One Size Fits All? The Effectiveness of Incentive Compensation in Public Acquisitions

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ABSTRACT

This paper provides new evidence on the relation between incentive compensation and acquisition performance. We find that higher sensitivity of executives' wealth to stock-price changes, Delta, is positively associated with post-acquisition stock-price performance and that higher sensitivity of executives' wealth to stock-return volatility, Vega, leads to risk-increasing acquisitions only when the target is a non-publicly listed firm. In public deals, we find no difference in the deal synergies available to acquiring firm's shareholders between high and low incentivised managers and no relation between incentive compensation and the quality of M&A decisions in terms of risk and stock-price returns. Our results are robust to a number of deal and firm characteristics and to controls for selection bias and endogeneity. Our findings suggest that when a publicly listed firm is acquired, the increased negotiation power of the target and information asymmetry considerations offset the positive impact of incentive compensation on both stock-price performance and risk-taking

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1. Introduction

Mergers and acquisitions (M&As) can be considered as one of the most important investment decisions managers make in terms of resource allocation and value creation (Shleifer and Vishny, 1988; Harford and Li, 2007; Zhao, 2013). However, the decision to acquire does not always benefit the shareholders of the bidding firm (Loughran and Vijh, 1997; Moeller et al., 2004). Previous research documents significant losses for acquiring shareholders in public deals (Fuller et al., 2002; Faccio et al., 2006) whereas acquirers of private targets appear to experience positive gains (Conn et al., 2005; Draper and Paudyal, 2006). While a number of possible explanations have been given in the literature for this phenomenon (Hansen and Lott, 1996; Chang, 1998; Fuller et al., 2002; Officer et al., 2009) no study so far has considered the role of managerial incentives in explaining differences in performance between acquirers of public and non-public firms.

The way executives are compensated is believed to play an important role in mitigating the principal-agent problem initially identified by Jensen and Meckling (1976). Shleifer and Vishny (1988) suggest that providing managers with some form of incentive compensation such as share ownership can align their interests with those of shareholders improving the quality of managerial decisions. More recent studies have found strong evidence to support the benefits of incentive compensation showing that it can strengthen company performance (Murphy, 1999; Core et al., 2003) and increase shareholder value (Billet et al., 2010). In the area of M&As, Datta et al., (2001) and Minnick et al., (2011) document a positive relation between equity-based compensation and deal performance. Incentive pay can further benefit shareholders by mitigating managerial risk aversion inducing managers to invest in risky profitable projects that they may otherwise forgo (Agrawal and Mandelker, 1987; Guay, 1999;

Coles et al., 2006). Better incentivised managers are found to make riskier acquisition decisions creating value for acquiring shareholders (Datta et al., 2001; Croci and Petmezas, 2015).

Using an extended sample (1993-2010) of U.S. mergers and acquisitions, this paper investigates for first time the role of compensation-related incentives in the quality of corporate acquisition decisions conditional on the legal status of the target firm. Given that appropriately structured executive compensation contracts can mitigate agency costs and benefit shareholders, the value destruction of acquiring shareholders in public deals is likely to result from suboptimal compensation contracts or perverted incentives of the acquiring managers. Alternatively, managers may respond differently to the same incentives conditional on the legal status of the target firm. The latter can in turn be related to a number of other factors such as information asymmetry or the increased negotiation power of publicly listed firms (Officer, 2007) that can render incentive compensation inefficient in public deals.

Confirming previous research findings (Fuller et al., 2002; Conn et al., 2005; Faccio et al., 2006), we show that acquirers of publicly listed firms experience lower announcement and long-run abnormal returns relative to acquirers of non-public firms. We further contribute to the literature by providing new evidence on the relation between incentive compensation and the quality of acquisition decisions. We find that, according to our expectations, better incentivised managers experience higher post-acquisition short and long-run returns and make riskier decisions when the target is not a publicly listed firm. However, we provide empirical evidence that compensation incentives are rendered inefficient in public deals. Our results show that better incentivised managers who acquire public targets fail to offer higher synergies in the short-run or improved long-run stock-price performance to their shareholders. Moreover, although pubic deals appear to increase the volatility of bidder's stock returns significantly more than non-public deals, we find that the higher riskiness of public deals is not related to

risk-taking incentives that acquiring managers are provided with via their compensation contracts.

In addition, our results reveal another striking view: although acquisitions of public targets are, theoretically, different type of deals than acquisitions of non-public firms, both types of acquiring managers are provided with similar equity-related incentives. Nevertheless, this "one size fits all" approach does not appear to work in the case of public deals. Our results can therefore have important implications for market participants. Independent remuneration committees should take the strategic objectives of the firm into account when designing executive compensation contracts. Given the potentially high cost of equity-related incentives to company shareholders, compensation contracts of managers that plan to expand by acquiring publicly listed firms should be redesigned so that to keep such costs to the minimum and, at the same time, achieve value-maximisation objectives.

The decreased efficiency of incentive compensation in public deals can be attributed to a number of reasons including the increased bargaining power of public targets (Officer, 2007) and the more efficient disclosure or information between the bidder and target shareholders (Conn et al., 2005) in private deals. Moreover, equity-related incentives provided to the managers of publicly listed targets can offset the impact of those provided to the managers of the acquiring firm. Therefore, the same type of compensation incentives may be perceived differently by acquiring managers conditional on the legal status of the target firm. Overall, the findings of this paper suggest that the inefficiency of incentive compensation contracts in acquisitions of publicly listed firms can, at least partly, provide an explanation for the value destruction of acquiring shareholders in such type of deals.

The rest of the paper is organised as follows: Section 2 provides a review of the literature followed by Section 3 that develops our hypotheses. Section 4 outlines the

construction of the sample. Section 5 presents descriptive statistics of the variables included in the analysis and Section 6 presents and discusses the empirical results. Section 7 concludes.

2. Target Status and Deal Performance

There is extensive evidence that the bidding shareholders lose when a public firm is acquired. Hansen and Lott (1996) show that acquirers of private targets experience on average two percent higher abnormal returns compared to acquirers of public targets. Fuller et al. (2002) report positive gains for acquiring shareholders when a private firm is acquired but significant losses for the bidding firm when the target is a publicly listed firm. Similarly, Officer et al. (2007) find lower announcement returns for bidding firms in public deals relative to those in private deals.

Deal underperformance when a publicly listed firm is acquired is also documented by studies that examine M&A activity outside the US. Using a sample of UK mergers and acquisitions, Conn et al. (2005) find negative announcement returns for domestic public acquisitions but positive returns for domestic private deals. Regarding long-run post-acquisition performance, acquirers of public targets experience negative returns while the long-run returns of acquirers of private targets are not statistically different than zero. Examining mergers and acquisitions in 17 Western European countries, Faccio et al. (2006) document significant positive abnormal returns for acquirers of unlisted targets but insignificant negative abnormal returns for acquirers of listed firms. In addition, they show that the target listing effect persists across countries and through time. In another UK study, Draper and Paudyal (2006) find that acquirers of private firms earn significant positive announcement returns while acquirers of listed firms either break-even or suffer small losses. In line with the findings of Faccio et al. (2006), Draper and Paudyal (2006) show that the target listing effect is persistent over time.

The underperformance of public deals is also implicitly evident from studies that examine acquisitions of publicly listed firms only. For instance, Travlos (1987) documents significant losses for acquiring shareholders at the announcement of stock deals when a public firm is acquired. In contrast, Chang (1998) find significantly positive abnormal returns for the bidding firm when a privately held firm is acquired using stock. Morck et al. (1990) find a negative relation between acquisition abnormal returns and diversifying deals but their study is based on acquisitions of public targets only. Similarly, the study of Andrade et al. (2001) that documents significantly negative abnormal long-run returns for the acquiring firm is based on a sample of public deals.

3. Explanation of Public Deals Underperformance and Hypotheses Development

A number of different explanations have been provided for the documented underperformance of the acquiring firms in public deals. Acquiring shareholders in private stock deals may be benefited from the creation of large blockholders from the target shareholders who can act as effective monitors of managerial performance (Chang, 1998; Fuller et al., 2002). In contrast, this does not happen when publicly listed firms are acquired.

Hansen and Lott (1996) argue that bidders' underperformance in public deals cannot be explained by differences in the degree of freedom between private and public targets. If private targets have more freedom in choosing the most appropriate to them auction method compared to public targets[1] then the bidders' gains in public acquisitions should have been larger than those in private deals. Officer (2007) attributes this phenomenon to the greater bargaining power of public targets relative to private targets showing that shareholders of private firms depend more on the bidding firm to allow them to sell out and meet their liquidity

[1] Public targets may be restricted by legal requirements in choosing their auction methods (Hansen and Lott, 1996).

needs. In a later paper, Officer et al. (2009) argue that information asymmetry can also explain the lower announcement returns in public deals as the market appears to react more positively to acquisitions of "difficult-to-value" firms. In an international study, Alexandridis et al. (2010) find that that the distribution of acquisition gains between acquiring and target shareholders depends on the level of competition in the market for corporate control. They show that acquirers in less competitive markets than the United States, United Kingdom, and Canada realize gains in public acquisition announcements whereas target shareholders gain significantly less.

This study identifies and covers an important literature gap by examining the role of managerial incentives in explaining differences in performance between public and non-public deals. The purpose of incentive compensation is to mitigate agency costs by tying the wealth of managers to that of shareholders. Datta et al. (2001) and Lahlou and Navatte (2017) show that acquiring managers with higher proportions of equity-based compensation make better acquisition decisions experiencing higher announcement and long-run abnormal returns compared to lower incentivised managers. Minnick et al. (2011) also provide supportive evidence of the positive relation between incentive compensation and deal performance showing that acquisitions made by managers with high pay-for-performance sensitivity (Delta) earn higher announcement returns and experience greater improvements in the operating performance compared to deals initiated by managers with low pay-for-performance sensitivity. Boulton et al. (2014) find that managers with a higher proportion of equity-based compensation are more likely to acquire private firms which are not associated with value destruction for acquiring shareholders.

Therefore, given that acquiring shareholders lose in public deals, we posit that the incentives provided to acquiring managers of public targets cannot efficiently mitigate agency

costs and lead to value-increasing decisions. Incentive compensation can be rendered inefficient in public deals for a number of reasons. The higher bargaining power of public targets (Officer, 2007; 2009) along with the increased levels of information asymmetry between the bidder and target shareholders (Conn et al., 2005) are likely to offset the positive impact of incentive compensation on the quality of acquisition decisions in public deals. In addition, equity-related incentives provided to the directors of publicly listed targets can have an opposing and offsetting impact on those provided to acquiring managers given the conflict of interests between the bidder and the target. Consequently, even if acquiring managers of public targets are provided with the same incentives as their counterparts who acquire non-public firms, these incentives may be rendered inefficient as they are perceived differently by acquiring managers in public deals. In order to test whether differences in performance between public and non-public deals can be explained by managerial incentives, we propose the following hypothesis:

H_1: Deal performance is positively related to compensation incentives only when the target is a non-publicly listed firm.

Furthermore, the value destruction in public acquisitions is likely to stem from increased managerial risk-aversion. Smith and Stulz (1985) argue that if managers are not provided with sufficient incentives via their compensation contracts, they are likely to forgo valuable projects that increase firm risk. Datta et al. (2001) find that equity-based compensation mitigates managerial risk-aversion and leads to value and risk increasing acquisitions. Edmans and Gabaix (2011) argue that risk-averse managers should be provided with greater risk-taking incentives in order to be sufficiently induced to take on risky projects. Confirming the predictions of Edmans and Gabaix (2011), Croci and Petmezas (2015) find a positive relation between pay-risk sensitivity (Vega) and the riskiness of acquisition decisions.

Usually, non-public targets are associated with higher information asymmetry (Officer et al., 2009) due to the lower volume of publicly available information for such type of firms. On the other hand, Conn et al. (2005) note that acquirers are able to disclose private information more efficiently to the concentrated shareholders of a private target due to the lack of publicity surrounding private deals. The latter mitigates, at least partly, information asymmetry concerns when a privately held firm is acquired. Risk-averse managers are likely to forgo acquisition decisions characterised by high levels of information asymmetry unless they are provided with sufficient incentives to overcome such concerns. Therefore, if managers are not provided with the appropriate risk-taking incentives, they are more likely to be engaged in public deals given that it is, generally, easier to access information about publicly listed firms. In other words, risk-averse managers can forgo valuable but riskier acquisitions of private targets when risk-taking is not efficiently induced by their compensation contracts. In order to examine whether the riskiness of acquisition decisions conditional on the legal status of the target firm is related to risk-taking incentives, we propose the following hypothesis:

H_2: Risk-taking incentives are positively associated with the riskiness of acquisition decisions only when the target is a non-publicly listed firm.

4. Data and Sample Selection

4.1 Sample Selection Criteria

The sample contains all completed domestic US[2] mergers and acquisitions with an announcement and effective date between January 1, 1993 and December 31, 2010 using the SDC Platinum database. Following Aktas et al. (2013), the selected transactions are those that have been classified as mergers, acquisitions, acquisitions of majority interest, acquisitions of

[2] Both the bidder and the target are US firms.

assets, acquisitions of certain assets, acquisitions of remaining interest, and exchange offers. In addition, the disclosed deal value of the transaction should be at least $1 million[3], the acquirer[4] should be a publicly listed company owning less than 50 percent of the target's shares six months prior to the acquisition announcement and hold at least 50 percent after the transaction so that an explicit change of control can be ensured. The number of transactions that meet these criteria is 28,751.

We match these transactions to firms in the Standard and Poor's ExecuComp database for executive compensation data. ExecuComp provides compensation data on the top five highest compensated officers for firms in the S&P 1500 Index. We require that the acquiring firm should have executive compensation data available in ExecuComp for the year preceding the acquisition announcement to control for the possibility that executive compensation has been affected by the transaction. Since ExecuComp does not provide compensation data prior to 1992, the starting year of our M&A sample is 1993. The final sample selection criterion is the availability of stock price and accounting data for the bidding firm at the time of the acquisition announcement in the merged CRSP/Compustat database. The sample ends in 2010 so that a three-year post-acquisition stock-price performance can be calculated. The final sample size is 7,859 transactions made by 1,926 firms.

4.2 Compensation Variables

The analysis is based on compensation characteristics of the top management team which is defined as the top five executives as ranked by the ExecuComp database. Coles et al.

[3] All dollar values in the analysis are adjusted for consumer price inflation and expressed in 2010 USD. The inclusion of the deal value criterion is important for the analysis as SDC Platinum does not report method of payment for those transactions without a disclosed deal value.

[4] Since all transactions in our sample are completed acquisitions, the terms acquirer and bidder or acquiring and bidding firm are used interchangeably.

(2006) argue that the vast majority of studies that examine the effectiveness of executive compensation incentives use simplified proxies to capture managerial incentives such as the value and volume of new options and stock grants, scaled and unscaled numbers of options and stock held, the sum of these etc. However, such variables are only noisy proxies of managerial incentives and are disconnected from important characteristics of incentive compensation as the latter are captured by Delta (pay-performance sensitivity) and Vega (pay-risk sensitivity) (Core and Guay, 2002; Coles et al., 2006). For instance, new stock and option grants ignore the impact of previous grants on managers' option portfolio while scaled numbers of options and stock held do not take into consideration important aspects of the equity portfolio such as the time to maturity, exercise price and the volatility of the underlying asset).

We therefore, define *Delta* as the dollar change in the wealth of the top five executives for a one percent change in the firm's stock price and *Vega* as the dollar change in the wealth of top five executives for a one percent change in the standard deviation of the firm's stock returns. The calculation of *Delta* and *Vega* follow the approach developed by Core and Guay (2002) and Coles et al., (2006) based on the Black-Scholes (1973) option valuation model as modified by Merton (1973) to account for dividends. Similar to previous studies, we also control for the impact of cash compensation in our analysis defining *Cash_Comp* as the sum of salary and bonus payments to the top five executives. Furthermore, parts of the (univariate) analysis scale the above compensation variables by total compensation to control for firm size. Total compensation (*Total_Comp*) is defined as the sum of top five executives' salary, bonus, new stock and option grants and other forms of compensation from ExecuComp. Lagged values of compensation variables are used in the analysis when examining firm performance so that to ensure that compensation incentives have been granted before the acquisition decision.

5. Descriptive Statistics

5.1 Sample Distribution

Table 1 presents the distribution of mergers and acquisitions in our sample. The effect of the dotcom crash in 2001 and global credit crunch that started in 2007 is evident from the substantial drop in acquisitions during these periods. Public deals are 24 percent of the total sample and they show a similar distribution with a peak at the late 90s just before the corporate scandals in the US and the substantial drop in stock prices after the crash of the internet bubble in 2001[5]. M&A activity regarding subsidiary and public deals follows a similar pattern.

Table 1 also presents information on the relative size of M&A deals over time. *Relative_Size* is the value of the transaction as reported in SDC Platinum divided by the market capitalization of the acquirer 4 weeks before the acquisition announcement. Bidders make relatively more expensive acquisitions (14 percent of their market value) during the period of intense M&A activity between 1995 and 2000. The average value of transactions falls to 11 percent after 2000 to result in an average deal size of 12 percent for the total sample period. Asquith et al. (1983) find a positive relation between relative size and bidder announcement returns while Travlos (1987) reports a negative one.

Table 1 also presents the distribution of the method of payment as it has been found to be an important determinant of deal performance (Travlos, 1987, Datta et al., 2001; Golubov et al., 2012) and it therefore forms a key variable in our analysis. *Payment_Cash* is a dummy variable that takes the value of one if the deal is financed only with cash and zero otherwise. *Payment_Equity* is a dummy variable that takes the value of one if the deal is financed only with stock and zero otherwise. *Mixed_Financing* is a dummy variable that takes the value of one if the deal is financed with more than one means of payment (for example, cash plus equity,

[5] Moeller et al. (2004) and Masulis et al. (2007) note a similar pattern.

equity plus debt, earnout plus cash or any combination of these) and zero otherwise. Cash transactions dominated the sample period with 4,034 transactions (51 percent of the total sample) compared to 1,500 equity (19 percent) and 2,325 (30 percent) mixed financing transactions.

5.2 Summary Statistics

Table 2 presents summary statistics for all compensation variables and firm characteristics included in the analysis. As noted in Section 4.2, all acquiring firms included in the sample have compensation data available in ExecuComp database for the year preceding the acquisition announcement which can be seen from the number of observations of *Cash_Comp* and *Total_Comp*. However, for 260 acquiring firm-years, the data provided by ExecuComp are not sufficient for the computations of *Delta* and *Vega* of the top five managerial portfolio. The average management team in our sample receives a total annual compensation of $17m of which 28 percent is provided in the form of cash compensation (salary and bonus). The total wealth of the top five acquiring executives changes by $3m per annum on average for a one percent change in the firm's stock price (*Delta*) and increases by $440,000 if the volatility of the firm's stock returns increases by one percent (*Vega*). These figures are comparable to those of previous studies (Coles et al., 2006) after taking into account inflationary differences[6] and the fact that we have a number of big multiple acquirers in our sample[7].

All control variables included in the analysis have been identified as important determinants of bidder's performance by previous studies. *Size* is the natural logarithm of bidder's market value four weeks preceding the acquisition announcement date. Moeller et al.

[6] Coles et al., (2006) report all dollar values in 2002 USD whereas we use 2010 as our base year.
[7] It has been shown that there is a strong positive relation between firm size and executive compensation (Khorana and Zenner, 1998; Bliss and Rosen, 2001)

(2004) show that large acquiring firms experience lower announcement period returns than small bidders irrespectively of other firm and deal characteristics. *Leverage* is calculated as the acquirer's book value of total debt divided by book value of total assets at the end of the year preceding the acquisition announcement. Maloney et al. (1993) find a positive relation between leverage and acquisition performance and a negative relation between firm size and leverage. Along with the findings of Moeller et al. (2004), these results suggest that small firms with higher levels of debt are likely to make more successful acquisitions. The average and median firm size in our sample are very similar to each other (about $14 billions) while the average acquiring firm employees leverage equal to 23 percent of its total assets.

Runup is the acquiring firm's buy-and-hold return from 205 days to 6 days before the acquisition announcement date minus the buy-and-hold return of the matched firm for the contemporaneous period. In line with previous studies, our sample bidders are matched with non-acquiring firms[8] (firms that have not been involved in any acquisition activity for a 3-year period surrounding the effective day) based on year, industry[9], market capitalization value and book-to-market ratio[10]. If a matched firm is delisted before the completion of the three-year post-acquisition period, it is substituted with the next closest matched firm on the delisting date[11]. Controlling for past stock price performance is important as previous research has documented a negative relation between acquirers' run-up and acquisition returns (Rosen, 2006). Furthermore, according to Jensen's (1988) theory of free cash flows, managers of good

[8] Harford and Li (2007), Duchin and Schmidt (2013).
[9] Billett et al. (2010), Duchin and Schmidt (2013). Industries are defined based on the Fama and French (1997) classification of 48 industries
[10] Barber and Lyon (1997) note that empirical test statistics are well-specified when they are based on the size and book-to-market ratio control firm approach. See also Spiess and Affleck (1999) and Datta et al. (2001).
[11] 30 acquirers without available data on market capitalization and book-to-market value in the year end before the announcement are excluded from the analysis. 747 out of the remaining 7,829 transactions are matched with two firms as the first matched firm is delisted before the passage of three years from the transaction date. Similarly, 81 acquirers are matched with three firms and 14 acquirers are matched with four firms that best meet the matching criteria. In 5 cases where no match was possible after the delisting of the first two best matched firms, the industry criterion was dropped.

past performers may destroy value in acquisitions by overpaying for targets. When the acquirer overpays for the target, the market reaction is expected to be negative (Baker et al., 2012). In line with expectations, Table 2 shows that the majority of acquirers in our sample have experienced positive abnormal returns in the period preceding the acquisition announcement. As a further control for managerial hubris we calculate the amount of cash available to acquiring managers as excess cash can increase managerial hubris resulting in poor acquisition decisions (Harford, 1999). Following Coles et al. (2006), *Cash/Assets* is defined as bidder's cash and cash equivalents divided by the book value of total assets at the end of the year preceding the acquisition announcement. In addition, as the time period the CEO has remained in the office can increase managerial entrenchment (Hermalin and Weisbach, 1998), we define *CEO_Tenure* as the number of months the CEO is in the office before the acquisition announcement.

Conn et al., (2005) find that acquirers with low book-to-market ratio (Glamour firms) underperform in public acquisitions but not in private acquisitions. In contrast, only high book-to-market bidders experience negative long-term returns in private acquisitions. Dong et al. (2006) document a positive relation between bidder's book-to-market ratio and acquisition announcement returns. Similarly, Rau and Vermaelen (1998) show that the poor bidder's post-acquisition performance can be attributed to acquirers with low book-to-market ratio. We control for this factor by including acquirer's *B/M* ratio in the analysis. *B/M* is defined as the book value of equity of the acquiring firm divided by its market value at the end of the year before the acquisition announcement.

Table 2 also presents summary statistics of a number of other firm characteristics that previous research has identified as important determinants of deal synergies, stock return volatility, *Delta* and *Vega* that are also examined in this paper. *ROA* is the operating income of the acquiring firm before depreciation divided by book value of total assets at the end of the

year preceding the acquisition announcement. *Sales_Growth* is defined as the logarithm of the ratio of bidder's sales in the year preceding the acquisition announcement (t-1) to sales in the previous year (t-2). Since risk-taking incentives are positively related to the firm's investment opportunities (Guay, 1999) a positive relation between sales growth and firm risk is expected. *Sigma* is the standard deviation of the acquirer's market-adjusted daily returns from 205 to 6 days before the acquisition announcement date and is used as a determinant of synergy gains (Golubov et al., 2012). *R&D* is the acquirer's research and development expenditure to book value of total assets at the end of the year preceding the acquisition announcement[12]. *Net_PPE* is defined as the acquirer's net expenditure in property, plant and equipment scaled by total assets at the end of the year before the acquisition announcement. *CAPEX* is the capital expenditures of the acquiring firm scaled by total assets at the end of the year preceding the acquisition announcement. A positive relation between firm risk and *R&D* is expected while risk averse managers are expected to invest a higher a proportion of capital in *Net_PPE* and *CAPEX* (Coles et al., 2006; Cohen et al., 2013). The values of all variables presented in this section is similar to those reported in previous studies (Core and Guay, 2002; Coles et al., 2006, Cohen et al., 2013, Croci and Petmezas, 2015) and their definitions are summarized in the Appendix.

6. Empirical Results

6.1 Target Status and Executive Compensation

Table 3 compares compensation characteristics of acquiring managers that make public acquisitions with those of managers that acquire non-public firms. Panel A shows that acquirers of public targets provide stronger incentives to their managers compared to acquirers of non-public targets. The average *Delta* is 2.207m dollars higher for managers that acquire public

[12] In accordance with previous studies, this value is set equal to zero when missing from Compustat.

firms than that of managers who initiate non-public deals. Similarly, the average *Vega* is 138,340 dollars higher for acquirers of public targets relative to acquirers of non-public targets. Acquiring managers of public targets also appear to be more generously compensated in terms of salary and cash bonuses as their average cash compensation is higher by 1.257m dollars compared to that of managers who make non-public acquisitions. All differences are significant at the 5 percent level or better.

However, the analysis in Panel A is based on dollar values raising concerns that the results may be driven by firm size. This emanates from the fact that public firms are more likely to be acquired by large bidders and that executive compensation increases with firm size (Khorana and Zenner, 1998; Bliss and Rosen, 2001). Based on the findings of Edmans et al. (2009) that the dollar change in executives' wealth from stock and option holdings divided by total annual compensation is independent of firm size, Panel B presents compensation characteristics scaled by total compensation. The results show that, controlling for firm size, acquiring managers of public targets are not better incentivised than their counterparts who acquire private or non-public firms. *Delta* and *Vega* are still higher for acquiring managers of public firms but the differences are now statistically insignificant. In contrast, acquirers of non-public targets appear to receive a higher proportion of cash compensation with the difference being statistically significant at the 1 percent level. The absence of statistical significance in the difference between equity-related incentives (*Delta* and *Vega*) provided to the acquiring managers of public and non-public targets mitigates potential endogeneity concerns as compensation committees appear to provide the same type of incentives to acquiring managers regardless of whether the latter initiate acquisitions of public or non-public firms. However, given that acquirers of non-public targets receive a higher proportion of cash compensation than acquirers of public targets, an element of differentiation still remains in their compensation contracts. Since a high level of cash compensation can be associated with increased managerial

entrenchment and risk aversion (Berger et al., 1997), acquiring managers of non-public targets are likely to make less risky acquisitions than their counterparts who acquire publicly listed firms.

6.2 Target Status, Deal Performance and Managerial Incentives

6.2.1 Univariate Analysis

Table 4 compares short and long-run stock-price performance between bidders of public and non-public deals. Acquisition announcement returns are measured by *CARs(-5,+5)* which is calculated as the bidder's cumulative abnormal returns over an eleven-day window around the acquisition announcement date using the market model. The estimation period is from 200 days to 60 days preceding the acquisition announcement date. The CRSP value-weighted index is used for the calculation of market returns in line with previous studies[13]. If a firm has made more than one acquisition announcements at the same date, only the first one is included in the calculation of *CARs(-5,+5)* in order to maintain independence of observations. Outliers at the 1 percent and 99 percent percentiles are also excluded from the analysis[14]. In line with previous research findings, the results show that the market reacts more positively to acquisition announcements of non-public targets (Fuller et al., 2002; Draper and Paudyal, 2006; Officer et al., 2007). Acquirers of public targets experience significantly lower mean (-2.01 percent) and median (-1.60 percent) announcement returns than bidders for non-public targets. Moreover, acquirers' CARs in public deals are negative and statistically significant whereas acquirers of non-public targets earn significantly positive announcement returns. All results are significant at the 1 percent level.

[13] See for example, Antoniou et al. (2008), Golubov et at. (2012), Alexandridis et al. (2013).
[14] The results remain identical if outliers are not excluded from the analysis.

Acquirer's long-run post-acquisition stock-price performance is measured by the 3-year abnormal buy-and-hold return. *3yABHR* is calculated as the bidder's 3-year buy-and-hold return following the acquisition effective date minus the 3-year buy-and-hold return of the non-acquiring matched firm for the same period. The matching criteria are similar to those described in Section 5.2. Similarly to the methodology followed in the calculation of CARs, only the first deal is included when a bidder makes more than one acquisitions on the same date. Outliers at the 1 percent and 99 percent percentiles are also excluded from the analysis[15]. Table 4 shows that acquirers of public targets also underperform in the long-run in line with the evidence provided by prior studies (Andrade et al., 2001; Conn et al., 2005). The average (median) 3-year ABHR is lower by 6.6 percent (6.5 percent) for acquirers of public firms compared to acquirers of non-public targets. In addition, acquirers of non-public targets experience positive and statistically significant (at the one percent level) long-term returns while the average and median 3-year ABHR of public deal bidders are not statistically different than zero at the 1 and 5 percent levels.

The (univariate) results so far show that acquirers of public targets experience significantly inferior short-run and long-run stock price performance confirming previous relative research that acquisitions of publicly listed firms destroy value for acquiring shareholders. However, Table 3 shows that managers who acquire public firms are not provided with significantly different equity-related incentives relative to managers that acquire non-public targets. Whether these compensation contracts have different impact on the quality of public and non-public deals will be tested in a multivariate setting in the next Section.

[15] The results do not change when these criteria are dropped.

6.2.2 Acquisition Announcement Returns

Table 5 presents the results of multivariate OLS regressions of acquirer's CARs on executive compensation[16] and other firm and deal characteristics. The dependent variable is the bidder's eleven-day (-5,+5) cumulative abnormal return around the announcement date. Apart from firm-specific characteristics that were discussed earlier, we also control for the method of payment as there is empirical evidence that bidders experience lower returns when they finance their acquisition with equity (Travlos, 1987) which can be due to signalling of assets overvaluation when managers choose to finance investments by equity (Myers and Majluf, 1984). Furthermore, it has been documented that diversifying acquisitions are associated with negative abnormal returns around the announcement date (Morck et al., 1990; Cornett et al., 2003). To capture the impact of diversifying deals on bidder's performance, we use the dummy variable *Diversifying* that takes the value of one if the acquirer and the target operate in different industries and zero otherwise[17]. All multivariate models hereupon include industry and year fixed effects to control for industry-specific factors and merger waves over time (Mitchell and Mulherin, 1996; Zhao, 2013). In addition, in all multivariate tests we use heteroskedasticity-robust standard errors clustered at firm-level due to the fact that a number of firms have made several acquisitions in our sample.

Model 1 of Table 5 shows the results for the full-sample while Models 2, 3 and 4 present the regression estimates when the target is a public, private and subsidiary firm respectively. Higher pay-performance sensitivity (*Delta*) is positively related to acquisition announcement returns when the target is a privately held (Model 3) or subsidiary firm (Model 4) confirming the findings of Datta et al. (2001) that acquisitions made by managers with higher levels of

[16] In line with previous studies (i.e. Coles et al., 2006), *Delta* and *Vega* are entered in million dollars in the multivariate regressions.

[17] Industries are defined based on the Fama and French (1997) classification of 48 industries. In 17 cases that the target's industry is not identified in the 48 industries classification of Fama and French (1997), industries are defined based on the 2-digit SIC code.

equity-based compensation are perceived more positively by the market. However, no such relation is observed in public deals indicating that equity-based incentives provided to acquiring managers of public targets fail to create value for acquiring shareholders in the acquisition announcement period. The economically and statistically significant coefficient of the *Public* dummy in Model 1 is consistent with the results of the univariate analysis showing that public deals experience significantly lower announcement returns than non-pubic deals.

The remaining control variables are according to expectations based on the extant literature. Acquirer's size is negatively related to acquisition announcement returns (Moeller et al., 2004) and so is the relatively size of the deal (Travlos, 1987) in public deals. On the other hand, the relative size if found to be positively associated with announcement returns when a privately-held firm is acquired (Asquith et al., 1983). The market also appears to perceive more positively acquisitions financed by cash as documented by Travlos (1987) and Datta et al. (2001). Past stock price performance (*Runup*) is negatively related to investors' reaction to deal announcement in all models in line with Jensen's (1988) hypothesis that corporate acquisitions can be driven by managerial hubris.

Model 5 introduces interaction terms between the target status dummies and the method of payment dummies in order to capture the effect of target status on announcement returns under different payment methods for the total sample. The interaction of target legal status and the method of payment has been identified as important by the literature (Fuller et al., 2002, Draper and Paudyal, 2006; Masulis et al., 2007; Golubov et al., 2012). *Cont_Equity* is a dummy variable that take the value of one if the method of financing includes equity and zero otherwise. All other dummy variables are as defined previously and described in the Appendix. The only interaction term that appears to have good explanatory power is that between public deals and equity financing. The coefficient of this term is negative and statistically significant

at the 1 percent level confirming the findings of previous studies that public deals are associated with lower abnormal returns (Travlos, 1987; Draper and Paudyal, 2006) when they are not financed with cash. It also explains further the positive and statistically significant coefficient of the *Payment_Cash* variable in Models 1 and 2.

6.2.3 Synergy Gains

As a robustness test of the relation between short-term deal performance and managerial incentives, we also measure synergy gains accrued from the deal around the announcement date. If an acquirer overpays for a target it usually reallocates wealth between the two firms. When the shareholders of the acquiring firm are well-diversified, they shouldn't be affected by overpayment. However, an acquisition that reduces the total value of both the acquiring and target firms makes shareholders worse off even if they are diversified (Moeller et al., 2004). Table 6 examines whether the structure of executive compensation of the acquiring firm affects the synergy gains from acquisitions. The table considers only public deals as the calculation of synergy gains requires the availability of stock price data for both the bidder and the target.

The dependent variable in the first model of Table 6, *Synergy_Gains*, measures the total dollar value of synergies resulted from the transaction. Following Kale et al. (2003) and Golubov et al. (2012), *Synergy_Gains* is calculated as the sum of dollar-denominated gains for the bidder and the target. Dollar-denominated gains are defined as the market value of equity 4 weeks before the announcement date times the cumulated abnormal return over the 5-day window surrounding the announcement date (-2,+2)[18] for each firm. Model specification follow Golubov et al. (2012). The results show no statistically significant relation between

[18] When synergies are calculated based on the method of Bradley et al. (1988) using an 11-day window (-5,+5) the results do not change.

incentive compensation and synergy gains suggesting that pay-performance and pay-risk sensitivity cannot affect acquisition synergies in public deals. In other words, providing higher equity-related incentives to managers who acquire public firms does not increase the combined value of the bidder and the target relative to their values as independent entities.

The dependent variable in the second model of Table 6, *Bidder's_Gains,* measures the percentage of synergy gains accrued to the shareholders of the acquiring firm. Similar to Kale et al. (2003) and Golubov et al. (2012), *Bidder's_Gains* is calculated as the dollar-denominated gain for the bidder divided by *Synergy_Gains* when *Synergy_Gains* is positive. When *Synergy_Gains* is negative, *Bidder's_Gains* is calculated as 1 minus the dollar-denominated gain for the bidder divided by *Synergy_Gains.* Model 2 shows that when the target is a publicly listed firm, incentive compensation is an inefficient mechanism of increasing shareholders value in the short-run. The findings are also in line with the results of the previous section that bidder's shareholders are better off when the transaction is financed entirely by cash. Overall, the empirical results of Tables 5 and 6 provide support to H_1 with regard to the short-run financial performance of the deal. The next two sections test our first hypothesis when the long-run performance of the deal is taken into consideration.

6.2.4 Long-Run Post-Acquisition Stock Price Performance

The calculation of both bidder's announcement returns and synergy gains are based on the estimation of cumulative abnormal returns for an event window surrounding the acquisition announcement date. However, the market reaction around the acquisition announcement date can be an insufficient statistic with respect to the wealth effect of the transaction (Harford and Li, 2007). The market may react negatively to an acquisition that can actually create value for acquiring shareholders in the long-run and vice versa. For instance, while the market tends to react negatively to stock deals (Travlos, 1987), acquiring shareholders may be benefited in the

long-run if acquiring managers use overvalued stock to acquire a relatively less overvalued target (Shleifer and Vishny, 2003). Other reasons may also be related to market inefficiencies such as the presence of information asymmetry and irrational investors' expectations. In addition, the evaluation of the effectiveness of incentive compensation cannot be limited to the announcement effect of the deal. Such an approach would imply that the incentives offered to managers via their compensation contracts make them focus on the myopic, short-term effects of their decisions. In contrast, equity-related compensation should be structured in such a way so that executives' wealth be tied to the firm's future stock price performance. The examination of the long-term impact of executives' decisions on firm performance is thus of (at least) equal importance in estimating the effectiveness of incentive compensation.

Table 7 presents the estimates of multivariate regressions that explain acquirer's long-run stock-price performance. Since not all acquiring firms survive for three years following the acquisition, we control for selection bias using Heckman (1979) two-step selection model. The dependent variable for the probit regressions (columns titled "*Selection*") is a dummy variable that takes the value of one if the acquirer survives for three years following the acquisition effective date and zero otherwise. The model requires the use of an instrumental variable in the first-stage equation that would not appear in the second-stage equation. In addition, this variable should be related to the likelihood of the company surviving in the post-acquisition long-run period but should not affect long-run performance as the latter is measured in the second stage regression (columns titled "*3yABHR*"). The selected variable, *Months_Surv.*, measures the number of months the acquiring firm has survived since its first acquisition during an extended period between January 1, 1981 and December 31, 2010. If the company has not made another acquisition in the past, the variable takes the value of zero. The difference between the number of total and uncensored observations (for instance, 1,167 for the total sample) indicate the number of bidders that are either delisted or don't survive as independent

entities for three years following the transaction. The dependent variable in the second-stage regression is our measure of three-year abnormal buy-and-hold return (*3yABHR*) as defined earlier in the paper (Section 6.2.1).

The first model in Table 7 shows that when the total sample is taken into consideration a higher *Delta* increases the likelihood of surviving three years following the acquisition and that both the sensitivity of managers' wealth to stock price change (*Delta*) and stock return volatility (*Vega*) are positively and significantly related to long-run stock price performance following acquisitions. The results are in line with previous research findings that aligning the interests of managers with those of shareholders via incentive compensation contracts improves bidders' long-run performance following corporate acquisitions (Datta et al., 2001; Minnick et al., 2011). The signs of the remaining variables are according to expectations. Large acquirers appear to destroy value in acquisitions (Moeller at al., 2004) and the use of cash as method of payment benefits acquiring shareholders in the long-run, in line with the findings of the short-term analysis. Superior past stock-price performance and high cash holdings are associated with bidder's underperformance in the long-run confirming Jensen's (1988) free cash flow hypothesis and the findings of Harford (1999) and Rosen (2006).

In line with the approach followed for the examination of the relation between executive compensation and acquisition announcement returns, Models 2, 3 and 4 present the results for public, private and subsidiary deals respectively. The regressions' estimates show that better incentivised managers make value increasing acquisitions when private or subsidiary firms are acquired but not when the target is a publicly listed firm. The coefficient of *Delta* is positive and statistically significant in both private and subsidiary deals subsamples (Models 3 and 4) and *Vega* is positive and statistically significant at the 1 percent level in private deals (Model 3). In contrast, none of the incentive compensation measures are important in the subsample of

public acquisitions (Model 2). The results indicate that incentive compensation cannot effectively align the interests of managers with those of shareholders in the long-run when a publicly listed firm is acquired confirming our earlier predictions.

Model 5 of Table 7 confirms the findings of Model 1 that pay-performance (*Delta*) and pay-risk (*Vega*) sensitivity are positively associated with long-run stock price performance. The introduction of interaction terms of the method of payment and the target legal status shows that the payment method effect, which is evident in acquisition announcement returns (Table 5), does not play an important role in explaining long-run deal performance once we control for the legal status of the target. Furthermore, the absence of statistical significance of the inverse Mills ratio in the majority of models (the only exception is Model 4 that examines long-run performance of subsidiary deals) shows that selection bias is not a serious issue and the results remain largely free from such concerns.

The results in Table 7 can possibly shed some light into the documented underperformance of public deals as incentive compensation appears to be ineffective in inducing value-increasing behaviour in such type of transactions in the long-run. Along with our findings that acquiring managers of public targets are not provided with significantly different equity-related incentives relative to the acquiring managers of non-public targets (Table 3), our long-run results add to our findings in the previous section confirming our predictions in H_1 that incentive compensation has a positive impact on deal performance only when a non-publicly listed firm is acquired. In public deals, acquiring managers appear to perceive differently the same equity-related incentives compared to their counterparts who acquire private or subsidiary firms.

6.2.5 Propensity Score Matching

Although the analysis in Table 7 is expected to address selection bias concerns, it is also possible that acquisitions of public targets are deals with quite different characteristics than acquisitions of non-publicly listed firms. To address such endogeneity concerns, we re-examine the relation between long-run deal performance and managerial incentives using a propensity-score matching (PSM) approach similar to that followed in several other studies (Duchin and Schmidt, 2013; Subrahmanyam et al., 2014; Ghaly et al., 2015). The dependent variable, *3yABHR_PSM* is now calculated as the 3-year daily buy-and-hold return of the acquiring firm following the acquisition effective date minus the 3-year daily buy-and-hold return of the propensity-score matched firm over the same period. Propensity scores are estimated using Harford's (1999) model to predict bidders. The model is estimated separately for each year in our sample and each acquirer is matched to a non-acquirer[19] with the closest propensity score in the same industry-year. Similarly to our covariate-matching approach in Sections 5.2, 6.2 and 6.2.4, matched firms that are delisted before the completion of the 3-year post-acquisition period are replaced with the next closest match on the delisting date.[20]

Table 8 presents the results. Model 1 confirms our earlier findings that pay-performance sensitivity (*Delta*) induces managers to make value-increasing acquisitions in the long-run, in line with the evidence provided by previous studies (Datta et al., 2001; Minnick et al., 2011; Lahlou and Navatte, 2017). However, partitioning our sample into acquisitions of public, private and subsidiary firms in Models 2, 3 and 4 respectively, shows that the positive relation between pay-performance sensitivity (*Delta*) and long-run stock-price performance is driven

[19] The propensity-scored matched firm should not be involved in any acquisition activity for a 3-year period surrounding the acquisition effective date.

[20] From the total sample of 7,859 acquisitions, the calculation of propensity scores was possible for 6,291 deals which is reflected in the decreased number of observations in Table 8 relative to Table 7. From the 6,291 PSM deals, 813 acquirers are matched with two firms as the first matched firm is delisted before the passage of three years from the acquisition effective date. Similarly, 171 acquirers are matched with three firms and 37 acquirers are matched with four firms with the closest propensity score.

by acquisitions of privately held firms. In contrast, incentive compensation does not appear to induce value-increasing decisions in the long-run when a publicly listed firm is acquired. Collectively, our empirical findings from sections 6.2.2 – 6.2.5 provide strong support to H_1. Our results show that equity-based incentives provided to acquiring managers via their compensation contracts cannot benefit acquiring shareholders neither in the short or long-run when the target is a publicly listed firm. Our analysis indicates that the documented underperformance of public deals relative to acquisitions of private firms can, at least partially, be explained by the inefficiency of incentive compensation to induce value-increasing behaviour in such type of corporate takeovers.

6.3 Target Status, Riskiness of Acquisitions and Managerial Incentives

Following the evidence provided by the preceding analysis about the relation between incentive compensation and deal performance subject to the status of the target firm, this section examines differences in the riskiness between public and non-public deals and whether such differences can be explained by managerial incentives in order to test H_2. We use two measures of acquisition risk to capture the change in the volatility of bidders' stock returns between the period preceding and the period following the transaction. The first measure, *D_Risk,* is calculated as the difference between the standard deviation of acquirer's stock returns for 6 months following the effective date (+1 to +126 days) and the standard deviation of acquirer's stock returns for 6 months preceding the effective date (-126 to -1 days). A positive value indicates an increase in firm risk after the acquisition while a negative value means that the volatility of stock returns has fallen following the transaction. To test the robustness of our results, a second firm risk variable is constructed. Following Agrawal and Mandelker (1987) and Kravet (2014), *D_Risk_AbR* measures the change in the standard deviation of acquirer's abnormal stock returns for a period of 6 months following the acquisition effective date (+60 to +185 days) minus a 6-month period preceding the acquisition

announcement date (-185 to -60 days). The pre-acquisition period ends 60 trading days before the announcement date and the post-acquisition period begins 60 trading days after the effective date in order to minimise the impact of acquisition negotiation and completion periods on stock returns (Kravet, 2014). Abnormal stock returns are calculated as the residual from the market model using the CRSP value-weighted index.

Table 9 presents differences in means and medians for both measures of acquisition risk between public and non-public deals. Being risky decisions per se, corporate acquisitions are associated with an increase in stock return volatility in both types of deals. The results show that acquisitions of public targets increase the volatility of the acquiring firm's stock returns significantly more than acquisitions of non-public targets. According to our first measure of acquisition risk, *D_Risk*, acquiring a publicly listed firm leads to an average (median) increase in stock return volatility of 14.31 percent (3.38 percent) relative to only 7.25 percent (-0.40 percent) when a non-public firm is acquired. Similarly, the average (median) increase in the volatility of acquirer's abnormal returns is 20.14 percent (11.06 percent) following the acquisition of a public firm compared to 12.66 percent (3.18 percent) when the target is a non-public firm. The differences are statistically significant at the 1 percent level for both means and medians and for both measures of risk. The lower volatility of non-public deals can be partly attributed to the fact that information can be disclosed more efficiently between the bidder and target shareholders in private deals (Conn et al.; 2005) making such type of deals less risky. Furthermore, as shown in Section 6.2, acquirers of non-public firms receive higher proportions of cash compensation that is associated with higher risk aversion (Berger et al., 1997). The remaining of the section examines whether such differences in acquisition risk can be explained by the responsiveness of managers to risk-taking incentives.

Tables 10-11 examine the relation between the change in the volatility of bidder's stock returns and managerial incentives in a multivariate setting. To address concerns of endogeneity regarding the relation between executive compensation and the riskiness of acquisition decisions, we use systems of simultaneous equations (3SLS regressions) in accordance with the commonly approved method in previous relative studies (Rogers 2012; Coles et al., 2006; Cohen et al., 2013; Croci and Petmezas, 2015). A three-stage-least-squares (3SLS) model is used since it shows higher consistency and efficiency than the 2SLS asymptotically (Cohen et al., 2013). Model specifications as well as the determinants of *Delta* and *Vega* used in the analysis are also similar to those of previous relative research (Coles et al., 2006, Cohen et al., 2013, Croci and Petmezas, 2015). Furthermore, in line with the common approach in 3SLS, we use contemporaneous[21] rather than lagged values of the variables included in the system of simultaneous equations.

Table 10 presents the results for the first measure of acquisition risk. The jointly determined (endogenous) variables are the change in the volatility of acquirer's stock returns, D_Risk^c, the sensitivity of managers' wealth to stock-price changes, $Delta^c$, and the sensitivity of managers' wealth to stock return volatility, $Vega^c$. Panel A shows the estimates of 3SLS regressions when a publicly listed firm is acquired. Confirming the findings of previous studies, the sensitivity of managers' wealth to stock-price performance ($Delta^c$) and cash compensation ($Cash\_Comp^c$) are negatively related to firm risk (Berger et al., 1997; Billett et al., 2010; Chava and Purnanandam, 2010; Cohen et al., 2013). In contrast, pay-risk sensitivity ($Vega^c$), which is expected to induce risk-taking (Coles et al., 2006; Cohen et al., 2013; Croci and Petmezas, 2015) has a positive but not statistically significant impact when the analysis is confined to public deals. Furthermore, $Vega^c$ is not found to be significantly related to other corporate

[21] Denoted by the exponential symbol "c"

investments (R&D, PPE and CAPEX) when the incentives of public deals acquiring managers are examined.

The results in Panel B of Table 10 indicate that the sensitivity of managerial wealth to the volatility of stock returns (*Vega*) is effective in inducing risk-taking when non-public firms are acquired. The coefficient of $Vega^c$ is positive and statistically significant at the 1 percent level confirming the findings of previous studies (Coles et al., 2006; Cohen et al., 2013; Croci and Petmezas, 2015). In contrast, cash compensation ($Cash\_Comp^c$) and pay-performance sensitivity ($Delta^c$) are negatively related to the riskiness of acquisitions decisions. In line with the relative literature, $Vega^c$ is now also positively related to R&D expenditures that increase firm risk (Nam et al., 2003; Coles at al., 2006) and negatively related to less risky investments such as property, plant and equipment. Moreover, the results show a strong and positive relation between $Delta^c$ and $Vega^c$ which justifies the choice to control for $Delta^c$ when $Vega^c$ is used as the dependent variable and vice versa. A positive and significant relation between firm size and the dollar value of managerial incentives is also found in both panels A and B in line with the previously documented positive association between firm size and executive compensation (Bliss and Rosen, 2001). The results add to the findings of the previous section according to which equity-related incentives are rendered inefficient to serve their intended objectives when a publicly listed firm is acquired. More specifically, pay-performance sensitivity (*Delta*) is found to be positively related to stock-price performance only in non-public deals (private and subsidiary deals). Similarly, pay-risk sensitivity (*Vega*) is found to induce risk-taking activity in corporate acquisitions only when the target firm is a non-publicly listed firm.

As a robustness check, the analysis of the system of simultaneous equations is repeated for the second risk measure (*D_Risk_AbR*) in Table 11. Confirming the findings of Table 10, the higher riskiness of public deals is not found to be related to the incentives managers are

provided with via their compensation contracts (Panel A). The coefficients of both $Delta^c$ and $Vega^c$ are statistically unimportant at conventional significance levels in Panel A. In contrast, managerial incentives work according to expectations when a non-public firm is acquired (Panel B). In the latter case, $Vega^c$ is positive and both economically and statistically significant (at the 1 percent level) in explaining changes in the volatility of abnormal stock returns whereas $Delta^c$ and cash compensation are negatively related to the riskiness of the acquisition. Overall, the findings from Tables 10 and 11 confirm the predictions of H_2.

7. Conclusion

Using an extended sample of U.S. mergers and acquisitions over an 18-year period (1993-2010) we provide new evidence about the relation of incentive compensation and bidding firm risk and performance. Higher sensitivity of acquiring managers' wealth to stock price changes, Delta, is positively related to short and long-run stock-price performance if the target is a non-public firm. Similarly, higher sensitivity of acquiring managers' wealth to stock return volatility, Vega, is found to mitigate risk aversion and lead to riskier corporate acquisitions when the target is a non-publicly listed firm. In contrast, managerial incentives do not seem to work according to their intended objectives in public deals.

Although managers of firms that acquire public targets are not found to receive significantly different equity-related incentives than acquiring managers who make non-public deals, they underperform their counterparts both in the short and long-run. Confirming previous research, we find that bidders of public deals experience significantly negative announcement returns and lower long-run returns than bidders of non-public deals. We contribute to the literature showing that the documented underperformance of public deals can, at least partially, be explained by the inefficiency of incentive compensation to induce value-increasing decisions both in the short and long-run in such type of deals. Examining the relation between

the riskiness of acquisitions decisions and pay-risk sensitivity leads to similar conclusions with regard to the effectiveness of incentive compensation in public deals. The risk-increasing behaviour of acquiring managers in public deals is not found to be driven by risk-taking incentives provided to them via their compensation contracts. One possible explanation is that the positive relation between incentive compensation and value-increasing decisions is offset by the increased bargaining power of public targets (Officer, 2007). Incentive compensation can also be more effective in non-public deals due to the mitigation of information asymmetry and managerial hubris. As noted by Conn et al. (2005), acquiring managers are able to disclose private information more efficiently to the concentrated shareholders of a private target and they may be more willing to discontinue negotiations when it is strategically correct to do so due to the lack of publicity surrounding private deals.

Our findings have important implications for market participants and create new scope for future research in the areas of M&As and executive compensation. It is possible that acquisitions of public targets are deals with different characteristics than acquisitions of non-public firms. However, our results show that remuneration committees provide the same level of incentive compensation to acquiring managers in both types of deals following an "one size fits all" approach. Since the current level of sensitivity of managers' wealth to stock price volatility and performance cannot create value for acquiring shareholders in public deals, it would be useful to identify which structure of executive compensation could maximise shareholders' value in such type of deals while minimising associated costs. The latter would benefit significantly both bidding firms' shareholders and independent compensation committees given the potentially high cost of equity-based compensation. Moreover, it could also be useful to investigate the structure of executive compensation of target's managers in public deals and examine whether equity-related incentives provided to target's executives contradict or even offset those provided to the managers of the bidding firm.

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Table 1: Distribution of M&As, Deal Size, Target Status and Method of Payment

The table presents the distribution of 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010. *Relative Size* is the deal value as reported by SDC Platinum scaled by the bidder's market capitalisation value from CRSP. *Public Deals* shows the number of transactions where the target is a publicly listed firm. *Private Deals* shows the number of transactions where the target is a private firm. *Subsidiary Deals* shows the number of transactions where the target is a subsidiary firm. *Payment Cash* shows the number of transactions that are financed entirely by cash. *Payment Equity* shows the number of transactions that are financed entirely by stock. *Mixed Financing* shows the number of transactions that are financed by a mix of cash, equity, debt and other consideration.

Year	Number of Acquisitions	% of Sample	Average Relative Size	Public Deals	Private Deals	Subsidiary Deals	Payment Cash	Payment Equity	Mixed Financing
1993	319	4.1%	0.10	67	132	119	119	117	83
1994	354	4.5%	0.11	92	141	117	151	116	87
1995	351	4.5%	0.14	106	135	105	135	126	90
1996	466	5.9%	0.14	122	204	132	180	158	128
1997	542	6.9%	0.15	153	221	163	192	198	152
1998	583	7.4%	0.14	183	246	150	220	207	156
1999	593	7.5%	0.13	195	230	165	260	184	149
2000	534	6.8%	0.14	152	233	145	217	155	162
2001	429	5.5%	0.11	119	166	139	218	66	145
2002	448	5.7%	0.08	77	189	176	244	35	169
2003	461	5.9%	0.10	85	192	180	284	30	147
2004	482	6.1%	0.13	89	232	157	290	30	162
2005	476	6.1%	0.10	89	251	132	286	17	173
2006	446	5.7%	0.11	91	192	160	308	19	119
2007	471	6.0%	0.11	102	244	124	307	12	152
2008	358	4.6%	0.11	66	170	120	242	13	103
2009	261	3.3%	0.12	52	111	91	164	12	85
2010	285	3.6%	0.10	47	141	94	217	5	63
Total	7,859	100.0%	0.12	1,887	3,430	2,469	4,034	1,500	2,325

Table 2: Summary Statistics

The table presents summary statistics for the sample of 7,859 completed U.S. acquisitions from SDC Platinum over the period January 1, 1993, to December 31, 2010. Data on executive compensation are from ExecuComp, stock price data from CRSP and accounting data from Compustat. *Delta* is the dollar change in the wealth of top five executives for one percent change in firm's stock price. *Vega* is the dollar change in the wealth of top five executives for one percent change in the standard deviation of firm's stock returns. *Cash_Comp* is the sum of salary and bonus payments to the top five executives from ExecuComp. *Total_Comp* is the sum of top five executives' salary, bonus, new stock and option grants and other forms of compensation from ExecuComp. Definitions of firm characteristics are as described in the Appendix.

Variable	Mean	Standard Deviation	25th Percentile	Median	75th Percentile	Number of Observations
Compensation Variables ('000s')						
Delta	3,099	26,338	210	598	1,685	7,599
Vega	440	939	46	130	399	7,599
Cash_Comp	4,814	6,681	2,228	3,377	5,499	7,859
Total_Comp	16,990	27,595	4,503	8,588	18,240	7,859
Firm Characteristics						
Size	14.884	1.645	13.670	14.670	15.910	7,859
Runup	0.043	0.823	-0.218	0.036	0.310	7,829
Leverage	0.228	0.168	0.096	0.211	0.331	6,937
Cash/Assets	0.154	0.179	0.026	0.076	0.225	7,821
B/M	0.592	0.282	0.730	0.590	0.820	7,799
ROA	0.132	0.105	0.064	0.131	0.191	7,854
Sales_Growth	0.065	0.124	0.004	0.045	0.106	7,708
Sigma	0.016	0.012	0.008	0.013	0.021	7,859
R&D	0.034	0.063	0.000	0.000	0.049	7,859
Net_PPE	0.206	0.219	0.045	0.133	0.284	7,713
CAPEX	0.046	0.058	0.010	0.030	0.060	7,713
CEO_Tenure	100	125	33	68	126	7,349

Table 3: Difference in Executive Compensation between Acquirers of Public and Non-Public Targets

The table presents differences in average compensation characteristics of acquiring managers between public and non-public deals. The sample is 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010 from SDC Platinum. Data on executive compensation are from ExecuComp. *Delta* is the dollar change in the wealth of top five executives for a one percent change in firm's stock price. *Vega* is the dollar change in the wealth of top five executives for a one percent change in the standard deviation of firm's stock returns. *Cash_Comp* is the sum of salary and bonus payments to the top five executives. *Total_Comp* is the sum of top five executives' salary, bonus, new stock and option grants and other forms of compensation. Transactions are classified as public deals when a publicly-listed firm is acquired, otherwise they are characterised as non-public deals. t-statistics are from the t-test for difference in means. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Panel A: Difference in Compensation (dollar value)				
	Public Deals	Non-Public Deals	Difference	t statistic
Delta	4,768.62	2,561.62	2,207.00**	*2.28*
Observations	1,852	5,747		
Vega	544.69	406.35	138.34***	*5.28*
Observations	1,852	5,747		
Cash_Comp	5,769.79	4,512.39	1,257.40***	*7.95*
Observations	1,887	5,972		
Panel B: Difference in Compensation scaled by Total Compensation				
	Public Deals	Non-Public Deals	Difference	t statistic
Delta	0.389	0.256	0.133	*0.75*
Observations	1,852	5,747		
Vega	0.024	0.022	0.001	*1.52*
Observations	1,852	5,747		
Cash_Comp	0.444	0.469	-0.025***	*-3.75*
Observations	1,887	5,972		

Table 4: Difference in Performance between Public and Non-Public Deals

The table presents differences in deal performance between acquirers of public and non-public targets. The sample is 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010 from SDC Platinum. Stock price data are from CRSP. *CARs(-5,+5)* is the bidder's cumulative abnormal return over an eleven-day event window (-5, +5) where 0 is the announcement date using the market model. The estimation period is from 200 days to 60 days before the acquisition announcement. *3yABHR* is the bidder's 3-year buy-and-hold daily return following the acquisition effective date minus the 3-year buy-and-hold daily return of the matched firm for the same period. Transactions are classified as public deals when a publicly-listed firm is acquired, otherwise they are characterised as non-public deals. t-statistics are from the t-test for difference in means and *z*-statistics are from the Wilcoxon rank sum test for difference between the respective distributions. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

	Public Deals	Non-Public Deals	Difference	t/z statistic
CARs(-5,+5) %				
Mean	-1.479***	0.529***	-2.008***	*-9.55*
Median	-1.198***	0.400***	-1.598***	*-9.92*
Observations	1,847	5,785		
3yABHR %				
Mean	-2.497	4.096***	-6.594**	*-2.45*
Median	-3.425*	3.110***	-6.535***	*-3.25*
Observations	1,572	4,893		

Table 5: Acquisition Announcement Returns, Target Status and Managerial Incentives

The table presents multivariate regression estimates of bidder's eleven-day CARs (-5,+5) on executive compensation and other firm and deal characteristics. The sample is 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010 from SDC Platinum. *CARs(-5,+5)* is the bidder's cumulative abnormal return over an eleven-day event window (-5, +5) where 0 is the announcement date using the market model. The estimation period is from 200 days to 60 days before the acquisition announcement. Definitions of the independent variables are as described in the Appendix. Transactions are classified as public deals when a publicly-listed firm is acquired, as private deals when a privately-held firm is acquired and as subsidiary deals when a subsidiary firm is acquired. t-statistics based on heteroskedasticity-robust, clustered at firm-level standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Variable	Model 1 All	Model 2 Public	Model 3 Private	Model 4 Subsidiary	Model 5 All
Intercept	9.3266***	6.0459	8.5854***	7.3154***	9.2214***
	(5.87)	(1.54)	(2.81)	(2.68)	(5.77)
Delta	0.0009	-0.0035	0.0031*	0.0190*	0.0009
	(0.46)	(-1.28)	(1.75)	(1.69)	(0.52)
Vega	0.1441	0.1677	0.1510	-0.0433	0.1181
	(1.36)	(0.83)	(0.80)	(-0.20)	(1.12)
Cash_Comp	0.0380**	0.0092	0.0483*	0.0255	0.0367**
	(2.19)	(0.24)	(1.89)	(1.25)	(2.21)
Size	-0.4659***	-0.3130*	-0.5023***	-0.3916***	-0.4664***
	(-5.31)	(-1.68)	(-3.58)	(-2.66)	(-5.34)
Payment_Cash	0.4131*	1.6394***	0.1236	0.3842	
	(1.96)	(3.73)	(0.37)	(0.97)	
Diversifying	-0.0331	-0.6455	0.3417	-0.0251	-0.0536
	(-0.16)	(-1.29)	(1.02)	(-0.07)	(-0.26)
Runup	-0.9107***	-0.9648***	-0.7387***	-1.3797***	-0.9082***
	(-5.57)	(-3.19)	(-3.66)	(-4.64)	(-5.52)
Cash/Assets	-0.3801	-1.1622	-0.1795	-0.7325	-0.4072
	(-0.49)	(-0.60)	(-0.16)	(-0.52)	(-0.52)
Public * Payment_Cash					-0.2519
					(-0.62)
Public * Contain_Equity					-2.2726***
					(-6.58)
Private * Payment_Cash					-0.1497
					(-0.48)
Private * Conatin_Equity					-0.1891
					(-0.55)
Subsidiary * Payment_Cash					0.2912
					(0.97)
Public	-1.6558***				
	(-5.93)				
Private	-0.3156				
	(-1.36)				
Relative_Size	-0.6516	-2.2655***	2.6743**	1.3703	-0.5150
	(-1.23)	(-3.21)	(1.97)	(1.26)	(-0.96)
BM	-0.2172	-0.7204	-0.0011	-0.4978	-0.2403
	(-0.40)	(-0.54)	(-0.00)	(-0.50)	(-0.44)
Number of Observations	7,292	1,799	3,146	2,282	7,292
F-Statistic	4.11***	1.84***	1.85***	6.81***	4.18***
R-Squared	0.04	0.07	0.04	0.05	0.04
Year-fixed Effects	YES	YES	YES	YES	YES
Industry-fixed Effects	YES	YES	YES	YES	YES

Table 6: Synergy Gains, Target Status and Managerial Incentives

The table presents multivariate regression estimates of synergy gains on executive compensation and other firm and deal characteristics. The sample is 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010 from SDC Platinum. *Synergy_Gains* is the sum of dollar-denominated gains for the bidder and the target. Dollar-denominated gains are defined as the market value of equity 4 weeks before the announcement date times the CAR (-2,+2) for each firm. *Bidder's_Gians* measures the bidder's share of synergies and is calculated as the dollar-denominated gains for the bidder divided by *Synergy_Gains* if the latter is positive and 1- dollar-denominated gains for the bidder divided by *Synergy_Gains* otherwise. t-statistics based on heteroskedasticity-robust, clustered at firm-level standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Variable	Model 1 Synergy_Gains (dollar value)	Model 2 Bidder's_Gains (%)
Intercept	2622.5590	-2.4867
	(1.60)	(-0.82)
Delta	2.3395	0.0050
	(0.25)	(0.61)
Vega	330.6291	-0.2738
	(0.74)	(-0.64)
Cash_Comp	-10.0750	-0.0091
	(-0.24)	(-0.46)
Size	-106.5279	0.1516
	(-1.01)	(0.88)
Payment_Cash	68.1965	1.0598***
	(0.38)	(3.24)
Diversifying	-197.6021	0.3789
	(-1.11)	(1.22)
Runup	-179.8838	-0.0122
	(-1.51)	(-0.09)
Sigma	-3019.4030	7.5242
	(-0.15)	(0.26)
Hostile	89.1978	0.4597
	(0.11)	(0.87)
Cash/Assets	330.8963	-0.9560
	(0.44)	(-0.44)
Relative_Size	-169.1889	-0.6143
	(-0.95)	(-1.30)
B/M	-219.2805	-1.6040
	(-0.66)	(-1.27)
Leverage	-60.9365	2.6763**
	(-0.13)	(2.02)
Observations	1,444	1,444
F-Statistic	0.74	6.56***
R-Squared	0.04	0.26
Year-fixed Effects	YES	YES
Industry-fixed Effects	YES	YES

Table 7: Long-Run Acquisition Performance, Target Status and Managerial Incentives

The table presents the results of sample selection models following Heckman (1979) of acquisition long-run financial performance on executive compensation and other firm and deal characteristics. The sample is 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010 from SDC Platinum. The dependent variable for the first-stage regression in Heckman selection models is a dummy variable that equals one if the acquiring firm survives for three years after the acquisition effective date and zero otherwise. The dependent variable for the second-stage regression is *3yABHR* which is the bidder's 3-year buy-and-hold daily return following the acquisition effective date minus the 3-year buy-and-hold daily return of the matched firm for the same period. Definitions of the independent variables are as described in the Appendix. Transactions are classified as public deals when a publicly-listed firm is acquired, as private deals when a privately-held firm is acquired and as subsidiary deals when a subsidiary firm is acquired. t-statistics based on heteroskedasticity-robust, clustered at firm-level standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Variable	Model 1: Total Sample		Model 2: Public Deals		Model 3: Private Deals		Model 4: Subsidiary Deals		Model 5: Total Sample	
	Selection	3yABHR	Selection	3yABHR	Selection	3yABHR	Selection	3yABHR	Selection	3yABHR
Intercept	-0.1716	0.3682	5.1412***	0.4047	-0.5189	1.1618**	0.9674	-0.2953	-0.1892	0.3306
	(-0.45)	(1.16)	(5.39)	(0.74)	(-0.70)	(2.25)	(1.57)	(-0.63)	(-0.49)	(1.04)
Delta	0.0124**	0.0009**	0.0448*	0.0003	0.0155	0.0013*	0.0105	0.0054**	0.0125**	0.0009**
	(2.30)	(2.12)	(1.71)	(0.60)	(1.36)	(1.94)	(1.54)	(1.97)	(2.31)	(2.13)
Vega	-0.0072	0.0403**	0.0425	0.0191	0.0042	0.0649***	-0.0757	-0.0463	-0.0085	0.0385**
	(0.23)	(2.56)	(0.46)	(0.64)	(0.09)	(2.84)	(-1.43)	(-1.16)	(-0.27)	(2.45)
Cash_Comp	-0.0090***	0.0044**	-0.0096	0.0117**	-0.0058	0.0047	-0.0088**	0.0013	-0.0090***	0.0043**
	(-3.26)	(2.04)	(-0.92)	(2.06)	(-1.16)	(1.43)	(-2.31)	(0.33)	(-3.24)	(1.99)
Months_Surv.	0.0003		-0.0001		-0.0003		0.0013***		0.0003	
	(0.96)		(-0.22)		(-0.59)		(2.61)		(0.96)	
Size	0.1216***	-0.0524***	0.1153***	-0.0553**	0.1554***	-0.0829***	0.0613*	-0.0226	0.1230***	-0.0498***
	(6.81)	(-3.12)	(2.74)	(-2.09)	(5.41)	(-3.12)	(1.91)	(-0.87)	(6.91)	(-2.96)
Payment_Cash	0.0131	0.0582**	0.0806	0.0764	0.0125	0.0659	-0.0789	-0.0165		
	(0.31)	(2.12)	(0.76)	(1.29)	(0.20)	(1.63)	(-0.95)	(-0.28)		
Diversifying	-0.0797*	0.0155	-0.2343**	0.0971	0.0513	0.0207	-0.1632**	-0.0670	-0.0813*	0.0134
	(-1.83)	(0.54)	(-2.25)	(1.51)	(0.77)	(0.49)	(-2.10)	(-1.14)	(-1.86)	(0.47)
Runup	0.0254	-0.0279*	0.0936*	-0.0579	0.0227	-0.0219	-0.0313	-0.0320	0.0243	-0.0273*
	(1.19)	(-1.81)	(1.80)	(-1.56)	(0.83)	(-1.12)	(-0.60)	(-0.84)	(1.14)	(-1.77)

(The table is continued on the next page.)

Table 7 (Continued)

Cash/Assets	-0.8392***	-0.2282*	-1.2897***	0.0727	-0.7354***	-0.1969	-1.0379***	-0.6057**	-0.8502***	-0.2363*
	(-6.57)	(-1.85)	(-4.09)	(0.31)	(-4.16)	(-1.26)	(-4.07)	(-2.36)	(-6.65)	(-1.91)
Public * Payment_Cash									0.1542*	0.0580
									(1.66)	(1.05)
Public * Contain_Equity									0.0323	-0.0711
									(0.46)	(-1.52)
Private * Payment_Cash									0.0093	0.0253
									(0.15)	(0.63)
Private * Conatin_Equity									0.0284	-0.0343
									(0.44)	(-0.78)
Subsidiary * Payment_Cash									-0.0123	0.0364
									(-0.20)	(0.93)
Public	0.0566	-0.0290								
	(0.98)	(-0.79)								
Private	-0.0086	-0.0326								
	(-0.18)	(-1.07)								
Relative_Size	-0.0449	-0.0067	-0.0985	0.0275	-0.1338	-0.1026	-0.1075	-0.0038	-0.0323	0.0065
	(-0.56)	(-0.12)	(-0.80)	(0.35)	(-0.62)	(-0.62)	(-0.77)	(-0.03)	(-0.40)	(0.11)
B/M	-0.2505***	0.0473	-0.3470	0.3127**	-0.1542	-0.0143	-0.3642**	-0.0640	-0.2432**	0.0485
	(-2.62)	(0.70)	(-1.39)	(2.10)	(-1.11)	(-0.15)	(-2.11)	(-0.49)	(-2.54)	(0.72)
Inverse_Mills		0.1627		-0.4822		0.0124		0.9989**		0.1840
		(0.54)		(-1.31)		(0.03)		(2.07)		(0.62)
Total Observations	7,325		1,804		3,176		2,280		7,325	
Uncensored Observ.		6,158		1,528		2,631		1,943		6,158
Wald Chi-Square	282.21***		131.68***		147.46***		115.8***		282.95***	
Year-fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry-fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 8: Propensity-Scored Matched Long-Run Stock-Price Returns, Target Status and Managerial Incentives

The table presents multivariate regression results of acquisition long-run financial performance on CEO compensation and other firm and deal characteristics. The sample is 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010 from SDC Platinum. Data on executive compensation are from ExecuComp, stock price data from CRSP and accounting data from Compustat. The dependent variable, *3yABHR_PSM*, is the bidder's 3-year buy-and-hold daily return following the acquisition effective date minus the 3-year buy-and-hold daily return of the propensity-scored matched firm for the same period. Propensity scores are estimated using Harford's (1999) model to predict bidders. Definitions of the independent variables are as described in the Appendix. Transactions are classified as public deals when a publicly-listed firm is acquired, as private deals when a privately-held firm is acquired and as subsidiary deals when a subsidiary firm is acquired. t-statistics based on heteroskedasticity-robust, clustered at firm-level standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Variable	Model 1 All	Model 2 Public	Model 3 Private	Model 3 Subsidiary	Model 5 All
Intercept	-0.2686	-1.0830*	0.0254	0.9567	-0.1839
	(-0.43)	(-1.87)	(0.03)	(1.02)	(-0.30)
Delta	0.0029***	0.0016	0.0127***	-0.0031	0.0029***
	(2.66)	(1.57)	(3.07)	(-0.73)	(2.65)
Vega	0.0297	-0.0016	0.0347	0.0994	0.0283
	(1.10)	(-0.05)	(0.86)	(1.32)	(1.06)
Cash_Comp	0.0007	-0.0027	-0.0006	0.0025	0.0007
	(0.19)	(-0.36)	(-0.09)	(0.95)	(0.20)
Size	-0.0086	0.0368	-0.0249	-0.0559	-0.0096
	(-0.33)	(1.23)	(-0.69)	(-0.95)	(-0.37)
Payment_Cash	-0.0016	0.0888	0.1146*	-0.2345***	
	(-0.04)	(1.22)	(1.76)	(-2.85)	
Diversifying	0.0682	0.1371*	0.0802	-0.0023	0.0672
	(1.59)	(1.82)	(1.29)	(-0.03)	(1.56)
Runup	-0.0366	-0.0488	-0.0087	-0.0820	-0.0340
	(-1.21)	(-1.00)	(-0.25)	(-1.18)	(-1.12)
Cash/Assets	-0.0209	0.2432	-0.2004	0.2275	-0.0243
	(-0.08)	(0.69)	(-0.52)	(0.61)	(-0.10)
Public * Payment_Cash					-0.0071
					(-0.10)
Public * Contain_Equity					-0.0851
					(-1.24)
Private * Payment_Cash					-0.0219
					(-0.31)
Private * Conatin_Equity					-0.1439*
					(-1.95)
Subsidiary * Payment_Cash					-0.1138*
					(-1.78)
Public	-0.0177				
	(-0.30)				
Private	-0.0296				
	(-0.51)				
Relative_Size	0.0841	0.1233	-0.0989	0.1572	0.0839
	(0.88)	(1.52)	(-0.26)	(0.85)	(0.87)
B/M	0.4593	0.1489	1.1399	-0.4297	0.4544
	(0.94)	(0.79)	(1.15)	(-1.48)	(0.93)
Number of Observations	5,268	1,381	2,118	1,723	5,268
F-Statistic	2.41***	2.05***	2.24***	1.53***	2.44***
R-Squared	0.03	0.10	0.07	0.06	0.04
Year-fixed Effects	YES	YES	YES	YES	YES
Industry-fixed Effects	YES	YES	YES	YES	YES

Table 9: Difference in Riskiness between Public and Non-Public Deals

The table presents differences in firm risk between acquisitions of public and non-public targets. The sample is 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010 from SDC Platinum. Stock price data are from CRSP. *D_Risk* is the change in the standard deviation of acquirer's stock returns between 6 months following the effective date (+1 to +126 days) and 6 months preceding the effective date (-126 to -1 days). *D_Risk_AbR* is the change in the standard deviation of acquirer's abnormal stock returns between 6 months following the effective date (+60 to +185 days) and 6 months preceding the acquisition announcement date (-185 to -60 days). Abnormal stock returns are calculated as the residual from the market model using the CRSP value-weighted index. Transactions are classified as public deals when a publicly-listed firm is acquired, otherwise they are characterised as non-public deals. t-statistics are from the t-test for difference in means and *z*-statistics are from the Wilcoxon rank sum test for difference between the respective distributions. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

	Public Deals	Non-Public Deals	Difference	t/z statistic
D_Risk %				
Mean	14.310***	7.254***	7.056***	*2.79*
Median	3.380***	-0.400	3.780***	*2.98*
Observations	1,846	5,901		
D_Risk_AbR %				
Mean	20.142***	12.661***	7.481***	*2.60*
Median	11.060***	3.180***	7.880***	*3.68*
Observations	1,833	5,842		

Table 10: Volatility of Stock Returns, Target Status and Managerial Incentives

The table presents simultaneous equations (3SLS) of acquiring firm risk, Vega and Delta. The sample is 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010 from SDC Platinum. Executive compensation data are from ExecuComp and stock price data from CRSP. *D_Risk* is the change in the standard deviation of acquirer's stock return between 6 months following the effective date (+1 to +126 days) and 6 months preceding the effective date (-126 to -1 days). *Delta*^{c} is the dollar change in top five executives' wealth for a one percent change in the firm's stock price. *Vega*^{c} is the dollar change in top five executives' wealth for a one percent change in the standard deviation of the firm's stock returns. Definitions of the independent variables are as described in the Appendix. The exponential symbol "c" denotes contemporaneous values (calculated for the year of the acquisition announcement). Transactions are classified as public deals when a publicly-listed firm is acquired, otherwise they are characterised as non-public deals. t-statistics based on heteroskedasticity-robust, clustered at firm-level standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Panel A: Public Deals			
Variable	D_Risk	Delta^c	Vega^c
Intercept	4.9079	-104.0753**	-3.6785***
	(1.16)	(-2.27)	(-5.69)
Delta^c	-0.06867*		0.0217***
	(-1.95)		(3.14)
Vega^c	1.9853	-8.3933	
	(1.60)	(-0.98)	
Cash_Comp^c	-0.0522*		0.0215***
	(-1.69)		(3.62)
D_Risk		-15.6010**	-0.2118
		(-2.27)	(-0.65)
Size	-0.3125	6.3318**	0.2312***
	(-1.19)	(2.21)	(6.53)
Cash/Assets^c		12.8682*	
		(1.81)	
ROA^c			-0.7461
			(-1.53)
Sales_Growth^c	0.9191	10.6316	
	(1.53)	(1.47)	
Leverage_Change	0.3093	8.9579	0.0561
	(0.53)	(1.01)	(0.19)
R&D^c		49.2501*	1.5825
		(1.90)	(1.54)
Net_PPE^c		-6.0772	0.0138
		(-0.73)	(0.06)
CAPEX^c		-33.0408	0.1466
		(-1.26)	(0.19)
CEO_Tenure	0.0327	2.4288***	
	(0.68)	(3.70)	
Observations	1,518	1,518	1,518
Year-fixed Effects	YES	YES	YES
Industry-fixed Effects	YES	YES	YES

Table 10 (Continued)

Panel B: Non-Public Deals			
Variable	D_Risk	Delta[c]	Vega[c]
Intercept	1.2196	-0.3194	-3.8543***
	(1.17)	(-0.06)	(-12.33)
Delta[c]	-0.0906**		0.0007
	(-2.51)		(0.06)
Vega[c]	0.9696***	5.9625***	
	(2.73)	(4.90)	
Cash_Comp[c]	-0.0105*		0.0149***
	(-1.89)		(5.53)
D_Risk		-1.4211	-0.4323**
		(-0.47)	(-2.05)
Size	-0.0857	-0.0815	0.2799***
	(-1.20)	(-0.21)	(14.10)
Cash/Assets[c]		3.6681**	
		(2.29)	
ROA[c]			-0.5342***
			(-2.87)
Sales_Growth[c]	1.1713***	8.1816***	
	(3.39)	(5.54)	
Leverage_Change	0.2297	1.3261	-0.0117
	(1.12)	(0.97)	(-0.08)
R&D[c]		-3.0617	0.8621***
		(-0.83)	(2.88)
Net_PPE[c]		0.9185	-0.4391***
		(0.67)	(-3.40)
CAPEX[c]		1.7608	0.4599
		(0.66)	(1.33)
CEO_Tenure	0.0448**	0.5274***	
	(1.99)	(5.38)	
Observations	4,418	4,418	4,418
Year-fixed Effects	YES	YES	YES
Industry-fixed Effects	YES	YES	YES

Table 11: Volatility of Abnormal Stock Returns, Target Status and Managerial Incentives

The table presents simultaneous equations (3SLS) of acquisition riskiness, Vega and Delta. The sample is 7,859 completed U.S. acquisitions over the period January 1, 1993, to December 31, 2010 from SDC Platinum. Executive compensation data are from ExecuComp and stock price data from CRSP. *D_Risk_AbR* is the change in the standard deviation of acquirer's abnormal stock returns between 6 months following the effective date (+60 to +185 days) and 6 months preceding the acquisition announcement date (-185 to -60 days). Abnormal stock returns are calculated as the residual from the market model using the CRSP value-weighted index. *Delta*^{c} is the dollar change in top five executives' wealth for a one percent change in the firm's stock price. *Vega*^{c} is the dollar change in top five executives' wealth for a one percent change in the standard deviation of the firm's stock returns. Definitions of the independent variables are as described in the Appendix. The exponential symbol "c" denotes contemporaneous values (calculated for the year of the acquisition announcement). Transactions are classified as public deals when a publicly-listed firm is acquired, otherwise they are characterised as non-public deals. t-statistics based on heteroskedasticity-robust, clustered at firm-level standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Panel A: Public Deals			
Variable	D_Risk_AbR	Delta^{c}	Vega^{c}
Intercept	3.7049	-173.2434*	-4.2393***
	(1.06)	(-1.82)	(-4.89)
Delta^{c}	-0.0479		0.0170**
	(-1.64)		(2.04)
Vega^{c}	1.6558	-15.9375	
	(1.62)	(-1.07)	
Cash_Comp^{c}	-0.0455*		0.0194***
	(-1.78)		(3.05)
D_Risk_AbR		-33.7713	-0.4034
		(-1.43)	(-1.26)
Size	-0.25111	10.1982*	0.2618***
	(-1.16)	(1.79)	(5.64)
Cash/Assets^{c}		13.0602	
		(1.31)	
ROA^{c}			-0.4465
			(-1.25)
Sales_Growth^{c}	1.1779**	22.2453	
	(2.26)	(1.39)	
Leverage_Change	0.3693	18.5230	0.1867
	(0.74)	(1.15)	(0.58)
R&D^{c}		61.0327	1.1641
		(1.34)	(1.63)
Net_PPE^{c}		-19.0574	-0.3231
		(-1.23)	(-1.17)
CAPEX^{c}		-38.7897	-0.0176
		(-0.98)	(-0.02)
CEO_Tenure	-0.0234	1.7198*	
	(-0.57)	(1.70)	
Observations	1,509	1,509	1,509
Year-fixed Effects	YES	YES	YES
Industry-fixed Effects	YES	YES	YES

Table 11 (Continued)

Panel B: Non-Public Deals			
Variable	D_Risk_AbR	Delta[c]	Vega[c]
Intercept	2.3823**	-0.5031	-3.8468***
	(2.16)	(-0.10)	(-12.71)
Delta[c]	-0.0817**		0.0014
	(-2.14)		(0.12)
Vega[c]	1.2657***	5.8654***	
	(3.38)	(5.07)	
Cash_Comp[c]	-0.0171***		0.0157***
	(-2.84)		(5.93)
D_Risk_AbR		-0.6430	-0.3387*
		(-0.27)	(-1.76)
Size	-0.1855**	-0.0809	0.2710***
	(-2.46)	(-0.23)	(14.82)
Cash/Assets[c]		4.3299***	
		(3.02)	
ROA[c]			-0.6110***
			(-3.24)
Sales_Growth[c]	1.2151***	8.0594***	
	(3.26)	(5.65)	
Leverage_Change	0.6241***	1.4429	0.0982
	(2.84)	(0.81)	(0.59)
R&D[c]		-4.7880	1.0918***
		(-1.08)	(3.27)
Net_PPE[c]		0.9179	-0.4187***
		(0.69)	(-3.32)
CAPEX[c]		1.1299	0.6384*
		(0.38)	(1.82)
CEO_Tenure	0.0493**	0.5358***	
	(2.06)	(5.35)	
Observations	4,403	4,403	4,403
Year-fixed Effects	YES	YES	YES
Industry-fixed Effects	YES	YES	YES

A. Appendix: Variable Definitions[22]

	Compensation Variables
Delta	The dollar change in the wealth of top five executives for a one percent change in firm's stock price from ExecuComp.
Vega	The dollar change in the wealth of top five executives for a one percent change in the standard deviation of firm's stock returns from ExecuComp.
Cash_Comp	The sum of salary and bonus payments to the top five executives from ExecuComp.
Total_Comp	The sum of top five executives' salary, bonus, new stock and option grants and other forms of compensation from ExecuComp.
	Performance Measures
CARs(-5,+5)	The bidder's cumulative abnormal returns over an eleven-day event window (-5, +5) where 0 is the acquisition announcement date using the market model. The estimation period is from 200 days to 60 days before the acquisition announcement. Market returns are based on the CRSP value-weighted index.
Synergy_Gains	The sum of dollar-denominated gains for the bidder and the target. Dollar-denominated gains are defined as the market value of equity 4 weeks before the announcement date times the CAR (-2,+2) for each firm from CRSP.
Bidder's_Gains	The dollar-denominated gains for the bidder divided by *Synergy_Gains* if the latter is positive and 1 – dollar-denominated gains for the bidder divided by *Synergy_Gains* otherwise.
3yABHR	The bidder's 3-year buy-and-hold daily return following the acquisition effective date minus the 3-year buy-and-hold daily return of the matched firm for the same period from CRSP.
3yABHR_PSM	The bidder's 3-year buy-and-hold daily return following the acquisition effective date minus the 3-year buy-and-hold daily return of the propensity-score matched firm for the same period from CRSP. Propensity scores are estimated using Harford's (1999) model to predict bidders.
	Risk Measures
D_Risk	The change in the standard deviation of acquirer's stock returns between 6 months following the effective date (+1 to +126 days) and 6 months preceding the effective date (-126 to -1 days) from CRSP.
D_Risk_AbR	The change in the standard deviation of acquirer's abnormal stock returns between 6 months following the effective date (+60 to +185 days) and 6 months preceding the acquisition announcement date (-185 to -60 days) from CRSP. Abnormal stock returns are calculated as the residual from the market model using the CRSP value-weighted index.
	Deal Characteristics
Payment_Cash	A dummy variable that take the value of one if the transaction is financed only with cash and zero otherwise.
Payment_Equity	A dummy variable that takes the value of one if the deal is financed only with stock and zero otherwise.
Cont_Equity	A dummy variable that takes the value of one if the method of payment includes stock and zero otherwise.

[22] When the variables bear the exponential symbol "c" (contemporaneous) in the analysis, they are calculated for the same year as the acquisition announcement.

Mixed_Financing	A dummy variable that takes the value of one if the deal is financed by more than one means of payment and zero otherwise.
Diversifying	A dummy variable that takes the value of one if the acquiring firm and the target operate in different industries and zero otherwise based on the Fama and French (1997) classification of 48 industries.
Public	A dummy variable that takes the value of one if the target is a publicly listed firm and zero otherwise.
Private	A dummy variable that takes the value of one if the target is a privately held firm and zero otherwise.
Subsidiary	A dummy variable that takes the value of one if the target is a subsidiary firm and zero otherwise.
Hostile	A dummy variable that takes the value of one if the deal is characterized as hostile or unsolicited by SDC Platinum and zero otherwise.
Relative_Size	The ratio of the deal value reported in SDC Platinum to the market value of the acquiring firm 4 weeks before the acquisition announcement from CRSP.
	Firm Characteristics
Months_Surv.	The number of months the acquiring firm has survived since its first acquisition during the period January 1, 1981, to December 31, 2010 from SDC Platinum. If the company has not made another acquisition in the past, the variable takes the value of zero.
Size	The natural logarithm of bidder's market value of equity four weeks before the acquisition announcement date from CRSP.
Runup	The acquiring firm's buy-and-hold daily return between 205 days and 6 days before the acquisition announcement date minus the buy-and-hold daily return of the matched firm for the same time period from CRSP.
Cash/Assets	The acquirer's cash and cash equivalents to book value of total assets at the end of the year preceding the acquisition announcement from Compustat.
B/M	The book value of equity of the acquiring firm from Compustat divided by its market value from CRSP at the end of the year before the acquisition announcement.
ROA	The operating income of the acquiring firm before depreciation divided by book value of total assets at the end of the year preceding the acquisition announcement from Compustat.
Sales_Growth	The logarithm of the ratio of bidder's sales in the year preceding the acquisition announcement (t-1) to sales in the previous year (t-2) from Compustat.
Sigma	The standard deviation of the acquirer's market-adjusted daily returns from 205 to 6 days before the acquisition announcement date from CRSP.
Leverage	The acquirer's total debt divided by book value of total assets at the end of the year before the acquisition announcement from Compustat.
D_Leverage	The change in the ratio of acquirer's total debt to total assets from the end of the year preceding the acquisition announcement to the end of the acquisition announcement year from CRSP.
R&D	The acquirer's research and development expenditure to book value of total assets at the end of the year preceding the acquisition announcement from Compustat.
Net_PPE	The acquirer's net expenditure in property, plant and equipment to book value of total assets at the end of the year preceding the acquisition announcement from Compustat.

CAPEX	The capital expenditures of the acquiring firm divided by book value of total assets at the end of the year preceding the acquisition announcement from Compustat.
CEO_Tenure	The number of months the CEO of the bidder has served in this position at the time of the acquisition announcement from ExecuComp.