable. For testing H1, I used Merger as a dependent variable and Ownership as the independent variable. To control the financial aspect of CEO decision, I used free cash flow (FCF), leverage, firms' size, and Tobins' Q. To test the long run performance in H2, I used firms' holding period returns (RET) minus risk free return rate (RF) as dependent variables while excess

**Table 2: Descriptive Statistic**

VARIABLES	Obs	Mean	Std. Dev.	Min	Max
Merger	2,154	0.0799	0.2711	0	1
Ownership	2,154	0.0642	0.1081	0	0.8401
Leverage	2,154	0.5199	4.9553	0	162.1462
FCF	2,143	-0.5708	3.1207	-86.6580	1.7538
Firm Size	2,154	2.8934	0.9667	-3.5756	4.0767
Tobin's Q	2,097	3.4982	15.1019	0.0077	451.5806
RET	19,640	0.0064	0.2148	-0.9042	6.1071
RF	19,640	0.0012	0.0015	0	0.0044
MKTRF	19,640	0.0054	0.0447	-0.1723	0.1135
SMB	19,640	0.0020	0.0224	-0.0530	0.0611
HML	19,640	-0.00002	0.0261	-0.1110	0.0827

This table presents the number of observations, mean, standard deviation, minimum and maximum value of each variable.

market return rate (MKTRF), small to big (SMB) return rate, and high to low (HML) as independent variables. The observation period for H1 is from 2007 to 2011. To analyse firms' performance before and after M&A, I use firms data in the period between 2002 and 2016.

Table 2 shows that the mean value for CEO ownership is 6.4% and its maximum value is 84%. The mean of FCF ratio is -0.57 of the firm assets while its minimum and maximum values are -86.66 and 1.75 times of its assets. The leverage ratio has a mean of 0.52 and a maximum value of 162.15. SMEs RET has a mean of 0.6% , a minimum value of -90.42%, and a maximum value of 610.71%. The mean and maximum values of RF, based on one month Treasury bill, are 0.11% and 0.44%. MKTRF during observation period has a mean of 0.5%, a minimum of -17.23%, and a maximum value of 11.35%. The mean values of SMB and HML for the U.S. capital market from the year 2002 to 2016 are 0.2% and 0.002%. The minimum values of SMB and HML in that period are -5.3% and -11.1% and the maximum values are 6.11% and 8.27%.

## 4.2. Collinearity test

This section provides a result of a correlation test. For variables tested in H1, I used Spearman correlation test to measure the linear correlation between the ordinal dependent variable and the continuous independent variables. This test measures the strength and direction between two variables. The coefficient from the Spearman correlation test indicates a strong correlation between two variables if they are closer to 1 while minus or positive sign shows the direction of the correlation. Table 3 presents the result of Spearman correlation test of all variables for H1. There is no correlation issue for all variables used in testing H1.

**Table 3: Spearman Correlation**

	Merger	Ownership	FCF	Leverage	Total Assets	TobinQ
Merger	1.000					
Ownership	0.0472*** 0.031	1.000				
FCF	0.0752*** 0.001	0.2304*** 0.000	1.000			
Leverage	0.0858*** 0.000	-0.0022 0.918	-0.0649* 0.003	1.000		
Total Assets	0.1294*** 0.000	0.0016 0.9433	0.3714*** 0.000	0.0079 0.717	1.000	
TobinQ	-0.0450* 0.040	-0.0505* 0.021	-0.3473*** 0.000	-0.1839*** 0.000	-0.2533*** 0.000	1.000

This table presents the Spearman correlation between all variables. The first row shows the Spearman correlation coefficient and the second row shows the level of significance (\*, \*\*, \*\*\* indicates significance at the 5%, 1%, and 0.01%)

**Table 4: Multicollinearity test**

Panel A: Pearson Correlation Matrix

	Return - RF	MKTRF	SMB	HML
Return - RF	1.000			
MKTRF	0.2299***	1.000		
SMB	0.1660***	0.3898***	1.000	
HML	0.0530***	0.3346****	0.1406***	1.000

Panel B: Variance Inflation (VIF) Method

Variable	VIF	1/VIF
MKTRF	1.3	0.7681
SMB	1.18	0.8479
HML	1.13	0.8879
Mean VIF	1.2	

This table presents the result of multicollinearity test. Panel A presents the result of Pearson correlation method. Panel B presents the result of VIF method. \*, \*\*, \*\*\* indicates significance level at 5%, 1%, 0.1% respectively.

For variables used in testing H2, I used a Pearson correlation test and the Variance Inflation Factor (VIF). Pearson correlation test is used to measure the strength and direction between two continuous variables. Two continuous variables are strongly correlated if the Pearson coefficient result is closer to either +1 or -1, with the direction of the correlation is shown by the + or – sign of the coefficient. In VIF test, two variables are highly correlated if their VIF result is 10 or higher. Table 4 presents the result of Pearson correlation test in Panel A and VIF test result in Panel B. From both methods it can be observed that there are no correlation issues for all variables for the H2 test.

### 4.3. Multivariate analysis

This section presents the result of the regression analyses that are used to examine all the hypotheses. This thesis H1 using logistic regression and H2 using ordinary least square (OLS) regression. Logistic regression is used when the dependent variable is an ordinal number and not continuous. In this thesis, a dummy variable of 1 and 0 is used as the dependent variable in H1. Meanwhile, OLS regression is applied when the dependent variable is a continuous value. By



investigating these two hypotheses, this thesis tries to answer the following research question:  
 Does CEO share ownership negatively influence the decision to engage in M&A deal for SME?  
 Does engaging in M&A deal benefit the firms' shareholders in the context of SME?

#### 4.3.1. CEO ownership and M&A Announcement

The first hypothesis is proposed to investigate the relation between CEO ownership and firm M&A announcement. The more ownership a CEO has on an SME, the less likely the CEO will engage in an M&A deal. Therefore, there is a negative relationship between CEOs' ownership and M&A announcements.

**Table 5: Regression result for H1**

VARIABLES	Merger			
	1	2	3	4
Ownership	1.172* (0.699)	0.811 (0.698)	1.182* (0.703)	0.823 (0.701)
FCF	0.236 (0.167)	0.137 (0.121)	0.251 (0.180)	0.142 (0.125)
Leverage	0.0348 (0.023)	0.0288 (0.024)	0.0362 (0.024)	0.0295 (0.024)
Firm Size	0.625*** (0.130)	0.630*** (0.128)	0.622*** (0.131)	0.630*** (0.129)
Tobin's Q	0.0204*** (0.007)	0.0172** (0.007)	0.0208*** (0.007)	0.0178** (0.007)
Constant	-4.451*** (0.451)	5.163*** (1.100)	-4.458*** (0.488)	5.167*** (1.111)
Observations	2,090	2,073	2,090	2,073
Pseudo R2	0.0360	0.0762	0.0396	0.0799
Prob > chi2	0.0000	0.0000	0.0000	0.0000
Industry fixed-effect		Yes	No	Yes
Year fixed-effect		No	Yes	Yes

The first row shows the coefficient number and the second row in the parentheses show standard error (\*\*\*, \*\*, \*, indicates significance level at 0,1%, 1%, and 5%). All the coefficients are shown in odds ratio. Model (1) contains only dependent, independent, and control variables. Model (2) contains an interaction model for variable Ownership and CEO Duality in model (1). Model (3), (4), and (5) contains model (2) with fixed-effect.

Table 5 provides the result of logistic regression analysis to test the first hypothesis. The dependent variable is Merger and the independent variable is Ownership. Financial measures such as FCF, leverage, firm size, and Tobin's Q are included as control variables to test whether the relation between Merger and Ownership are affected by those variables. Column 1 in table 5 shows a regression of all variables without fixed-effect. The regression result for all variables including a combination of the time fixed-effect and the industry fixed-effect are presented in column 2, 3, and 4.

The result of regression (1) is not supporting the first hypothesis for the negative influence of Ownership on Merger. Instead, the result shows a positive and high probability that CEO with more ownership will involve in M&A transaction. The ratio of FCF and leverage both are positive but not significant. On the other hand, firm size and Tobin's Q have a positive and significant relation with M&A announcement. When firm size increase, there is a high probability it will involve in M&A activity. Tobin's Q result coefficient is below 1 and it is statistically significant. Firms with low Tobin's Q are more acquisitive, indicating that acquisitions may substitute for profitable investment opportunities (Malmandier and Tate, 2008).

I examine the relation between CEO ownership and Merger by including a combination of industry and year fixed effect in regression (2), (3), and (4) to control endogeneity caused by industry sector of SMEs or the year SMEs make M&A announcement. There are not any significant changes for the regression result after controlled by year fixed-effect. On the other hand, industry fixed-effect significantly increase pseudo R<sup>2</sup> of the model although it makes ownership result lower and not statistically significant. These results indicate that M&A deals during the observation period are influenced by industry fixed-effects. The unobserved cross-industrial differences seem to make the relation between ownership and M&A become statistically not significant.

From the regression models to test H1, I am not able to have a statistically significant result of the relation of independent variable Ownership to dependent variable Merger. Therefore, the regression model used to test H1 is not able to examine the relation between CEO ownership and M&A decision of the SMEs.

### 4.3.2. M&A Announcement and firms' performance

The second hypothesis investigates the effect of an M&A decision to SMEs performance. This hypothesis predicts that the M&A decision will increase SMEs performance in years following the announcement of the M&A deal. Therefore, H2 predicts that there should be a positive relation between firms return and M&A announcement after M&A announcement.

**Table 6: Abnormal Returns using Fama French – Three-Factor Portfolios Model**

	After		Before		Difference	
	$\alpha$	R <sup>2</sup>	$\alpha$	R <sup>2</sup>	$\alpha$	R <sup>2</sup>
1 year	-0.0038 (-0.74)	0.0723	.0055 (0.85)	0.0541	-0.0047 (-1.13)	0.0655
2 year	.0004 (0.09)	0.0517	-0.0042 (-1.04)	0.0588	.0020 0.64	0.0549
3 year	-0.0018 (-0.52)	0.0522	-0.0004 (-0.11)	0.0648	-0.0011 (-0.45)	0.0590
5 year	-0.0055** (-2.01)	0.0482	.0010 (0.38)	0.0613	-0.0036* (-1.88)	0.0547

$\alpha$  (alpha) is abnormal return from Fama French – Three-Factor Portfolios Model. The first row shows the coefficient of  $\alpha$  and the second row shows its t-statistic. Before and After is the observation period before and after M&A announcement. Difference is the result of After – Before.

\*\*\*, \*\*, \*, indicates significance level at 0,1%, 1%, and 5%.

Table 6 provides the abnormal return based on the Three-Factor Portfolios Model (FF-TFPM; Fama French, 1993). The abnormal returns is the alpha ( $\alpha$ ) from FF-TFPM regression. To obtain alpha, I follow Malmandier and Tate (2008) by using weighted least square (WLS) regression method. The model is weights proportional to the square root of the total number of firms present in one calendar-time portfolio month. I use robust standard error to control heteroskedasticity problem. The dependent variable is the difference between firms return and risk-free investment return. Holding period return is used to measure firms' return because it represents the return the shareholders will have if they keep their portfolios for one month period. To analyse the effect of M&A announcement on firm performance, I run FF-TFPM regression with a 1, 2, 3, and 5 years period prior and after M&A announcement. The coefficient of alpha from the regression is the abnormal return of the firms, which represents firms' performance.

To observe the influence of an M&A announcement on performance, I obtain the alphas of the FF-TFPM for 12 months (1 year), 24 months (2 years), 36 months (3 years), and 60 months (5 years) before and after the announcement. The alphas for 1 and 5 years period before the announcement shows positive returns (0.55% and 0.1%) while the alphas for 2 and 3 years period shows negative return (-0.42% and -0.04%). The alpha values after announcement period all show negative returns with the exception the alphas for 2 years period (0.04%). Only the alphas for 5 years after M&A announcement is statistically significant (-0.55%). The differences in alphas before and after an announcement for 5 year period is negative and statistically significant.

The results for SMEs performance after the announcement is not consistent with the hypothesis 2 that after M&A transactions the acquirer will have positive performance. Instead, SMEs show negative returns in the 5 years period after the announcement. This negative returns is significantly lower compared to the same period before the announcement.

#### **4.4. Discussion on the relation of CEO ownership, M&A announcement, and performance after M&A Announcement**

This thesis tries to investigate the relation between CEOs' shares ownership and their decision to do M&A deals in small and medium enterprises. The result indicates that there is a positive relation but not statistically significant between CEO ownership and M&A announcement. This result is caused by unobserved industrial differences in the sample. Therefore, I found no evidence that SMEs CEO ownership of the firm decision related to their decision to do an M&A. The size of the firms also significantly related to M&A. As firm size increase, more likely they will involve in M&A deals. SMEs low tobins' Q indicate SMEs CEO are more acquisitive. SMEs CEO will choose M&A rather than another investment opportunities which available at same time.

This thesis also tries to find support for the benefit of engaging in an M&A activity to SMEs' financial return. The findings show that SME's abnormal return after an M&A announcement is negative and significant for 5 years observation period. The difference for the returns between after and before M&A announcement is also negative and significant for 5 years period. The negative abnormal return during 5 years after the announcement shows that SMEs tend to underperform after M&A announcements. SMEs performance after the announcement in 5 years period is lower compared to before the announcement for the same period. For SMEs long-term

performance, as far as 5 years, M&A transactions produce negative returns and the returns is lower than before the transactions. For short and medium-term, there are no evidence that M&A transaction affects SMEs return.

Previous research on long-term performance after M&A announcement by using FF-TFPM also found that companies tend to have lower alpha in 3-year period after the M&A announcement as calculated based on value-weighted return basis (Andre et al., 2004; Laabs and Schierek, 2010). Mitchel and Stafford (2000), which use FF-TFPM and VW, found no evidence that firms underperform in the 3-year period after M&A announcement. Although they are using the same model to calculate abnormal return, the difference in the sample and observation period used by these researchers might explain the contradicting results. Andre et al. (2004) use M&A data of Canada's SMEs in the period of 1980 – 2000, while Laabs and Schierek (2010) use the data on automotive supply industry worldwide between 1981 – 2007. Mitchel and Stafford (2000) use a sample of the U.S. firms from 1958 to 1993. These differences lead to a different result despite the fact that these studies used the same formula to calculate each component in the model. Further research is therefore needed to evaluate the impact an M&A announcement has on SMEs performance.

## 5. Conclusion

This section provides the summary and conclusion of this research. Hereafter, the contribution of this research to theoretical development and practice is explained. Lastly, limitations of this research and suggestions for future research are indicated.

### 5.1. Conclusion on the result

The goal of this study is to answer the following research questions: 1) Is there any relation between SMEs CEO ownership and SMEs decision to do an M&A? 2) Is M&A activity beneficial for SMEs shareholders in terms of the financial return? To answer these research questions, I formulated these hypotheses:

H1: There is a negative relation between CEOs' ownership and M&A decision.

H2: There is a positive SMEs performance after M&A announcement.

The result of the logit regression shows that there is no evidence of a relation between SMEs' CEO Ownership and M&A announcement made by them. As the firm is growing, M&A option becomes more realistic and achievable for SMEs. Having low tobins' Q mean SMEs CEO tend to be acquisitive.

Furthermore, contrary to H2, result from regression for Fama French's (1993) Three-Factor Model shows a significant underperformance in the long-term for SMEs after M&A announcement. SMEs show a negative abnormal return in observation periods of 5 years after the M&A announcement. This result rejects the hypothesis about positive performance of SMEs after M&A.

To be concluded, CEO decision for SMEs to involve in M&A transactions is not related to CEO ownership of the firm. On the other hand, considering shareholders return for their investment in SMEs, CEO decision to involve in M&A transactions is not beneficial in the long-term. Instead of expecting a positive return for the long-term benefits from M&A transactions, SMEs shareholders should consider another form of benefits from M&A opportunities offered by their CEO.

## **5.2. Contribution**

This thesis is related to two streams of literature. First, it relates to the literature on SMEs' corporate governance, specifically SMEs' CEO shares ownership. There is no evidence that SMEs CEO ownership is related to their decision to do an M&A. Second, this thesis relates to the literature on firms performance after an M&A activity. When SMEs involved in M&A transactions as an acquirer, in the long-term U.S. SMEs shares' returns is negative and lower compared to before M&A announcement.

## **5.3 Research limitations and further research**

This research aims to investigate the relation between SMEs' CEO ownership and SMEs M&A as well as the effect of an M&A announcement on SMEs' shareholders wealth. With the assumption that CEOs' shares ownership enables them to make an M&A decision, this research did not test other aspects of SMEs' corporate governance. CEO decisions and performance is monitored by the board of directors. Board characteristics of an SME may affect the probability of CEO decision on M&A deals. Another common phenomenon is CEO who is also the chairman of the board of his own firm (duality). Whether CEO duality also affects SMEs CEO probability on conducting M&A can be investigated in the next research.

To investigate the effect of SMEs M&A on shareholders wealth, this research use alpha values which are calculated based on Fama French's (1993) Three-Factor Portfolios Model to measure firms' abnormal return. All the variables for Fama French model are obtained from CRSP database and are constructed from all stocks in the U.S. stock market. The negative alpha value indicates that SMEs are underperforming if compared to other firms in the U.S. stock market in general. Construction of Fama French's model that consists solely of firms that are categorized as SME can give different results and better comparison. Different observation period may also give different result.

The sample of firms that are used in this research is limited to public firms in the U.S. that are classified as SMEs in the year 2007 until 2011. Research on M&A activities by private SMEs is limited given the limited availability of the data on private SMEs. Further research should investigate the potential differences between M&A activities in public and private SMEs as well as the impact of such activities on their financial performance.

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