



## **Equity-based Compensation and Mergers & Acquisitions Performance**

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### **Abstract**

This thesis examines the impact of equity-based compensation (EBC) on the acquirers' Cumulative Abnormal Returns (CAR) around Merger and Acquisition (M&A) announcements. Using the final sample of 3,035 M&A deals made by 931 U.S. acquirers during the 2007-2016 period, I document that on average, M&A deals do create value for the acquirers. However, I find that low EBC acquirers experience significantly higher CAR around M&A announcements relative to high EBC acquirers.<sup>1</sup> Whereas, the marginal effect of EBC on the acquirers' CAR around M&A announcements is insignificant. In the additional analysis, I find that equity-based compensation has a negative indirect effect on the acquirers' CAR around M&A announcements that passes through two mediating variables: R&D and firm risk. Furthermore, although I find that cross-border M&A significantly underperforms domestic M&A, the relation between equity-based compensation and the acquirers' CAR around M&A announcements does not significantly vary between cross-border and domestic M&A.

Keywords: Equity-based compensation, R&D, Firm Risk, Merger and Acquisition, Cross-border M&A.

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<sup>1</sup> Each low and high EBC group consists of the acquirer who has equity-based compensation portion in the quartile 1 (bottom 30%) and quartile 3 (top 30%), respectively.

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## I. Introduction

A considerable amount of studies suggest that equity-based compensation could ameliorate agency conflicts by aligning the interest of managers with those of shareholders (Jensen and Meckling, 1976). In light of this view, the 1990s has witnessed a remarkable growth in both prominence and prevalence of equity-based compensation, stock and option awards in particular (Bebchuk and Grinstein, 2005). Likewise, many public U.S. firms escalate their reliance toward equity-based compensation. For instance, equity awards represent around 85% of Apple Inc. executive pay in 2008. Apple Inc.'s CEO even receives an annual salary of only \$1 without bonus plan, instead receiving stock awards worth roughly \$75 million in 2003.

In fact, however, recent popular press and research are often questioning the efficacy of large equity-based payoffs to U.S. executives (Francis, 2017). They argue that the 40-years-old incentive alignment approach using equity-based compensation may be broken in recent periods, given that CEO who is highly paid by equity awards are among the worst performers (Marshall and Lee, 2016). In this thesis, I specifically investigate the efficacy of equity-based compensation on Merger & Acquisition (M&A) performance. In particular, I examine whether equity-based compensation could motivate the acquirers' executives to engage in valuable M&A decisions for shareholders. M&A as a significant, externally observable, and long-term discretionary investment provides an ideal setting to explore such relation. This thesis then attempts to answer the following research question:

**RQ:** Does equity-based compensation have an impact on the M&A performance?

Providing an answer to such research question is important because equity-based compensation could be a critical determinant for the acquirers towards valuable M&A deals. Although prior studies argue that on average, M&A does not create value for the acquirers, does not necessarily mean firm should abstain from growing through M&A in today's globalized era (Andrade et al., 2001). Furthermore, prior research to date is inconclusive. Examining M&A deals during the 1993-1998, Datta et al. (2001) find that equity-based compensation has a strong positive influence on the acquirers' stock returns around M&A announcements. However, it remains unclear how or through what channels equity-based compensation affects M&A performance and whether this effect depends on certain conditions. The purpose of this study is to fill this gap by thoroughly examining the impact of equity-based compensation on the M&A performance for acquirers in the recent period, including certain mechanisms and conditions affecting such impact.

The final sample consists of 3,035 M&A deals made by 931 U.S. acquirers during January 1, 2007, to December 31, 2016. The sample period is selected after considering that there is an accounting treatment change related to equity-based compensation under FAS 123R in 2006. Then, as the proxy for M&A performance, I apply short-window event study to construct Cumulative Abnormal Returns (CAR) of the acquirers. In contrast to Datta et al. (2001), the primary finding of this thesis indicates that although on average, M&A deals create value for the acquirers, low equity-based compensation (EBC) acquirers experience significantly higher CAR around M&A announcements relative to high EBC acquirers.<sup>2</sup> This finding suggests that on average, market views low EBC acquirers as making better M&A deals than their counterparts in high EBC acquirers. Whereas, I find that the marginal effect of EBC on the acquirers' CAR around M&A announcement is insignificant. The above results are robust to alternative model specifications and variable definitions.

I next examine specific mechanisms through which equity-based compensation could affect M&A performance. I find evidence that EBC has a negative indirect effect on the acquirers' CAR around M&A announcements that passes through two mechanisms: R&D and firm risk. In particular, the result shows that EBC has a positive association with R&D intensity. I also find that EBC motivates executives to allocate their investment away from less-risky investment policy (capital expenditure) into riskier investment policy (R&D). Likewise, the result also displays that EBC has a positive association with the degree of firm risk, as measured by earning variances. Subsequently, I document that both R&D and firm risk channels are negatively associated with the acquirers' CAR around M&A announcements. These findings then support the notion that market tends to overlook the R&D benefit since it is more uncertain and likely to materialize much later than other investments, such as capital expenditure (Chan et al., 2001). Also, firms with higher earning variances are subject to greater agency conflicts, uncertainty about outcomes, and reduced firm performance (Miller & Bromiley, 1990; Bloom and Milkovich, 1998; Core et al., 1999).

In addition to examine the M&A performance in general, I also specifically investigate the performance of cross-border M&A relative to domestic M&A. I find that on average, market views both domestic and cross-border M&A as good news, but apparently, market views domestic M&A as better news than cross-border M&A. In particular, the result displays that cross-border M&A has a negative effect on the acquirers' CAR around M&A

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<sup>2</sup> Each low and high EBC group consists of the acquirer who has equity-based compensation portion in the quartile 1 (bottom 30%) and quartile 3 (top 30%), respectively

announcements. Given such findings, the cross-border M&A seems could be a condition affecting the extent to which equity-based compensation affects M&A performance. However, after examining the moderating effect of cross-border M&A on the relation between EBC and the acquirers' CAR around M&A announcements, the results show that such relation does not significantly vary between cross-border and domestic M&A.

This thesis contributes to the M&A literature by observing the equity-based compensation, R&D, and firm risk impact on the M&A performance. I find limited evidence examining whether these determinants are value-increasing or value-decreasing channels for the acquirers shareholders' wealth during M&A announcements. Additionally, I find that the trend of cross-border M&A has increased rapidly, but research exploring this topic from the agency theory viewpoint has not kept pace with the trend. Most prior studies investigate the cross-border M&A using transaction cost economics, resource-based view, and institutional theory. An exception is Markides and Oyon (1998), which show that cross-border M&A made by acquirers with insider-dominated boards result in shareholders' value destruction.

Furthermore, I observe the experience of acquirers in a broader sample period than prior studies. The sample period captures the characteristics of recent M&A wave and equity-based compensation during the 2000s which are different from the previous periods. In the context of M&A, I document that the majority of acquirers pay the M&A deals entirely in cash, acquire target within the same industry, and acquire private target firms. Prior studies argue that such M&A deal features are positively associated with the acquirers' CAR (Morgan et al., 2000; Andrade et al., 2001; Moeller et al., 2004). These characteristics then could explain the higher acquirers' average CAR in this sample period relative to the 1980s and 1990s. Regarding the equity-based compensation, I find relatively higher EBC at 51% than Datta et al. (2001), which only find EBC of 29.8% during the 1993-1998. Additionally, I find that the popularity of stock option award has decreased during the sample period, contrasting Bebchuk and Grinstein (2005). This trend could be due to accounting treatment changes related to stock option-based compensation under FAS 123R in 2006, the options backdating scandals during the 2004-2008, and the say-on-pay vote which enacted in Dodd-Frank Act in 2010.

The remainder of this paper is organized as follows. Section 2 presents the literature review and the development of hypotheses. Section 3 explains the construction of sample and the methodology used to examine the hypotheses. Section 4 provides the empirical results and the analysis. Section 5 discusses the conclusion, limitations of this study, and suggestions for future research.

## II. Background and Hypotheses Development

### 2.1 M&A Performance

The popularity of M&A seems to have flourished over the past decades. Henry (2002) documents that the total U.S. M&A deal value is roughly \$4 trillion during the 1998-2000, which is much higher than total M&A deal values completed during the previous 30 years. Given its relevance, there are several potential explanations of why firms would undertake M&A, including to create synergies and economies of scales, induce firm growth, and expand profit and opportunities in new markets (Andrade et al., 2001; Ferraz and Hamaguchi, 2002).

In fact, however, prior studies argue that on average, M&A deals do not create value for the acquirers' shareholders. Andrade et al. (2001) find that on average, acquirers realize negative returns of 0.7% around M&A announcements during the 1973-1998 period. Likewise, Moeller et al. (2004) document that on average, the acquirers' shareholders lose roughly \$25.2 million upon M&A announcements during the 1980-2001 period. In their additional analysis, Andrade et al. (2001) and Moeller et al. (2004) note that such negative returns are limited to certain acquirers, which are those acquirers who finance the M&A deals with equity and the small acquirers, respectively. Such findings then suggest the existence of M&A payment method and acquiring firm size effects on the M&A announcement returns. While the M&A performance could be explored from several viewpoints, I focus on examining the determinant of acquirers' returns around M&A announcements from the agency theory viewpoint, equity-based compensation in particular.

### 2.2 Agency Theory

Jensen and Meckling (1976) define the principal-agent relationship as a contract under the principals (shareholders) engage the agents (managers) to perform some services, including the delegation of decision-making authority on behalf of the principals. Using the basic economic models, Gibbon (MIT course *Lecture note 1: Agency Theory*) explains that such agency relationship may potentially induce misalignment of interest issues between both parties. That is because the shareholder's payoff (or "profit") increases in the firm value and decreases in the manager's wage, while the manager's payoff (or "utility") increases in the wage received and decreases in the cost of action they have taken. Consequently, the managers do not always act in the best interest of shareholders. They may utilize the firm-inside information to increase their utility at the expense of shareholders, given that they run the business on a daily basis and have more access to such information.

The agency conflict, combined with the inability of shareholders to perfectly monitor the managers' action and costlessly design the perfect shareholders-managers contract, ultimately deteriorate the firm value (Denis and McConnell, 2003). This concept forms the basis for corporate governance literature: how do shareholders and managers minimize such loss using certain mechanisms. In this thesis, I examine one of the internal corporate governance mechanisms, which is the executive compensation. In particular, I observe the equity-based component of executive compensation, which generally exists in the forms of stock and stock option awards. Stock awards, such as restricted stocks, are stocks that are granted to the executives restrictedly, in the sense that they are forfeited under certain conditions (e.g., employee longevity). Whereas, stock option awards are contracts which give executives the right to purchase stock at a pre-specified exercise price for a pre-specified term.

### 2.3 Equity-based Compensation and M&A Performance

The incentive alignment approach of equity-based compensation has drawn a great deal of attention from financial economists. They intensely explore whether equity-based compensation could ameliorate the misalignment of interest issues between shareholders and managers. In this study, I specifically investigate such approach using M&A event as a unique setting. M&A is typically viewed as a significant, externally observable, and long-term discretionary investment. M&A also tends to exacerbate the inherent conflict of interests between executives and shareholders (Bebchuk and Fried, 2003; Harford and Li, 2007). As agency theory explains, the managers may extract private benefits at the expense of shareholders. In the context of M&A, the managers may undertake non-value maximizing M&A deals that could reduce the shareholders' wealth (e.g., empire building motive). Therefore, M&A provides an ideal setting to explore the efficacy of equity-based compensation on shareholders' value around investment decision announcements.

There is a widespread recognition that equity-based compensation could mitigate the agency conflicts by aligning the interest of managers with those of shareholders (Jensen and Meckling, 1976). One potential explanation is because equity-based compensation gives the executives a direct economic interest in the future appreciation of firm value (Palmon et al., 2009). Accordingly, examining M&A deals during the 1993-1998 period, Datta et al. (2001) find that equity-based compensation has a strong positive influence on the acquirer shareholders' wealth around M&A announcements. This finding then also supports the notion that equity-based compensation could motivate managers to engage in value-maximizing behavior (Shleifer and Vishny, 1988; Hirshleifer and Suh, 1992).

In fact, recent studies are openly questioning the efficacy of equity-based compensation in improving shareholders' value. Using 429 large-cap U.S. firms during the 2006-2015 period, Marshall and Lee (2016) report that CEO who is highly paid by equity-based compensation are among the worst performers. They later argue that in recent periods, the equity incentives are not working anymore to reduce the agency conflicts. In light of this view, Masulis et al. (2007) briefly revisit the relation between equity-based compensation and M&A performance, then find that equity-based compensation has an insignificant impact on the acquirers' stock returns around M&A announcements, contrasting Datta et al. (2001). However, I note that none provide further analysis regarding the mechanisms affecting such relation. Then, I predict that the managerial risk-taking hypothesis can be brought forward to support this insignificance, or even inverse relation, between equity-based compensation and M&A performance.

A considerable amount of study argues that equity-based compensation, by providing convex payoffs, could make risk more valuable to managers, thereby potentially reducing managerial risk aversion. Coles et al. (2006) suggest that equity-based compensation motivates executives to invest in riskier investment policy, including more investment in R&D. A high level of R&D spending is a sign of executives' confidence to improve the companies' growth and competitiveness. However, the market tends to overlook such signal since the benefits of R&D are far more uncertain and likely to materialize much later than other investments, such as capital expenditure (Kothari et al., 2002). Accordingly, prior studies find that high R&D intensive firms earn unfavorable stock price performance relative to low R&D intensive firms (Chan et al., 2001). Considering these arguments, I expect that equity-based compensation could negatively affect the acquirers' CAR indirectly through R&D channels.

In light of above arguments, numerous studies find that equity-based compensation is positively associated with the degree of firm risk, as measured by stock return and earning variances (Agrawal and Mandelker, 1987; DeFusco et al., 1990; Datta et al., 2001). Such risk measures are typically considered as uncertainty about outcomes or events, thereby making decision makers harder to create an organizational strategy and plan future actions. Bathala and Rao (1995) also argue that firms with high earning variances are subject to greater agency conflicts. Accordingly, prior studies find that higher variability in the firm's returns and earnings have a significant impact on the reduced firm performance (Miller & Bromiley, 1990; Bloom and Milkovich, 1998; Core et al., 1999). Therefore, I predict that equity-based compensation could have negative and indirect impact on the acquirers' CAR through firm risk channels. I find limited empirical evidence exploring such specific relation.



In summary, recent studies argue that the 40-years-old incentive alignment approach of equity-based compensation may be broken. Consequently, equity-based compensation may not effectively motivate the acquirers' executives to pursue valuable M&A deals for shareholders in recent periods. Therefore, I predict that equity-based compensation has a negative association with M&A performance. Additionally, I consider two mechanisms that could explain the negative indirect effect of equity-based compensation on M&A performance: R&D and firm risk. These arguments lead to the hypothesis:

**H1.** The equity-based compensation is negatively associated with the acquirers' CAR around M&A announcements.

#### 2.4 Cross-border M&A

In addition to examine the M&A performance in general, I particularly investigate the cross-border M&A performance relative to the domestic M&A performance. In the recent periods, the rapid growth of globalization, emerging new markets, and technology advancement appear to heighten the benefits and opportunities offered by M&A. Consequently, firms become more attracted to enter foreign market and evolve into global firms. Then, the predominant form of foreign entry mode has been channeled through cross-border M&A. In contrast to domestic M&A, the cross-border M&A is incurred between companies across two national boundaries. Specifically, I use the term of cross-border M&A for each M&A that involves U.S. acquirers and foreign target firms.

Prior studies argue that cross-border M&A acquirers could benefit from cost advantages through lower labor and resources costs, technological know-how, marketing ability, and spillovers of corporate governance standards (Markides and Ittner, 1994; Martynova and Renneboog, 2006). In light of such benefits, the trend of cross-border M&A has increased over the years. The cross-border M&A deal values by U.S. acquirers rise gradually from \$1.5 to \$22.2 billion during the 1979-1989 period and reach \$272.1 billion in 1999 (Doukas, 1995). However, in fact, the globalization and technology advancement not only enhance the opportunities offered by cross-border M&A, but also heighten the complexity of doing business. Therefore, the cross-border M&A also presents several unique challenges that could jeopardize its potential gains. Such challenges are generally related to the differences in cultural, geographic, country-level governance, macroeconomic target nation and international tax effects between two firms across two national boundaries (Erel et al., 2012).

#### 2.4.1 Cross-border M&A Performance

Given the opportunities and challenges mentioned above, the empirical evidence regarding cross-border M&A performance is expected to be mixed. Early studies document that cross-border acquirers experience positive average abnormal returns (Morck and Yeung, 1992; Markides and Ittner, 1994). They suggest that such cross-border acquirers could be better-off through reaping certain benefits that domestic acquirers would not experience. In contrast, Datta and Puia (1995) suggest that on average, cross-border M&A has a negative impact on the acquirers' announcement returns. They find that such impact is mostly due to the cultural distance between two countries. Accordingly, prior studies find that cross-border acquirers, relative to domestic acquirers, experience significantly lower CAR around M&A announcements during the 1990s (Moeller and Schlingemann, 2005; Starks and Wei, 2013).

Considering such mixed evidence, it is still unclear whether in this recent M&A waves, the unique challenges of cross-border M&A could hinder its potential benefits. I expect that in today's globalized era, the complexity of doing business between two firms across two national boundaries could heighten such challenges, thereby making cross-border acquirers underperform domestic acquirers. These arguments lead to the hypothesis:

**H2.** The cross-border M&A is negatively associated with the acquirers' CAR around M&A announcements.

#### 2.5 Equity-based Compensation and Cross-border M&A Performance

Furthermore, I consider the cross-border M&A type as a condition affecting the relation between equity-based compensation and M&A performance. Recall that H1 predicts that the equity-based compensation is negatively associated with the acquirers' stock announcement returns. Moreover, H2 predicts that in today's globalized era, the unique challenges of cross-border M&A could jeopardize its potential gains, thereby making the cross-border acquirers underperform the domestic acquirers. Therefore, I expect that the negative effect of equity-based compensation on M&A performance is much more pronounced for cross-border acquirers relative to domestic acquirers. Although prior studies have observed the cross-border M&A quite extensively, I find limited evidence exploring the determinant of cross-border M&A performance from the agency theory viewpoint. These arguments lead to the hypothesis:

**H3.** The negative effect of equity-based compensation on the acquirers' CAR around M&A announcements is stronger for cross-border acquirers relative to domestic acquirers.

### III. Research Design

#### 3.1 Data and Sample Selection

This thesis gathers all required data regarding M&A deals, executive compensation, firm-specific financials, and stock prices from four different databases. Initially, I define the sample period of this research. There is an accounting treatment change related to equity-based compensation, stock option award in particular, under FAS 123R during 2006. The implementation of FAS 123R eliminates the ability of companies to expense their stock option-based compensation at their intrinsic value and instead required them to expense it at its fair value (Hayes et al., 2012). This new accounting treatment regime also requires companies to have more extensive equity-based compensation reporting disclosure, which makes pre-2006 and post-2006 executive compensation database are not entirely comparable. Therefore, I start the sample period from the year 2007. Additionally, to make sure the completeness of data reported in all database, I limit the observation to the year 2016. The sample period then covers 2007 through 2016.

Second, I obtain all M&A deals during January 1, 2007, to December 31, 2016 from Thomson One SDC database. Then, I apply several selection criteria to these M&A deals in order to be included in the sample, as follows:

1. M&A deal must be completed with the announcement date and the effective date that occurred during January 1, 2007, to December 31, 2016.
2. The difference between the announcement date and the effective date of M&A deal must be at least zero to exclude M&A deal that is effective before the announcement date.
3. The acquirer location is in the United States of America (U.S.).
4. The acquirer status is publicly listed to be able collecting the stock prices data.
5. The acquirer primary Standard Industrial Classification (SIC) code are excluded from the utility companies and financial services, which are classified by 4900-4999 and 6000-6999 SIC code, respectively, because these companies have significantly different structures and goals (Coles et al. 2006; Brick et al., 2006).
6. The M&A deal value exceeds one million dollars.
7. I exclude M&A deals that are announced within one day of each other. For instance, if a firm acquires more than one target firm on the same day, all deals are excluded to avoid noisy estimates.

Such selection criteria result in 9,398 M&A deals made by 3,625 acquirers. Some important details of M&A deals, such as the announcement date, target nation, deal value, payment method and acquirer CUSIP identifier, are extracted from Thomson One SDC database.

Third, I obtain the annual executive compensation and firm-specific financial information of 3,625 acquirers during the sample period from ExecuComp and Compustat database, respectively. ExecuComp covers up to ten executives' data of the S&P 1500, but most companies report only five executives. Following Datta et al., (2001), I eliminate acquirer that reports less than five executives and include only the top five executive compensation data if the acquirer reports more than five executives. Both executive compensation and firm-specific financial information data are observed one year prior to the M&A announcement and matched with M&A deal data from Thomson One SDC database. From this procedure, a sample of 3,152 M&A deals made by 941 acquirers remains.

Finally, I extract daily stock price performance for 941 acquirers during various event windows to construct Cumulative Abnormal Returns (CAR) from the Center for Research in Security Prices (CRSP) database. A detailed explanation of this procedure is explained in the section 3.2.1. A deal is included in a sample if its stock prices data is available in the CRSP database. The final sample consists of 3,035 M&A deals made by 931 U.S. acquirers.

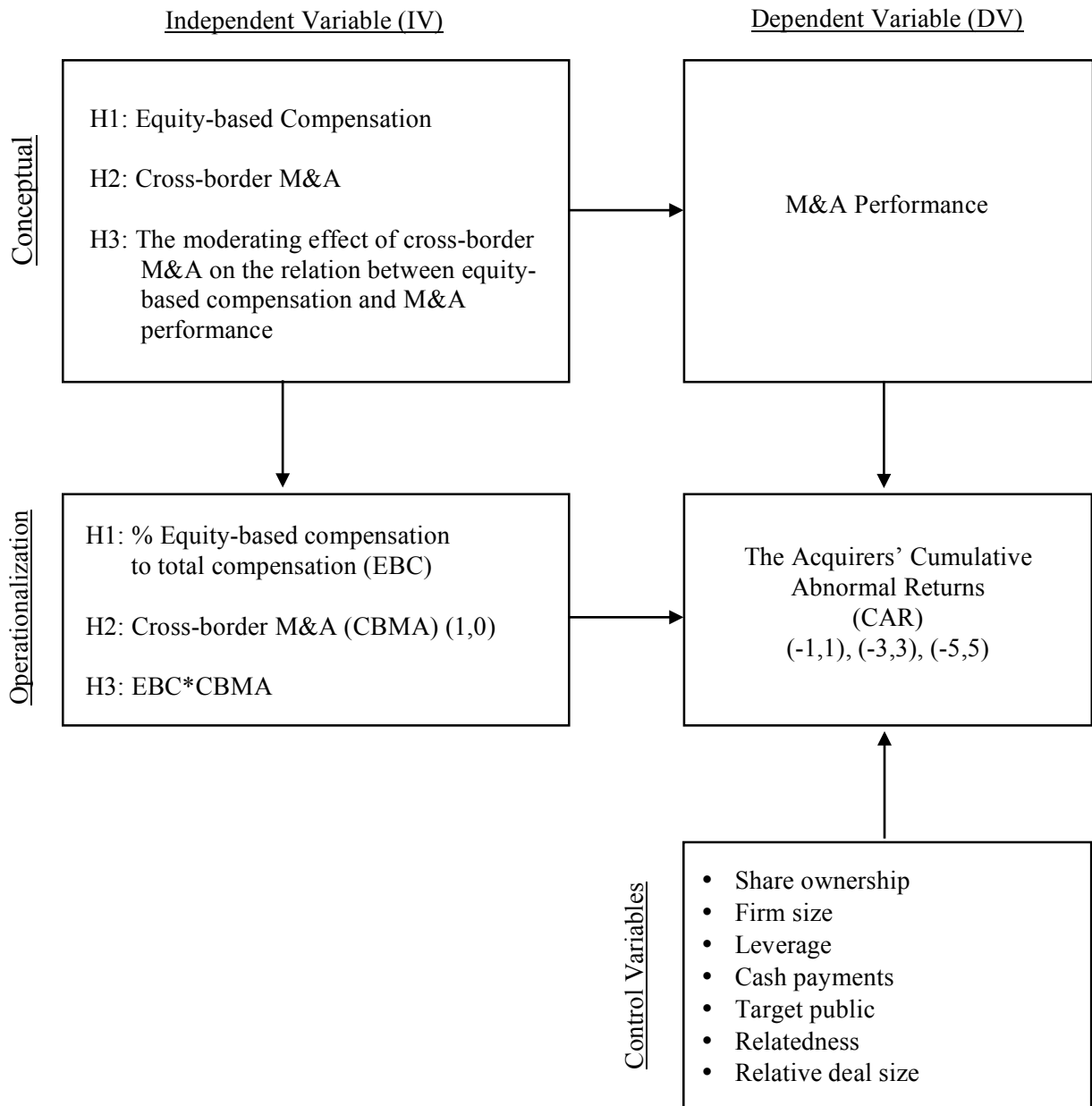
## 3.2 Variables

Figure 1 presents the predictive validity framework (“Libby boxes”) that shows how to operationalize the conceptual research question using the dependent and independent variables for each hypothesis. Initially, I explain the M&A performance as the dependent variable, including the details of event study methodology to construct the acquirers' CAR as the proxy for M&A performance. Then, I present the explanation of all independent and control variables. Last, I discuss the research methodology to examine all hypotheses.

### 3.2.1 M&A Performance

The efficient market hypothesis is a useful benchmark for analyzing the behavior of security prices. It posits that the capital markets will react quickly when information about specific events release publicly. Therefore, the security prices will reflect a sophisticated level of fundamental analysis immediately upon its announcement (Fama, 1991; Mackinlay, 1997; Kothari, 2001). To test this securities market efficiency, I apply the event study methodology, which measures the economic impact of a specific event on the firm's equity value.

**Figure 1**  
**Predictive Validity Framework**



A short-window event study is considered as consistent with the efficient market hypothesis and could provide a relatively clean test of market efficiency (Kothari, 2001). Andrade et al. (2001) also argue that short-window event study is the most statistically reliable methodology for measuring value creation or destruction of M&A deals. Considering both arguments, I use short-window event study to construct the acquirers' CAR as the proxy for M&A performance. CAR represents the aggregation of abnormal stock returns, which could draw overall inferences for the acquirers' stock price performance around M&A announcements.

I construct several steps to perform a short-window event study methodology. First, I define the event of interest as the M&A announcement date. Second, I determine the event window, which is defined as the period over which the acquirers' security prices will be observed. I observe not only post-announcement M&A date, but also pre-announcement M&A date since the market also anticipates much of the publicly available information before it is released. Therefore, I exercise three days (-1,+1), seven days (-3,+3), eleven days (-5,+5) of event windows, with the M&A announcement date becomes date 0. Third, I calculate the abnormal return, which is defined as the actual ex-post stock return over the event window minus the normal stock return over the event window. For firm  $i$  and event window  $\tau$ , the abnormal return ( $AR_{i\tau}$ ) can be formulated as follow:

$$AR_{i\tau} = R_{i\tau} - E(R_{i\tau}) \quad (1)$$

Where  $AR_{i\tau}$  = the abnormal return on security firm  $i$  for event window  $\tau$   
 $R_{i\tau}$  = the actual ex-post return on security firm  $i$  for event window  $\tau$   
 $E(R_{i\tau})$  = the normal return on security firm  $i$  for event window  $\tau$

The normal return ( $E(R_{i\tau})$ ) is the expected return that would have occurred without conditioning on the event taking place over the estimation period. There are two common models for measuring the normal return, which are the market model and constant mean return model. Following Mackinlay (1997), I apply the market model, which assumes a stable linear relation between the security firm returns and the market wide portfolio returns. The normal return ( $E(R_{i\tau})$ ) can be formulated as follow:

$$E(R_{i\tau}) = \alpha_i + \beta_i R_{m\tau} + \varepsilon_{i\tau} \quad (2)$$

Where  $\alpha_i$  and  $\beta_i$  = the parameters of market models  
 $R_{m\tau}$  = the period- $\tau$  returns on the market portfolio  
 $\varepsilon_{i\tau}$  = the zero mean disturbance term

In particular, I regress the security firm returns on the market portfolio returns using the OLS method over the estimation period. I use the CRSP Value Weighted Index, including dividends, as the estimate for market portfolio. In determining the estimation period, Mackinlay (1997) suggest that there should be the gap between the estimation period and the event window to prevent the estimation period from containing leaked information before the event window. Therefore, I set the estimation period of 250 to 30 trading days before the M&A announcement date, considering NASDAQ and NYSE average 250 trading days in a year. Additionally, if the event coincides with the non-trading day, I take the previous day as the event date. Combining equations (1) and (2), the abnormal return ( $AR_{it}$ ) can be measured with the formula as follow:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{m\tau} + \varepsilon_{it}) \quad (3)$$

Last, the abnormal return ( $AR_{it}$ ) over the corresponding event window between  $\tau_1$  and  $\tau_2$  must be aggregated to derive CAR. Hence, in this study, CAR represents the cumulative unexpected future economic rents arising from the M&A announcements for the acquirers' shareholders. A zero CAR reflects a fair rate of return on the M&A announcements. A positive (negative) CAR indicates that the market reacts positively (negatively) to the M&A deals over the event window, hence the M&A deals create (does not create) value for shareholders. I use the Eventus tools that accessible through WRDS interface to construct CAR. For firm  $i$  and event window  $\tau$ , the calculation of CAR is yielded as follow:

$$CAR_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{it} \quad (4)$$

### 3.2.2 Independent Variables

#### *Equity-based Compensation*

H1 examines the relation between equity-based compensation and the acquirers' CAR around M&A announcements. Following Datta et al. (2001), I apply a proxy for equity-based compensation that is more direct and clearer to interpret. Equity-based compensation is measured as the percentage of total stock and stock options to total compensation paid to the top five executives of the acquirers (EBC). A high EBC acquirer indicates that the acquirers possess a high portion of stock and stock option awards in their executive pay structure.

### *Cross-border M&A*

H2 observes the performance of cross-border M&A relative to domestic M&A. I use the dummy variable of cross-border M&A (CBMA) to investigate whether the M&A deal is classified as cross-border or domestic M&A. CBMA is “1” if the target firm is located outside U.S. and otherwise “0”.

### *Interaction Term between Equity-based Compensation and Cross-border M&A*

H3 investigates the moderating effects of cross-border M&A on the relation between equity-based compensation and M&A performance. That is, whether the cross-border M&A type could strengthen the negative impact of equity-based compensation on M&A performance. I use the interaction term of EBC and CBMA (EBC\*CBMA) as the main independent variables to capture such moderating effects.

### 3.2.3 Control Variables

Control variables are included to account for other factors that may correlate with the dependent variables, independent variables, or both. It includes the characteristics of acquirers, target, and M&A deals. Below is the detail explanation.

#### *Executive Stock Ownership*

Prior studies argue that the incentive effect of equity-based compensation varies cross-sectionally with the level of executive stock ownership (Ofek and Yermack, 2000; Datta et al., 2001). They find that the percentage of managerial stockholding is negatively correlated with the intensity of equity incentives. When managers already have a high fraction of the firm’s equity, the demand for further equity-based compensation is more likely to be reduced (Jensen and Meckling, 1976). As the proxy for the acquirers’ executive stock ownership, I use the natural logarithm of total stock ownership granted to the top 5 executives of the acquirer (Share own).

#### *Acquiring Firm Size*

Numerous studies find that there is a correlation between acquiring firm size and stock market reactions around the M&A announcements. Bajaj and Vijh (1995) argue that small (large) firms experience greater (lower) stock market reaction to the corporate announcements. The potential explanation is the corporate announcement is much more informative for small



firms since there is relatively less-information produced for their stocks during announcement periods. Similarly, Moeller et al. (2004) also provide evidence that the announcement return for large acquirers is about 2% lower compare to small acquirers. They argue that their findings are consistent with the hubris hypothesis. It posits that the managers of large firms suffer from hubris, so they overpay the premium paid for M&A deals. In light of these studies, I use the natural logarithm of total assets as the proxy for the acquiring firm size (Firm size).

### *Leverage*

The free cash flow hypothesis conjectures that managers at firms with a high amount of free cash flows, but few profitable investment opportunities would rather be engaging in empire building (Jensen, 1986). That is because the managers are interested in maximizing their power and influence by engaging in non-value-maximizing M&A, rather than increasing payout to the shareholders (Bebchuk and Fried, 2003; Denis and McConnell, 2003). To reduce such issues, prior studies suggest that leverage could limit managerial discretions, give managers more incentive to improve firm performance, and prevent managers from making non-valuable M&A (Stulz, 1990; Masulis et al., 2007). They also find that leverage has a positive impact on the acquirers' stock market returns. Therefore, I control the acquirers' leverage amount, which is measured as total short-term and long-term debt scaled by total assets (Leverage).

### *Payment Method of M&A*

Pecking order theory postulates that managers follow a hierarchy of financing sources. It gives first preference to internal funds, followed by debt, hybrid securities, and equity issuance as a last resort. In light of this view, Myers and Majluf (1984) present that equity issuance gives an adverse effect on the stock prices performance. They argue that when managers, who are assumed have a better understanding of the company's true value, issue new shares; investors perceive that the company's shares are overvalued, which then decrease the stock price returns. Additionally, recent studies give empirical evidence that acquirers who finance M&A deals by equity, relative to acquirers who fully pay M&A deals in cash, experience significantly lower abnormal returns (Andrade et al., 2001; Moeller et al., 2004; Alexandridis et al., 2010). Therefore, I control the M&A payment method effect by including the dummy variable of "1" if the M&A deal is fully paid by cash, and "0" otherwise (Cash payments).

### *Target Firm Status*

Prior studies find that the acquirers shareholders' wealth gains depend on the target firm status, whether it is a public or private firm. They argue that investing in public (private) target firm is more likely to decrease (increase) the shareholders' wealth (Draper & Paudyal, 2006; Fuller et al., 2002; Moeller et al., 2004). Additionally, they explain that the acquirers could capture a liquidity discount when buying private target firms, hence it creates a more favorable market reaction. Thus, I include the dummy variable of "1" if the target firm status is public, and "0" otherwise to control the target firm status effect on CAR (Target public).

### *Industry Relatedness*

Researchers find that conglomerate, or diversified, M&A creates lower stock market reactions around M&A announcements, while it potentially benefits self-interested managers (Morck et al., 1990; Agrawal and Mandelker, 1992; Morgan et al., 2000). Morgan et al. (2000) even find that it leads to significant losses in firm operating performance and firm value over three-years following the completion of M&A deals. The possible explanation is the acquirers' managers tend to undertake diversified M&A to reduce the portfolio of firm risk that they bear, regardless of whether such M&A is valuable or not for the shareholders. To control such effects, I include dummy variable with the value of "1" if the acquirer and target share the same 2-digit SIC code and "0" otherwise (Relatedness).

### *Relative size of Deal Values*

Moeller et al. (2004) and Masulis et al. (2007) provide evidence that the relative size of M&A deal value is positively correlated with the acquirers' announcement returns. I control the relative size of M&A deal value, which is computed as the percentage of M&A deal values to the acquirers' market value of asset (Relative deal size). Since the market value of assets could also represent the firm size, this prediction is in line with the argument that the acquirers' firm size is inversely correlated with the acquirers' announcement returns.

## 3.3 Methodology

I apply several methodologies to examine the hypotheses. First, as explained in the Section 3.2.1, I use short-window event study to construct CAR as the proxy for M&A performance. Second, as the initial assessment of hypotheses, I examine the differences in the acquirers' characteristics using univariate mean comparison tests. In particular, I apply t-tests in examining the significance of differences between the means of two sub-samples. Third, I

perform OLS regressions to control several factors that could affect the independent and dependent variables mentioned above. Below is the OLS regression model for the main analysis of this thesis:

$$\begin{aligned} CAR_{i,t} = & \alpha + \beta_1 EBC_{i,t-1} + \beta_2 CBMA_{i,t} + \beta_3 EBC * CBMA_{i,t-1} + \beta_4 Share\ own_{i,t-1} \\ & + \beta_5 Firm\ size_{i,t-1} + \beta_6 Leverage_{i,t-1} + \beta_7 Cash\ payment_{i,t} + \beta_8 Target\ public_{i,t} \\ & + \beta_9 Relatedness_{i,t} + \beta_{10} Relative\ deal\ size_{i,t-1} + IndustryFE_{i,t} + YearFE_{i,t} \\ & + \varepsilon_{i,t} \end{aligned}$$

## IV. Results

### 4.1 Sample Description

I present sample description for the characteristics of M&A transactions, executive compensation, independent, and control variables in Table 1. The panel data comprises one observation for each acquirer-year combination with total 3,035 M&A deals made by U.S. acquirers during the 2007-2016 sample period. Of those deals, 2,221 are domestic M&A (73.2%) and 814 are cross-border M&A (26.8%).

#### 4.1.1 M&A Transactions

Panel A of Table 1 presents the characteristics of M&A transactions. The 2009 financial crisis in the wake of Lehman Brothers downfall brings a significant decline of the M&A deal number to the lowest point at 269 deals. However, the deal value in 2009 remains high due to several mega-deals, such as Pfizer-Wyeth (\$67,3 billion), ExxonMobil-XTO Energy (\$40,3 billion), and Comcast-NBC Universal (\$23,5 billion). Then after the 2009 financial crisis, the M&A deal value is gradually increasing until it reaches the highest point at \$377,8 billion in 2015, with numerous deals worth over \$10 billion.

Panel A of Table 1 reports that on average, M&A deals do create value for the acquirers every year. More specifically, Panel B of Table 1 shows that the average acquirers' CAR (-1,1) is 0.91%, which corresponds to gain for acquirers at around \$176 million, given the acquirers' average market value of equity of \$19.3 billion. These findings are in fact, against Andrade et al. (2001) that suggest on average, acquirers realize negative returns from M&A deals during the 1980s and 1990s period. They find such negative returns are limited to those majority of acquirers who finance the M&A with stock. In contrast, I find that 65% of acquirers pay the M&A deals entirely in cash in the sample period. Panel A of Table 1 also shows that most of the acquirers and targets come from manufacturing, services, and retail trade sectors. While Andrade et al. (2001) document that in the 1990s, mining and media/telecommunications are the two most active industries. The above findings then indicate that M&A characteristics in this sample period are different from the previous periods, which could explain the higher average returns in this sample period relative to the 1980s and 1990s period.

Focusing on the cross-border M&A, Panel A of Table 1 shows that UK is the most frequent target country, followed by Canada, Germany, France, and Australia. In untabulated analysis, I also find that Curtiss Wright Corp. and Microsoft Corp. are cross-border acquirers with the most frequent deals and the largest deal values over the sample period, respectively.

**Table 1**  
**Sample Description**

Panel A presents the M&A characteristics. Cumulative Abnormal Returns (CAR) of the acquirer is used as proxy for M&A performance. I exercise three days (-1,+1), seven days (-3,+3), eleven days (-5,+5) of CAR, with the M&A announcement date becomes date 0. For the detailed procedure to construct CAR, refer to Section 3.2.1. Panel B presents the summary statistics for the variables used in the main analysis. All variables are defined in Appendix A. The independent and control variables are as follows: (1) EBC: The percentage of total stock and stock options to total compensation granted to the top five executives of the acquirers; (2) CBMA: The dummy variable with value of “1” if target firm is located outside U.S. and “0” otherwise; (3) Firm Size: The natural logarithm of total book value of assets; (4) Leverage: The percentage of total short-term debt and long-term debt scaled by total book value of assets; (5) Share own: The natural logarithm of total shares owned by top five executives; (6) Cash payment: The dummy variable with value of “1” if the transaction is fully paid in cash and “0” otherwise; (7) Target public: The dummy variable with the value of “1” if the target status is public and “0” otherwise; (8) Relatedness: The dummy variable with the value of “1” if the target firm and acquirer share the same 2-digit SIC code and “0” otherwise; (9) Relative deal size: The percentage of M&A deal value to the acquirer’s market value of asset. \*, \*\*, and \*\*\* indicate 10%, 5%, and 1% significance levels, respectively.

Panel A: M&A Characteristics									
<i>Yearly Distribution of M&amp;A Deals and M&amp;A Performance</i>									
Year	Cross-border M&A		Domestic M&A		Total M&A Deals	Total Deal Values	CAR (%)		
	Number of Deals	Deal Value	Number of Deals	Deal Value			(-1,1)	(-3,3)	(-5,5)
2008	101	32,224	277	134,650	378	166,873	0.89	0.49	0.94
2009	73	21,829	196	212,784	269	234,612	0.71	0.51	0.57
2010	98	24,951	256	178,892	354	203,843	0.70	0.74	0.70
2011	113	38,384	253	155,763	366	194,147	0.36	0.18	0.15
2012	107	36,048	268	141,506	375	177,554	1.27	1.38	1.24
2013	70	23,360	240	230,548	310	253,908	1.39	0.95	0.77
2014	96	37,331	260	226,417	356	263,748	1.18	1.13	1.11
2015	82	34,430	253	343,356	335	377,786	1.06	0.88	0.85
2016	74	41,620	218	260,995	292	302,615	0.61	0.88	1.06
Total	814	290,177	2,221	1,884,910	3,035	2,175,087	0.91	0.79	0.83

<i>Top 5 Industry of M&amp;A Deals</i>				
Industry	Acquirer		Target	
	Number of Deals	%	Number of Deals	%
Manufacturing	1,803	59%	1,573	52%
Services	684	23%	841	28%
Retail Trade	157	5%	141	5%
Wholesale Trade	120	4%	130	4%
Mining	116	4%	126	4%

<i>Top 5 Target Firm Nation of Cross-border M&amp;A deals</i>				
Target Nation	Number of Deals	%	Deal Values	%
United Kingdom (UK)	143	17.56%	39,033	13.45%
Canada	119	14.62%	27,744	9.56%
Germany	60	7.37%	20,633	7.11%
France	47	5.77%	17,724	6.11%
Australia	37	4.55%	16,556	5.75%

Panel B: Summary Statistics							
	Mean	Std. Dev.	Minimum	p25	Median	p75	Maximum
<i>M&amp;A Performance</i>							
CAR -1,1 (%)	0.91***	4.77	-14.39	-1.38	0.53	2.93	18.13
CAR -3,3 (%)	0.79***	6.04	-18.53	-2.29	0.46	3.58	20.53
CAR -5,5 (%)	0.83***	7.05	-18.80	-2.76	0.52	4.38	23.62

**Table 1-Continued**

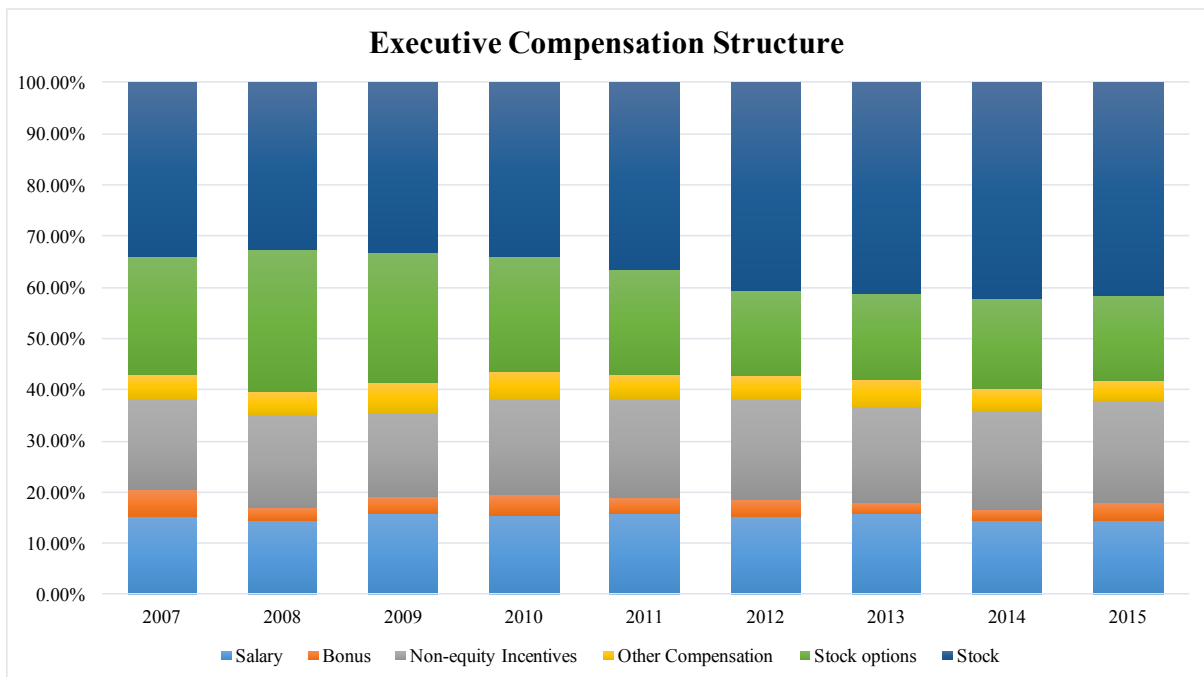
	Mean	Std. Dev.	Minimum	p25	Median	p75	Maximum
<i>Executive Compensation</i>							
Salary (%)	22.18	13.27	2.78	13.55	18.91	26.90	96.72
Bonus (%)	3.26	7.77	0	0	0	2.16	71.97
Non-equity incentives (%)	18.30	13.38	0	8.59	17.34	25.27	83.68
Stock awards (%)	31.55	22.36	0	12.83	32.22	46.72	92.75
Stock option awards (%)	19.42	19.15	0	0	16.73	31.07	94.15
Other compensation (%)	5.28	7.47	0	1.27	2.91	6.04	7.01
<i>Independent and Control Variables</i>							
EBC (%)	51.02	19.63	0	40.15	53.79	64.82	95.64
CBMA	0.27	0.44	0	0	0	1	1
Firm size	8.09	1.70	4.82	6.86	7.94	9.17	12.25
Leverage (%)	20.39	17.69	0	5.77	18.09	29.71	136.89
Shares own	7.32	1.34	4.27	6.43	7.23	8.06	12.41
Cash payment	0.65	0.48	0	0	1	1	1
Target public	0.23	0.42	0	0	0	0	1
Relatedness	0.63	0.48	0	0	1	1	1
Relative deal size (%)	6.75	12.48	0	0.82	2.57	6.85	164.78

#### 4.1.2 Equity-based Compensation

Figure 2 displays the yearly distribution of the top five executive compensation structure of the acquirers during the 2007-2015 period. The annual executive pay structure consists of salary, bonus, Non-Equity Incentives Plan (NEIP), stock awards, stock option awards, and other forms of compensations. The figure indicates that the equity-based compensation, which consists of stock and stock option awards, accounts for more than 50% of total executive pay each year during the past decade. Of this number, stock award fraction has gradually increased from 34.0% to 41.4%. These findings are in fact, contrary to Bebchuk and Grinstein (2005) that argue stock option award makes up the highest portion of equity-based compensation in the 1990s. Several potential factors could decrease the popularity of stock option awards during the sample period, including the accounting treatment change of stock option based compensation under FAS 123R in 2006, the options backdating scandals during the 2004-2008, and the say-on-pay vote which enacted in Dodd-Frank Act in 2010.

Panel B of Table 1 reports the summary statistics of the top five executive compensation structure of the acquirers. On average, executives have a fixed salary amounted to 22.2% of their total pay. Additionally, NEIP makes up a quite high fraction at 18.3% of total pay, while bonus and other compensations appear not to have a significant portion in the pay structure. Then, the stock award has the highest fraction at 31.5%, while the stock option award portion is only 19.4%. Additionally, the mean value of 51.02% on EBC indicates that on average, the majority of acquirers' executive pay consists of equity-based pay. This report shows a relatively higher amount than Datta et al. (2001) that find EBC at 29.8% during the 1993-1998.

**Figure 2**  
**Yearly Distribution of the Top Five Executive Compensation Structure of Acquirers**



This rise in equity-based compensation trend from the 1990s to 2000s reflects the intensified focus of U.S. public firms on aligning the executives' interests with those of shareholders through pay-performance scheme during the past decade. I find that this trend has not curbed the increase of total executive compensation during the 2000s, but it indeed shifts the way firms deliver their executives pay. That is, the equity-based compensation currently makes up a relatively higher portion than the non-equity component, such as base salary and cash bonus, compare to the previous period.

#### 4.1.3 Independent and Control Variables

Panel B of Table 1 reports the summary statistics of the independent and control variables used in the main analysis. Regarding the acquiring firm-specific characteristics, the minimum value of EBC reflects that there is an acquirer who does not compensate their top five executives with equity-based pay, while there is an acquirer who delivers it at 95.6%. Furthermore, the acquirers have a relatively high average book value of assets amounted to \$14,6 billion, with the average logarithm of total book value of assets of 8.1 (Firm size). Then, the mean value of leverage is 20.4%, suggesting that the acquirers have a relatively low portion of total debts to total assets. The average total shares owned by top five executives amounted to 5,924 shares, with the average natural logarithm of total share own is 7.3 (Share own).

**Table 2**  
**Correlation among Variables**

This table presents the Pearson Correlation Matrix between independent and control variables. The explanation of each variable is reported in Table 1. Two variables are highly correlated if the correlation coefficient is close to either +1 (perfect positive correlation) or -1 (perfect negative correlation). \* indicates 5% significance levels.

No.	Variables	1	2	3	4	5	6	7	8	9
1	EBC	1								
2	CBMA	0.04*	1							
3	Firm size	0.32*	0.06*	1						
4	Leverage	0.01	-0.02	0.22*	1					
5	Share own	0.10*	-0.06*	0.29*	-0.02	1				
6	Cash payment	0.02	-0.06*	-0.02	-0.02	0.00	1			
7	Target public	0.06*	-0.15*	0.18*	0.01	0.11*	0.14*	1		
8	Relatedness	0.03	-0.07*	-0.06*	0.01	0.02	0.03	0.17*	1	
9	Relative deal size	-0.06*	-0.13*	-0.21*	-0.01	-0.08*	-0.09*	0.17*	0.06*	1

Focusing on the M&A deal features, the domestic M&A still represents the majority of M&A transactions (73%) during the sample period. Furthermore, I document that the majority of acquirers pay the M&A deals entirely in cash (65%), acquire target within the same industry (63%), and acquire private target firms (77%). Prior studies argue that such M&A deal features are positively correlated with the acquirers' CAR (Morgan et al., 2000; Andrade et al., 2001; Moeller et al., 2004). This finding then could explain the higher average acquirers' CAR in this sample period relative to the 1980s and 1990s as reported by Andrade et al. (2001). Last, the results show that on average, the M&A deal value is only accounted below 10% to the acquirers' market value of assets at 6.8% (Relative deal size). Whereas, the maximum value of relative deal size is 164.8%, indicating that there is acquirer who pays the M&A deal higher than its market value of assets.

Table 2 reports the Pearson correlations matrix between the independent and control variables used in the main analysis. The variables are highly correlated if the coefficient is close to either +1 (perfect positive correlation) or -1 (perfect negative correlation). Overall, the correlation coefficients are relatively lower than the threshold, which suggests that no issues with multicollinearity. The low intercorrelations among variables indicate that there is sufficient independent variation among variables used in this thesis to allow discrete effects to be estimated (Markides and Ittner, 1994). More specifically, I focus the analysis on the EBC and CBMA as the primary independent variables. The result shows that the highest correlation coefficient is 0.32, which indicates that EBC has a positive correlation with the firm size.



## 4.2 Univariate Analysis

### 4.2.1 High and Low Equity-based Compensation

As the initial assessment of hypotheses, I seek to better understand the differences in the characteristics between high and low EBC acquirers. Panel A of Table 3 provides evidence that although on average, M&A deals create value for both high and low EBC acquirers, the low EBC acquirers experience significantly higher CAR relative to the high EBC acquirers. In particular, the average CAR (-1,1) for low EBC acquirers is 1.34%, while it is 0.58% for high EBC acquirers. This result indicates that EBC could be negatively associated with the acquirers' CAR, supporting the H1. Furthermore, Panel C of Table 3 suggest that the relation between EBC and the acquirers' CAR is conditional on the M&A type that the acquirers undertake. That is, the negative effect of equity-based compensation on the acquirers' CAR is much more significant in domestic M&A relative to cross-border M&A, contradicting the H3.

In the untabulated analysis, I note that the high EBC acquirers are larger in size, which supports the fact that equity-based compensation is common among larger firms, such as Apple Inc. and Alphabet Inc. Additionally, I find that on average, the high EBC acquirers have higher M&A deals numbers announces in a year, indicating that equity-based compensation could motivate executives to undertake more M&A deals.

### 4.2.2 Cross-Border M&A and Domestic M&A

Panel B of Table 3 reports that the market appears to view both cross-border and domestic M&A as good news, but they view domestic M&A as better news than cross-border M&A. In particular, the average CAR (-1,1) for cross-border M&A is 0.39%, while it is significantly higher for domestic M&A at 1.11%. Alternatively, in order to assure that the cross-border and domestic acquirers are sufficiently similar, I match each cross-border acquirer with domestic acquirer based on these criteria: (1) The announcement date of domestic M&A is within one-year window range of cross-border M&A; (2) The SIC code of domestic acquirer is within the same two-digits of cross-border acquirer; (3) The domestic acquirer has the smallest difference in market value of assets with cross-border acquirer; (4) The domestic acquirer has the same target firm status with cross-border acquirer. Such criteria result in the sample of 254 cross-border M&A and 254 domestic M&A. The results show that the cross-border M&A effect remains significantly negative on CAR (-1,1). Altogether, these univariate results indicate that the gains of cross-border acquirers around M&A announcements are significantly lower relative to the domestic acquirers. This finding also appears to support the H2, which predicts that cross-border M&A could have a significantly negative impact on the acquirers' CAR.

**Table 3**  
**Equity-based Compensation and M&A Performance: Univariate**

Panel A presents the univariate mean comparison of the Cumulative Abnormal Returns (CAR) between acquirers with low and high EBC. CAR of the acquirer is used as proxy for M&A performance. I exercise three days (-1,+1), seven days (-3,+3), eleven days (-5,+5) of CAR, with the M&A announcement date becomes date 0. For the detailed procedure to construct CAR, refer to Section 3.2.1. EBC is the percentage of total stock and stock options to total compensation granted to the top five executives of the acquirers. Each low and high group consists of the acquirer who has EBC amount in the quartile 1 (bottom 30%) and quartile 3 (top 30%), respectively. Panel B presents the univariate mean comparison of the CAR between cross-border and domestic acquirers. To assure that the cross-border acquirers and domestic acquirers are sufficiently similar, I match each cross-border acquirer with domestic acquirer, based on these criteria: (1) The announcement date of domestic M&A is within one-year window range of cross-border M&A; (2) The SIC code of domestic acquirer is within the same two-digits of cross-border acquirer; (3) The domestic acquirer has the smallest difference in market value of assets with cross-border acquirer; (4) The domestic acquirer has the same target firm status with cross-border acquirer. Panel C presents the univariate mean comparison of the CAR between cross-border and domestic acquirers with low and high EBC. T-tests is used to examine the significance of differences between the mean values of two sub-samples. \*, \*\*, and \*\*\* indicate 10%, 5%, and 1% significance levels, respectively.

Panel A: CAR categorized by EBC Proportion					
	Low EBC	Medium EBC	High EBC	Difference	t-statistic
	(1)	(2)	(3)	(3)-(1)	for Diff
CAR (-1,1)	1.34%	0.82%	0.58%	-0.76%***	-3.49
CAR (-3,3)	1.16%	0.70%	0.52%	-0.64%**	-2.32
CAR (-5,5)	1.38%	0.53%	0.57%	-0.81%**	-2.52
Panel B: CAR categorized by M&A Type					
	Domestic	Cross-border	Difference	t-statistic	
	(1)	(2)	(2)-(1)	for Diff	
<i>Full Sample (n= 841 cross-border and 2,221 domestic M&amp;A deals)</i>					
CAR (-1,1)		1.11%	0.39%	-0.72%***	-3.65
CAR (-3,3)		0.90%	0.50%	-0.40%	-1.62
CAR (-5,5)		0.93%	0.55%	-0.38%	-1.29
<i>Matched Sample (n= 254 cross-border and 254 domestic M&amp;A deals)</i>					
CAR (-1,1)		0.97%	0.12%	-0.85%**	-2.24
CAR (-3,3)		1.18%	0.36%	-0.82%	-1.60
CAR (-5,5)		0.96%	0.40%	0.56%	-0.94
Panel C: CAR categorized by EBC Proportion and M&A Type					
	Low EBC	Medium EBC	High EBC	Difference	t-statistic
	(1)	(2)	(3)	(3)-(1)	for Diff
<i>CAR (-1,1)</i>					
Cross-border	0.78%	0.38%	0.06%	-0.72%**	-2.02
Domestic	1.52%	1.00%	0.77%	-0.75%***	-2.83
<i>CAR (-3,3)</i>					
Cross-border	0.77%	0.59%	0.17%	-0.60%	-1.26
Domestic	1.29%	0.74%	0.66%	-0.64%*	-1.92
<i>CAR (-5,5)</i>					
Cross-border	1.15%	0.33%	0.24%	-0.91%	-1.59
Domestic	1.46%	0.61%	0.69%	-0.77%**	-1.99

#### 4.2.3 Mechanisms through which Equity-based Compensation Affects M&A Performance

As explained in Section 2.3, I consider two channels through which equity-based compensation could indirectly affect M&A performance: R&D and firm risk. Initially, I observe the relation between EBC and these two channels. In line with the initial prediction, Panel A of Table 4 shows that low EBC acquirers have significantly lower level of R&D relative to high EBC acquirers. Likewise, Panel A of Table 4 also displays that low EBC acquirers have lower degree of firm risk, albeit insignificant. In sum, these findings indicate that EBC could be positively associated with the level of R&D and firm risk.

Subsequently, I examine the correlation of both R&D and firm risk channels with the acquirers' CAR around M&A announcements. Panel B of Table 4 displays strong evidence that low R&D acquirers experience significantly higher CAR relative to high R&D acquirers. Similarly, Panel C of Table 4 also reports that low firm risk acquirers experience higher CAR relative to high firm risk acquirers, albeit insignificant. Such findings then suggest that both R&D and firm risk mechanisms could have negative associations with the acquirers' CAR around M&A announcements. Taken together, these univariate results support the initial prediction regarding the negative indirect effect of EBC on the acquirers' CAR through two mediating variables: R&D and firm risk.

#### 4.3 Equity-based Compensation and M&A Performance

It is worth noting that the analysis discussed above are simple univariate differences that do not control other factors which could affect the independent and dependent variables. Therefore, I perform multivariate OLS regressions to investigate whether the effects that present in the univariate analysis continues to hold after controlling several acquiring firm and M&A deal-specific features.<sup>3</sup> Panel A of Table 5 reports that the coefficients of EBC on CAR in all event windows are negative, yet I fail to find significant results at any level of confidence. These findings then fail to support the H1 and univariate analysis performed earlier. That is, the acquirers' CAR around M&A announcements cannot be explained by the variation in the equity-based compensation.

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<sup>3</sup> I conduct fundamental check to classical assumptions of OLS regressions: (1) Normality tests using Kernel Density graphical methods to ensure that the variables and residuals are normally distributed; (2) Robust standard errors to deal with the presence of heteroscedasticity issues; (3) In addition to the Pearson Correlation Matrix, I compute the Variance inflation factor (VIF) scores to check multicollinearity issues. Results indicate that none of such issues present in any of regression models.

**Table 4****Equity-based Compensation, Investment Policy, Firm Risk and M&A Performance: Univariate**

Panel A presents the univariate mean comparison of the R&D and Firm Risk between acquirers with low and high EBC. EBC is the percentage of total stock and stock options to total compensation granted to the top five executives of the acquirers. R&D is research and development expenditures scaled by total book value of assets. Firm risk is standard deviation of ROA (net income over total book value of assets) for 5 years. Panel B presents the univariate mean comparison of the CAR between acquirers with low and high R&D. CAR of the acquirer is used as proxy for M&A performance. I exercise three days (-1,+1), seven days (-3,+3), eleven days (-5,+5) of CAR, with the M&A announcement date becomes date 0. For the detailed procedure to construct CAR, refer to Section 3.2.1. Panel C presents the univariate mean comparison of the CAR between acquirers with low and high Firm Risk. Each low and high group consists of the acquirer who has the variable amount in the quartile 1 (bottom 30%) and quartile 3 (top 30%), respectively. T-tests is used to examine the significance of differences between the mean values of two sub-samples. \*, \*\*, and \*\*\* indicate 10%, 5%, and 1% significance levels, respectively.

Panel A: R&D and Firm Risk categorized by EBC Proportion					
	Low EBC	Medium EBC	High EBC	Difference	t-statistic for Diff
	(1)	(2)	(3)	(3)-(1)	
R&D	3.66%	4.57%	6.46%	2.80%***	9.26
Firm Risk	2.22%	2.43%	2.47%	0.25%	1.23
Panel B: CAR categorized by R&D Proportion					
	Low R&D	Medium R&D	High R&D	Difference	t-statistic for Diff
	(1)	(2)	(3)	(3)-(1)	
CAR (-1,1)	1.29%	0.99%	0.44%	-0.85%***	-3.94
CAR (-3,3)	1.28%	0.93%	0.16%	-1.12%***	-4.07
CAR (-5,5)	1.22%	1.03%	0.22%	-0.99%***	-3.06
Panel C: CAR categorized by Firm Risk Proportion					
	Low Firm Risk	Medium Firm Risk	High Firm Risk	Difference	t-statistic for Diff
	(1)	(2)	(3)	(3)-(1)	
CAR (-1,1)	0.83%	0.77%	0.82%	-0.00%	-0.02
CAR (-3,3)	0.83%	0.71%	0.73%	-0.09%	-0.29
CAR (-5,5)	0.96%	0.58%	0.70%	-0.26%	-0.73

**Table 5**  
**Equity-based Compensation and M&A Performance: Multivariate**

This table describes the Ordinary Least Squares (OLS) regressions where the dependent variable is Cumulative Abnormal Returns (CAR) from day -1 to +1, -3 to +3, and -5 to +5, with the M&A announcement date as day 0. For the detailed procedure to construct CAR, refer to Section 3.2.1. The main independent variables are EBC and CBMA. EBC is the percentage of total stock and stock options to total compensation granted to the top five executives and CEO of the acquiring firm for Panel A and Panel B, respectively. CBMA is the dummy variable with value of “1” if target firm is located outside U.S. and “0” otherwise. The control variables are as follows: (1) Firm Size: The natural logarithm of total book value of assets; (2) Leverage: The percentage of total short-term debt and long-term debt scaled by total book value of assets; (3) Share own: The natural logarithm of total shares owned by top five executives; (4) Cash payment: The dummy variable with value of “1” if the transaction is fully paid in cash and “0” otherwise; (5) Target public: The dummy variable with the value of “1” if the target status is public and “0” otherwise; (6) Cashpay\*TargetPub: The interaction term between cash payment method and target public firms; (7) Relatedness: The dummy variable with the value of “1” if the target firm and acquirer share the same 2-digit SIC code and “0” otherwise; (8) Relative deal size: The percentage of M&A deal value to the acquirer’s market value of asset. The executive compensation and firm-specific financial data are observed one year before the M&A deals announcement. All continuous variables are winsorized at the 1% and 99% levels. All regressions include unreported year and industry dummy variables. Robust standard errors are estimated and reported in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	Panel A: Top 5 Executives			Panel B: CEO		
	CAR (-1,1)	CAR (-3,3)	CAR (-5,5)	CAR (-1,1)	CAR (-3,3)	CAR (-5,5)
	(1)	(2)	(3)	(4)	(5)	(6)
EBC <sub>t-1</sub>	-0.004 (0.006)	-0.003 (0.008)	-0.009 (0.009)	-0.005 (0.005)	0.003 (0.006)	-0.001 (0.007)
CBMA <sub>t</sub>	-0.003* (0.002)	-0.000 (0.003)	-0.000 (0.003)	-0.004* (0.002)	-0.000 (0.003)	-0.001 (0.003)
Firm size <sub>t-1</sub>	-0.002** (0.001)	-0.002* (0.001)	-0.002** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Leverage <sub>t-1</sub>	0.017** (0.008)	0.027*** (0.010)	0.033*** (0.012)	0.021*** (0.008)	0.029*** (0.010)	0.036*** (0.011)
Share own <sub>t-1</sub>	-0.000 (0.001)	-0.000 (0.001)	-0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	0.000 (0.001)
Cash payment <sub>t</sub>	-0.002 (0.002)	-0.003 (0.003)	-0.005 (0.003)	-0.002 (0.002)	-0.002 (0.003)	-0.002 (0.003)
Target public <sub>t</sub>	-0.024*** (0.006)	-0.029*** (0.007)	-0.031*** (0.008)	-0.026*** (0.006)	-0.029*** (0.007)	-0.031*** (0.008)
Cashpay*TargetPub <sub>t</sub>	0.027*** (0.006)	0.035*** (0.007)	0.039*** (0.008)	0.029*** (0.006)	0.036*** (0.007)	0.039*** (0.008)
Relatedness <sub>t</sub>	0.002 (0.002)	0.000 (0.003)	-0.003 (0.003)	0.003 (0.002)	0.002 (0.003)	-0.001 (0.003)
Relative deal size <sub>t-1</sub>	0.052*** (0.015)	0.050*** (0.019)	0.064*** (0.020)	0.048*** (0.017)	0.044** (0.019)	0.057*** (0.020)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.026*** (0.008)	0.019* (0.011)	0.037*** (0.013)	0.022*** (0.007)	0.014 (0.010)	0.026** (0.011)
Observations	3,010	3,010	3,010	3,244	3,244	3,244
R-squared	0.165	0.141	0.138	0.162	0.134	0.131
Adj. R-squared	0.067	0.040	0.037	0.069	0.038	0.035
F-statistic	3.90	2.66	2.81	4.14	2.90	2.88

Furthermore, Panel A of Table 5 also reports that the CBMA coefficient is negative and significant coefficient on CAR (-1,1), indicating that there is a negative association between cross-border M&A and the acquirers' CAR. In other words, the cross-border acquirers experience significantly lower CAR around M&A announcements relative to the domestic acquirers. This result is in keeping with the predictions of H2 and the univariate results discussed earlier. However, I note that the magnitude of negative coefficient is rather low from the economic perspective. Model (1) indicates that the cross-border acquirers' gain is approximately 0.003% lower than domestic acquirers, which translates into loss around \$659,400 given the cross-border acquirers' average market value of equity at \$22 billion.

The remaining control variables, where significant, tend to support the prior studies. The magnitude and statistical significance of the coefficients are also fairly stable across all models. In particular, I observe that: (1) acquiring firms size has a negative effect on CAR, suggesting that M&A made by larger firms, relative to smaller firms, are greeted less favorably by the market (Bajaj and Vijh, 1995; Moeller et al., 2004); (2) leverage has a positive relation with CAR, giving evidence that leverage could be an important mechanism to mitigate free cash flow issues and prevent executives from taking non-value maximizing M&A (Stulz, 1990; Masulis et al., 2007); (3) buying public target firm is negatively associated with CAR, supporting the notion that acquirers' gain is more likely to decrease when the acquirers buy public target firm (Moeller et al., 2004); (4) the interaction term between cash payment and buying public target has a positive effect on CAR, indicating that the stock price impact when buying public target is less negative when the deals are paid entirely in cash; (5) the relative deal size value has a positive relation with CAR, supporting Masulis et al. (2007).

#### 4.3.1 Robustness Check

To establish the robustness of my main findings, I initially re-estimate the regressions using a different measure of equity-based compensation, which is defined as the percentage of total equity-based compensation to total compensation paid to the acquirers' CEO. Panel B of Table 5 displays that the EBC coefficients remain insignificant, while the CBMA coefficient remains negative and significant for CAR (-1,1). Second, I re-estimate the regressions using different functional proxies of firm size and leverage as control variables. I compute the acquiring firm size as: (1) the natural logarithm of market value of equity, (2) the natural logarithm of sales. Additionally, I measure leverage as the percentage of total short-term debt and long-term debt scaled by the market value of equity. The results, unreported for brevity, show that the EBC and CBMA coefficients exhibit virtually no change from Table 5.

Third, I re-estimate the relation between EBC and CAR into different sub-samples based on the EBC quartiles. I separate the sample into low, medium, and high EBC sub-samples, which are defined as the acquirers with EBC in the quartile 1 (bottom 30%), quartile 2, and quartile 3 (top 30%), respectively. Table 6 shows that the EBC and CBMA coefficients remain insignificant and negative, respectively. Taken together, the primary findings reported in Table 5 are highly robust to alternative model specifications and variable definitions. That is, equity-based compensation does not have a significantly marginal effect on the acquirers' CAR around M&A announcements, contrasting the H1. Also, cross-border M&A is negatively associated with the acquirers' CAR around M&A announcements, supporting the H2.

#### 4.3.2 Additional Analysis

In addition to examine the marginal effect of EBC on the acquirers' CAR, I perform further analysis regarding the difference effect of equity-based compensation on CAR for the acquirers with different level of EBC. As reported in the univariate results, the low EBC acquirers experience significantly higher CAR relative to the high EBC acquirers. Therefore, it could be the case that such effect also presents in the regression analysis after controlling several variables. To examine this possibility, I split the EBC variable into three categorical variables: EBC\_Low, EBC\_Medium, and EBC\_High, which are defined as the dummy variable with value of "1" if the EBC in the quartile 1 (bottom 30%), quartile 2, and quartile 3 (top 30%), respectively. Then, I re-estimate the regression models using EBC\_Low and EBC\_High as the main independent variables, simultaneously.

Table 7 reports that the EBC\_Low coefficients are mostly positive and significant, indicating that on average, the low EBC acquirers experience significantly higher CAR relative to the medium EBC acquirers, as the control group. Whereas, all EBC\_High coefficients are insignificant, suggesting that there is no significant difference between CAR for high EBC and medium EBC acquirers. Altogether, the above findings are in line with the univariate results: the market reacts more favorably to M&A made by low EBC acquirers relative to high EBC acquirers. However, I note that there are several limitations to this methodology. Turning a continuous variable of EBC into categorical variables, each value in the range of quartile 1, for example, is then considered equal. While in fact, it is not. Hence, instead of just discretizing the EBC into two groups (low and high EBC), I split the EBC into three groups and make the medium EBC as the control group. This method at least creates some separation between the low and high EBC groups.

**Table 6**  
**Equity-based Compensation and M&A Performance: Robustness Check**

This table describes the Ordinary Least Squares (OLS) regressions where the dependent variable is Cumulative Abnormal Returns (CAR) from day -1 to +1 with the M&A announcement date as day 0. For the detailed procedure to construct CAR, refer to Section 3.2.1. The main independent variables are EBC and CBMA. EBC is the percentage of total stock and stock options to total compensation granted to the top five executives of the acquirers. CBMA is the dummy variable with value of “1” if target firm is located outside U.S. and “0” otherwise. The remaining control variables are similar with Table 5. The regression estimates are presented for each low, medium, and high EBC sub-samples, which are defined as the acquirers with EBC in the quartile 1 (bottom 30%); quartile 2; and quartile 3 (top 30%), respectively. The executive compensation and firm-specific financial data are observed one year before the M&A deals announcement. All continuous variables are winsorized at the 1% and 99% levels. All regressions include unreported year and industry dummy variables. Robust standard errors are estimated and reported in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	CAR (-1,1)		
	Low EBC (1)	Medium EBC (2)	High EBC (3)
EBC <sub>t-1</sub>	0.013 (0.016)	0.031 (0.036)	-0.002 (0.027)
CBMA <sub>t</sub>	0.004 (0.004)	-0.004 (0.003)	-0.007* (0.004)
Firm size <sub>t-1</sub>	-0.002 (0.002)	-0.004** (0.002)	-0.002 (0.001)
Leverage <sub>t-1</sub>	0.009 (0.016)	0.033** (0.015)	-0.001 (0.016)
Share own <sub>t-1</sub>	-0.002 (0.002)	0.001 (0.002)	0.000 (0.002)
Cash payment <sub>t</sub>	-0.003 (0.005)	-0.003 (0.004)	0.000 (0.004)
Target public <sub>t</sub>	-0.018 (0.013)	-0.008 (0.010)	-0.040*** (0.009)
Cashpay*TargetPub <sub>t</sub>	0.025* (0.014)	0.020* (0.011)	0.040*** (0.010)
Relatedness <sub>t</sub>	0.008* (0.004)	-0.001 (0.004)	-0.003 (0.004)
Relative deal size <sub>t-1</sub>	0.058** (0.029)	0.035 (0.027)	0.058** (0.025)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Constant	0.035* (0.018)	0.003 (0.023)	0.019 (0.025)
Observations	1,003	1,001	1,006
R-squared	0.292	0.288	0.210
Adj. R-squared	0.060	0.093	0.047
F-statistic	1.59	1.69	2.34



**Table 7**  
**Equity-based Compensation and M&A Performance: Additional Analysis**

This table describes the Ordinary Least Squares (OLS) regressions where the dependent variable is Cumulative Abnormal Returns (CAR) from day -1 to +1, -3 to +3, and -5 to +5, with the M&A announcement date as day 0. For the detailed procedure to construct CAR, refer to Section 3.2.1. The main independent variables are EBC\_Low and EBC\_High, which are defined as dummy variable with the value of “1” if the EBC in the quartile 1 (bottom 30%) and quartile 3 (top 30%), respectively. EBC is the percentage of total stock and stock options to total compensation granted to the top five executives of the acquirers. The remaining control variables are similar with Table 5. The executive compensation and firm-specific financial data are observed one year before the M&A deals announcement. All continuous variables are winsorized at the 1% and 99% levels. All regressions include unreported year and industry dummy variables. Robust standard errors are estimated and reported in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	CAR (-1,1) (1)	CAR (-3,3) (2)	CAR (-5,5) (3)
EBC_Low <sub>t-1</sub>	0.005* (0.003)	0.004 (0.003)	0.007* (0.004)
EBC_High <sub>t-1</sub>	0.001 (0.002)	0.002 (0.003)	0.004 (0.003)
CBMA <sub>t</sub>	-0.003* (0.002)	-0.000 (0.003)	-0.000 (0.003)
Firm size <sub>t-1</sub>	-0.002** (0.001)	-0.002* (0.001)	-0.003** (0.001)
Leverage <sub>t-1</sub>	0.017** (0.008)	0.027*** (0.010)	0.033*** (0.012)
Share own <sub>t-1</sub>	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)
Cash payment <sub>t</sub>	-0.002 (0.002)	-0.003 (0.003)	-0.004 (0.003)
Target public <sub>t</sub>	-0.024*** (0.006)	-0.029*** (0.007)	-0.030*** (0.008)
Cashpay*TargetPub <sub>t</sub>	0.027*** (0.006)	0.035*** (0.007)	0.039*** (0.008)
Relatedness <sub>t</sub>	0.002 (0.002)	0.000 (0.003)	-0.003 (0.003)
Relative deal size <sub>t-1</sub>	0.051*** (0.015)	0.050*** (0.019)	0.063*** (0.020)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Constant	0.022*** (0.008)	0.015 (0.011)	0.030** (0.013)
Observations	3,010	3,010	3,010
R-squared	0.166	0.141	0.139
Adj. R-squared	0.068	0.040	0.038
F-statistic	3.87	2.7	3.00

#### 4.4 Mechanisms through which Equity-based Compensation Affects M&A Performance

So far, the primary findings of the univariate and multivariate analysis show that low EBC acquirers experience significantly higher CAR relative to high EBC acquirers, while the marginal effect of EBC on CAR itself is insignificant. Additionally, the univariate results also support the initial prediction regarding the negative indirect effect of EBC on acquirers' CAR around M&A announcements through R&D and firm risk channels. In particular, the results suggest that EBC could have a positive association with the R&D and firm risk channels. Also, both channels could be negatively associated with the acquirers' CAR around M&A announcements. In this section, I perform multivariate OLS regressions to investigate whether such effects continue to hold after controlling several variables.

##### 4.4.1 Equity-based Compensation, Investment Policy, and Firm Risk

Initially, I examine whether equity-based compensation has a positive marginal effect on the level of riskier investment policy (R&D) and firm risk (earning variances). I include capital expenditure (Capex) as the dependent variable to make the results more pronounced. As expected, Table 8 shows that EBC has positive and significant association with the level of R&D intensity. In contrast, Table 8 reports that EBC is negatively associated with Capex. These findings then suggest that equity-based compensation could motivate executives to allocate their investment away from less-risky investment policy (Capex) into riskier investment policy (R&D). Additionally, Table 8 shows that EBC has positive and significant association with the degree of firm risk, indicating that the level of earning variances increases in the equity-based compensation portion in executive pay. In summary, the above regression results indicate that equity-based compensation is positively associated with both R&D and firm risk channels, supporting the univariate results.

Of the control variables, the market to book ratio, Log(sales), and Sales growth, as the proxy for firm size, have a negative association with the level of R&D. This result indicates that larger firms are less-R&D intensive than smaller firms. One possible explanation is instead of conducting R&D in-house, large firms may find it optimal to gain access in innovation by acquiring R&D intensive small firms (Phillips and Zhdanov, 2012). Furthermore, the result shows that the Surplus cash coefficient is positive on R&D, suggesting that acquirers with higher amount of cash available to finance new projects tend to increase their R&D spending.

**Table 8**  
**Equity-based Compensation, Investment Policy, and Firm Risk**

This table describes the Ordinary Least Squares (OLS) regressions where the dependent variables are: (1) R&D: research and development expenditures scaled by total book value of assets of the acquirer; (2) Capex: capital expenditures scaled by total book value of assets of the acquirer; (3) Firm risk: standard deviation of ROA (net income scaled by total book value of assets) for 5 years of the acquirer. The main independent variable is EBC, which is defined as the percentage of total stock and stock options to total compensation granted to the top five executives of the acquirers. The remaining control variables are as follows: (1) Market-to-book: The ratio of market value of assets to book value of assets; (2) Leverage: The ratio of total short-term debt and long-term debt scaled by total book value of assets; (3) Cash compensation: The ratio of total salary and bonus scaled by total compensation granted to the top five executives; (4) Sales: The natural logarithm of sales as proxy for firm size; (5) Sales Growth: The natural logarithm of the ratio of sales in the current year to the sales in the previous year; (6) Surplus cash: The amount of cash available to finance new projects scaled by assets. All continuous variables are winsorized at the 1% and 99% levels. All regressions include unreported year and industry dummy variables. Robust standard errors are estimated and reported in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	R&D (1)	Capex (2)	Firm risk (3)
EBC <sub>t-1</sub>	0.024*** (0.006)	-0.007* (0.004)	0.011** (0.004)
Market to book <sub>t-1</sub>	-0.007*** (0.002)	0.004*** (0.001)	-0.000 (0.001)
Sales <sub>t-1</sub>	-0.007*** (0.001)	0.002*** (0.001)	-0.002*** (0.001)
Sales growth <sub>t-1</sub>	-0.018** (0.008)	0.002 (0.003)	-0.015* (0.009)
Leverage <sub>t-1</sub>	0.005 (0.008)	-0.010** (0.004)	0.010* (0.005)
Cash compensation <sub>t-1</sub>	0.010 (0.010)	0.004 (0.006)	0.025*** (0.007)
Surplus cash <sub>t-1</sub>	0.358*** (0.024)	-0.004 (0.012)	0.060*** (0.016)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Constant	0.077*** (0.012)	0.019*** (0.006)	-0.008 (0.007)
Observations	2,186	2,186	1,641
R-squared	0.688	0.473	0.346
Adj. R-squared	0.651	0.412	0.262
F-statistic	26.36	8.07	24.47

#### 4.4.2 Investment Policy, Firm Risk, and M&A Performance

I next examine whether R&D and firm risk are value-increasing or value-decreasing channels for the acquirers when they are growing through M&A. Table 9 shows that R&D has a negative association with the acquirers' CAR. This result supports prior studies that argue market tends to overlook the R&D benefit because it is far more uncertain and likely to materialize much later than other investments, such as capital expenditure (Chan et al., 2001). Likewise, Table 9 also reports that firm risk is negatively associated with the acquirers' CAR. This finding is in line with prior research that suggests firms with higher earning variances are subject to greater agency conflicts, uncertainty about outcomes, and reduced firm performance (Miller & Bromiley, 1990; Core et al., 1999). Alternatively, Model (3) presents the full model incorporating all mechanisms, including R&D, firm risk, and EBC, simultaneously. I find that the R&D and firm risk coefficients remain significantly negative.

Therefore, these regression results indicate that both R&D and firm risk channels are negatively associated with the acquirers' CAR around M&A announcements, which appears to be in line with the initial prediction and the univariate results. Then, the overall conclusion of Section 4.4 suggests that equity-based compensation has a negative indirect effect on the acquirers' M&A announcement returns through two mediating variables: R&D and firm risk.

#### 4.5 Conditions under which Equity-based Compensation Affects M&A Performance

In this section, I investigate whether the relation between equity-based compensation and M&A performance is different for cross-border and domestic M&A acquirers. In contrast to the initial prediction of H3, the univariate results show that the negative effect of equity-based compensation on CAR is much more pronounced for domestic acquirers than cross-border acquirers. To test this moderating effect in the regressions, I use the interaction term between EBC and CBMA as the main variable of interest and re-estimate the regressions. Adding the interaction term into the regressions changes the interpretation of EBC and CBMA coefficients itself. The unique effect of EBC on the acquirers' CAR now is not only limited to the EBC coefficient value, but also depends on the EBC\*CBMA coefficient value.

Table 10 displays that all EBC\*CBMA coefficients are insignificant. For robustness, I perform alternative model variations in Table 11. The results show that all EBC\*CBMA coefficients also remain insignificant. These findings then fail to support the H3 and univariate results reported earlier. That is, although cross-border M&A significantly underperforms domestic M&A, the relation between equity-based compensation and M&A performance does not significantly vary between cross-border and domestic M&A.

**Table 9**  
**Investment Policy, Firm Risk, and M&A Performance**

This table describes the Ordinary Least Squares (OLS) regressions where the dependent variable is Cumulative Abnormal Returns (CAR) from day -1 to +1, -3 to +3, and -5 to +5. For the detailed procedure to construct CAR, refer to Section 3.2.1. The main independent variables are: (1) R&D: research and development expenditures scaled by total book value of assets; (2) Firm risk: standard deviation of ROA (net income over total book value of assets) for 5 years. The remaining control variables are similar with Table 5. The executive compensation and firm-specific financial data are observed one year before the M&A deals announcement. All continuous variables are winsorized at the 1% and 99% levels. All regressions include unreported year and industry dummy variables. Robust standard errors are estimated and reported in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	CAR (-1,1)		
	(1)	(2)	(3)
R&D <sub>t-1</sub>	-0.094*** (0.029)		-0.073* (0.043)
Firm risk <sub>t-1</sub>		-0.050* (0.027)	-0.054* (0.032)
EBC <sub>t-1</sub>	-0.001 (0.006)	0.000 (0.007)	0.000 (0.009)
CBMA <sub>t</sub>	-0.003* (0.002)	-0.003* (0.002)	-0.004 (0.003)
Firm size <sub>t-1</sub>	-0.002*** (0.001)	-0.002** (0.001)	-0.003** (0.001)
Leverage <sub>t-1</sub>	0.015* (0.008)	0.027*** (0.009)	0.025** (0.011)
Share own <sub>t-1</sub>	-0.000 (0.001)	-0.000 (0.001)	0.001 (0.001)
Cash payment <sub>t</sub>	-0.002 (0.002)	-0.002 (0.003)	-0.004 (0.003)
Target public <sub>t</sub>	-0.023*** (0.006)	-0.019*** (0.006)	-0.024*** (0.008)
Cashpay*TargetPub <sub>t</sub>	0.026*** (0.006)	0.022*** (0.007)	0.027*** (0.008)
Related <sub>t</sub>	0.002 (0.002)	0.002 (0.002)	0.002 (0.003)
Relative deal size <sub>t-1</sub>	0.051*** (0.015)	0.051*** (0.018)	0.050** (0.021)
Market to book <sub>t-1</sub>	0.001 (0.001)	-0.000 (0.001)	-0.000 (0.002)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Constant	0.030*** (0.009)	0.017* (0.010)	0.016 (0.012)
Observations	3,010	2,186	1,555
R-squared	0.169	0.176	0.192
Adj. R-squared	0.054	0.069	0.063
F-statistic	3.25	2.82	2.07

**Table 10**  
**Equity-based Compensation and Cross-border M&A Performance: Moderating Effect**

This table describes the Ordinary Least Squares (OLS) regressions where the dependent variable is Cumulative Abnormal Returns (CAR) from day -1 to +1, -3 to +3, and -5 to +5. For the detailed procedure to construct CAR, refer to Section 3.2.1. The main independent variable is the interaction term between EBC and CBMA (EBC\*CBMA). EBC is computed as the percentage of total stock and stock options to total compensation granted to the top five executives of the acquirers. CBMA is the dummy variable with value of “1” if target firm is located outside U.S. and “0” otherwise. The remaining control variables are similar with Table 5. The executive compensation and firm-specific financial data are observed one year before the M&A deals announcement. All continuous variables are winsorized at the 1% and 99% levels. All regressions include unreported year and industry dummy variables. Robust standard errors are estimated and reported in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	CAR (-1,1) (1)	CAR (-3,3) (2)	CAR (-5,5) (3)
EBC*CBMA <sub>t-1</sub>	0.002 (0.006)	0.002 (0.008)	-0.000 (0.010)
EBC <sub>t-1</sub>	-0.010 (0.012)	-0.005 (0.015)	0.000 (0.018)
CBMA <sub>t</sub>	-0.001 (0.007)	-0.001 (0.009)	-0.009 (0.010)
Firm size <sub>t-1</sub>	-0.002** (0.001)	-0.002* (0.001)	-0.002** (0.001)
Leverage <sub>t-1</sub>	0.017** (0.008)	0.027*** (0.010)	0.033*** (0.012)
Share own <sub>t-1</sub>	-0.000 (0.001)	-0.000 (0.001)	-0.001 (0.001)
Cash payment <sub>t</sub>	-0.002 (0.002)	-0.003 (0.003)	-0.005 (0.003)
Target public <sub>t</sub>	-0.024*** (0.006)	-0.029*** (0.007)	-0.031*** (0.008)
Cashpay*TargetPub <sub>t</sub>	0.027*** (0.006)	0.035*** (0.007)	0.039*** (0.008)
Related <sub>t</sub>	0.002 (0.002)	0.000 (0.003)	-0.003 (0.003)
Relative deal size <sub>t-1</sub>	0.051*** (0.015)	0.050*** (0.019)	0.064*** (0.020)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Constant	0.025*** (0.008)	0.018 (0.011)	0.037*** (0.013)
Observations	3,010	3,010	3,010
R-squared	0.165	0.141	0.138
Adj. R-squared	0.067	0.040	0.040
F-statistic	3.74	2.54	2.67

**Table 11**  
**Equity-based Compensation and Cross-border M&A Performance: Robustness**

This table describes the Ordinary Least Squares (OLS) regressions where the dependent variable is Cumulative Abnormal Returns (CAR) from day -1 to +1, -3 to +3, and -5 to +5. For the detailed procedure to construct CAR, refer to Section 3.2.1. The main independent variables are EBC\_Low\*CBMA and EBC\_High\*CBMA. EBC\_Low and EBC\_High are defined as dummy variable with the value of “1” if the EBC in the quartile 1 (bottom 30%) and quartile 3 (top 30%), respectively. EBC is computed as the percentage of total stock and stock options to total compensation granted to the top five executives of the acquirers. The remaining control variables are similar with Table 5. The executive compensation and firm-specific financial data are observed one year before the M&A deals announcement. All continuous variables are winsorized at the 1% and 99% levels. All regressions include unreported year and industry dummy variables. Robust standard errors are estimated and reported in parentheses. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	CAR (-1,1) (1)	CAR (-1,1) (2)	CAR (-1,1) (3)
EBC_Low*CBMA <sub>t-1</sub>	-0.003 (0.005)	-0.002 (0.007)	-0.001 (0.008)
EBC_High*CBMA <sub>t-1</sub>	-0.001 (0.004)	-0.003 (0.006)	-0.001 (0.007)
EBC_Low <sub>t-1</sub>	0.005* (0.003)	0.006 (0.004)	0.009* (0.005)
EBC_High <sub>t-1</sub>	0.001 (0.003)	0.005 (0.004)	0.006 (0.004)
CBMA <sub>t</sub>	-0.002 (0.003)	0.001 (0.003)	0.000 (0.004)
Firm size <sub>t-1</sub>	-0.002** (0.001)	-0.002* (0.001)	-0.003** (0.001)
Leverage <sub>t-1</sub>	0.017** (0.008)	0.027*** (0.010)	0.033*** (0.012)
Share own <sub>t-1</sub>	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)
Cash payment <sub>t</sub>	-0.002 (0.002)	-0.003 (0.003)	-0.004 (0.003)
Target public <sub>t</sub>	-0.024*** (0.006)	-0.029*** (0.007)	-0.031*** (0.008)
Cashpay*TargetPub <sub>t</sub>	0.027*** (0.006)	0.035*** (0.007)	0.040*** (0.008)
Related <sub>t</sub>	0.002 (0.002)	0.000 (0.003)	-0.003 (0.003)
Relative deal size <sub>t-1</sub>	0.052*** (0.015)	0.051*** (0.019)	0.064*** (0.020)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Constant	0.022*** (0.008)	0.016 (0.011)	0.031** (0.013)
Observations	3,010	3,010	3,010
R-squared	0.166	0.142	0.140
Adj. R-squared	0.067	0.040	0.038
F-statistic	3.58	2.60	2.92

## V. Concluding Remarks

In the era of heightened corporate governance scrutiny, recent popular press and research are often questioning the efficacy of large payoffs from equity-based compensation awarded to U.S. executives. Equity-based compensation is typically considered as a critical governance mechanism that could align the interest of executives with those of shareholders (Jensen and Meckling, 1976). Yet, this thesis provides empirical evidence opposing such popular view. In particular, this thesis focus on examining the impact of equity-based compensation on the acquirers shareholders' wealth creation around M&A announcements.

Using the final sample of 3,035 M&A deals made by 931 U.S. firms during the 2007-2016, I document that on average, M&A deals do create value for the acquirers. However, I find that the acquirers with low equity-based compensation (EBC) display significantly higher Cumulative Abnormal Returns (CAR) around M&A announcements relative to the acquirers with high EBC.<sup>4</sup> This result suggests that on average, market views low EBC acquirers as making better M&A deals than their counterparts in high EBC acquirers. Whereas, the marginal effect of EBC on the acquirers' CAR is insignificant. The above results are robust to alternative model specifications and variable definitions.

Furthermore, I investigate two specific mechanisms through which equity-based compensation could indirectly affect M&A performance, which are R&D and firm risk. I find evidence that EBC is positively associated with the level of riskier investment policy (R&D) and firm risk (earning variances). Subsequently, both R&D and firm risk channels have negative associations with the acquirers' CAR around M&A announcements. In summary, this additional analysis presents the negative indirect effect of equity-based compensation on the acquirers' CAR that passes through two mediating variables: R&D and firm risk.

In addition to examine the M&A performance in general, I specifically investigate the performance of cross-border M&A relative to domestic M&A. I document that although on average, both cross-border and domestic M&A create positive value for the acquirers, cross-border acquirers experience significantly lower CAR around M&A announcements relative to domestic acquirers. In particular, I find that cross-border M&A is negatively associated with the acquirers' CAR around M&A announcements. Considering such findings, cross-border M&A seems could be a condition affecting the relation between equity-based compensation and M&A performance. However, after examining the moderating effect of cross-border M&A

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<sup>4</sup> Each low and high EBC group consists of the acquirer who has equity-based compensation portion in the quartile 1 (bottom 30%) and quartile 3 (top 30%), respectively.



on the relation between EBC and the acquirers' CAR around M&A announcements, the results show that such relation does not significantly vary between cross-border and domestic M&A. Appendix B illustrates the summary results of this thesis.

There are some limitations to this study. First, I only examine the short-term performance of M&A deals. It is then interesting to investigate whether equity-based compensation motivates executives to sacrifice short-term in favor of long-term shareholders' value creation. Second, there is a possibility of omitted correlated variables issues. There could be other factors which have an impact on the independent and dependent variables that are not controlled in the regressions. Next, due to the limitation of data and time, this thesis only investigates the impact of equity-based compensation on the U.S. acquirers' gain. Future research could explore the efficacy of equity-based compensation on the gain of acquirers or targets from emerging countries, such as China and Japan, given that they are progressively turning into one of the most prominent participant in the global market. It could also be the case that different geographical area plays a significant role in determining the outcome of stock market reactions. Last, future research could also find other critical determinants of M&A performance to unlock the shareholders' value creation following the M&A deals.

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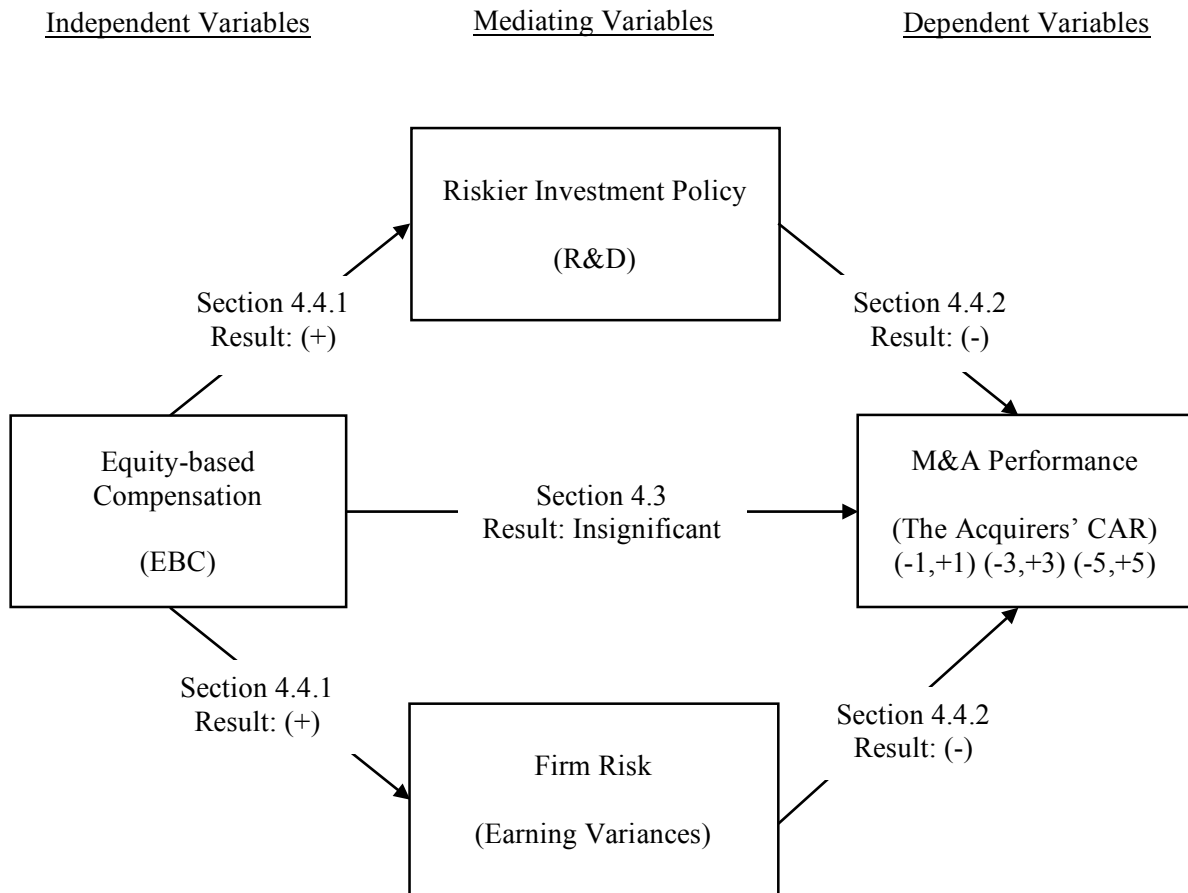
## Appendix A

### Definitions of Variables

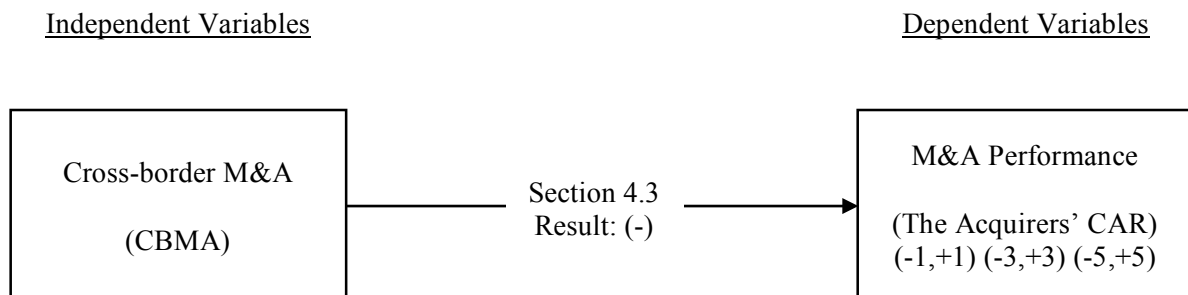
Variable	Measurement
<i>Acquiring Firm Characteristics</i>	
EBC	The percentage of total stock and stock options to total compensation granted to the top five executives.
Firm size	The natural logarithm of total book value of assets.
Leverage	The percentage of total short-term debt and long-term debt scaled by total book value of assets.
Shares own	The natural logarithm of total shares owned by top five executives.
Market to book	The ratio of market value of assets to book value of assets.
Sales	The natural logarithm of sales.
Sales growth	The natural logarithm of the ratio of sales in the current year to the sales in the previous year.
Cash compensation	The ratio of total salary and bonus scaled by total compensation granted to the top five executives.
Surplus cash	The amount of cash from assets in place (net cash flow - depreciation and amortization) scaled by total book value of assets.
R&D	Research and development expenditures scaled by total book value of assets.
Capex	Capital expenditures scaled by total book value of assets.
Firm risk	Standard deviation of ROA (net income scaled by total book value of assets) for 5 years.
<i>M&amp;A Deals Characteristics</i>	
CBMA	The dummy variable with value of “1” if target firm is located outside U.S. and “0” otherwise.
Cash payment	The dummy variable with value of “1” if the transaction is fully paid in cash and “0” otherwise
Target public	The dummy variable with the value of “1” if the target status is public and “0” otherwise
Relatedness	The dummy variable with the value of “1” if the target firm and acquirer share the same 2-digit SIC code and “0” otherwise
Relative deal size	The percentage of M&A deal value to the acquirer’s market value of asset.

## Appendix B Summary Result

### H1



### H2



### H3

