

Does executive compensation affect firms' acquisition decisions? Evidence from China

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Exploiting regulatory changes in China that govern the use of stock options, we investigate whether executive compensation affects acquisition decisions and post-acquisition performance from 2005 to 2014. We find that acquisitions are not driven by stock options. Managerial stock ownership promotes acquisitions at low levels of ownership – but leads to less frequent acquisitions at higher levels, implying a non-linear relationship. Similarly, we also find a non-linear impact of managerial stock ownership on long-term post-acquisition performance. However, neither stock options nor stock ownership determine short-term post-acquisition performance. Finally, state ownership has a significant impact on the compensation-acquisition relationship in that the above relationships only exist in private enterprises.

Keywords: Acquisition; state-owned enterprises; stock option; stock ownership

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1. Introduction

Mergers and acquisitions (M&A) are a major driver of firm growth and internationalization, accounting for about 70% of foreign direct investment (FDI) flows (Meyer and Peng, 2016). In contrast to previous periods, the current M&A boom since the Global Financial Crisis has featured more acquirers from emerging countries with Chinese companies making it to the top. For instance, ChemChina's acquisition of Syngenta AG, an agribusiness company based in Switzerland, for USD 43 billion was the 5th largest acquisition in 2016.

The surge of M&A transactions initiated by Chinese acquirers can be attributed to both internal and external factors. Internally, economic reforms have led to large-scale privatization of state-owned enterprises (SOEs) since the 1980s. For several decades, the Chinese government has encouraged SOEs to reorganize through M&As to improve efficiencies (Gao and Kling, 2008). Externally, China's accession into the World Trade Organization (WTO) has encouraged Chinese firms to adopt M&As to restructure and consolidate, enabling them to defend against expanding foreign competitions in their home market. However, acquisition decisions in China are unlikely to be solely motivated by economic considerations (Yang et al., 2019). This study explores the role of executive compensation in decision making and post-

merger performance. China is an interesting case to study as the government has initiated an ‘experimental’ reform in 2006 introducing equity-based compensation for managers in both private and public firms. As outlined by Jiang et al. (2017), China's regulatory change has led to a rapid adoption of stock options in both SOEs and non-SOEs, in sharp contrast to the more gradual adoption in the US and other developed countries over decades. Analysing the implications of this regulatory change is promising as confounding events play a minor role due to the short adoption period. This offers an ideal setting for testing conflicting theories on the role of executive compensation in driving M&As.

Several finance and management scholars have demonstrated important links between executive compensation and acquisition behaviour; however, empirical evidence is inconsistent. Based on agency theory, incentive compensation is deemed to reduce managerial behaviour driven by self-interest by aligning the interests of managers and shareholders (Jensen and Meckling, 1976). In particular, equity compensation should reduce managerial benefits from value-destroying acquisitions (Shleifer and Vishny, 1997). Yet, a growing body of empirical evidence suggests that managers' desire for higher compensation may drive acquisitions, irrespective of whether the deal is in the interest of shareholders (Bliss and Rosen,

2001; Grinstein and Hribar, 2004). For instance, the CEO of Chase Manhattan Bank, William Harrison, received a USD 20 million bonus for the company's acquisition of J.P. Morgan in 2000 despite a subsequent substantial drop of the acquirer's stock price. It is also reported that on average 40 to 60% of M&As fail to create value (Bauer and Matzler, 2014). Thus far, theoretical and empirical debates have mainly focused on developed countries; less is known about the impact of executive pay on M&As in emerging countries.

This study focuses on executive compensation and acquisitions in China. Specifically, this study explores three questions: (1) does executive compensation affect managers' acquisition decisions, (2) is post-acquisition performance determined by executive pay, and (3) how does the institutional environment affect these relationships? We collect M&A and compensation data from 2005 to 2014 as well as post-merger performance data until 2018. To remove host country effects and cross-cultural disparities between targets and acquirers, we focus on domestic acquisitions, which account for 89.5% of M&As in China. We include ownership data to explore differences between SOEs and non-SOEs.

Our contribution is threefold. First, we provide empirical evidence for China, where equity compensation has been a novel phenomenon. To the best of our knowledge, this is the

first study that analyses acquisitions from the perspective of executive pay in China. Second, we assess whether executive compensation is a mechanism to align interests or a tool for managerial entrenchment in emerging countries such as China where weak corporate governance coexists with substantial governance reforms. Third, this study shows that institutions play a significant role in acquisitions highlighting the importance of the institutional impact on organizational behaviours. Despite economic reforms, state ownership is still a significant variable in explaining firm behaviour.

2. Theoretical background

Motivations for acquisitions refer to synergies (Harrison et al., 1991), extracting value from inefficient targets (Fama, 1980) – but also behavioural explanations. The latter include, the managerial hubris hypothesis, which suggests that acquiring managers may overstate their abilities to run target firms (Roll, 1986a). This can lead to value-destroying acquisitions. Executive compensation can align managers' interests with their shareholders in line with agency theory (Jensen and Meckling, 1976); however, the role of executive pay in the context of acquisitions has remained ambiguous.

The dominant perspective refers to the optimal contracting theory or the incentive

alignment perspective, which advocates that executives promote shareholder-value-maximizing behaviours (Jensen and Meckling, 1976; Mehran, 1995; Shleifer and Vishny, 1997). Based on this perspective, managers with higher levels of incentive compensation are expected to be more prudent in making acquisitions given *a priori* that acquiring firms generally do not benefit from acquisitions (Goranova et al., 2017; Gugler et al., 2003; Halebian et al., 2009; Amihud and Lev, 1981; Jensen and Ruback, 1983). This theoretical view, however, yields mixed empirical results (Bliss and Rosen, 2001; Sanders, 2001; Schmidt and Fowler, 1990; Wright et al., 2002). For instance, Sanders (2001) presents a positive association between stock options and firms' acquisition activity, arguing that the lack of penalty for acquisition failures induces managers to take more risks. In contrast, Bliss and Rosen (2001) find that higher levels of equity-based compensation (both stock options and restricted stock) reduce the number of transactions in the banking industry.

The managerial power theory (MPT) has questioned the relevance of the optimal contracting theory in explaining executives' behaviour. Bebchuk and Fried (2003) argue that executive compensation itself is part of an agency problem rather than an instrument to address it. This can be attributed to two reasons. First, inefficient corporate governance systems may

reinforce managerial entrenchment. For instance, board members, for various reasons (e.g. to be re-appointed to the board or to sustain valuable business and social networks), may favour CEOs instead of monitoring them. Furthermore, market forces might be underdeveloped to ensure optimal contracting outcomes (Bebchuk and Fried, 2003). Managerial power scholars contend that an expected increase in post-acquisition compensation induces managers to make more acquisitions, extracting rents from shareholders. Haleblan et al. (2009) show that acquiring managers receive higher compensations after acquisitions, irrespective of acquisition performance. Grinstein and Hribar (2004) present a positive association between managerial power and bonus payments related to M&As. They argue that managers with more power are more likely to receive a higher acquisition bonus even if such acquisitions are value-decreasing.

3. Hypothesis development

3.1 Incentive compensation and acquisition decisions

Given the mixed theoretical and empirical evidence, adopting either theory in isolation is insufficient in understanding the alleged impact of executive compensation on M&A decisions.

We argue that managers' desire to make acquisitions depends on the type and level of incentive

pay they receive. Stock options have long been a dominant part of executive compensation in US companies since 1990s (Murphy, 2013). Following the prevalence in developed economies, China has introduced stock options in 2006 with the aim to incentivize executives. To the extent that acquisitions on average do not benefit shareholders, they are risky investments (Bauer and Matzler, 2014; Baker and Limmack, 2001; Franks and Mayer, 2001; Loderer and Martin, 1992; Loughran and Vijh, 1997; Weitzel and Kling, 2018). However, whether the use of stock options has achieved its expected impact remains ambiguous.

On the one hand, it is widely suggested that stock options can be used to mitigate managers' risk aversion and induce them to invest in risky but positive net present value projects (Coles et al., 2006). This risk-taking incentive is due to its non-linear *convexity effect*: option holders benefit if stock prices rise above the strike price but pay-outs do not become negative if stock prices drop below the strike price. Hence, we expect a positive correlation between stock options and acquisition behaviour as executives participate in the upside of a deal. On the other hand, the *magnification effect* associated with options may reduce managers' appetite for risk (Shue and Townsend, 2017). Options have a sensitivity to volatility ('vega') but also a sensitivity to firm value ('delta'). Thus, risk-averse managers may wish to reduce

volatility in the value of the firm (Edmans et al., 2017). The following alternative hypotheses emerge:

Hypothesis 1a: There is a positive association between stock options and the frequency of M&A.

Hypothesis 1b: There is a negative association between stock options and the frequency of M&A.

Stock ownership has different characteristics compared to stock options as the pay-out profile is symmetric, i.e. managers participate in the downside risk. In addition, managers cannot diversify their shareholding and they have an employment risk associated with the same firm, which makes them more risk averse. Stock has a higher value to executives than equivalent stock options due to lower volatility, making stock a more efficient ‘alignment tool’ (Dittmann and Maug, 2007, Edmans et al., 2017). The level of stock ownership matters as small equity stakes are unlikely to affect executives’ decision making. This suggest the following hypotheses:

Hypothesis 2: Managerial stock ownership and the frequency of M&A exhibit a positive correlation if equity stakes are low. The relationship turns negative for high equity stakes.

3.2 Post-acquisition performance

Although research on post-acquisition performance proliferates, prior studies present mixed results on how executive compensation affects post-acquisition performance (Haleblian et al., 2009). Some studies suggest that executives' stock ownership is positively correlated with value-enhancing corporate strategies (Bethel and Liebeskind, 1993; Johnson et al., 1993; Lewellen et al., 1985). Datta et al. (2001) argue that stock options rather than stock ownership determine both short-term cumulative abnormal returns (CARs) and long-term buy-and-hold returns (BHRs). According to Datta et al. (2001), firms with higher proportions of stock options exhibit higher CARs and higher BHRs. By contrast, Jenter, (2002) and Hall and Murphy (2002) argue that optimal contracts should only use stock.

We conjecture that stock ownership and stock options have a different impact on post-acquisition performance. Stock options lead to more acquisitions and as they become more frequent the quality of targets diminishes, suggesting a negative impact on post-merger performance. The following hypothesis captures these arguments:

Hypothesis 3: The association between stock options and post-acquisition performance is negative.

When a manager receives compensation in stock, her future wealth is partly linked to the future value of the firm. However, different levels of this ‘linkage’ will have a different impact on acquisition performance. In line with the non-linear relationship between managerial ownership and acquisition behaviour, we contend that the relationship is non-linear.

As executive compensation is positively correlated to firm size, it is reasonable to expect that managers will receive higher compensation after acquisitions (Lahlou and Navatte, 2017; Haleblan et al., 2009). Moreover, managers can also benefit from acquisitions by building a ‘bigger empire’, reducing their employment risk (Deutsch et al., 2007). If managers have small equity stakes, they might pursue value-destroying mergers as their losses can be offset by other personal benefits following acquisitions (Lahlou and Navatte, 2017). This argument changes with higher equity stakes, suggesting a positive impact on post-merger performance, captured by the following hypothesis.

Hypothesis 4: The association between managerial stock ownership and post-acquisition performance is negative at low levels of ownership – but positive if equity stakes are higher.

3.3 Institutional impact

A significant feature of China's institutional setting is the dominant position of the state in the national economy. The state plays a significant role in the economy through state-ownership, administrative governance and regulations (Gao and Kling, 2006). Thus, we expect that the institutional setting affects the impact of executive compensation on acquisitions. Specifically, we conjecture that the equity-based compensation plays a less prominent role in SOEs than in private firms. First, managers in SOEs are less sensitive to compensation since they are appointed by the state and rewarded with political promotion by fulfilling their targets (Conyon and He, 2011). Second, managers in large SOEs are less powerful than their counterparts in private firm because they are under direct control of state bureaucrats such as the State-owned Assets Supervision and Administration Commission of the State council (SASAC) (Gao and Kling, 2012). Finally, many state-led acquisitions are driven by other motives such as restructuring (i.e. steel industry). We formulate the following hypothesis:

Hypothesis 5: The association between executive compensation, M&A activity and performance is less pronounced in SOEs than in private firms.

4. Sample construction and method

4.1. Sample and data

Our data covers the period from 2005-2014 as we require a post-merger phase to assess long-term performance of merged entities. We consider this sample period for two reasons. First, this decade is marked by continuous financial and market reforms. Specifically, Chinese firms have been encouraged to adopt stock options since 2006 to incentivize managers.ⁱ This policy change provides a natural experiment to investigate the impact of this relatively new form of incentive mechanism on firms' strategic decision making. Second, many SOEs began to undertake acquisitions to restructure their ownership.ⁱⁱ Thus, it is interesting to know whether executive compensation plays a different role in SOEs and non-SOEs.

Using the Zephyr database, we identified 10,969 acquisitions from January 1, 2005-December 31, 2014. We exclude (1) withdrawn offers during the sample period, (2) financial services, and (3) foreign targets. These criteria result in a final sample of 10,553 acquisitions initiated by 2,014 firms. Financial and executive compensation data were collected from the China Stock Market and Accounting Research Database (CSMAR) starting from 2004 to allow for a one-year lag prior to acquisitions.

4.2. Dependent variables

Acquisition activity, measured as the number of acquisitions a firm undertakes each year, is the dependent variable to test Hypotheses 1a, 1b, and 2. A firm is categorized as an active acquirer if it undertakes more than five acquisitions within the sample period. Post-acquisition performance is the dependent variable to test Hypotheses 3 and 4. Consistent with prior research (Datta et al., 2001; Wright et al., 2002), we use cumulative abnormal returns (CARs) to measure the market response to acquisition announcements as proxy for short-term post-acquisition performance. Using a single index market model, CARs have been estimated for five-day event windows (-2 to +2) based on a 60-day estimation period from 90 days to 30 days prior to the acquisition announcement date (day 0).

In contrast to prior studies, we also use three-year buy-and-hold returns (BHRs) to capture the long-term performance of acquisitions. We include BHRs for two main reasons. First, some scholars (Datta et al., 2001; Loughran and Vijh, 1997) argue that it is hard to interpret CARs in a meaningful way. Second, less efficient capital markets in China make short-term measurement unreliable. The BHR_i is calculated as shown in (1), where day $t=1$ is the first trading day after the announcement date and $R_{i,t}$ is the daily stock return of stock i on day t .

$$BHR_i = [\prod_{t=1}^T (1 + R_{i,t}) - 1] \times 100 \quad (1)$$

BHRs are estimated based on a three-year period after announcements. Since there are, on average, 240 trading days each year, BHRs are based on 720 trading days.

4.3. Executive compensation variables

We investigate three types of executive compensation: stock options, managerial stock ownership, and cash compensation. Since many firms do not disclose option values or adopt different methods to value options, we use a dividend adjusted Black-Scholes model to value executive stock options. We then proxy stock option compensation as the value of options to the total value of options and cash pay. Managerial stock ownership is estimated as the percentage of shares managers own in terms of the number of outstanding shares at each year end. Cash compensation includes salaries, bonuses, and other cash payments disclosed in annual reports.

4.4. Control variables

Firm size, measured as the natural logarithm of total assets, is controlled as it has been

known to affect acquisitions (Amihud and Lev, 1981; Sanders, 2001). Financial leverage, defined as long- and short-term debt to total assets, has also been included to control for its impact (Jensen, 1986). Although the payment method is a significant variable in the M&A literature, we ignore it as over 90% of acquisitions are cash mergers (Kling and Weitzel, 2011). Some scholars (Morck et al., 1990; Sanders, 2001) argue that poor past performance induces managers to seek new opportunities. Yet, strong past performance can also lead to hubris making value-destroying mergers more likely Roll (1986). Hence, we include measures of past firm performance using annual stock returns and returns on equity.

Additionally, Lang et al. (1991) propose that investment opportunities, measured by Tobin's Q, can also affect firms' investment decisions. However, Tobin's Q not only captures growth potential, but also a firm's overvaluation, which shapes merger activities (Rhodes–Kropf et al., 2005). We decompose Tobin's Q into three components to control for firm-specific overvaluation, industry-specific overvaluation and long-term growth expectations, respectively (Jiang et al., 2017; Rhodes–Kropf et al., 2005).

We control for a firm's growth measured as the annual growth rate of total assets. Previous acquisition experience has also been found to influence activities (Sanders, 2001). We create a

dummy variable (MA experience) that is equal to one if the firm has at least one acquisition in the previous three years and zero otherwise. Table 1 provides an overview of all variables.

(Insert Table 1 here)

4.5. Method

First, we are interested in whether the two subgroups, active and less active firms, exhibit different patterns in executive compensation and post-acquisition performance. We thus use a parametric two-sample t-test to determine whether the groups' means differ. Second, we use multiple regressions to test the relationship between executive compensation and the level of acquisition activities. In models where the number of acquisitions refers to the dependent variable, an ordinary least squares regression is not appropriate. Thus, we employ a negative binomial regression model to cope with the over-dispersion of the dependent variable. To test Hypotheses 1a, 1b, and 2, we use the number of acquisitions firm i undertook in year t as the dependent variable and include compensation and control variables lagged by one year, unless otherwise stated. Lagging variables ensures explanatory variables are predetermined, i.e. weakly exogenous. We also include the square of stock ownership to capture its anticipated

non-linear relationship. To test Hypotheses 3 and 4, we use CARs and BHRs as dependent variables with similar controls. The Appendix provides the regression equations and further details. In line with Hypothesis 5, we anticipate that incentive compensation could influence investment decisions differently in non-SOEs and SOEs. Thus, we run the above regressions for SOEs and non-SOEs separately. We account for fixed effects and include industry and year dummies. Furthermore, all regressions are clustered within cross-sectional units. Clustered standard errors account for serial correlation, permitting that the error terms for one firm in year t and year $t-1$ are similar.

5. Empirical results

Table 2 reports summary statistics. Although the number of acquisitions has increased from 476 in 2005 to 1,741 in 2014, the average deal value has remained stable. The deal volume reached its peak at 713 million Yuan in 2006, which was a 268% increase compared to 2005. This peak resulted from a privatization wave and restructuring among SOEs.

(Insert Table 2 here)

Table 3 presents descriptive statistics based on 10,553 acquisitions from 2005-2014 and

firm characteristics of acquiring firms. Each firm undertook 2.94 acquisitions per year on average. Acquiring firms are large with an average market capitalization of 11.9 billion Yuan. It only takes around three months (87 days) to complete an acquisitions compared to five-month in the US (Grinstein and Hribar, 2004). The average cumulated abnormal returns (CARs) was 1.37% suggesting that Chinese markets reacted positively to M&A announcements. In contrast, CARs tend to be negative in developed markets (Morck et al., 1990). However, BHRs reached -17.54% on average, revealing poor long-term performance. Over 59% acquisitions occurred in the same industry. Over 30% of the acquisitions were undertaken by SOEs.

(Insert Table 3 here)

Table 4 shows compensation related variables. Only 356 firm-year observations contain stock options. If firms chose options, they accounted for a significant proportion (77.17%) of the total compensation. The average stock ownership of executives was 10.46%, relatively higher than the average 7% of managerial ownership overall for listed firms during the same period (Jiang et al., 2017).

According to Panel B of Table 4, the proportion of out-of-the money options and in-the-money options are almost equal. In contrast, Datta et al. (2001) finds that the majority (93.3%)

of U.S. stock options are at-the-money from 1993-1998. Finally, Panel C indicates that over 80% of firms award stock options with a vesting period between three and five years, while only 18% of the stock options have a vesting period over five years. Thus, when compared with the long-term nature of stock options in US firms, Chinese listed firms usually award mid-term stock options.

(Insert Table 4 here)

5.1. Active versus non-active acquiring firms

Table 5 reports the means of different types of compensation for active and non-active acquirers. Panel A indicates that active acquiring firm's award significantly lower managerial stock ownership (8.78%) than firms which are less active in making acquisitions (13.96%). In contrast, executives of active acquirers usually receive a significantly higher proportion of stock options (6.74%) than less active acquiring firms (2.95%) as shown in Panel B. Finally, Panel C reports that cash compensation for managers of active acquirers are significantly higher than in less active firms. The statistics support our hypotheses that different types of executive compensation exhibit an opposite impact on acquisition decisions.

(Insert Table 5 here)

Table 6 reports five-day (-2, +2) abnormal cumulative returns (CAR) and three year buy-and-hold returns (BHR) for the full sample and the two subgroups. As reported in Panel A, markets generally respond positively to acquisitions. Yet, acquisitions initiated by active acquirers usually trigger poorer market reactions. The results in Panel B indicate that long-term post-acquisition performance is, on average, negative for the full samples. However, less active acquirers demonstrate better BHRs.

(Insert Table 6 here)

5.2. Executive compensation and acquisition activity

Table 7 presents the results of the association between incentive compensation and acquisition activities. Model (1) only includes equity compensation to capture their main effects. Stock options are positively and significantly related to the number of M&As, supporting Hypothesis 1a instead of 1b. Managerial stock ownership demonstrates a non-linear impact on acquisition activities. When managers have small equity stakes, there is a positive correlation between managerial stock ownership and the number of acquisitions. However, the

significant quadratic term of stock ownership indicates that firms become less active in making acquisitions when managers have higher equity stakes. This supports Hypothesis 2. Model (2) reports the effects of control variables. We include both compensation variables and control variables in Model (3), excluding two control variables insignificant in Model (2). The results remain the same. Model (4) shows a fixed effects model. Except for stock options, the non-linear effect of managerial ownership on acquisitions is consistent. These results are in line with prior findings by Sanders (2001) but differ from Bliss and Rosen (2001). This may be because the study by Bliss and Rosen (2001) focuses on the banking industry.

(Insert Table 7 here)

We analyse the institutional impact by dividing the sample into SOEs and non-SOEs presented in Table 8. There is no association between the number of acquisitions, stocks options or stock ownership in SOEs, confirming Hypothesis 5.

(Insert Table 8 here)

5.3. Executive compensation and post-acquisition performance analysis

Tables 9 and 10 present the impact of executive compensation on CARs and BHRs. As

noted in Table 9, executive compensation does not seem to affect short-term market reactions to acquisition announcements. The results hold in both SOEs and non-SOEs. However, Table 10 presents a significant relationship between equity-based compensation and long-term BHRs. There is a negative association between stock ownership and BHRs at low levels of ownership and a subsequent positive association, supporting Hypothesis 4. Stock options are negatively associated with BHRs in non-SOEs. In contrast, neither stock options nor stock ownership matter for BHRs of SOEs, consistent with Hypothesis 5.

(Insert Table 9 and 10 here)

6. Discussion

This study explores the role of executive compensation in driving acquisitions and shaping post-merger performance. We selected China as our empirical setting due to a profound regulatory change in 2006, permitting stock options. Hence, the Chinese market serves as a laboratory to explore the impact of new instruments such as stock options on acquisitions.

6.1. Theoretical implication

Our work contributes to the compensation literature in terms of how executive pay affects acquisition decisions and performance. The dominant view posits that by aligning managers' interests with shareholders, equity compensation should reduce value-destroying acquisitions (Jensen and Meckling, 1976). However, poor acquisition performance seems to prevail (Morck et al., 1988).

Our findings show that stock options do not affect acquisition decisions in China. Managerial stock ownership, however, exhibits a non-linear impact. We find that managers are active in making acquisitions if they only own negligible to moderate levels of stock. However, they are less active in conducting acquisitions if their stock ownership is substantial. In line with the M&A literature, we show that frequent acquisitions are likely to destroy firm value. The resource-based view can explain this finding. M&A success largely depends on whether synergies materialise (Meyer and Peng, 2016). With limited firm resources, it is difficult for executives to manage many acquisitions within a short period successfully. This is especially the case in emerging countries where resource scarcity is more prevalent.

We find that the impact of compensation differs in SOEs and non-SOEs. In SOEs, neither

stock options nor managerial stock ownership matter, whereas managerial stock ownership is important in privately-owned firms. Managers in SOEs are less sensitive to executive pay as political promotions matter (Chen, 2005; Jiang et al., 2017).s

6.2. Practical implication

Our study also provides insights for policy makers. First, although executive compensation is used to provide incentives, it could become a concealing form of rent extraction by powerful managers when monitoring mechanisms are not in place. Different from stock options in developed countries, stock options in Chinese firms usually have more relaxed vesting conditions. For example, our data shows that almost 50% of stock options are in-the-money while over 97% of US firms are at-the-money. A common solution to this problem is to have appropriate vesting conditions for equity compensation.

6.3 Limitations

Inherently, our study has some limitations. First, since domestic M&As still dominate the Chinese acquisition market, we excluded cross-border transactions. However, both inbound acquisitions and outbound acquisitions of Chinese firms have becoming increasingly important

for international business. Further research could consider cross-board M&As. A second limitation relates to the compensation data. Since Chinese stock options are still in its infancy, we have only around 300 stock options in our sample. Third, since many target firms are non-listed firms, variables such as targets' market capitalization, acquisition premium and their post-acquisitions performance are not available.

7. Conclusion

The alleged impact of executive compensation on firms' acquisition decisions has triggered extensive in the literature. This study takes advantage of China's most recent compensation reform, providing new evidence to both strands of literature focusing on executive compensation and M&As. Our results show that compensation types (options versus equity stakes) and the institutional environment shape managerial decisions in M&As. We argue that more research, especially in emerging economies, is needed to ensure a more complete understanding of the impact of executive compensation on firms' decision making.

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Appendix: Equations

To test Hypotheses 1a, 1b, and 2, we use the following regression model, where the dependent variable $Acquisition_{i,t}$ is the number of acquisitions firm i undertook in year t and the compensation and control variables are lagged by one year (t-1), unless stated otherwise. We also include the square of stock ownership to capture its anticipated non-linear effect.

$$\begin{aligned} Acquisition_{i,t} = & \alpha + \beta_1 Option_{i,t-1} + \beta_2 Ownership_{i,t-1} + \beta_3 Ownership_{i,t-1}^2 + \\ & \beta_4 Cash\ Pay_{i,t-1} + \beta_5 Debt\ to\ Asset\ Ratio_{i,t-1} + \beta_6 Return\ on\ Equity_{i,t-1} + \\ & \beta_7 Stock\ Return_{i,t-1} + \beta_8 Industry - specific\ Overvaluation_{i,t-1} + \beta_9 Firm - \\ & specific\ Overvaluation_{i,t-1} + \beta_{10} Long - term\ Growth\ Expectation_{i,t-1} + \\ & \beta_{11} Firm\ Size_{i,t-1} + \beta_{12} Firm\ Growth_{i,t-1} + \beta_{13} M\&A\ experience_{i,t-1} + \\ & Industry\ fixed\ effects + Year\ fixed\ effects + \epsilon_{i,t-1} \end{aligned} \quad (2)$$

To test Hypotheses 3 and 4, we again use quadratic regression models to investigate the relationship between incentive compensation and short-term post-acquisition performance shown in (3). To capture long-term stock price performance, use BHRs instead of CARs.

$$\begin{aligned} CARs(-2, +2)_{i,t} = & \alpha + \beta_1 Option_{i,t-1} + \beta_2 Ownership_{i,t-1} + \beta_3 Ownership_{i,t-1}^2 + \\ & \beta_4 Cash\ Pay_{i,t-1} + \beta_5 Industry\ Diversity_{i,t-1} + \beta_6 Firm\ Size_{i,t-1} + \\ & \beta_7 State\ Control_{i,t-1} + \beta_8 M\&A\ experience_{i,t-1} + Industry\ fixed\ effects + \\ & Year\ fixed\ effects + \epsilon_{i,t-1} \end{aligned} \quad (3)$$

Table 1: Variable and definitions

Variables	Definitions
Acquisition	The number of acquisitions a firm undertakes each year
CARs	Cumulative abnormal returns
BHRs	Buy-and-hold returns
Stock option	The value of managerial stock options based on dividend adjusted Black-Scholes model at each year end
Stock ownership	The percentage of shares managers owned to firm's total outstanding shares at each year end
Cash pay	Executive's salary, bonus, and other cash payments reported in the annual report
Debt to equity ratio	Long and short-term debt to total assets
Firm size	Natural log of total assets
Firm growth	Annual growth rate of total assets
ROE	Return on equity
Stock return	Annual stock return
Industry-specific overvaluation	Decomposition of Tobin's Q to capture industry related overvaluation
Firm-specific overvaluation	Decomposition of Tobin's Q to capture firm related overvaluation
Long-term growth expectation	Decomposition of Tobin's Q to capture long-term growth expectation
MA experience	Dummy if firm have prior acquisition experience
State control	Dummy if firm's controlling shareholder is government

Table 2: Distribution of M&A deals

	Number of Acquisitions	% of Sample	Avg. Deal Value (in million yuan)
2005	476	4.51	193.36
2006	424	4.02	712.52
2007	751	7.12	400.57
2008	835	7.91	273.97
2009	884	8.38	413.94
2010	1,357	12.86	332.22
2011	1,587	15.04	233.67
2012	1,149	10.89	290.82
2013	1,349	12.78	359.05
2014	1,741	16.50	514.27
Total	10,553	100%	361.88

Table 3: Descriptive of Deal

Panel A: Deal Characteristics				
	N	mean	sd	median
Acquisition	10,553	2.94	2.53	2.00
Acquirer Market	7,329	11,888.31	29,998.85	6,059.18
Deal Equity Value	8,513	314.46	1414.23	60.00
Deal Target Value	7,576	988.33	5138.17	120.00
Completion (days)	2,739	87.04	152.57	27.00
CAR (%)	9,166	1.37	10.50	0.53
BHR	9,734	-17.54	57.78	-34.44
Industry Diversity	10,539	59.13	49.16	100.00

Panel B: Acquiring Firm Characteristics				
	N	mean	sd	median
Debt to Asset Ratio	10,553	0.46	0.21	0.48
Firm Size	10,552	21.80	1.14	21.68
Return on Equity	10,552	0.09	0.08	0.08
Stock Return	10,251	0.36	0.76	0.05
Firm Growth	9,103	0.20	0.24	0.14
Tobin's Q	10,553	1.78	1.36	1.39
Firm-specific	10,552	0.06	0.74	0.12
Industry-specific	10,552	0.04	0.35	0.05
Long-term Growth	10,552	0.14	0.39	0.20
State Control	10,551	0.31	0.46	0.00

Table 4: Executive Compensation of Acquiring Firms

Panel A: Compensation of Executives					
Compensation (in 1000 CNY)	N	Mean	P25	P50	P75
Cash Compensation	10,53	4,170	1,579	2,741.	4,657.
Stock Option Pay	356	65,470	8,079	35,81	79,796
Stock Option Pay (%)	355	77.17	99.96	99.99	100.00
Stock Ownership	10,55	10.46	0.00	0.01	8.64

Panel B: Type of Stock Option		
Type of Option	Frequency	% of Sample
Out of the Money	148	50.51
At the Money	0	0
In the Money	145	49.49

Panel C: Vesting Period of Stock Options		
Vesting Time (in years)	Frequency	% of Sample
$VEST \leq 3$	3	0.79
$3 < VEST \leq 5$	311	82.27
$5 < VEST \leq 10$	64	16.93

Table 5: Executive Compensation Categorized by Frequency of Making Acquisitions

Panel A: Managerial Stock Ownership (%)					
	Full Sample	Active	Less Active	Difference	Std. Error
MEAN	10.46	8.78	13.96	5.17***	0.41
N	10,552	7,134	3,418		
Panel B: Stock Option Pay (%)					
	Full Sample	Active	Less Active	Difference	Std. Error
MEAN	5.51	6.74	2.95	-3.79***	0.47
N	10,553	7,135	3,418		
Panel C: Cash Compensation (in 1000 CNY)					
	Full Sample	Active	Less Active	Difference	Std. Error
MEAN	4,170.60	4,710.06	3,043.25	-	111.50
N	10,530	7,122	3,408		

Note: Table 5 reports three types of executive compensation in the two subgroups, active acquiring firms and less active ones. We divide the sample according to the average number of acquisitions they conducted during the 10-year sample period. A firm is defined as an active acquirer if it undertook more than five acquisitions in the sample period. Panel A compares managerial stock ownership in the two groups. Results show that managers in less active acquiring firms own more firm equity than those in the active group. By contrast, Panel B shows that managers of less active acquiring firms have lower levels of stock option pay in their compensation package than those in the active group. The difference is also statistically significant. Similarly, Panel C shows the difference of cash compensation in the two groups. Less acquiring firms pay significantly lower cash pay than active acquiring firms.

Table 6: Post-acquisition Performance Categorized by Frequency of Making Acquisitions

Panel A: Five-day (-2, +2) CARs Categorized by Frequency of Making Acquisitions					
	Full Sample	Active	Less Active	Difference	Std. Error
CAR	0.01	0.01	0.02	0.01***	0.00
N	9,166	6,278	2,888		
Panel B: Three-year BHRs Categorized by Frequency of Making Acquisitions					
	Full Sample	Active	Less Active	Difference	Std. Error
BHR	-12.62	-16.93	-3.44	13.48***	1.75
N	9,734	6,627	3,107		

Note: Table 6 compares short and long-term post-acquisition performance in active acquiring firms and less active ones. Short-term post acquisition performance is measured as cumulative abnormal returns (CARs), and long-term post acquisition performance is measured as three-year buy-and-hold returns (BHRs). The table shows that less active acquiring firms on average exhibit higher CARs than active acquiring ones; however, the difference is small. Both groups of firms exhibit negative three-year BHR. However, the performance of active acquiring firms is significantly worse.

Table7: Impact of Incentive Compensation on Acquisitions

	[1]	[2]	[3]	[4]
Stock Option	0.280** (0.085)		0.120 (0.078)	0.096 (0.068)
Stock Ownership	1.514*** (0.346)		1.260*** (0.356)	1.272*** (0.353)
Stock Ownership2	-1.560** (0.584)		-1.327* (0.597)	-1.308* (0.592)
Cash Pay		0.000** (0.000)	0.000* (0.000)	0.000* (0.000)
Debt to Asset Ratio		-0.499*** (0.099)	-0.400*** (0.097)	0.387*** (0.099)
Return on Equity		0.294 (0.214)	0.323 (0.205)	0.325 (0.207)
Stock Return		0.103*** (0.022)	0.125*** (0.022)	0.119*** (0.032)
Industry-specific Overvaluation		0.215*** (0.049)	0.183*** (0.048)	0.467*** (0.095)
Firm-specific Overvaluation		0.029 (0.032)		
Long-term Growth Expectation		0.182 (0.113)		
Firm Size		0.205*** (0.039)	0.176*** (0.021)	0.180*** (0.022)
Firm Growth		0.644*** (0.070)	0.576*** (0.071)	0.589*** (0.071)
MA Experience		0.285*** (0.034)	0.276*** (0.034)	0.265*** (0.034)
lnalpha	0.310***	0.188***	0.170***	0.132***
YEAR FE				YES
INDUSTRY FE				YES
ll	-1.73e+04	-1.46e+04	-1.45e+04	-1.45e+04
chi2	306.799	662.678	726.162	434.110
N	15,056	12,779	12,779	12,779

Note: Table 7 shows the negative binomial regression results explaining the association between incentive compensation and acquisition activities. The dependent variable is the number of acquisitions a firm made during the sample period, and independent variables include different types of executive compensation.

Apart from Stock Option and Stock Ownership, we also include the square of stock ownership (Stock Ownership²) to capture its non-linear impact. Model (1) only includes equity compensation to capture their main effects. Model (2) reports effects of all other control variables. Model (3) considers compensation variables and control variables, excluding two insignificant control variables in Model (2). Finally, year and industry fixed effects are added in Model (4). All regressions are clustered within firm units. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 8: Impact of Incentive Compensation on Acquisitions in SOE and Non-SOE**Subgroups**

	Non-SOE		SOE	
	[1]	[2]	[3]	[4]
Stock Option	0.135 (0.081)	0.093 (0.067)	-0.038 (0.169)	-0.015 (0.181)
Stock Ownership	1.138** (0.370)	1.100** (0.360)	3.343 (2.684)	4.309 (2.77)
StockOwnership2	-1.201* (0.5612)	-1.116 (0.558)	-13.813 (14.878)	-15.651 (14.792)
Cash Pay	0.000* (0.000)	0.000* (0.000)	0.000 (0.000)	0.000* (0.000)
Debt to Asset Ratio	-0.346** (0.110)	-0.338** (0.113)	-0.518** (0.173)	-0.596** (0.175)
Return on Equity	0.065 (0.247)		0.880** (0.335)	
Stock Return	0.138*** (0.027)	0.101* (0.040)	0.129** (0.039)	0.180** (0.059)
Firm Size	0.146*** (0.027)	0.153*** (0.026)	0.252*** (0.036)	0.263*** (0.037)
Firm Growth	0.670*** (0.086)	0.713*** (0.086)	0.379** (0.125)	0.456*** (0.120)
MA Experience	0.265*** (0.042)	0.252*** (0.0402)	0.295*** (0.060)	0.277*** (0.061)
Industry-specific	0.237** (0.069)	0.432** (0.133)	0.062 (0.077)	0.338* (0.168)
lnalpha	0.094*	0.048	0.313***	0.272***
YEAR FE		YES		YES
INDUSTRY FE		YES		YES
ll	-9,997.567	-9,946.520	4,512.208	4,492.749
chi2	464.921	567.015	275.926	318.064
N	8,659	8,659	4,120	4,121

Note: Table 8 shows the negative binomial regression results explaining the association between incentive compensation and acquisition activities in two sub-groups: SOEs and Non-SOEs. A firm is classified as SOE if the state is the controlling shareholder. The dependent variable is the number the acquisitions a firm made each year. For comparison, we include year and industry fixed effects in Model (2) and (4). All regressions are clustered within firm units. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 9: Impact of Compensation on Five-day (-2, +2) Cumulative Abnormal Stock Returns Around Acquisition Announcement

	Full Sample	SOE	Non-SOE
Stock Option	-0.006 (0.010)	0.030 (0.019)	-0.008 (0.011)
Stock Ownership	-0.067 (0.039)	0.188 (0.299)	-0.065 (0.040)
Stock Ownership2	0.087 (0.063)	-1.097 (1.10)	0.085 (0.065)
Cash Pay	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Industry Diversity	-0.007* (0.003)	-0.003 (0.005)	-0.008 (0.004)
Firm Size	-0.008*** (0.002)	-0.006 * (0.003)	-0.010*** (0.002)
State Control	-0.002 (0.004)		
MA Experience	-0.009* (0.004)	-0.008 (0.007)	-0.010* (0.005)
YEAR FE	YES	YES	YES
INDUSTRY FE	YES	YES	YES
R ² -adjusted	0.017	0.012	0.022
F-statistics	3.450	1.541	3.322
<i>p</i> -value	0.000	0.030	0.000
N	4,649	1,333	3,316

Note: Table 9 shows the multivariate estimation of short-term post-acquisition performance measured by five-day cumulative abnormal returns (CARs) against different types of executive compensation. Control variables include Firm Size, MA experience, Industry Diversity and State Control. The first column is based on the full sample. Column 2 and 3 reports results for the subgroups, SOE and Non-SOEs, respectively. We also control for year and industry fixed effects. All regressions are clustered within firm units. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 10: Impact of Compensation on Post-acquisition Three-year Buy-and-Hold-Returns

	Full Sample	SOE	Non-SOE
Stock Option	-0.750 (0.464)	0.800 (2.360)	-0.943* (0.472)
Stock Ownership	-13.044*** (2.550)	-26.281 (14.995)	-12.185*** (2.623)
Stock Ownership ²	10.394* (4.200)	-3.317 (53.688)	9.130* (4.289)
Cash Pay	-0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)
Firm Size	-0.800*** (0.137)	-0.828*** (0.251)	-0.784*** (0.160)
Industry Diversity	-0.239 (0.208)	-0.392 (0.371)	-0.205 (0.249)
MA Experience	-0.436 (0.240)	-0.322 (0.396)	-0.510 (0.299)
YEAR FE	YES	YES	YES
INDUSTRY FE	YES	YES	YES
R ² -adjusted	0.189	0.152	0.200
F-statistics	34.160	8.817	27.029
<i>p</i> -value	0.000	0.000	0.000
N	4,695	1,353	3,342

Note: This table presents ordinary least squares (OLS) regressions to assess the impact of executive compensation on post-acquisition performance. The dependent variable is long-term post-acquisition performance measured by the three-year buy-and-hold return (BHRs). Independent variables include Stock Option, Stock Ownership, and the square of stock ownership (stock ownership²) to capture its non-linear impact on performance. Year and industry fixed effects are included in all models. Column 1 reports the result for the full sample, and column 2 and 3 are based on SOEs and Non-SOEs, respectively. All regressions are clustered within firm units. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

ⁱ The China Securities Regulatory Commission (CSRC) released the “Measures for the Administration of Stock Incentive Plans of Listed Companies” on December 31, 2005.

ⁱⁱ Mixed Ownership Reform was first introduced in the 1990's to reform the sole ownership structure of state-owned enterprises (SOEs). By introducing private sector investment and management into SOEs, this reform seeks to increase corporate governance and efficiency.