

**ERASMUS UNIVERSITY ROTTERDAM  
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**The Impact of Corporate Governance Mechanisms on M&A  
Performance in Acquiring Firms**

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# PREFACE AND ACKNOWLEDGEMENTS

This thesis is made for the completion of my master study in Erasmus School of Economics, Erasmus University Rotterdam. It represents my interest in finance especially in corporate governance and merger and acquisition (M&A). The topic of this thesis, corporate governance and M&A performance is inspired by the material discussed in the Seminar Corporate Governance.

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Rotterdam, August 2017

Anindita Apsari

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## ABSTRACT

This thesis examines the effect of corporate governance mechanisms on acquiring firm's M&A performance using M&A transactions in US over the period of 2003 until 2016. By implementing event study and multiple linear regression analysis, this study discovers that the proportion of equity-based compensation (EBC) is positively related with acquiring firms' M&A performance. Additionally, this thesis reveals a new evidence that stock ownership of independent compensation committee members increases acquiring firms' M&A performance. On the other hand, the proportion of independent outside directors in the board is negatively correlated with M&A performance. The correlation is significant when the proportion of independent outside directors are more than 80%. Overall, the findings provide evidence that executive compensation, board independence and ownership structure significantly affect the acquiring firms' M&A performance.

**Keywords:** Mergers & Acquisitions (M&A), Corporate Governance, Executive Compensation, Board of Directors, Ownership

**JEL Classification:** G30, G34

# TABLE OF CONTENTS

<b>PREFACE AND ACKNOWLEDGEMENTS.....</b>	<b>ii</b>
<b>ABSTRACT.....</b>	<b>iii</b>
<b>LIST OF TABLES.....</b>	<b>v</b>
<b>LIST OF FIGURE.....</b>	<b>vi</b>
<b>Chapter 1 Introduction.....</b>	<b>1</b>
<b>Chapter 2 Literature Review.....</b>	<b>4</b>
<b>2.1 M&amp;A transactions and performance.....</b>	<b>4</b>
<b>2.2 Agency theory.....</b>	<b>5</b>
<b>2.3 Corporate governance mechanisms.....</b>	<b>5</b>
<b>Chapter 3 Hypothesis Development.....</b>	<b>9</b>
<b>Chapter 4 Data.....</b>	<b>12</b>
<b>4.1 Data selection and construction.....</b>	<b>12</b>
<b>4.2 Variable description and measurement.....</b>	<b>13</b>
4.2.1 Dependent variable.....	13
4.2.2 Independent variables.....	13
4.2.3 Control variables.....	14
<b>Chapter 5 Methodology.....</b>	<b>19</b>
<b>Chapter 6 Result.....</b>	<b>23</b>
<b>6.1 Descriptive statistics.....</b>	<b>23</b>
<b>6.2 Correlation analysis.....</b>	<b>30</b>
<b>6.3 Regression result and analysis.....</b>	<b>32</b>
6.3.1 M&A performance and executive compensation.....	32
6.3.2 M&A performance and board independence.....	36
6.3.3 M&A performance and interaction term of EBC and board independence.....	38
6.3.4 M&A performance and Compensation Committee member ownership.....	39
6.3.5 M&A performance and interaction term of EBC and CC ownership.....	43
<b>Chapter 7 Conclusion.....</b>	<b>45</b>
<b>7.1 Summary and Implications.....</b>	<b>45</b>
<b>7.2 Limitations and Future Research.....</b>	<b>46</b>
<b>References.....</b>	<b>47</b>

## LIST OF TABLES

<b>Table 1</b> Descriptive statistics of M&A transactions, 2003-2016	24
<b>Table 2</b> Descriptive statistics of Cumulative Abnormal Return (CAR) of acquiring firms; CAR (-1,+1), CAR (-2,+2), CAR (-5,+5), CAR (-10,+10), CAR (-15,+15)	25
<b>Table 3</b> Descriptive statistics of executive compensation structure of acquiring firms	27
<b>Table 4</b> Descriptive statistics of independent and control variables	29
<b>Table 5</b> Correlation matrix	31
<b>Table 6</b> Regression result of M&A performance and EBC over 2003-2016; CARs (-1,+1), (-2,+2), (-5,+5), (-10,+10)	33
<b>Table 7</b> Regression result of M&A performance and EBC; CARs (-10,-1), (+1,+10), (-30,+30), (-30,-1), (+1,+30)	35
<b>Table 8</b> Regression result of M&A performance and board independence over 2003- 2016; CARs (-1,+1), (-5,+5), (-10,+10)	37
<b>Table 9</b> Regression result of M&A performance and interaction term of EBC and board independence over 2003-2016; CARs (-1,+1), (-2,+2), (-5,+5), (-10,+10)	38
<b>Table 10</b> Initial regression result of M&A performance and Compensation Committee member ownership over 2003-2016; CARs (-1,+1), (-2,+2), (-5,+5), (-10,+10)	41
<b>Table 11</b> Additional regression result of M&A performance and Compensation Committee member ownership over 2003-2016; CARs (-1,+1), (-2,+2), (-5,+5), (-10,+10)	42
<b>Table 12</b> Regression result of M&A performance and Compensation Committee member ownership over 2003-2016; CARs (-10,-1) and (+1,+10)	43
<b>Table 13</b> Regression result of M&A performance and interaction term of EBC and Compensation Committee member ownership over 2003-2016; CARs (-10,-1) and (+1,+10)	44

## LIST OF FIGURE

**Figure 1** Average Cumulative Abnormal Return (CAR) of acquiring firms

26

## Chapter 1 Introduction

Recently, merger and acquisition (M&A) has become very popular and often used as one of firms' focal strategy in growing the business. It can be noticed from the fact that the number of M&A transactions intensify in the recent years. In 2015, worldwide merger and acquisition deals elevated by 42% from 2014, amounting to approximately \$4.7 trillion (Thomson Reuters, 2016). It is the highest annual period for merger activity since Thomson Reuters began its recording in 1980. Specifically, in 2015, United States and Asia Pacific accounted for a combined 74% of worldwide M&A deal-making activity. This number is the highest for both regions which exceeds the records for all yearly M&A activity in the regions.

As a crucial strategy, merger and acquisition is expected to produce added benefits and improve performance for both acquirer and target companies. Nevertheless, former studies acknowledge that in most of the deals, acquirers obtain negative or smaller gains than target firms from engaging in merger and acquisition activity (Jensen & Ruback, 1983; Andrade et al., 2001; Moeller et al., 2004). Morck et al. (1990) shows that acquiring firms have significantly lower and negative equity value around the acquisition announcement period. In addition, previous study documents that stock market reaction around announcement date is positive for the combined parties but the favourable reaction comes mostly from target firm's stockholders (Andrade et al., 2001). Latter study by Moeller et al. (2004) also support the evidence by revealing that shareholders of acquiring firms actually lose approximately \$25.2 million on average at the time of acquisitions announcement.

Among various explanations to this negative return, agency problem becomes the key theory and has a significant role in merger and acquisition transactions (DePamphilis, 2012). Agency problem arise because managers make decisions that are not in the best interest of shareholders when trying to satisfy their interest. Hence, the misalignment between management and shareholder interests cause the so-called agency problem to happen (Jensen & Meckling, 1976).

Corporate governance mechanism is expected to resolve the agency problem between management and shareholders. Executive compensation, as one of corporate governance instruments, is granted to incentivize CEOs to maximize firm value and align the interest between managers and shareholders. A study by Mehran (1995) provides evidence that

executive compensation motivates managers to optimize firm value. It also suggests that firm performance is positively related with the percentage of equity-based compensation.

As an intermediary between managers and shareholders, board of directors, also play an important role in company's investment decision process and in monitoring managers to act in the best interest of shareholders (Hermalin & Weisbach, 2001). Moreover, after the implementation of The Sarbanes-Oxley Act of 2002 (SOX), the component of board of directors become more crucial for companies, since the act requires firms to appoint more independent outside directors. SOX also affects companies' supply and demand for directors. Linck et al. (2009) suggest that post SOX appointment, firms lower the supply since the risk and job complexity of board increase, and raise the demand for independent outside directors.

In addition, ownership structure as one of internal corporate governance mechanisms also have an ability to align the interest between managers and shareholders (Morck et al., 1988). It is expected that if management hold a certain amount of shares in the company, they will act in the same direction with shareholders. Moreover, Mikkelson & Partch (1989) add that management ownership is also one of M&A effectiveness determinants.

Consistent with these theories and earlier findings, it is understandable to argue that corporate governance mechanisms, such as executive compensation, board of directors and ownership could minimize the agency problem and thus affect the firm performance, including merger and acquisition performance. Accordingly, it is noteworthy to scrutinize the existence of corporate governance instruments in relation with firm's investment decision, particularly merger and acquisitions performance.

This thesis aims to examine the relationship between corporate governance mechanisms and merger and acquisition (M&A) performance, focusing on the effect of executive compensation, board of directors and ownership on M&A performance. It will investigate whether executive compensation package, component of board of directors and ownership structure could align the interests between managers and shareholders as well as improve M&A performance for acquiring firms. In order to fulfil the research objective, the main research question is formulated as follow:

***How does the executive compensation and board of directors affect M&A performance, i.e. the stock market reaction of acquiring companies?***



Using a sample consists of 9,270 M&A transactions in US over the period of 2003 until 2016 and implementing an event study and multiple linear regression, the correlation between corporate governance mechanisms and M&A performance in acquiring firms is examined. The empirical result confirms that equity-based compensation (EBC) is positively related with M&A performance of acquiring firms. On the other hand, the relation between the proportion of independent outside directors and acquiring firms' M&A performance is negative. The relation is significant when the board is dominated by independent outside directors (i.e. the independent outside directors are more than 80%). Last, the regression result show a new and interesting finding that the stock ownership of independent compensation committee members increases the acquiring firms' CAR around the M&A announcement date.

The result of this thesis contributes to the current literatures and business world in several forms. First, it extend the previous studies of M&A performance and corporate governance. Specifically, this thesis provides a new evidence on the impact of stock ownership of independent compensation committee members on acquiring firms' M&A performance. This thesis also give more understanding in the relation between corporate governance mechanisms and M&A performance since it uses more recent data of M&A transactions and corporate governance mechanisms. Last, the result of this thesis provide knowledge and insight to the business world and firm management for improving the effectiveness of M&A activity.

The remaining part of this thesis is organized as follows. Chapter 2 reviews the previous literatures in M&A deals and performance, agency theory, corporate governance mechanisms and the association between M&A performance and corporate governance mechanisms. The hypothesis development is presented in chapter 3. In chapter 4, the data selection and variable description and measurement are provided. Chapter 5 explains the methodology used in this thesis. Chapter 6 discusses the empirical result of this thesis. Finally, chapter 7 provides the concluding remarks as well as the limitations and suggestions for future research.

## Chapter 2 Literature Review

### 2.1 M&A transactions and performance

Firms consider a number of strategies in maximizing their value. Some firms grow organically by increasing the revenue, while others elevate the firm value through the inorganic growth (Jensen, 2001; Delmar et al., 2003). The inorganic growth is known as merger and acquisition (M&A), in which a company take over other company with the goal of creating synergy and escalating firm value (Barkema & Schijven, 2008). DePamphilis (2012) states that M&A is one of corporate device to gain more profit when their performance is at its peak. The author adds that firm value is expected to increase when firms engage in M&A activities.

According to the previous literatures, there are several strategic motives for firms to engage in M&A activity. First, Hayward & Hambrick (1997) state that firms engage in M&A activity to attain synergies that create combined value which exceeds the value of both individual companies. Next, the common and important motive is to gain intangible assets and external resources, such as knowledge and expertise that can be transferred from target firms to acquiring firms (Gupta & Roos, 2001; Bruner, 2004). Other strategic reasons for firms to engage in M&A activity are to access new foreign market and realize economies of scale (Anandh & Singh, 1997; Coyle, 2000). Andrade et al. (2001) adds that the main motive for firm is to boost efficiency that will build up the value of shareholders.

With the expectation that M&A creates synergies and increase shareholder's value, many previous studies try to investigate the gain from M&A transactions for both acquiring and target firms. Jensen & Ruback (1983) provide evidence that firms obtain favourable gains from corporate takeover. However, they find that the gain for acquiring firm shareholders is neutral while the gain for target firm shareholders is positive. The authors suggest that the gain is not formed from market power creation. The evidence is supported by Bradley et al. (1988) which discover a 7.4% increase in shareholders return within 11-days around the M&A announcement date for combined firms.

Latter study by Andrade et al. (2001) also document a positive market reaction around announcement date for the combined parties. Nevertheless, the result shows that target firms have more favourable abnormal return compared to acquiring firms. The finding is supported by Moeller et al. (2004) by revealing that acquiring firm's shareholders actually lose

approximately \$25.2 million on average at announcement date although they get a positive abnormal stock return of 1.1%. Overall, there is no clear conclusion from academic literatures on the gains for acquiring firms' shareholders even though recent studies document a negative or smaller return for shareholders of acquiring firms.

## 2.2 Agency theory

According to Jensen & Meckling (1976), agency theory is related with the separation of ownership (i.e. principal) and control (i.e. agent). The principal are providers of capital, such as debt-holder and shareholders, while agent refers to human capital of company (Eisenhardt, 1989). As the one who supply the capital, the interest of principal is to grow and maximize the value of their capital. While the management, as the one who lead the firm, might have own personal goals and interests. When maintaining the firm, management might make decisions that are not in the best interest of shareholders. As a result, the misalignment of interest between principal and agent lead to a problem called "agency problem" (Jensen & Meckling, 1976).

In practice, agency problem could arise in every business activities. Moreover, it also occur in M&A activity since DePamphilis (2012) reveals that managerialism become the motive for engaging in M&A activity. The desire of maximizing self-interests, such as power, pride, empire building and higher compensation is called managerialism. Hence, the unfavourable return from M&A transactions might have occurred because of the agency problem between management and shareholders.

Accordingly, Jensen (2004) states that principals will seek for ways to prevent agents from maximizing their own interests. As suggested by Shleifer & Vishny (1997), good corporate governance could overcome the agency problem in an organization. The authors state "*Corporate governance deals with the ways in which supplier of finance to corporations assure themselves of getting a return on their investment.*".

## 2.3 Corporate governance mechanisms

Corporate governance mechanisms could effectively mitigate the agency problem between stockholders and management (Shleifer & Vishny, 1997). Supporting Shleifer & Vishny (1997), Thomsen & Conyon (2012) claim that the reason of corporate governance to exist is to minimize the agency problem between shareholders and management in a firm. Following

parts discuss the previous literatures associated with corporate governance mechanisms, such as executive compensation, board of directors and ownership.

### **Executive compensation**

The general theory presumes that executive compensation as one of corporate governance mechanism is granted to incentivize CEOs to maximize firm value and align the interest between managers and shareholders. Mehran (1995) supports the argument by providing the evidence that executive compensation motivates managers to increase firm value. The author documents that firm performance, measured by Tobin's Q and return on asset (ROA) is positively related with the proportion of managers' compensation, particularly equity-based compensation (EBC). Bebchuck and Fried (2003) supports the findings and suggests that compensation in the form of stock and options will elevate firm long-term performance.

A number of studies have specifically scrutinized the relation between executive compensation and M&A activity. Tehranian et al. (1987) examine whether manager's compensation package influences the effect of takeover on acquiring companies' share price. They compare the shareholders return around M&A announcement between firms with long-term performance plans and firms without long-term performance plans. They find that acquiring firms with long-term performance plans generate more positive market reaction at the acquisition announcement date compared to firms without long-term performance plans.

In addition, Datta et al. (2001) further examine acquiring firms' equity-based compensation (EBC) in relation with M&A performance around and following the acquisition announcement in US over 1993-1998. Cumulative abnormal return of acquiring firms around the acquisition announcement is used as a proxy of M&A performance. They use the percentage of stock options grant to measure EBC and control for firm size, acquisition mode, means of payment, manager ownership and prior option grants. By incorporating event study and multivariate regression analysis, they discover that bidding managers' EBC is positively correlated with share price performance around and following the announcements of acquisition. They also notice that managers with abundant EBC grant smaller acquisition premiums, acquire high growth firms, and create acquisitions that intensify firm risk.

## **Board of Directors**

The importance of independent outside directors in improving firm value and aligning managers' and shareholders' interests is still controversial. Moreover, the academic literatures in regard to the relationship between board independence and firm's M&A performance are inconclusive.

Not many studies explicitly investigate the association of board independence and M&A performance in acquiring firms. Byrd & Hickman (1992) observe the relationship between the proportion of independent directors and shareholder wealth effect on tender offer bids. They discover significantly greater abnormal return at the announcement date for acquiring firms with at least 50% independent outsiders on their board. The result shows a curvilinear relation, indicating that some firms possibly hold excess number of independent outside directors in the board. Subsequently, Cotter et al. (1997) find that target shareholder gains are greater when the board is independent. They suggest that the existence of a poison pill and antitakeover provision escalate target shareholder gains. Moreover, recent study by Amar et al. (2011) document a positive relation between the level of board independence and acquiring's M&A performance, measured as cumulative abnormal returns from one-day prior M&A announcement date to one-day after M&A announcement date. Therefore, findings from earlier literatures indicate that independent outside directors play a monitoring role in making strategic decision including M&A activity.

On contrary, Faleye et al. (2001) indicate that firms with high monitoring board (i.e. the independent outside directors serve more than half of the board committee) generate unsatisfactory acquisition performance. They add that the downsides of high monitoring quality are poor strategic advising and higher managerial myopia.

## **Ownership**

As another important instrument of internal corporate governance, ownership structure potentially align the interest between managers and shareholders. Several studies examine the impact of management ownership on firm performance. Morck et al. (1988) examine the director ownership in relation with firm's market value. They find a significant non-monotonic relationship between the percentage of shares owned by board of directors and firms' Tobin's Q. It shows that when the board ownership is no more than 5%, the Tobin's Q rises, then

decreases when ownership is between 5-25%, and increases again as the percentage of shares owned by directors is more than 25%.

The finding is supported by latter study by McConnell & Servaes (1990) which also find a significant curvilinear relation between Tobin's Q ratio and the portion of common stock hold by officers and directors. It documents that the Tobin's Q increases until the insider ownership is approximately 40-50%, then decrease afterwards. It suggests that the structure of equity ownership is one of corporate value determinants. In addition, Bhagat & Black (1999) reveals that independent outside directors who own significant amount of firms' stock improve firm's performance, specifically return on assets and turnover ratio.

Several studies have specifically investigated the correlation of management and director stock ownership with M&A performance. Lewellen et al. (1985) investigate the relation between management stock ownership and acquiring firms M&A performance. The authors document that the higher percentage of shares held by executives of acquiring firms result in more positive abnormal stock returns of acquiring firms. The finding indicates that the interest of shareholders and management are aligned when management held significant amount of firm's stocks.

Furthermore, Sundaram et al. (2001) examine the relation between stock ownership of independent outside directors and shareholder wealth around foreign acquisitions in US acquiring firms during 1986-1996. The authors find that the proportion of shares held by independent outside directors is positively correlated with acquirer CAR around acquisitions announcement date. The correlation is statistically significant only when the board have at least 11 directors and dominated by independent outside directors.

## Chapter 3 Hypothesis Development

This thesis will re-examine a mix of papers by Datta et al. (2001), Amar et al. (2011) and Sundaram et al. (2001). Datta et al. (2001) scrutinize the relation between executive compensation and M&A performance in acquiring firms around and following the acquisition announcement in US over 1993-1998. Acquiring firms' share price around the acquisition announcement is used as a proxy of M&A performance. Then, they use the percentage of stock options grant to measure EBC and control for firm size, acquisition mode (merger), means of payment, manager ownership and prior option grants. By incorporating event study and multivariate regression analysis, they discover that EBC granted to managers in bidding firm is positively correlated with share price performance around and following the announcements of acquisition. In accordance with Datta et al. (2001), the first hypothesis is formulated as follow:

**Hypothesis 1:** There is a positive relationship between acquiring's M&A performance around announcement date and executive compensation, particularly equity-based compensation.

Byrd & Hickman (1992) examine the relationship between the proportion of independent directors and shareholder wealth effect on tender offer bids. They find a significantly more positive abnormal return at the announcement date for acquiring firms with at least 50% independent outsiders on their board. However, the relationship is curvilinear. Additionally, Amar et al. (2011) investigate the impact of board composition, particularly board independence on acquiring firms' share performance during acquisitions over 1998-2002 in Canada. By using 3-days cumulative abnormal return (CAR) around the acquisitions announcement, they find that board independence is positively correlated with acquiring firms' abnormal stock return around acquisitions announcement date. In line with Amar et al. (2011), the following hypothesis is constructed as follow:

**Hypothesis 2:** There is a positive relationship between acquiring's M&A performance around announcement date and the proportion of independent outside directors in the board.

Additionally, Faleye et al. (2011) observe the impact of board monitoring intensity on the directors' efficiency in conducting monitoring and advising responsibilities. The board is classified as high monitoring board when the independent outside directors serve more than half of the board committees. The finding shows that high monitoring intensity of board will

cause the firm turnover to be more sensitive to performance, enhance the earning quality and reduce the excess compensation. Therefore, the following hypothesis is formulated as follow:

**Hypothesis 3:** The relation between executive compensation and acquiring's M&A performance around announcement date is more positive with a higher proportion of independent outside directors in the board.

Morck et al. (1988) study the relation between management ownership and firm's market value. The authors find a significant non-monotonic correlation between the percentage of shares owned by board of directors and firm's market value, measured as Tobin's Q ratio. It shows that Tobin's Q rises when the board ownership is no more than 5%, then decrease when ownership is between 5-25%, and increase again as the percentage of shares owned by directors is more than 25%. Bhagat and Black (1999) supports the evidence by revealing that independent outside directors who own a significant amount of companies' shares increase firm's performance such as return on assets (ROA) and turnover ratio. Moreover, Sundaram et al. (2001) specifically investigate whether stock ownership of independent outside directors affects the shareholder return on international acquisitions in US acquiring firms during 1986-1996. The authors discover a positive relation between the proportion of shares held by independent outside directors and bidding firms' CAR around acquisitions announcement date. The correlation is statistically significant when the board is large and dominated by independent outside directors. Hence, extending Sundaram et al. (2001) the fourth hypothesis is expressed as follow:

**Hypothesis 4:** The total ownership stake of all independent compensation committee members (CC-ownership) increases M&A performance in acquiring firms.

According to Morck et al. (1988), stock ownership could effectively align the interest between management and shareholders. When firm management held a number of company stocks, it is expected that they will act in the best interest of shareholders. Compensation committee members in the board are responsible to determine and evaluate the executive compensation package in the firm according to NYSE Listed Company Manual. By holding a significant amount of company shares, compensation committee members are expected to review the executive compensation package in the best interest of shareholders. Thus, the fifth hypothesis is constructed as follow:



**Hypothesis 5:** When the stock ownership of compensation committee member (CC-ownership) is higher, the relation between executive compensation and acquiring's M&A performance around announcement date is more positive

## Chapter 4 Data

This chapter presents the sample selection, data construction, as well as variable definition and measurement. Section 4.1 discusses the data used in the study and elaborates the steps on gathering and merging the data. In section 4.2, the description and measurement of all dependent, independent and control variables are provided.

### 4.1 Data selection and construction

This study focuses on the period after the implementation of The Sarbanes-Oxley Act (SOX) which took place on July 30, 2002, to ensure that firms have the same corporate governance framework. Consequently, the time period of this study begins from January 1, 2003 until December 31, 2016.

Several steps are done to construct the final dataset used in this study. First, in order to gather the M&A performance data, the M&A transactions are identified using Thomson One Banker (TOB) database. These criteria are applied when identifying the M&A deals:

- 1) The announcement date of M&A deals happened during January 1, 2003 to December 31, 2016.
- 2) The M&A deals have been completed as of 31 December, 2016.
- 3) Acquirer firms are in US.
- 4) Acquirer firms are publicly listed.
- 5) Acquirer acquired at least 51% of target's shares.
- 6) Financial and utilities companies (Standard Industrial Classification (SIC) code of 4900 – 4999 and 6900 – 6999) are excluded.

By implementing these selection criteria, an initial dataset of 9,442 unique M&A transactions is generated. Next, acquiring firms' stock price around the M&A announcement date as a proxy of M&A performance is obtained from Datastream by using the Event Study Tools. While the data of three components of corporate governance mechanisms, namely executive compensation, board of directors and ownership are collected from Compustat Execucomp database and Institutional Shareholder Services (ISS) database, respectively. Last, the data of control variables that contain firm's financial and accounting data are gathered from Compustat database.

All the datasets of dependent, independent and control variables are merged by the year of M&A transactions and a company identifier of 6-digits CUSIP. Since some databases do not provide the data for certain firms, some data are left out from the dataset. Finally, the final dataset consists of 9,270 observations of M&A deals in US over the time period of January 1, 2003 to 31 December, 2016.

## 4.2 Variable description and measurement

The following sections discuss the definition and measurement of all variables used in this study. First, the dependent variable is explained. After that, the independent and control variables are discussed correspondingly.

### 4.2.1 Dependent variable

The dependent variable in this study is acquiring firms' cumulative abnormal stock return around the M&A announcement date as a proxy of M&A performance. Previous study by Hayward & Hambrick (1997) suggest that cumulative abnormal stock return reflects the market reaction around the announcement date, thus it is a competent proxy for denoting M&A performance. Moreover, Andrade et al. (2001) use abnormal stock market reaction at merger announcement to see whether mergers create value for shareholders. The abnormal stock return is generated using event-study method and calculated using the market model following MacKinlay (1997). The 200-days estimation period and 81-days (-40,+40) event window contains of 40-days prior the announcement, the announcement day and 40-days after the announcement date are used in generating the abnormal stock return. Following previous studies (Andrade et al., 2001; Moeller et al., 2004; Masulis et al., 2007), the 3-days (-1,+1), 5-days (-2,+2), 11-days (-5,+5), 21-days (-10,+10) and 31-days (-30,+30) CARs are used as dependent variables in this study.

### 4.2.2 Independent variables

The independent variable used in this thesis is corporate governance mechanisms, particularly executive compensation, board of directors, and ownership.

### **Percentage of equity-based compensation (*EBC*)**

Consistent with the first hypothesis, this study uses the percentage of equity-based compensation (EBC) in total compensation package given to corporate executives as the first independent variable. Following Datta et al. (2001), EBC is calculated as the sum of stock awards and option awards divided by total compensation granted to executives in acquiring firms. All the data of executive compensation are at year-end prior to the acquisition announcement and collected from Compustat Execucomp database.

### **Board independence**

In accordance with the second hypothesis, the board independence is used as second independent variable. Board independence is the proportion of independent outside director in the acquiring firm's board. It measured as the number of independent outside directors divided by the total number of directors in the board at year-end prior to the acquisition announcement in acquiring firm. The measurement has been used in former studies by Byrd & Hickman (1992) and Cotter et al. (1997). A director is considered as independent outside directors if the classification is "I" or independent. The number of independent directors and the total number of directors in the board are generated from Institutional Shareholder Services (ISS) database

### **Compensation Committee member ownership (*CC ownership*)**

In line with the fourth hypothesis, the total ownership stake of all independent Compensation Committee member is used as fourth independent variable in this study. The CC ownership is calculated as total shares held by all independent Compensation Committee members divided by the firm's shares outstanding. The natural logarithm of percentage of shares owned by all independent Compensation Committee members in acquiring firms at year-end prior to the acquisition announcement is used as independent variable. All the data of CC ownership are retrieved from Institutional Shareholder Services (ISS) database.

#### **4.2.3 Control variables**

In order to lessen the endogeneity problem, this study involves several control variables. Since M&A performance are influenced by firm characteristics and deal characteristics, this thesis includes both characteristics as control variables. Firm characteristics such as firm size, profitability, return on equity (ROE), Tobin's Q, firm volatility, free cash flow, and the number

of directors in the board are used as control variables. The deal characteristics such as payment, competition bidder, target relatedness and target nationality are also used as control variable in this thesis.

### **Firm size**

Moeller et al. (2004) find that size of acquirer firm affects the gain from M&A transactions. They document a negative correlation between acquirer firm size and abnormal return at the announcement date. Datta et al. (2000) also report that the market reaction of M&A announcement is affected by firm size and include it as a control variable in the regression. Since former studies discover that firm size has a correlation with M&A performance, firm size is used as a control variable in this thesis. Following Datta et al. (2000), firm size is calculated as the acquiring firms' natural logarithm of market capitalization (i.e. firm's shares outstanding multiplied by the market price of one share). The data of acquiring firms' market capitalization is at a year-end prior to the acquisition announcement and attained from Compustat database.

### **Firm profitability**

Previous study by Morck et al. (2004) discover that acquirer's past performance affects the shareholders returns in acquiring firms. In order to examine firm prior performance, one could consider firm prior profitability. Hence, this study includes firm profitability as a control variable, measured as the acquiring firms' earnings before interest and tax (EBIT) divided by total asset. EBIT is used in order to measure the operating income that firms can create, disregarding tax and financing decision. The data of acquiring firms' EBIT and total asset are at a year-end prior to the acquisition announcement and collected from Compustat database.

### **ROE**

In order to measure firm profitability, one could also consider the return on equity (ROE) of a firm. Bozec (2005) uses ROE to measure firm performance in his study. ROE is measured as net income divided by shareholders equity. It is the amount of profit that firms can produce with the investment from shareholders. This thesis includes acquiring firm prior ROE as a control variable when investigating the relation between the CC ownership and M&A

performance. The ROE data are at a year-end preceding the M&A announcement and obtained from Compustat database.

### **Tobin's Q**

Lang et al. (1989) suggest that there is a relationship between firm value and stock price performance around tender offer activities. They document a positive and significant correlation between Tobin's Q ratio and acquiring firms' abnormal stock return around the acquisitions announcement. In accordance with Lang et al. (1989) and Moeller et al. (2004), Tobin's Q ratio is used as a control variable in this study. It is calculated as the acquirer's total market value of assets divided by acquirer's total book value of assets at a year-end prior to M&A announcement. The market value of assets is calculated as the book value of assets minus book value of common equity plus the market value of common equity. Compustat database is used to gather market value and book value of assets and equity data.

### **Firm volatility**

Firm volatility reflects the level of risk in a firm. According to Altman (1968), firm volatility is computed as retained earnings divided by total asset. Hence, firm volatility, measured as the ratio of acquirer's retained earnings to total asset at a year-end preceding the M&A announcement is used as a control variable in this study. The data needed to calculate firm volatility is obtained from Compustat database.

### **Free Cash Flow**

Jensen (1986) suggests that large free cash flow influence managers in a firm to engage in unprofitable or even value-destroying M&A transactions. Masulis et al. (2007) use free cash flow as a control variable in the regression to examine the relation between acquisitions profitability and corporate governance mechanisms. Based on Jensen (1986) and Masulis et al. (2007), free cash flow presumably has a correlation with acquiring firms' abnormal stock return around M&A transactions. Hence, this study includes free cash flow as a control variable in the regression. It is defined as acquiring firm's operating income before depreciation minus interest expense minus income taxes minus capital expenditures divided by the book value of total asset at a year-end prior to the M&A announcement. All the data needed to compute free cash flow is retrieved from Compustat database.

### **Board size**

Following Malmendier & Tate (2008) and Schmidt (2008), board size is used as a control variable in this study. It is calculated as total number of directors serve in the board at year-end prior to the acquisition announcement in acquiring firms. The data contains number of directors in each firms is attained from Institutional Shareholder Services (ISS) database.

### **Payment**

According to Andrade et al. (2001) firms that use all-cash in financing M&A have higher returns compared to firms that adopt all-stock financing. Moreover, Moeller et al. (2004) document a negative abnormal stock returns when the M&A transactions is funded by stock. These studies show the relation between the method of payment and M&A performance. Hence, this study involves a dummy variable with value of “1” if the M&A transaction is fully paid by cash and “0” otherwise. The payment method and the proportion of cash used in the M&A transaction is gathered from Thomson One Banker (TOB) database.

### **Competition bidder**

Hayward and Hambrick (1997) find a relation between the number of bidder and the premium for M&A transactions. They discover that higher number of bidder increase the premium for M&A deals. As the number of bidder seemingly influence the abnormal stock return, this study includes a dummy variable with value of “1” if there is a competing bidder (more than 1 bidders) in the M&A transaction and “0” otherwise. The data of number of bidder is collected from Thomson One Banker (TOB) database.

### **Firm relatedness**

Previous studies show that M&A activities in which acquirer and target are in the same industry produce better performance compared to M&A transactions between two unrelated firms (Morck et al, 1990; Moeller et al.(2004). Therefore, it is important to control for the industry relatedness between acquirer and target firms. A dummy variable of “1” if acquirer and target

share the same 3-digit SIC code is used as a control variable in this study. The acquirer and target SIC code are obtained from Thomson One Banker (TOB) database.

### **Target Nationality**

Amar et al. (2011) use the nation of target firms as a control variable since prior study by Eun et al. (1996) suggest that cross-border acquisition have different value creation compared to domestic acquisition. Following Amar et al. (2011), this study incorporates a dummy variable in which the value is “1” if target firm is a US firm and “0” otherwise. The data of target nationality is collected from Thomson One Banker (TOB) database.



## Chapter 5 Methodology

This section discusses the methodology used in this study. First, it explains the event-study method including the determination of event window and estimation period. Then, the regression models used in this study are also presented in this chapter.

In order to empirically test the hypotheses, this thesis conduct an event-study and multiple linear regression. These methods have become main methodology on recent studies regarding M&A and corporate governance mechanism, for instance Datta et al. (2001) and Masulis et al. (2007).

The first method namely event-study technique is employed to compute the dependent variable in this study, the cumulative abnormal stock return around the announcement date of M&A transactions. When using event study method, it is important to determine the event window and estimation period. This thesis uses 81 days (-40,+40) event window, contains 40 days prior to the announcement, the announcement day and 40 days after the announcement. For the estimation period, 200 trading days prior to the event window is used, following prior studies by Moeller et al. (2004) and Masulis et al., (2007).

The market model, referring to a paper of Mackinlay (1997) is used for calculating acquiring firm daily returns since it associates the return of security with the market return. The formula of market model is as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

where  $R_{it}$  = return on security i during day t,  
 $\alpha_i$  = intercept,  
 $\beta_i$  = parameter of the market model,  
 $R_{mt}$  = market return on day t and  
 $\varepsilon_{it}$  = zero mean disturbance term.

Using the market model, the acquiring firm abnormal return is calculated using the formula (Mackinlay, 1997):

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \quad (2)$$

where  $AR_{it}$  is abnormal return to security  $i$  for day  $t$ .

The cumulative abnormal return is the accumulation of the abnormal returns in the event window (Mackinlay, 1997). Then, the acquiring firm cumulative abnormal return (CAR) is calculated using the following formula:

$$CAR_{i(t_1,t_2)} = \sum_{t=t_1}^{t_2} AR_{it} \quad (3)$$

where  $t_1$  and  $t_2$  are the days between the event window.

Next, the multiple linear regression is utilized to examine the relation between the dependent and independent variables. In order to test the third hypothesis, an interaction term between EBC and board independence is used as independent variable. It is the multiplication of the percentage of EBC to total compensation at year-end prior to the acquisition announcement and the proportion of independent outside directors in the board at year-end prior to the acquisition announcement. Subsequently, for testing the fifth hypothesis, an interaction term of EBC and CC ownership is used as independent variable. It is the multiplication of the percentage of EBC to total compensation at year-end prior to the acquisition announcement and the natural logarithm of total shares owned by all independent Compensation Committee members at year-end prior to the acquisition announcement.

In order to mitigate the endogeneity problem, the year fixed effect and industry fixed effect are used in the regression model. The year fixed effect is used to control for the trends over the years, since the number of M&A transactions is different in each year. Thomsen et al. (2006) use year fixed effect to check whether the time effect influence the regression. The year fixed effect is measured as dummy variable with value of “1” if M&A transactions occurred in a particular year and “0” otherwise. Besides, the industry fixed effect is used as control variable since firms that engaged in M&A transactions come from different industries. The industry differences might have effect on the return on M&A transactions. Grinstein & Hribar (2004) include industry fixed effect when investigating the relation between executive compensation and M&A transactions.

The regression models for testing the hypotheses are as follow:

### Model 1

$$\begin{aligned}
 CAR_{i(t1-t2)} = & \alpha + \beta_1 EBC_i + \beta_2 Firm\_size_i + \beta_3 Profitability_i + \beta_4 Tobinq_i + \\
 & \beta_5 Volatility_i + \beta_6 FCF_i + \beta_7 Board\_size_i + \beta_8 Payment_i + \\
 & \beta_9 Competition\_bidder_i + \beta_{10} Relatedness_i + \beta_{11} Target\_nationality_i + \\
 & YearFE + IndustryFE + \varepsilon_i
 \end{aligned} \tag{4}$$

### Model 2

$$\begin{aligned}
 CAR_{i(t1-t2)} = & \alpha + \beta_1 Board\_independence_i + \beta_2 Firm\_size_i + \\
 & \beta_3 Profitability_i + \beta_4 Tobinq_i + \beta_5 Volatility_i + \beta_6 FCF_i + \beta_7 Board\_size_i + \\
 & \beta_8 Payment_i + \beta_9 Competition\_bidder_i + \beta_{10} Relatedness_i + \\
 & \beta_{11} Target\_nationality_i + YearFE + IndustryFE + \varepsilon_i
 \end{aligned} \tag{5}$$

### Model 3

$$\begin{aligned}
 CAR_{i(t1-t2)} = & \alpha + \beta_1 EBC_i + \beta_2 Board\_independence_i + \beta_3 EBC * \\
 & Board\_independence_i + \beta_4 Firm\_size_i + \beta_5 Profitability_i + \beta_6 Tobinq_i + \\
 & \beta_7 Volatility_i + \beta_8 FCF_i + \beta_9 Board\_size_i + \beta_{10} Payment_i + \\
 & \beta_{11} Competition\_bidder_i + \beta_{12} Relatedness_i + \beta_{13} Target\_nationality_i + \\
 & YearFE + IndustryFE + \varepsilon_i
 \end{aligned} \tag{6}$$

### Model 4

$$\begin{aligned}
 CAR_{i(t1-t2)} = & \alpha + \beta_1 CC\_ownership_i + \beta_2 Firm\_size_i + \beta_3 Profitability_i + \\
 & \beta_4 Tobinq_i + \beta_5 Volatility_i + \beta_6 FCF_i + \beta_7 Board\_size_i + \beta_8 Payment_i + \\
 & \beta_9 Competition\_bidder_i + \beta_{10} Relatedness_i + \beta_{11} Target\_nationality_i + \\
 & YearFE + IndustryFE + \varepsilon_i
 \end{aligned} \tag{7}$$

### Model 5

$$\begin{aligned} CAR_{i(t_1-t_2)} = & \alpha + \beta_1 EBC_i + \beta_2 CC\_ownership_i + \beta_3 EBC * CC\_ownership_i + \\ & \beta_4 Firm\_size_i + \beta_5 Profitability_i + \beta_6 Tobinq_i + \beta_7 Volatility_i + \beta_8 FCF_i + \\ & \beta_9 Board\_size_i + \beta_{10} Payment_i + \beta_{11} Competition\_bidder_i + \beta_{12} Relatedness_i + \quad (8) \\ & \beta_{13} Target\_nationality_i + YearFE + IndustryFE + \varepsilon_i \end{aligned}$$

## Chapter 6 Result

This chapter discusses the empirical results from implementing the event-study technique and multiple linear regression. In section 6.1, the descriptive statistics of M&A transactions, CARs over different event windows, executive compensation structure, and all independent and control variables are provided. Section 6.2 presents the correlation analysis of all independent and control variables. Last, section 6.3 analyses and discusses the regression results from testing the previously formulated hypotheses. A number of regression result tables are also presented in this section.

### 6.1 Descriptive statistics

Table 1 provides the summary statistics of M&A transactions and their corresponding value over the period of January 1, 2003 to December 31, 2016 in US. The dataset consists of 9,270 completed M&A transactions executed by 1,240 different firms. However, only around 44% of transactions, specifically 4,097 transactions disclose the value of M&A deals. The number of M&A transactions are similar each of the year, with average of 662 M&A deals each of the year. The highest number of M&A transactions is occurred in 2012 while the lowest M&A transactions is taken place in 2009. The number of M&A transactions decrease sharply from 709 to 430 transactions in 2009. Financial crisis in the preceding years might influence firms' financial stability and thus affecting the investment decision, including merger and acquisitions. Based on table 1, the M&A transaction value is also relatively evenly distributed during the period of 2003-2016, with the mean of approximately \$1,060 million. The biggest average transaction value is happened at 2010 while the smallest average transaction value is occurred at 2008. The median of M&A transaction value shows the same relatively equal distribution. It is surprising that the distribution of M&A transaction value is nearly constant. It might have occurred because some of the deals have tremendous value compare to others.

**Table 1**  
**Descriptive statistics of M&A transactions, 2003-2016**

The sample comprises of 9,270 completed M&A transactions over the period of January 1, 2003 to December 31, 2016 in US. The transactions consist of domestic and cross-border M&A transactions. The transaction value is measured in million US dollars. Transaction value is defined as the price that acquiring firm paid to acquire the target. The data of M&A transaction value is generated from Thomson One Banker (TOB) database.

Year	Number of Transactions	Number of Transactions that Disclose Value	% of Transactions that Disclose Value	Mean Transaction Value (\$ millions)	Median Transaction Value (\$ millions)
2003	638	350	54.55%	1,012.01	1,027.00
2004	621	337	53.46%	1,010.82	995.00
2005	744	390	52.55%	1,074.68	1,050.00
2006	670	301	44.93%	1,101.36	1,122.00
2007	613	277	44.86%	1,048.41	1,078.00
2008	709	261	37.24%	995.18	960.00
2009	430	184	43.26%	1,097.18	1,163.00
2010	715	295	41.54%	1,116.88	1,100.00
2011	733	299	40.65%	1,087.79	1,108.00
2012	784	319	40.69%	1,070.71	1,098.00
2013	580	239	40.86%	1,001.05	929.00
2014	766	318	40.73%	1,113.70	1,149.00
2015	674	291	43.32%	1,026.60	983.00
2016	598	236	39.46%	1,050.07	1,015.50
Average	662	292	44.15%	1,057.60	1,055.54
Total	9,270	4,097	44.20%		

The descriptive statistics of cumulative abnormal return (CAR) of acquiring firms in different event windows is presented in table 2. The average CAR of acquiring firms in 2-days (-1,+1), 5-days (-2,+2), 11-days (-5,+5), 21-days (-10,+10) and 31-days (-15,+15) are positive during the period of 2003-2016. This is inconsistent with previous studies that find a negative return in acquiring firms when engaging in M&A activity (Morck et al., 1990; Servaes, 1991). However, the average CAR in 61-days (-30,+30) window is negative throughout the years, with the mean of -0.37%. The median of CAR (-30,+30), which is -0.08%, also indicates that on average, acquiring firms have a negative return in 61-days around the M&A announcement date. Additionally, the minimum and maximum value of CARs in all event windows are

excessively large, especially for 61-days (-30,+30) CAR. It indicates that the market reaction in some transactions are somewhat extreme.

Figure 1 plots the average cumulative abnormal return (CAR) of acquiring firms on an event window of 40-days prior to the M&A announcement date and 40-days after the M&A announcement date. As seen in the figure, there is a sharp increase in acquiring firms' CAR on the day 0, in which the M&A transaction is announced. It shows that shareholders anticipate and react positively to M&A transactions accordingly. However, the CAR gradually decrease one day after the announcement date and then decrease extremely on 2-days after the M&A announcement date.

**Table 2**  
**Descriptive statistics of Cumulative Abnormal Return (CAR) of acquiring firms;**  
**CAR (-1,+1), CAR (-2,+2), CAR (-5,+5), CAR (-10,+10), CAR (-15,+15), CAR (-30,+30)**

The Cumulative Abnormal Return (CAR) of acquiring firms over 200-days estimation period is calculated using market model following Mackinlay (1997). The descriptive statistics, such as the number of observations, mean, median, standard deviation, minimum value and maximum value for the following CARs with different event windows: 3-days (-1,+1) CAR, 5-days (-2,+2) CAR, 11-days (-5,+5) CAR, 21-days (-10,+10) CAR, 31-days (-15,+15) CAR and 61-days (-30,+30) CAR are presented in the table. The data of acquiring firms' CAR are generated from Datastream database.

Event window	Obs.	Mean	Median	Std. Deviation	Minimum	Maximum
(-1,+1)	9,224	0.26%	0.13%	0.041	-41.13%	36.90%
(-2,+2)	9,224	0.26%	0.12%	0.048	-43.10%	36.77%
(-5,+5)	9,224	0.27%	0.18%	0.064	-46.52%	39.72%
(-10,+10)	9,224	0.23%	0.23%	0.084	-55.54%	51.26%
(-15,+15)	9,224	0.15%	0.21%	0.103	-65.57%	83.64%
(-30,+30)	9,224	-0.37%	-0.08%	0.148	-106.79%	82.26%

**Figure 1**  
**Average Cumulative Abnormal Return (CAR) of acquiring firms**

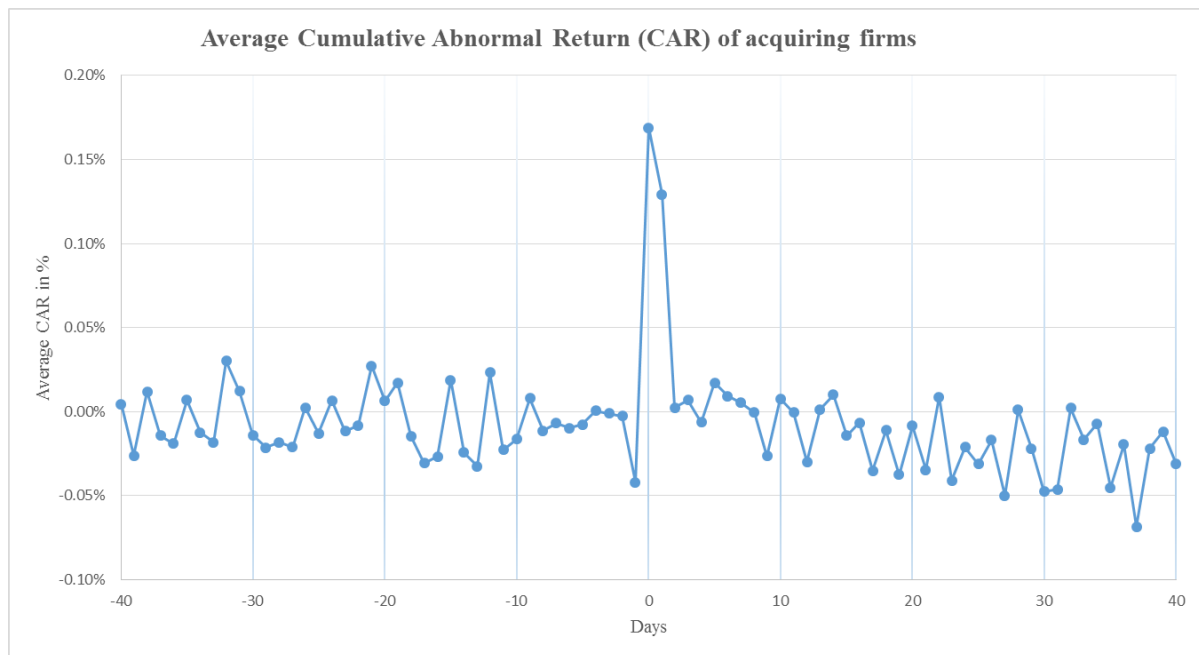


Table 3 displays the summary statistics of acquiring firms’ executive compensation structure at year-end prior to the M&A announcement. Total compensation in acquiring firms comprises of total of salary, bonus, other annual compensation, total value of restricted stock granted, total value of stock options granted, long-term incentive payouts, and all other compensation granted to acquiring firm executives. As seen in the table, even though the average total compensation given to the executives is \$21.2 million, the average salary paid is only \$2.8 million. Additionally, from the last row, it can be concluded that on average, the executive compensation package consists of approximately 36% of equity-based compensation. The equity-based compensation is measured as the proportion of stock and options grants to total compensation. On average, the stock grants and option grants that executives received are \$6.1 million and \$3.8 million respectively. It indicates that executives are commonly granted with stock awards rather than option awards. Overall, the proportion of equity-based compensation in this sample is higher than the percentage of equity-based compensation during 1993-1998 reported in Datta et al. (2001). It shows that the usage of equity-based compensation develops during the 2000s.



**Table 3**  
**Descriptive statistics of executive compensation structure of acquiring firms**

The structure of executive compensation of acquiring firms at year-end prior to the M&A announcement is presented in the table. Salary is the dollar value of base salary paid to executives. Bonus is the dollar value of bonus paid to executives. Other annual is the dollar value of other annual compensation that not classified as salary or bonus. Stock awards is the grant-date fair value of all stock awarded to executives. Option awards is the grant-date fair value of all options granted to executives. Long-term incentive plan payout is the amount rewarded to executives under the firm's long-term incentive plan. All other is the amount of compensation which comprises items such as severance payments, debt forgiveness, imputed interest, payouts for cancellation of stock options, payment for unused vacation, tax reimbursements, signing bonuses, 401K contributions and life insurance premiums. Total compensation is the summation of salary, bonus, other annual compensation, total value of restricted stock granted, total value of stock options granted, long-term incentive payouts, and all other compensation granted to acquiring firm executives. The equity-based compensation (EBC) is the sum of the value of stock awards and option awards divided by total compensation. All the compensation data are in thousand US dollars, except the EBC. The data of executive compensation is obtained from Compustat Execucomp database. Over 9,270 M&A transactions in the sample, the executive compensation is granted by firms in 9,225 M&A transactions.

Compensation (\$ 000)	Obs.	Mean	Median	Std. Dev.	Minimum	Maximum
Salary	9,225	2,796.65	2,635.00	1239.26	9.62	13,277.88
Bonus	9,225	1,400.73	127.00	3074.94	0.00	72,140.42
Other annual	9,225	90.44	0.00	532.85	0.00	22,894.10
Stock awards	9,225	6,138.73	1,344.00	17408.07	0.00	428,032.00
Option awards	9,225	3,803.25	0.00	15480.23	0.00	237,109.40
Long-term incentive plan payouts	9,225	258.10	0.00	1568.07	0.00	32,483.59
All other	9,225	168.15	0.00	984.90	0.00	32,660.24
Total compensation	9,225	21,228.18	13,871.34	27384.58	268.13	435,198.30
Equity-based compensation (%)	9,225	35.94	42.54	0.29	0.00	98.35

Table 4 summarizes the descriptive statistics of independent and control variables. The mean, median, standard deviation, minimum value and maximum value of each variable are reported. The second row indicates that the executive compensation package at year-end prior to the announcement date comprises of equity-based compensation that ranges from 0% to 98.35%. On average, executives in the sample firms are rewarded by significant amount (36%) of equity-based compensation; comprising of stocks and options. Next, the mean and median of proportion of independent outside director in the board are 0.77 and 0.8 respectively. It indicates that on average, board in the sample firms is relatively dominated by independent outside directors. Afterwards, the descriptive statistics show that the independent Compensation Committee members in the sample firms own 0% to 43.64% of firm's shares.

However, the total shares held by independent Compensation Committee members in the sample firms on average is only 0.53% of firm's shares. It shows that independent Compensation Committee members hold relatively small-scale of shares.

The natural logarithm of market capitalization of acquiring firms at year-end preceding the M&A announcement date is used as a proxy of prior firm size. The distribution of market capitalization is more normally distributed when using the natural logarithm of market capitalization. The market capitalization varies between 3.46 to 13.35, with the average of 8.6. It shows that on average, acquiring firms have positive past market capitalization. Next, by looking at the descriptive statistics, it can be noticed that some firms have a negative past profitability as the ratio lies between -1.53 to 0.73. However, on average, acquiring firms in the sample have a positive profitability ratio of 0.11. Afterwards, acquiring firms in the sample have a relatively wide range of return on equity (ROE), ranging from -10.22 to 70.38. The mean of 0.11 implies that acquiring firms in the sample have positive ROE.

Subsequently, the Tobin's Q ratio at year-end preceding the M&A announcement is used to reflect the firm past value. As seen in the table, the Tobin's Q ratio of acquiring firms in the sample lies between 0.52 to 13.73, with average of 2.15. It indicates that acquiring firms in the sample have positive past value. Then, the past firm volatility as measured as a ratio of acquiring firm's retained earnings to total asset at year-end prior to M&A announcement. On average, acquiring firms in the sample have a positive prior volatility ratio of 0.3. However, the ratio is quite broad ranging from -8.79 to 2.34. Next, the average of acquiring firm's prior free cash flow is positive by approximately \$70 thousands. However, certain firms have negative past free cash flow, as seen in the minimum value.

From the descriptive statistics, it could be seen that the number of directors serve in the board are between 3 to 18 directors. On average, acquiring firms in the sample have around 9 directors in the board. It is in accordance with Lipton and Lorsch (1992) that suggest the optimal board consists of 8 to 9 directors. Next, the variable *Payment* is a dummy variable regarding the method of payment of M&A transactions. The value is "1" if the M&A deals is paid by 100% cash. The mean of *Payment* tells that 21% of M&A transactions in the sample are entirely paid by cash. Alongside, the variable of *Competition\_bidder* is a dummy variable in regard to number of bidder in the M&A transactions. It has a value of "1" if there is a competing bidder (more than 1 bidder) in M&A transactions and "0" if there is only 1 bidder. The mean of *Competition\_bidder* shows that the majority of deals have only 1 bidder. Last, variable of

*Relatedness* regards to the industry relatedness between acquirer and target firms. The value is “1” if acquirer and target are in the same industry. The abnormal stock return of acquiring firm is different when acquirer and target are related or diversified (Morck et al., 1990). By looking at the mean of *Relatedness*, it can be concluded that 31% of M&A transactions in the sample occurred between firms within the same industry. Last, the mean of *Target\_nationality* indicates that 71% of M&A transactions occurred between US firms, or the sample consists of 71% domestic M&A transactions.

**Table 4**  
**Descriptive statistics of independent and control variables**

The table comprises of summary statistics, namely number of observations, mean, median, standard deviation, minimum value and maximum value for the following measures: (1) *EBC*: the sum of value of stock and option awards divided by total compensation at year-end prior to the M&A announcement in acquiring firms. (2) *Board\_independence*: the number of independent outside directors divided by total number of directors in the board in acquiring firms. (3) *CC\_ownership*: total shares held by all independent Compensation Committee members divided by firm’s shares in acquiring firms. (4) *Firm\_size*: natural logarithm of firm’s shares outstanding multiplied by the market price in acquiring firms. (5) *Profitability*: earnings before interest and tax (EBIT) divided by total asset. (6) *ROE*: net income divided by shareholders equity in acquiring firms. (7) *Tobinq*: the book value of assets minus book value of common equity plus the market value of common equity divided by total book value of assets in acquiring firms.. (8) *Volatility*: retained earnings divided by total asset. (9) *FCF*: operating income before depreciation minus interest expense minus income taxes minus capital expenditures divided by the book value of total asset in acquiring firms. (10) *Board\_size*: total number of directors serve in the board in acquiring firms. (11) *Payment*: dummy variable with value of “1” if the M&A deal is entirely paid by cash and “0” otherwise. (12) *Competition\_bidder*: dummy variable with value of “1” if there is a competing bidder (more than 1 bidders) in the M&A transaction and “0” otherwise. (13) *Relatedness*: dummy variable with value of “1” if acquirer and target share the same 3-digit SIC code and “0” otherwise. (14) *Target\_nationality*: dummy variable with value of “1” if target firm is a US firm and “0” otherwise. All the data of *EBC*, *Board\_independence*, *CC\_ownership*, *Firm\_size*, *Profitability*, *ROE*, *Tobinq*, *Volatility*, *FCF* and *Board\_size* are at year-end preceding the M&A announcement. The data of *EBC* and *CC\_Ownership* are in percentage, while the data of *FCF* is in million US dollars.

Variables	Obs.	Mean	Median	Std. Dev.	Minimum	Maximum
<i>EBC (%)</i>	9,225	35.94	42.54	0.290	0	98.35
<i>Board_independence</i>	8,680	0.77	0.80	0.128	0	1
<i>CC_ownership (%)</i>	8,669	0.53	0.13	0.022	0	43.64
<i>ln(Firm_size)</i>	9,254	8.59	8.35	1.726	3.46	13.35
<i>Profitability</i>	9,268	0.11	0.11	0.075	-1.53	0.73
<i>ROE</i>	7,577	0.17	0.14	0.931	-10.22	70.38
<i>Tobinq</i>	9,250	2.15	1.84	1.148	0.52	13.73
<i>Volatility</i>	9,268	0.27	0.30	0.478	-8.79	2.34
<i>FCF (\$ million)</i>	8,804	0.07	0.07	0.063	-1.22	0.43
<i>Board_size</i>	8,680	9.42	9	2.161	3	18
<i>Payment</i>	9,270	0.21	0	0.406	0	1

<i>Competition_bidder</i>	9,270	0.01	0	0.074	0	1
<i>Relatedness</i>	9,270	0.31	0	0.464	0	1
<i>Target_nationality</i>	9,270	0.71	1	0.452	0	1

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## 6.2 Correlation analysis

This section discusses the relation between all independent and control variables used in the regression models. Table V presents the correlation matrix between independent and control variables, comprising the Pearson correlation coefficients. The significance of the coefficient is also provided in the table. The star in coefficient indicates that the correlation is significant at 5% significance level. As seen in Table V, there is no perfect collinearity between variables used in the regression models since the correlation coefficients are relatively low. For most of variables, the coefficients are not more than 0.50. Exceptionally, the interaction term of EBC\* Board\_independence and EBC\*CC\_ownership have a relatively high correlation with EBC. It is sensible since the variable EBC\* Board\_independence and EBC\*CC\_ownership are derived from the interaction of EBC and Board\_independence and EBC and CC\_ownership correspondingly.

**Table 5**  
**Correlation matrix**

The table displays the Pearson correlation coefficients of all independent and control variables in the regression models. The star (\*) in coefficient indicate significance at 5 percent level.

	<i>EBC</i>	<i>Board_independence</i>	<i>EBC * Board_independence</i>	<i>CC_ownership</i>	<i>EBC * CC_ownership</i>	<i>Firm_size</i>	<i>Profitability</i>	<i>ROE</i>	<i>Tobinq</i>	<i>Volatility</i>	<i>FCF</i>	<i>Board_size</i>	<i>Payment</i>	<i>Competition_bidder</i>	<i>Relatedness</i>	<i>Target_nationality</i>
<i>EBC</i>	1															
<i>Board_independence</i>	0.3343*	1														
<i>EBC * Board_independence</i>	0.9805*	0.4516*	1													
<i>CC_ownership</i>	-0.1040*	-0.0592*	-0.1140*	1												
<i>EBC * CC_ownership</i>	-0.9301*	-0.3183*	-0.9177*	0.3751*	1											
<i>Firm_size</i>	0.2716*	0.1981*	0.2904*	-0.6526*	-0.4369*	1										
<i>Profitability</i>	0.0245*	0.0081	0.0336*	-0.1315*	-0.0740*	0.2741*	1									
<i>ROE</i>	0.0022	0.0194	0.0052	-0.0528*	-0.0225	0.0755*	0.1242*	1								
<i>Tobinq</i>	0.0485*	-0.0534*	0.0368*	-0.0609*	-0.0491*	0.2805*	0.4787*	0.0628*	1							
<i>Volatility</i>	0.0295*	0.0658*	0.0377*	-0.0439*	-0.0388*	0.1382*	0.3973*	0.0543*	0.0157	1						
<i>FCF</i>	0.1167*	0.0598*	0.1240*	-0.1232*	-0.1494*	0.2381*	0.7720*	0.0929*	0.3767*	0.3734*	1					
<i>Board_size</i>	0.0757*	0.1385*	0.0896*	-0.3902*	-0.1746*	0.5213*	0.0720*	0.0416*	-0.0864*	0.1515*	0.0714*	1				
<i>Payment</i>	-0.0509*	-0.0115	-0.0516*	0.0173	0.0538*	-0.0295*	-0.0126	-0.0107	0.0024	-0.0544*	0.0027	-0.0336*	1			
<i>Competition_bidder</i>	-0.0320*	-0.0115	-0.0300*	-0.0220*	0.0265*	0.0271*	0.0307*	-0.0025	0.0162	0.009	0.0207	0.0258*	0.0587*	1		
<i>Relatedness</i>	0.0002	-0.0973*	-0.0195	0.0423*	0.0133	-0.0778*	-0.0024	-0.0270*	0.0518*	-0.0636*	-0.0607*	-0.0953*	-0.0001	0.0191	1	
<i>Target_nationality</i>	-0.0590*	-0.0797*	-0.0700*	0.018	0.0558*	-0.0632*	-0.0018	-0.0095	-0.0178	-0.0581*	-0.0493*	-0.0583*	0.0510*	-0.0142	0.0255*	1

### 6.3 Regression result and analysis

This section presents the analysis of the main regression results in testing the formerly formulated hypotheses. Several regression models are constructed in order to examine the impact of corporate governance mechanisms, particularly executive compensation, board independence and ownership on M&A performance. The regression result tables from performing multiple linear regression using Stata are also provided in this section.

#### 6.3.1 M&A performance and executive compensation

Table 6 reports the regression result from investigating the relation between M&A performance and executive compensation, particularly equity-based compensation (EBC) over the period of 2003-2016. The 3-days (-1,+1), 5-days (-2,+2), 11-days (-5,+5) and 21-days (-10,+10) CARs are used as dependent variables in different regression models. As seen in Table 6, the coefficient of EBC is positive in model 1, 2 and 3 when using CAR (-1,+1), CAR (-2,+2) and CAR (-5,+5) as dependent variables. However, the coefficient is not significant at any significance level. On the other hand, when looking at the fourth model, the coefficient of EBC is positive and statistically significant at 5% significance level when 21-days (-10,+10) CAR is used as dependent variable. The coefficient of 0.0129 indicates that, on average, one percent increase in the percentage of equity-based compensation in total compensation will lead to 1.29% increase in 21-days cumulative abnormal return (CAR (-10,+1)) for acquiring firms. The result supports the finding of Datta et al. (2001) that discover a positive correlation between equity-based compensation and stock price performance around the acquisition announcement date. The R-squared is 0.068, meaning that this model could explain 6.8% of the variability of the data. While, the adjusted R-square is 2.4%. It is comparable with Datta et al. (2001) that find an adjusted R-squared of 1.25%.

Next, the coefficients of firm size are negative and statistically significant at 1% significance level in model 1, 2, 3 and 4. It is in line with former study by Moeller et al. (2004) that find a negative correlation between size of the firm measured by the market capitalization and acquiring firms' abnormal return around acquisition announcement date. Then, the coefficients of Tobin's Q are negative and statistically significant in model 3 and 4. The result differs from previous study by Lang et al. (1989) that discover a statistically significant positive relation between Tobin's Q and acquiring firms' abnormal stock return around the acquisitions announcement. Last, the coefficients of payment method are positive and significant in model

1, 2 and 3. It indicates that acquiring firms' CAR around M&A announcement date is more positive when the M&A transaction is entirely paid by cash. It is in accordance with Datta et al. (2001) which find that shareholder return around acquisition announcement date increases when the acquisition is fully financed with cash.

**Table 6**  
**Regression result of M&A performance and EBC over 2003-2016;**  
**CARs (-1,+1), (-2,+2), (-5,+5), (-10,+10)**

The table presents the regression result of 4 regression models associated with the relation between M&A performance and equity-based compensation (EBC). In model 1, 2, 3 and 4, the dependent variables are 3-days, 5-days, 11-days and 21-days CAR of acquiring firms around M&A announcement date, respectively. The standard error of each coefficients are in parentheses.

VARIABLES	Model 1 CAR (-1,+1)	Model 2 CAR (-2,+2)	Model 3 CAR (-5,+5)	Model 4 CAR (-10,+10)
<i>EBC</i>	0.00258 (0.0031)	0.00254 (0.0037)	0.00707 (0.0050)	0.0129** (0.0065)
<i>Firm_size</i>	-0.00174*** (0.0005)	-0.00160*** (0.0005)	-0.00245*** (0.0007)	-0.00258*** (0.001)
<i>Profitability</i>	-0.0146 (0.0134)	-0.00411 (0.0157)	0.000537 (0.0210)	-0.00376 (0.0280)
<i>Tobinq</i>	0.000528 (0.0006)	-0.000212 (0.0007)	-0.00223** (0.0009)	-0.00485*** (0.0012)
<i>Volatility</i>	4.13e-05 (0.0015)	-0.00119 (0.0017)	-0.00329 (0.0023)	-0.00452 (0.0030)
<i>FCF</i>	0.00932 (0.0150)	-0.00533 (0.0176)	0.0289 (0.0236)	0.0765** (0.0313)
<i>Board_size</i>	0.000106 (0.0003)	-0.000119 (0.0004)	-1.16e-05 (0.0005)	-0.000504 (0.0006)
<i>Payment</i>	0.00431*** (0.0011)	0.00447*** (0.0013)	0.00349** (0.0018)	0.00360 (0.0023)
<i>Competition_bidder</i>	-0.00196 (0.0058)	0.00316 (0.0068)	-0.00240 (0.0092)	-0.00486 (0.0122)
<i>Relatedness</i>	-0.000351 (0.0011)	0.000710 (0.0013)	0.00133 (0.0017)	-0.00204 (0.0023)
<i>Target_nationality</i>	0.00121 (0.0010)	-0.000636 (0.0012)	-0.00163 (0.0016)	-0.000813 (0.0021)
<i>Constant</i>	0.0108*** (0.0037)	0.0172*** (0.0044)	0.0332*** (0.0059)	0.0474*** (0.0078)
Observations	8,184	8,184	8,184	8,184
R-squared	0.101	0.087	0.080	0.068
Adjusted R-squared	0.058	0.044	0.036	0.024

Significance levels \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In order to check whether the positive correlation is occurred before or after the M&A announcement, additional regression models are constructed. Table 7 provides the result of supplementary regression models by using CAR (-10,-1), CAR (+1,+10), CAR (-30,+30), CAR (-30,-1) and CAR (+1,+30) as dependent variables. In model 1, CAR (-10,-1) is used a dependent variable to see the relation between M&A performance and equity-based compensation (EBC) before the M&A announcement date. The coefficient of EBC is positive and significant at 5% significance level in model 1. It suggests that there is a leakage of information or an insider trading on 10-days before the M&A announcement date. To check the relation between M&A performance and EBC after the M&A announcement date, 10-days (+1,+10) after the announcement date CAR is used as a dependent variable in model 2. A positive coefficient of EBC is found in the regression result, though statistically insignificant.

Additionally, in order to see the relation of M&A performance in longer event window, CAR of one-month prior and after the M&A announcement date (CAR (-30,+30)) is used in model 3. The coefficient of EBC in model 3 is positive and significant at 1% significance level. It suggests that, on average, an increase in the percentage of equity-based compensation (EBC) in total compensation leads to higher CAR around M&A announcement date. Specifically, on average, a 1% increase in the percentage of EBC is associated with 4.69% change in acquiring firms' cumulative abnormal return 61-days around the M&A announcement date. The R-squared of this model is 0.077, indicating that this model could explain 7.7% of the variability of the data.

As seen in table 7, acquiring firms' CAR one-month before the M&A announcement date is used as dependent variable in model 4 to see the relation of M&A performance and the proportion of EBC before the event date. The coefficient of EBC in model 4 is positive and significant at 1% significance level. It reveals that there is a leakage of information or an insider trading a month before the M&A announcement date. Whereas, model 5 is used to see the relation between M&A performance and the proportion of EBC after the event date. The coefficient of EBC is positive and significant when CAR (+1,+30) is used as dependent variable. The result indicates the proportion of EBC in total executive compensation package is not anticipated enough in acquiring firms.

Based on the regression results displayed in table 6 and 7, it can be concluded that there is a positive relation between the proportion of equity-based compensation (EBC) at a year-end prior to the M&A announcement and M&A performance around M&A announcement date in



acquiring firms. Hence, the result confirms the first hypothesis and supports the study of Datta et al. (2001).

**Table 7**  
**Regression result of M&A performance and EBC**  
**CARs (-10,-1), (+1,+10), (-30,+30), (-30,-1), (+1,+30)**

The table presents the regression result of 5 regression models associated with the relation between M&A performance and equity-based compensation (EBC). In model 1, 2, 3, 4 and 5, the dependent variables are 10-days CAR before the M&A announcement, 10-days CAR after the M&A announcement, 61-days CAR around M&A announcement, 30-days CAR before the M&A announcement and 10-days CAR after the M&A announcement, respectively. The standard error of each coefficients are in parentheses.

VARIABLES	Model 1 CAR (-10,-1)	Model 2 CAR (+1,+10)	Model 3 CAR (-30,+30)	Model 4 CAR (-30,-1)	Model 5 CAR (+1,+30)
<i>EBC</i>	0.00997** (0.00420)	0.00376 (0.00458)	0.0469*** (0.0114)	0.0283*** (0.00752)	0.0188** (0.00772)
<i>Firm_size</i>	-0.000298 (0.000598)	-0.00136** (0.000652)	-0.00369** (0.00163)	-0.000996 (0.00107)	-0.00178 (0.00110)
<i>Profitability</i>	0.0167 (0.0180)	-0.0124 (0.0196)	-0.0524 (0.0490)	-0.00414 (0.0322)	-0.0398 (0.0331)
<i>Tobinq</i>	-0.00258*** (0.000775)	-0.00302*** (0.000844)	-0.0107*** (0.00211)	-0.00491*** (0.00139)	-0.00646*** (0.00142)
<i>Volatility</i>	-0.00242 (0.00195)	-0.00166 (0.00213)	-0.0107** (0.00532)	-0.00424 (0.00350)	-0.00590 (0.00359)
<i>FCF</i>	0.0290 (0.0202)	0.0457** (0.0220)	0.205*** (0.0550)	0.0894** (0.0361)	0.111*** (0.0371)
<i>Board_size</i>	-0.000480 (0.000403)	-0.000440 (0.000439)	-0.000723 (0.00110)	-0.000789 (0.000721)	-0.000281 (0.000740)
<i>Payment</i>	-0.000638 (0.00150)	0.00190 (0.00164)	0.000956 (0.00409)	-0.00143 (0.00269)	0.000168 (0.00276)
<i>Competition_bidder</i>	-0.000142 (0.00783)	-0.00177 (0.00854)	-0.0292 (0.0213)	-0.0173 (0.0140)	-0.00777 (0.0144)
<i>Relatedness</i>	-0.000436 (0.00147)	-0.00128 (0.00160)	-0.00222 (0.00400)	-0.00252 (0.00263)	0.000369 (0.00270)
<i>Target_nationality</i>	0.000999 (0.00135)	-0.00229 (0.00147)	0.00152 (0.00368)	0.00500** (0.00242)	-0.00383 (0.00248)
<i>Constant</i>	0.0155*** (0.00501)	0.0295*** (0.00546)	0.0160 (0.0250)	0.0330*** (0.00896)	0.0370*** (0.00920)
Observations	8,184	8,184	8,178	8,184	8,184
R-squared	0.054	0.056	0.077	0.063	0.066
Adjusted R-squared	0.009	0.011	0.033	0.018	0.022

Significance levels \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 6.3.2 M&A performance and board independence

The regression result explaining the impact of board independence on M&A performance during the period of 2003-2016 is presented in table 8. The 3-days (-1,+1), 11-days (-5,+5) and 21-days (-10,+10) CARs are used as dependent variables in different regression models. The coefficient of board independence in model 1 and 2 are negative and significant at 1% and 5% significance level, respectively. The coefficient is also negative yet insignificant in model 3. Thus, the result rejects the second hypothesis that M&A performance and the proportion of independent outside directors in acquiring firm's board is positively correlated.

In order to investigate the negative correlation, the board independence is divided into 4 categories. The first category is a dummy variable with value of "1" if the proportion of independent outside directors is 51% to 60% of total number of directors serve in the board. It consists of 540 transactions in the sample. The second category of board independence is a dummy variable of "1" if the proportion of independent outside directors in the board is between 61% to 70%. It comprises of 1,333 transactions in the sample. The third category is a dummy variable which value is 1 if the proportion of independent outside directors in the board is 71% to 80%. It contains 1,923 transactions in the sample. And the last category is a dummy variable of "1" if the proportion of independent outside directors in the board is more than 80%. It consists of 5,043 transactions in the sample. As a result, model 4 and 5 include the board independence of category 1, 2, 3 and 4 as independent variables.

As seen in table 8, the coefficient of category 1 of board independence is positive but insignificant in model 4 and 5. While the coefficients of category 2, 3 and 4 of board independence are negative. The coefficient of category 4 of board independence in model 4 is significant at 10% significance level. The result indicates that M&A performance is negatively correlated with board independence when the proportion of independent outside directors is high (over 80%). The result differs from the finding of Byrd & Hickman (1992) that discover a positive correlation when the proportion of independent is at least 50% and a negative correlation when the proportion of independent outside director is more than 60%.

After the implementation of SOX, board in the firms are relatively dominated by independent outside directors. Most of the transactions in the sample by 8,839 have more than half independent outside directors in the board. 719 transactions have 50-60% independent outside directors in the board. And only 252 transactions have less than 50% independent outside

directors in the board, which is pretty rare in the sample. It is different compared to earlier study by Byrd & Hickman (1992) which have more than half transactions in the sample with less than 50% independent outside directors in the board during 1980-1987. The difference in the observation count expectedly give rise to the different result.

**Table 8**  
**Regression result of M&A performance and board independence over 2003-2016;**  
**CARs (-1,+1), (-5,+5), (-10,+10)**

The table presents the regression result of 5 regression models associated with the relation between M&A performance and board independence. In model 1 and 4, the dependent variables are 3-days CAR of acquiring firms around M&A announcement date. In model 2 and 5, the dependent variables are 11-days CAR of acquiring firms around M&A announcement date. In model 3, the dependent variable is 21-days CAR of acquiring firms around M&A announcement date. The standard error of each coefficients are in parentheses.

VARIABLES	Model 1 CAR (-1,+1)	Model 2 CAR (-5,+5)	Model 3 CAR (-10,+10)	Model 4 CAR (-1,+1)	Model 5 CAR (-5,+5)
<i>Board_independence</i>	-0.0151*** (0.00443)	-0.0138** (0.00696)	-0.00739 (0.00926)		
<i>Board_independence</i> <i>Category 1 (51%-60%)</i>				0.00318 (0.00279)	0.00516 (0.00438)
<i>Board_independence</i> <i>Category 2 (61%-70%)</i>				-0.00210 (0.00246)	-0.00323 (0.00387)
<i>Board_independence</i> <i>Category 3 (71%-80%)</i>				-0.00221 (0.00242)	-0.00162 (0.00380)
<i>Board_independence</i> <i>Category 4 (&gt;80%)</i>				-0.00462* (0.00238)	-0.00455 (0.00375)
<i>Firm_size</i>	-0.00146*** (0.000437)	-0.00204*** (0.000688)	-0.00197** (0.000914)	-0.00140*** (0.000439)	-0.00190*** (0.000690)
<i>Profitability</i>	-0.0178 (0.0134)	-0.00492 (0.0210)	-0.0137 (0.0280)	-0.0189 (0.0134)	-0.00646 (0.0210)
<i>Tobinq</i>	0.000481 (0.000577)	-0.00226** (0.000908)	-0.00473*** (0.00121)	0.000426 (0.000579)	-0.00236*** (0.000911)
<i>Volatility</i>	0.000367 (0.00145)	-0.00285 (0.00229)	-0.00397 (0.00304)	0.000354 (0.00146)	-0.00291 (0.00229)
<i>FCF</i>	0.00942 (0.0150)	0.0305 (0.0236)	0.0804** (0.0314)	0.0105 (0.0150)	0.0315 (0.0236)
<i>Board_size</i>	8.08e-05 (0.000300)	-5.42e-05 (0.000471)	-0.000551 (0.000627)	1.81e-05 (0.000301)	-0.000126 (0.000473)
<i>Payment</i>	0.00430*** (0.00112)	0.00344* (0.00176)	0.00365 (0.00233)	0.00430*** (0.00112)	0.00342* (0.00176)
<i>Competition_bidder</i>	-0.00180 (0.00584)	-0.00227 (0.00918)	-0.00486 (0.0122)	-0.00203 (0.00584)	-0.00264 (0.00918)
<i>Relatedness</i>	-0.000515	0.00116	-0.00218	-0.000532	0.00112

	(0.00109)	(0.00172)	(0.00228)	(0.00109)	(0.00172)
<i>Target_nationality</i>	0.00107	-0.00187	-0.00109	0.00106	-0.00187
	(0.00100)	(0.00158)	(0.00210)	(0.00100)	(0.00158)
Constant	0.0194***	0.0401***	0.0484***	0.0114***	0.0325***
	(0.00450)	(0.00707)	(0.00940)	(0.00399)	(0.00627)
Observations	8,210	8,210	8,210	8,210	8,210
R-squared	0.101	0.079	0.066	0.101	0.079
Adjusted R-squared	0.059	0.035	0.022	0.059	0.036

Significance levels \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 6.3.3 M&A performance and interaction term of EBC and board independence

Table 9 provides the result of testing the third hypothesis that the relation between equity-based compensation and acquiring's M&A performance around announcement date is more positive with a higher proportion of independent outside directors in the board. In model 1, the coefficient of board independence remains negative and significant, same as in the previous regression result between M&A performance and board independence. While the coefficients of interaction term between the proportion of EBC and board independence are statistically insignificant. Therefore, the result cannot explain the intermediation effect of board independence and no clear conclusion can be made.

**Table 9**  
**Regression result of M&A performance and interaction term of EBC and board independence over 2003-2016; CARs (-1,+1), (-2,+2), (-5,+5), (-10,+10)**

The table presents the regression result of 4 regression models associated with the relation between M&A performance and the interaction term of EBC and board independence. In model 1, 2, 3 and 4, the dependent variables are 3-days, 5-days, 11-days and 21-days CAR of acquiring firms around M&A announcement date, respectively. The standard error of each coefficients are in parentheses.

VARIABLES	Model 1 CAR (-1,+1)	Model 2 CAR (-2,+2)	Model 3 CAR (-5,+5)	Model 4 CAR (-10,+10)
<i>EBC</i>	0.0119 (0.0109)	0.0114 (0.0128)	0.00639 (0.0171)	0.0103 (0.0228)
<i>Board_independence</i>	-0.0119** (0.00564)	-0.0130** (0.00661)	-0.0142 (0.00887)	-0.00936 (0.0118)
<i>EBC * Board_independence</i>	-0.0115 (0.0133)	-0.0109 (0.0155)	0.00119 (0.0209)	0.00339 (0.0277)
<i>Firm_size</i>	-0.00156*** (0.000448)	-0.00141*** (0.000524)	-0.00230*** (0.000704)	-0.00250*** (0.000935)
<i>Profitability</i>	-0.0153	-0.00497	-0.000687	-0.00462

	(0.0134)	(0.0157)	(0.0211)	(0.0280)
<i>Tobinq</i>	0.000399	-0.000348	-0.00233**	-0.00491***
	(0.000577)	(0.000676)	(0.000907)	(0.00121)
<i>Volatility</i>	0.000180	-0.00105	-0.00317	-0.00446
	(0.00145)	(0.00170)	(0.00229)	(0.00304)
<i>FCF</i>	0.00895	-0.00564	0.0292	0.0769**
	(0.0150)	(0.0176)	(0.0236)	(0.0314)
<i>Board_size</i>	9.73e-05	-0.000126	-1.54e-06	-0.000494
	(0.000300)	(0.000352)	(0.000472)	(0.000627)
<i>Payment</i>	0.00433***	0.00450***	0.00351**	0.00362
	(0.00112)	(0.00131)	(0.00176)	(0.00233)
<i>Competition_bidder</i>	-0.00182	0.00330	-0.00231	-0.00481
	(0.00582)	(0.00682)	(0.00915)	(0.0122)
<i>Relatedness</i>	-0.000445	0.000609	0.00123	-0.00210
	(0.00109)	(0.00128)	(0.00172)	(0.00228)
<i>Target_nationality</i>	0.00115	-0.000702	-0.00167	-0.000837
	(0.00100)	(0.00118)	(0.00158)	(0.00210)
<i>Constant</i>	0.0178***	0.0248***	0.0417***	0.0531***
	(0.00512)	(0.00600)	(0.00805)	(0.0107)
Observations	8,184	8,184	8,184	8,184
R-squared	0.102	0.088	0.080	0.068
Adjusted R-squared	0.060	0.045	0.037	0.024

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Significance levels \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### 6.3.4 M&A performance and Compensation Committee member ownership

The initial regression result illustrating the relation between M&A performance and total ownership stake of all independent compensation committee members (CC-ownership) over the period of 2003-2016 is presented in table 10. Different CARs are used as dependent variables in order to see the relation during different windows. As showed in table 10, the coefficients of CC ownership in model 1, 2, 3 and 4 are positive but statistically insignificant.

Afterwards, the relation between M&A performance and CC-ownership is consecutively tested by using acquiring firms' prior return on equity (ROE) as a proxy of firm prior profitability instead of the ratio of EBIT to total asset. The additional regression results regarding the relation between M&A performance and CC-ownership are presented in table 11.

When including prior ROE as control variable, the coefficient of CC ownership is positive and statistically significant in model 1 and 4. In model 1, the coefficient suggests that, on average, an increase in CC ownership by one percent is associated with a change in 3-days (-1,+1) CAR in acquiring firms by 0.00056%. The R-squared is 0.111 and the adjusted R-squared is 0.065. Both R-squared and adjusted R-squared in model 1 are higher compared to R-squared and

adjusted R-squared of model 1 in Table 10 by 0.098 and 0.055, respectively. It implies that model 1 in Table 11 could explain more variability of the data compared to model 1 in Table 10.

Besides, in model 4, the coefficient suggests that, on average, an increase in CC ownership by one percent is associated with a change in 21-days (-10,+10) CAR in acquiring firms by 0.0015%. The R-squared in model 4 is 0.068 and the adjusted R-squared is 0.020. Meanwhile, the R-squared in model 4 in Table 10 is 0.065 and the adjusted R-squared is 0.022. The R-squared of model 4 is slightly higher compared to the R-squared in model 4 in Table 10.

The result is in line with prior research by Denis & McConnell (2003) which suggest that directors are more likely to ignore high acquisition premium when the number of shares that they own increases. Therefore, the result approves the fourth hypothesis that the total ownership stake of all independent compensation committee members (CC-ownership) increases M&A performance in acquiring firms.

Since there is evidence of leaked announcements (Model 4 in Table 7), the relation between CC-ownership and M&A performance before and after the M&A announcement date are tested. Table 12 displays the result of additional regression models by using CAR (-10,-1) and CAR (+1,+10) as dependent variables. The coefficients of CC ownership in model 1 and 2 remain positive. Moreover, in model 2, the coefficient is significant at 1% significance level. It suggests that the stock ownership of compensation committee members (CC-ownership) is not anticipated enough in acquiring firms in the sample.

**Table 10**  
**Initial regression result of M&A performance and Compensation Committee member ownership over 2003-2016; CARs (-1,+1), (-2,+2), (-5,+5), (-10,+10)**

The table presents the regression result of 4 regression models associated with the relation between M&A performance and total ownership stake of independent compensation committee members (CC ownership). In model 1, 2, 3, 4 and 5, the dependent variables are 3-days, 5-days, 11-days and 21-days CAR of acquiring firms around M&A announcement date, respectively. The standard error of each coefficients are in parentheses.

VARIABLES	Model 1 CAR(-1,+1)	Model 2 CAR(-2,+2)	Model 3 CAR(-5,+5)	Model 4 CAR (-10,+10)
<i>CC_ownership</i>	0.000378 (0.000305)	0.000304 (0.000358)	0.000406 (0.000480)	0.000880 (0.000638)
<i>Profitability</i>	-0.0187 (0.0135)	-0.00985 (0.0158)	-0.00924 (0.0212)	-0.0177 (0.0282)
<i>Tobinq</i>	0.000144 (0.000566)	-0.000494 (0.000663)	-0.00275*** (0.000889)	-0.00518*** (0.00118)
<i>Volatility</i>	4.59e-05 (0.00146)	-0.00122 (0.00171)	-0.00345 (0.00229)	-0.00459 (0.00305)
<i>FCF</i>	0.00436 (0.0153)	-0.00891 (0.0179)	0.0274 (0.0240)	0.0773** (0.0319)
<i>Payment</i>	0.00450*** (0.00112)	0.00475*** (0.00132)	0.00371** (0.00176)	0.00387* (0.00234)
<i>Competition_bidder</i>	-0.00212 (0.00585)	0.00297 (0.00686)	-0.00268 (0.00919)	-0.00534 (0.0122)
<i>Relatedness</i>	-0.000142 (0.00110)	0.000955 (0.00129)	0.00151 (0.00172)	-0.00179 (0.00229)
<i>Target_nationality</i>	0.00123 (0.00101)	-0.000603 (0.00118)	-0.00157 (0.00159)	-0.000703 (0.00211)
<i>ROE</i>				
<i>Constant</i>	0.00207 (0.00301)	0.00661* (0.00353)	0.0187*** (0.00473)	0.0306*** (0.00629)
Observations	8,176	8,176	8,176	8,176
R-squared	0.098	0.084	0.077	0.065
Adjusted R-squared	0.055	0.042	0.033	0.022

Significance levels \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 11**  
**Additional regression result of M&A performance and Compensation Committee member ownership over 2003-2016; CARs (-1,+1), (-2,+2), (-5,+5), (-10,+10)**

The table presents the additional regression result regarding the relation between M&A performance and total ownership stake of independent compensation committee members (CC ownership). In model 1, 2, 3 and 4 the dependent variables are 3-days, 5-days, 11-days and 21-days CAR of acquiring firms around M&A announcement date, respectively. In following regression models, the firm prior profitability is measured by acquiring firms' prior return on equity (ROE). The standard error of each coefficients are in parentheses.

VARIABLES	Model 1 CAR(-1,+1)	Model 2 CAR(-2,+2)	Model 3 CAR(-5,+5)	Model 4 CAR(-10,+10)
<i>CC_ownership</i>	0.000562* (0.000338)	0.000443 (0.000396)	0.000537 (0.000525)	0.00154** (0.000698)
<i>ROE</i>	2.09e-05 (0.000494)	-0.000103 (0.000578)	-0.000198 (0.000766)	-0.000298 (0.00102)
<i>Tobinq</i>	-0.000528 (0.000574)	-0.00103 (0.000672)	-0.00296*** (0.000892)	-0.00653*** (0.00118)
<i>Volatility</i>	-0.000513 (0.00161)	-0.00114 (0.00189)	-0.00592** (0.00250)	-0.00591* (0.00332)
<i>FCF</i>	-0.0151 (0.0122)	-0.0110 (0.0142)	0.0194 (0.0189)	0.0680*** (0.0251)
<i>Payment</i>	0.00482*** (0.00123)	0.00394*** (0.00144)	0.00288 (0.00191)	0.00357 (0.00254)
<i>Competition_bidder</i>	-0.00596 (0.00675)	0.00125 (0.00790)	-0.00659 (0.0105)	-0.00640 (0.0139)
<i>Relatedness</i>	0.000243 (0.00118)	0.00142 (0.00139)	0.00172 (0.00184)	-0.00282 (0.00244)
<i>Target_nationality</i>	0.00209* (0.00108)	0.000303 (0.00126)	-0.000829 (0.00168)	0.000143 (0.00223)
<i>Constant</i>	0.00142 (0.00391)	0.00453 (0.00458)	0.0213*** (0.00608)	0.0407*** (0.00808)
Observations	6,713	6,713	6,713	6,713
R-squared	0.111	0.095	0.082	0.068
Adjusted R-squared	0.065	0.048	0.034	0.020

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



**Table 12**  
**Regression result of M&A performance and Compensation Committee member ownership over 2003-2016; CARs (-10,-1) and (+1,+10)**

The table presents the regression result of 2 regression models associated with the relation between M&A performance and total ownership stake of independent compensation committee members (CC ownership). In model 1, the dependent variables is 10-days CAR before the M&A announcement. In model 2, 10-days CAR after the M&A announcement is used as dependent variables. The standard error of each coefficients are in parentheses.

VARIABLES	Model 1 CAR(-10,-1)	Model 2 CAR(+1,+10)
<i>CC_ownership</i>	0.0000972 (0.000447)	0.00155*** (0.000493)
<i>ROE</i>	-0.000295 (0.000651)	0.0000759 (0.000719)
<i>Tobinq</i>	-0.00253*** (0.000758)	-0.00418*** (0.000837)
<i>Volatility</i>	-0.00210 (0.00213)	-0.00364 (0.00235)
<i>FCF</i>	0.0455*** (0.0161)	0.0360** (0.0177)
<i>Payment</i>	-2.78e-05 (0.00162)	0.000397 (0.00179)
<i>Competition_bidder</i>	0.00195 (0.00891)	-0.00257 (0.00984)
<i>Relatedness</i>	-0.000736 (0.00156)	-0.00138 (0.00173)
<i>Target_nationality</i>	0.000737 (0.00142)	-0.00154 (0.00157)
<i>Constant</i>	0.00986* (0.00516)	0.0339*** (0.00570)
Observations	6,713	6,713
R-squared	0.052	0.067
Adjusted R-squared	0.003	0.018

Significance levels \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 6.3.5 M&A performance and interaction term of EBC and CC ownership

Table 13 provides the result of testing the fifth hypothesis that when total ownership stake of independent Compensation Committee members increases, the relation between equity-based compensation and acquiring's M&A performance is more positive. The coefficient of interaction term between the proportion of EBC and CC ownership are positive in model 1, 2 and 3. While in model 4, the coefficient of interaction term is negative. However, the results are not statistically significant. Hence, no clear conclusion can be deduced from the regression result.

**Table 13**

**Regression result of M&A performance and interaction term of EBC and Compensation Committee member ownership over 2003-2016; CARs (-1,+1), (-2,+2), (-5,+5) and (-10,+10)**

The table presents the regression result of 4 regression models associated with the relation between M&A performance and the interaction term of EBC and CC ownership. In model 1, 2, 3 and 4, the dependent variables are 3-days, 5-days, 11-days and 21-days CAR of acquiring firms around M&A announcement date, respectively. The standard error of each coefficients are in parentheses.

VARIABLES	Model 1 CAR(-1,+1)	Model 2 CAR(-2,+2)	Model 3 CAR(-5,+5)	Model 4 CAR(-10,+10)
<i>EBC</i>	0.00285 (0.00769)	0.00207 (0.00898)	0.00161 (0.0119)	0.00555 (0.0159)
<i>CC_ownership</i>	0.000490 (0.000533)	0.000310 (0.000623)	0.000536 (0.000827)	0.00177 (0.00110)
<i>EBC * CC_ownership</i>	0.000242 (0.000960)	0.000353 (0.00112)	0.000105 (0.00149)	-0.000163 (0.00198)
<i>ROE</i>	3.79e-05 (0.000492)	-7.89e-05 (0.000575)	-0.000172 (0.000764)	-0.000251 (0.00102)
<i>Tobinq</i>	-0.000646 (0.000577)	-0.00114* (0.000674)	-0.00306*** (0.000895)	-0.00671*** (0.00119)
<i>Volatility</i>	-0.000526 (0.00161)	-0.00114 (0.00188)	-0.00590** (0.00250)	-0.00594* (0.00332)
<i>FCF</i>	-0.0119 (0.0122)	-0.00823 (0.0142)	0.0231 (0.0189)	0.0723*** (0.0252)
<i>Payment</i>	0.00486*** (0.00123)	0.00397*** (0.00144)	0.00295 (0.00191)	0.00358 (0.00254)
<i>Competition_bidder</i>	-0.00617 (0.00673)	0.000988 (0.00787)	-0.00691 (0.0104)	-0.00658 (0.0139)
<i>Relatedness</i>	0.000334 (0.00119)	0.00154 (0.00138)	0.00190 (0.00184)	-0.00265 (0.00245)
<i>Target_nationality</i>	0.00217** (0.00108)	0.000436 (0.00126)	-0.000624 (0.00167)	0.000346 (0.00222)
<i>Constant</i>	0.000987 (0.00482)	0.00359 (0.00563)	0.0211*** (0.00747)	0.0423*** (0.00994)
Observations	6,696	6,696	6,696	6,696
R-squared	0.112	0.097	0.084	0.070
Adjusted R-squared	0.065	0.050	0.036	0.020

Significance levels \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Chapter 7 Conclusion

### 7.1 Summary and Implications

This study scrutinizes the relationship between corporate governance mechanisms and M&A performance, concentrating on executive compensation, board of director structure and ownership structure. Corporate governance is expected to minimize the agency problem and align the interest between managers and shareholders. Thus, the stock market reaction around M&A announcement is predicted to be more favourable if acquiring firms have a good corporate governance mechanism.

The correlation between corporate governance mechanisms and M&A performance is investigated using a sample of 9,270 M&A transactions in US over the period of 2003 until 2016 by implementing an event study and multiple linear regression.

The result indicates that corporate governance mechanisms, particularly executive compensation, board of director structure and ownership structure have statistically significant effect on the acquiring firms' CAR around the M&A announcement date. First, focusing on executive compensation, this study discovers a statistically significant positive relation between the proportion of equity-based compensation and stock market reaction around the M&A announcement date in acquiring firms. It is in accordance with the finding of previous study by Datta et al. (2001). However, this study reports that there is a leakage of information or an insider trading on the days before the announcement of M&A deals.

Second, concerning on the structure of board of director, this study finds that the proportion of independent outside directors is negatively correlated with shareholder return around the M&A announcement date in acquiring firms. When the correlation is investigated further, the statistically significant negative correlation occurs when the proportion of independent outside directors are more than 80%. It is in line with prior study by Faleye et al. (2011) which state that high monitoring degree in board of director destroys acquisition performance and restricts firms to make innovation. To sum up, the result indicates that acquiring firms should consider the optimal proportion of independent outside directors and inside directors in the board.

Last, focusing on the ownership structure, this study shows that the total ownership stake of all independent compensation committee members increases the acquiring firms' CAR around the M&A announcement date. It is in compliance with earlier study by Denis & McConnell (2003)

which suggest that directors are more likely to ignore unfavourable M&A with the increase of shares ownership. Nevertheless, the result implies that the stock ownership of compensation committee member (CC-ownership) is overlooked in acquiring firms.

In conclusion, this study documents that the proportion of equity-based compensation comprising of stock and option awards as well as total stock ownership of independent compensation committee members effectively incentivize executives and directors in maximizing the value of investment decision, specifically merger and acquisitions.

The finding of this thesis extends the previous academic literatures related with the relation between corporate governance and M&A performance. It is also beneficial for corporate management since this thesis provides insights to enhance the effectiveness of merger and acquisitions activities.

## 7.2 Limitations and Future Research

There are several limitations in this thesis that might have affected the result. First, this study uses the cumulative abnormal return (CAR) of M&A transaction as a proxy of M&A performance. However, there are other proxies that could measure the M&A performance, such as acquisition premium. Thus, different result might potentially arise when different M&A performance proxy is used. Second, this study applies a relatively long event window when generating the CAR. The CAR is possibly influenced by other events other than M&A transactions when long event window is chosen. Last, the reversed causality between corporate governance mechanisms and M&A performance might arise in this study. Although the year and industry fixed effect is used to address this problem, the endogeneity problems probably still exist.

The result in this thesis generate several suggestions for future research, First, future study could use the M&A transactions outside US, since the M&A performance and corporate governance practices are very likely to be different in other countries. It would be interesting to see whether corporate governance mechanism affects M&A performance in different countries. In addition, the acquisition premium could be used as a proxy of M&A performance in order to check the robustness of the result. Last, as this study exclude the financial firms, it is also interesting to see the impact of corporate governance on M&A performance in financial industries.

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