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Do managerial incentives prevent value-destroying acquisitions?

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Abstract

This paper examines how managerial incentives affect certain deal characteristics in acquisitions and how these characteristics are related to announcement returns and shareholder wealth. Based on our own results and extensive research, we identify large and diversifying acquisitions to be value-destroying. Our findings suggest that performance-based compensation, e.g. bonus and stock options, incentivizes the manager to acquire firms that maximize shareholder wealth. Furthermore, we present empirical evidence that CEO duality reduce the probability of engaging in diversifying, value-destroying acquisitions. These findings suggest that managerial incentives significantly affect shareholder wealth in context of acquisitions, where performance-based compensation and CEO duality prevent value-destroying acquisitions to some extent.

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1.0 Introduction

Mergers and acquisitions (M&As) have become a popular business strategy globally, especially where opportunities for organic growth is limited. Deals worth nearly $3.3 trillion in the first nine months of 2018 was reported as a record for global M&A activity according to Financial Times (Platt, 2018). Cost reduction, revenue enhancement, reduced capital requirements and tax gains are among the drivers to engage in M&As. However, extensive research has found that M&As tend to destroy shareholder value of bidder firms (Andrade, Mitchell, & Stafford, 2001; Bradley, Desai, & Kim, 1988; Loughran & Vijh, 1997). Previous literature has also examined the implications of managerial objectives and compensation structure in M&As. Datta, Iskandar-Datta, and Raman (2001) showed a positive relationship between stock price performance at announcement and equity-based compensation. It is also argued that bidders systematically overpay for targets due to the pursuit of private benefits and hubris (Morck, Shleifer, & Vishny, 1990). The research of managerial incentives and M&As implies an interesting relationship between managerial incentives and shareholder wealth.

Motivated by the implied relationship of previous research we define the research question as follows: *Do managerial incentives, e.g. the structure of CEO compensation, prevent bidder firms from engaging in value-destroying acquisitions?* To explore this, our research is constructed in two steps. Firstly, we try to find deal characteristics that are associated with negative announcement returns. These deal characteristics are then defined as value-destroying acquisitions. Secondly, we examine how managerial incentives relate to these value-destroying acquisitions. The primary objective of this study is to examine the relationship between different managerial incentives and shareholder wealth in context of acquisitions.

Using a sample of 391 transactions in the United States between 2008 and 2017 and extensive research on M&As, we first examine bidder's announcement returns associated with the deal characteristics transaction size and corporate diversification[1]. We identify large deals as value-destroying. Existing literature suggests that corporate diversification is negatively related to firm performance and

[1] Corporate diversification and diversifying deals are used interchangeably. Both describe an acquisition where bidder and target operate in different industries.

firm value (Graham, Lemmon, & Wolf, 2002; Lang & Stulz, 1994; Lins & Servaes, 1999). However, our data sample does not provide any evidence that either corporate focus or diversifying deals destroy value at announcement.

Our study offers empirical evidence on the relationship between managerial incentives, specific deal characteristics and shareholder wealth. Whereas previous research on M&A and managerial incentives has focused on a broad definition of value-destroying acquisitions, we contribute with a more specific approach by examining how managerial incentives affect specific deal characteristics and thus shareholder wealth.

We study the relationship between managerial incentives, with focus on performance-based compensation versus fixed compensation, and two deal characteristics. That is, if managerial incentives have any explanatory power on decisions regarding transaction size and corporate diversification. Ordinary least square (OLS) and logistic regression analysis was conducted to examine the relationship between managerial incentives, and transaction size and corporate diversification respectively. We find that the transaction size is increasing in the incentive variables salary, bonus and fair value of options. The effect on transaction size is substantially larger for salary than both bonus and fair value of options, indicating an interesting difference between performance-based compensation and fixed compensation regarding acquisition decision. We find similar results in our analysis of corporate diversification. Odds, or probability, of engaging in corporate diversification is increasing in both salary and bonus, however, the odds is more increasing in salary. In addition, we provide evidence that CEO duality[2] significantly decreases the odds of diversifying acquisitions. Based on Davis, Schoorman, and Donaldson (1997), we argue that CEO duality may be both a structural and psychological empowerment of the CEO, thus encouraging a CEO to better serve the firm and its shareholders. Our findings, in the context of bidder's announcement returns, provides evidence that managerial incentives affect shareholder wealth. We argue that performance-based compensation gives less incentives to engage in value-destroying acquisitions that decrease shareholder wealth compared to fixed compensation.

[2] CEO duality: when the CEO is also a chairman at the board of directors.

The next section reviews the literature and present our hypothesis statement. Section 3 lays out the sample formation process and data sources. Section 4 describes our research design and employed methodologies. In section 5 we present the empirical findings with its possible explanations. Lastly, section 6 concludes the research.

2.0 Literature review

Previous literature on M&As is extensive. In this section we present a broad overview of studies that focus on firm characteristics, bidder firms' announcement returns, and the relationship between managerial compensation and deal characteristics. Moreover, relevant theories to our research are discussed. Firstly, studies on firm- and deal characteristics, with focus on firm size and diversification, and its effect on bidders' announcement return and firm performance are presented. Secondly, we give an overview of relevant studies on the relationship between managerial compensation and decision-making regarding M&As. In the third subsection we present two theories relevant for our study, free cash flow theory and managerial entrenchment theory. We conclude the section with our hypothesis statement.

2.1 Deal characteristics, announcement return and firm performance

Moeller, Schlingemann, and Stulz (2004) studied the relationship between acquisitions and bidder firm size. In their paper, they test whether bidder firm size affect post-acquisition abnormal return. After controlling for firm and deal characteristics, they find that small firms experience 2 percentage points larger abnormal return at announcement compared to large firms. In addition, they found that shareholders in large firm experience significant wealth losses following an announcement of acquisition. Their findings are supported more recently by Hackbarth and Morellec (2008). Fuller, Netter, and Stegemoller (2002) studied shareholders return for serial acquirers and examined variations in acquirer returns as a function of different bid characteristics. Their results indicate negative return for shareholders for larger target relative to bidders. Several studies are controlling

for relative size and identified the same pattern in cumulative abnormal returns (CARs). Studies by Asquith, Bruner, and Mullins (1983) and Moeller et al. (2004), on the other hand, shows increasing bidder returns in relative size. Target firm size has also been reported to affect bidders' announcement returns. Economically significant results presented by Alexandridis, Fuller, Terhaar, and Travlos (2013) state that for every standard deviation increase in target firm size, the bidders' announcement return decreases by 1.1%.

Greater corporate focus, i.e. operating in one or few industries, is consistent with maximizing shareholder value (Comment & Jarrell, 1995). Graham et al. (2002) also found a negative effect for acquiring firms from other industries than the bidder operates in. Corporate diversification, defined as a corporation's expansion into a new market or industry in which the corporate does not currently operate, and firm performance is previously studied by Palich, Cardinal, and Miller (2000). Their study focuses on the previous ambiguous empirical evidence to conclude whether moderate or extensive diversification is superior for firm performance. In line with Hoskisson and Hitt (1990), Palich et al. (2000) found empirical evidence of an inverted-U relationship between corporate diversification and firm performance. That is, low to moderate diversification is positively related to firm performance, while the relationship is negative for moderate to high diversification. Previous literature suggest that corporate diversification has not been beneficial for corporations. A study performed in the U.S. using data from the 1980s found the relationship between corporate diversification and firm value to be negative (Lang & Stulz, 1994). Lins and Servaes (1999) found similar results when they examined the valuation effect of diversification in Germany, Japan and the United Kingdom. In Japan and the United Kingdom, they found a diversification discount of approximately 10 and 15 percent respectively. However, they did not find any evidence for a discount in Germany.

2.2 Managerial incentives and deal characteristics

Morck et al. (1990) tested if managerial objectives drive bad acquisitions. They introduce evidence that some bidders systematically overpay for target firms. According to the article, managers of the bidding firm overestimate their ability to run the acquired firm. Hubris and pursuit of private benefits for the manager are

among the reason's bidder firms overpay for their targets. A manager takes both private benefits and consequences for the market value of the firm into account when the firm acquires. They also argue that managers are willing to overpay if there are high private benefits related to the acquisition, even at the cost of shareholder wealth.

Executive compensation structure and its effects on corporate acquisition decisions is well-documented in the literature. Evidence from Datta et al. (2001) suggest a positive relationship between managers' equity-based compensation (EBC) and stock price performance around and following acquisition announcements. They separated the acquisitions in their sample into high and low EBC firms and state that low EBC firms suffer significant losses while high EBC firms experience significant positive stock price effects. Hagendorff and Vallascas (2011) analyzed how structures of managerial compensation affect the risk choices in acquisitions made by bank CEOs. Their main finding is that higher pay-risk sensitivity is related to CEOs engaging in risk-increasing deals. This is interpreted as a causal relationship between executive compensation and the manager's investment choices. They offer a perspective on how compensation can affect the riskiness of the target firm in M&As. These findings may be limited to the banking industry, however, Carpenter (2000) found general evidence that increased option compensation makes the manager seek less risk.

Bliss and Rosen (2001) have done a study on CEO compensations and bank mergers. Their paper focus on managerial compensation following a merger in the banking industry and whether CEO compensation and level of stock ownership affect acquisition decisions. An interesting finding in their study is that executive compensation increases significantly following an acquisition. They also found that compensation increased when accounting for stock price decline on announcement date. Hence, the CEOs overall wealth increases when engaging in acquisition, usually at the expense of shareholders.

CEOs with more power to influence decisions received significantly larger bonuses. However, there is no positive relation between bonus compensation and deal performance, where the majority received bonus payment in the form of cash. Furthermore, the most frequent motivation for the M&A bonus was the resulting increase in firm size and revenues. The results indicated that measures of effort and skill only explained a small part of the variation in bonus, while deal size and

managerial power explained a large part (Grinstein & Hribar, 2004). Similar results are found in studies of corporate diversification and CEO compensation. Data from 1985-1990 suggest substantial compensation premia for mangers of diversified firm. Rose and Shepard (1994) reported 13 to 17 percent higher compensation for CEOs of firms with two distinct lines of business compared to similar-sized undiversified firms. Their findings are explained by increased required managerial ability in diversified firms, rather than CEO entrenchment.

Kroll, Wright, Toombs, and Leavell (1997) investigated whether acquiring firms' form of control might be associated differently with CEO rewards or excess returns. Their finding indicates that for manager-controlled and owner-manager-controlled firms, such announcements result in positive excess returns. They also found that increased firm size due to acquisitions are significantly and positively associated with CEO rewards.

2.3 Theoretical framework

2.3.1 Free cash flow theory

According to Jensen (1987), the agency costs associated with conflicts between managers and shareholders over the payout of free cash flow played an important role in the merger boom in the 1980s. To maximize shareholders wealth, managers must pay out the free cash flow to the shareholders. However, earlier studies discuss how managers rather follow their own interests, incentives to expand the firm beyond the size that maximizes shareholder wealth. Managers may pursue increased power and benefits, executing value-destroying investments or be a part of empire building (Jensen, 1987).

Jensen (1986) presented evidence from the oil industry that the management did not pay out the excess resources to shareholders in the late 1970s and early 1980s. Large cash flows, as an effect of price increases in the industry, were spent on exploration and development (E&D) and programs involving acquiring companies in retailing. The firm's stock prices systematically decreased with announcement of increases in E&D expenditures and the acquisitions were unsuccessful.

Acquisitions made by cash-rich bidders are value-decreasing, according to Harford (1999). He argues that abnormal stock price reactions to the announcement of acquisitions by cash-rich firms is negative and decreasing in the amount of excess free cash flow. This finding is supported by Lang, Stulz, and Walkling (1991).

Debt can motivate managers of firms with substantial free cash flow. Jensen (1986) argues that the benefits of debt in regard to aligning interests between manager and shareholders have been neglected compared to the agency costs of debt. Debt can prevent managers to invest excess free cash flow on inefficiently diversification, perquisites or value-destroying acquisitions.

Managerial stock ownership may also be interesting regarding the free cash flow theory. In addition to the evidence that cash-rich firms are more likely to be bidders, Harford (1999) argues that the acquisition activity in his finding is driven by low managerial stock ownership.

2.3.2 The managerial entrenchment theory

Shleifer and Vishny (1989) proposed that managers have incentives to make manager-specific investments. They argued that managers make acquisitions to reduce the probability of being replaced, even if the acquisitions reduce shareholders wealth. Because of the increased cost to replace the manager, higher wages and larger perquisites could be extracted from shareholders. When managers pursue entrenchment, it often involves expanding existing business lines excessively. For example, CEOs who are more experienced in other industries may have increased incentives of diversifying transactions. Amihud and Lev (1981) presented evidence supporting this. They found that managers engage in conglomerate acquisitions motivated by risk-reducing activities. That is, managers have incentives to reduce the firm risk since their employment and income are correlated with the firm risk.

According to Masulis, Wang, and Xie (2007), takeovers by entrenched managers have significantly negative effects on bidder announcement returns. Several drivers can explain the negative market returns (Harford, Humphery-Jenner, & Powell, 2012). Their study determined how entrenched managers made value-decreasing acquisitions. They found that CEOs tend to pay high premiums,

select low synergy targets and avoid risk-reducing targets to maintain their level of entrenchment.

2.4 Hypothesis statement

Considering relevant studies and theories mentioned above, we want to test four hypotheses. Hypothesis (i) and (ii) are in line with existing empirical evidence, however, we want to test the hypotheses on our data. Alexandridis et al. (2013) found that an increase in target firm size affect bidders' announcement return negatively, which is related to our first hypothesis. Further, we also believe corporate diversification affects the abnormal return around announcements. Our second hypothesis test the results of Graham et al. (2002) among others, which found diversifying M&As to be negatively affecting bidder firms.

Based on the presented hypotheses and relevant literature, we state two hypotheses for CEO incentives and deal characteristics (iii and iv). Datta et al. (2001) argued that stock price performance is positively correlated with equity-based compensation. In addition, Morck et al. (1990) tested if managerial objectives drive bad acquisitions. Therefore, our third and fourth hypothesis is related to the total compensation and its structure to CEOs. We believe that value-destroying acquisitions, larger targets and corporate diversification, are related to manager incentives.

By testing all hypotheses, we can discuss how CEO incentives affect shareholder value in certain acquisitions, and thus conclude if managerial incentives prevent value-destroying acquisitions.

i. Bidders' abnormal return around announcement is decreasing (becoming more negative) in target firm size.
ii. Bidders' abnormal return around announcement is negatively related to corporate diversification.
iii. High total CEO compensation and low performance-based pay are associated with larger deals.
iv. High total CEO compensation and low performance-based pay are associated with corporate diversification.

3.0 Sample Formation Process and Data Sources

In this section we outline how the data was obtained. The sample consists of information on acquisition deals, bidder- and target characteristics, managerial compensation, -incentives and -characteristics and stock prices. We used different databases and merged all relevant data. To match data from different databases, we used announcement date and company identifiers (ticker-ID and GVKEY). Due to weakness of outdated tickers, we quality assured that the companies in fact were matched correctly. The sample formation process resulted in a final dataset of 391 transactions including information on all necessary variables. The process and databases used is discussed in the following subsections. Further, we present descriptive- and summary statistics and Pearson correlation matrices. The variables are discussed more in-depth under methodology. A complete list of our variables is listed in appendix A.

3.1 Deals

We extracted data on mergers and acquisitions from the SDC Platinum database. Transactions included meet the following criteria: (1) between 2008 and 2017, (2) acquirer and target are located in the U.S, (3) the deal is completed, (4) the deal is listed in U.S. Dollar, (5) payment method is either in cash, stocks or a combination of both, and (6) enterprise value of target firms is positive.

For each transaction, we exported data related to the balance sheet, income statement and industry (SIC-codes) for both target and bidder.

3.2 Stock prices

Daily stock prices for both event window and estimation window in our event study was gathered from the Center for Research in Security Prices (CRSP) database. In addition, we obtained daily CRSP value-weighted index for the corresponding days. These were used to calculate the 5-day cumulative abnormal return (CAR) for each bidder firm and included as a variable in our dataset.

3.3 Compensation and incentives

Execucomp by WRDS was used to obtain compensation and incentives data for CEOs of bidder firms. Data extracted from Execucomp include salary, bonus, total compensation, fair value of stocks and fair value of options as compensation measures. In addition, we include the incentive measures CEO ownership and whether the CEO served as a director during the fiscal year. All data is at the end of the fiscal year prior to the announcement of the acquisition.

3.4 Control variables

Bidder-, deal-, and CEO characteristics are used as control variables in our models. From Compustat we extracted data from the income statement and balance sheet to calculate/obtain bidder characteristics such as free cash flow, Tobin's q and leverage. SDC Platinum provided information on deal- and bidder characteristics. Lastly, we obtained CEO characteristics such as age, gender and the date (s)he became CEO. The latter is obtained to calculate CEO tenure.

3.5 Sample Characteristics

Table 1 and 2 presents frequency distribution and statistics of the acquisitions in the sample based on year and industry respectively. The sample consists of 391 completed acquisitions from January 1, 2008 to December 31, 2017 in the U.S. In table 1, we present the mean and median transaction value and relative size, number of all-cash deals and corporate diversification. From the tables we see that most transactions are 100% financed by cash (214 of 391). In addition, of the 391 deals, 226 observations are diversifying acquisitions.

Table 1 show large differences between mean and median transaction value. Transaction value range from $3 million dollars to $85 billion dollars. The median value of the sample offers a better representation of the data since the mean is heavily affected by very large transactions in our data sample. The same pattern is found in mean and median values of bidder total assets in table 2. We see that the mean is skewed by few, large bidder firms in the utilities industry.

Table 1: Frequency table by year

Year	Frequency	% of total	Mean Transaction Value	Median Transaction Value	Mean Relative Size	Median Relative Size	All-Cash Deals	Corporate Diversification
2008	18	4.60 %	227.49	142.70	0.19	0.06	6	11
2009	44	11.25 %	5188.73	408.69	0.46	0.11	17	25
2010	56	14.32 %	1470.93	418.03	0.13	0.08	36	32
2011	41	10.49 %	3631.01	580.00	0.29	0.12	21	25
2012	42	10.74 %	1179.82	642.47	0.15	0.06	25	24
2013	36	9.71 %	2467.83	1170.54	0.24	0.12	23	16
2014	36	9.21 %	3890.39	823.82	0.31	0.10	19	21
2015	40	10.23 %	4904.83	2326.35	0.21	0.06	23	21
2016	43	11.00 %	5844.86	1009.16	0.23	0.07	25	24
2017	35	8.95 %	8555.33	1771.06	0.28	0.16	19	27
Total	**391**	**100 %**	**3808.31**	**725.62**	**0.25**	**0.08**	**214**	**226**

Corporate diversification is defined as an acquisition of a firm that operates in different industry. That is, SIC-code of target and acquirer is different. Relative size is measured as the relative size based on total assets at the end of the fiscal year prior to announcement.

Table 2: Frequency table by industry

Industry of bidder	Frequency	% of total	Mean Total Assets	Median Total Assets	All-cash deals	Corporate Diversification
Communication Services	16	4,09 %	150785,33	138717	5	13
Consumer Discretionary	32	8,18 %	16875,72	6438,8	15	20
Energy	11	2,81 %	35534,38	16980	0	4
Financials	21	5,37 %	18551,45	6291,9	8	8
Health Care	66	16,88 %	12431,74	5878,5	46	44
Industrials	65	16,62 %	25191,55	5922	36	40
Information Techonology	90	23,02 %	17029,29	1624,1	56	44
Materials	60	15,35 %	31306,71	6462,8	35	36
Consumer Staples	16	4,09 %	19099,98	9816	10	10
Utilities	14	3,58 %	50827,18	45624,5	3	7
Total	**391**	**100 %**	**27159,11**	**5922**	**214**	**226**

Total assets for bidder firms at the end of the fiscal year prior to the announcement.

Table 3 and Table 4 presents the mean, median, minimum, maximum and standard deviation of incentives and other CEO characteristics, and bidder characteristics respectively. We notice that, on average, most of a CEOs total compensation is performance-based, where the largest contributor is value of stocks. Low mean and median CEO ownership is in line with dispersed ownership in the United States.

Table 3: Summary statistics of CEO characteristics

Variable	Mean	Median	Min	Max	Std. Dev.
Salary*	983.42	969.36	0	3466.66	442.34
Bonus*	172.84	0	0	9050	786.29
Options*	1653.54	443.72	0	64979.6	4043.22
Stocks*	4210.24	2757.77	0	106272.1	6574.92
Total Compensation*	9422.90	7404.83	.001	108606.4	8998.40
% Performance	.576267	.609041	0	.9836533	.210720
CEO Tenure	7.10230	6	0	36	5.98114
CEO Age	55.9156	56	35	73	6.16653
CEO Ownership	1.47234	.414	.001	37.644	3.77541

*in $1,000. Total compensation includes Salary, Bonus, Other Annual, Total Value of Restricted Long-Term Stock Granted, Total Value of Stock Options Granted (Black-Scholes), Incentive Payouts, and All Other Total. % performance includes bonus, options and stocks as a fraction a fraction of total compensation.

Table 4: Summary statistics of bidder characteristics

Variable	Mean	Median	Min	Max	Std. Dev.
Free Cash Flow	.07340	.07480	-.18188	.26956	.05609
Leverage	1.3494	.51446	0	65.125	4.9887
Tobin's q	1.9406	1.7208	.60551	8.9794	1.0177
Volatility	.36094	.29638	.12966	5.5205	.33614
Large Equity	.09462	0	0	1	.29307

Tobin's q is measured as total assets and market value equity less total common equity as a fraction of total assets. Leverage is computed as total current liabilities and total long-term debt as a fraction of (parent) shareholder equity at the end of the fiscal year prior to announcement. Free cash flow is calculated as operating income before depreciation less capital expenditures less total interest and related expenses less income taxes scaled by total assets. Large equity is a dummy variable equlas 1 if equity is greater than $50 million. Volatility is the standard deviation of inter-day return multiplied by the square root of 252.

3.7 Correlation analysis

Exhibit B and C shows Pearson correlation matrix between the variables used in the analysis. In exhibit B, correlations between dependent and all independent variables from the regression analysis of announcement returns is presented (model 1). The largest correlations are between control variables. Free cash flow is positively correlated (0.4929) with both Tobin's q and percent of cash payment (0.3092). In addition, we find volatility positively correlated (0.3650) to the year dummy 2009. We do not consider the presented correlations problematic for our first model.

Exhibit C present correlations between dependent and independent variables used in our models analyzing managerial incentives and acquisitions decisions (model 2 through 5). We only observe high correlation between total compensation and its compensation components (salary, bonus etc.). However, we do not include both total compensation and its components in any models. These are used separately in two different model to check robustness of our results.

4.0 Research Design

4.1 Event study

We research the market reaction on stock prices to announcements of acquisitions. Our approach is to conduct an event study where the announcement of the deal is the event. To control for any information leakage before announcement and possible lag in investors' ability to act on new information, we use one of the most

researched event windows: 2 days prior to announcement until 2 days after the announcement. We also use a 140-day estimation window which is discussed below.

We apply the market model which assumes a stable linear relationship between the security and market return. In our research, the market model is preferable because it reduces the variance of abnormal returns compared to the constant mean return model which assumes constant mean return over time (MacKinlay, 1997).

Cumulative abnormal return (CAR) is the outcome of our event study. CAR is calculated using the firms' daily stock prices during both estimation and event window and daily CRSP value-weighted return index as daily market return in the same time period. Traditionally, event studies have been performed using monthly stock prices, however, Brown and Warner (1985) found that the properties of daily observations are not threatening the specification of the market model.

First, we calculate the firms' daily stock price returns as $\ln(\frac{P_{t+1}}{P_t})$. Using the daily returns as the dependent variable in a linear regression and daily market return as independent variable, we obtain the α and β parameters from the estimation window.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

$$E(\varepsilon_{it} = 0) \quad var(\varepsilon_{it}) = \sigma_\varepsilon^2$$

Then we calculate the securities' normal return $E(R_{it}|X_t)$ using the estimated parameters from the estimation window to the daily data in the event window. Thus, we have the securities' normal return during the event window.

$$E(R_{it}|X_t) = \hat{\alpha} + \hat{\beta} R_{mt}$$

Abnormal return is then calculated as the difference between the securities' actual return and normal return in the event window.

$$AR_{it} = R_{it} - E(R_{it}|X_t)$$

where $AR_{it}, R_{it}, E(R_{it}|X_t)$ and X_t are firm's abnormal return, actual return, normal return and conditioning information factor, which in this case is the announcement of an acquisition, respectively.

The abnormal returns have to be aggregated in order to draw any overall inferences for the event of interest (MacKinlay, 1997). Hence, we accumulate the five abnormal (daily) returns for each event and obtain a 5-day CAR.

$$CAR_i(t_1, t_2) = \sum AR_{it}$$

In order to capture the isolated effect of the announcement during the event window on a firms' cumulative abnormal return, we use a 140-day estimation window from 150 days until 10 days prior to announcement. MacKinlay (1997) found that the distribution of ARs are normally distributed with zero mean and variance $\sigma^2(AR_{it})$ if the estimation window is large. Our choice of estimation window is a trade-off between a large window to achieve normal distribution of ARs and a reduced window to avoid other events from the same firm within the estimation window.

4.2 Ordinary least square (OLS) regression analysis – market reaction

After performing an event study and obtaining 5-day CAR for all transactions, we examine the effects of deal size and diversifying deals on the market reaction following an announcement of an acquisition. In addition to the two variables of interest, transaction value and a corporate focus dummy variable, we include several variables in our model in an attempt to explain the variation in CAR. Masulis et al. (2007) used both deal characteristics and bidder characteristics as determinants for acquirer returns that we adapt in our model.

$$\begin{aligned} CAR(-2,2)_i = {} & \alpha + \beta_1\, Transaction\ Value_i + \beta_2\, Corporate\ Focus_i \\ & + \beta_3\, Large\ Equity_{i,t-1} + \beta_4\, Relative\ Size_{i,t-1} + \beta_5\, \%\ of\ Cash_i \\ & + \beta_6\, Tobin's\ q_{i,t-1} + \beta_7\, FCF_{i,t-1} + \beta_8\, Leverage_{i,t-1} \\ & + \beta_9\, Volatility_{i,t-1} + \beta_{10-18}\, Industry\ Dummy_i \\ & + \beta_{19-27}\, Year\ Dummy_i + \varepsilon_i \end{aligned}$$

4.2.1 Deal characteristics

Previous research suggest that the method of payment is related to the stock price reaction to acquisition announcements. In the literature, it is known that cash as

payment method outperform pure stock exchange (Travlos, 1987). Myers and Majluf (1984) attributed the findings to the adverse selection problem in equity issuance. Hence, we include the variable % of Cash that indicate the percentage of the deal payed with cash.

In addition to payment method, we also control for the relative size between the bidder and the target. The relative size between the two firms are measured by total assets at the end of the fiscal year prior to the announcement date. Moeller et al. (2004) have studied the effect of relative size on bidder returns and found that increased relative size increase bidder returns at announcement.

We also control for the year the announcement was made. Our model includes dummy variables which equals 1 if the announcement was made in the given year, or 0 otherwise. Due to multicollinearity, we include dummy variables for all years except 2017. Year dummies are included to control for macroeconomic variations that may affect the stock price returns.

4.2.2 Bidder characteristics

Servaes (1991) suggest that Tobin's q has a positive effect on CAR for tender offer acquisitions, while Moeller et al. (2004) find the effect to be negative. However, both argue that Tobin's q affects bidder announcement returns. Therefore, we include Tobin's q at the end of the fiscal year prior to the announcement.

Financial leverage incentivizes the manager to improve firm performances because of the control creditors obtain through leverage. Furthermore, leverage is a corporate governance mechanism that reduces managerial discretion through its impact on free cash flow. Hence, we control for the acquirer's financial leverage.

Free cash flow is expected to have a negative impact on CAR based on the free cash flow theory. Higher free cash flow allows managers to engage in empire building which ultimately affect CAR (Jensen, 1986). On the other hand, high free cash flow can also indicate good recent firm performance, which is likely to be correlated with better managerial skills. Hence, the coefficient for free cash flow could turn out to be either positive or negative.

In addition, we control for the bidders' industry to capture industry-specific variations on stock returns. All firms in our dataset is categorized in ten industries

based on the Global Industry Classification Standard (GICS) that are used to produce dummy variables. We exclude one industry to avoid perfect multicollinearity.

4.3 Ordinary least square (OLS) regression analysis – incentives and deal characteristics

OLS regression analysis is also applied when we study the effect of managerial incentives on transaction size. In addition to bidder and deal characteristics, our model includes incentive variables and CEO characteristics in order to isolate causality.

$$
\begin{aligned}
Transaction\ Value_i &= \alpha + \beta_1\, Salary_{i,t-1} + \beta_2\, Bonus_{i,t-1} \\
&+ \beta_3\, Value\ of\ Options_{i,t-1} + \beta_4\, Value\ of\ Stocks_{i,t-1} \\
&+ \beta_5\, CEO\ Ownership_{i,t-1} + \beta_6\, Directior_{it} + \beta_7\, Male_i \\
&+ \beta_8\, CEO\ age_{it} + \beta_9\, CEO\ tenure_{it} + \beta_{10}\, Relative\ Size_{i,t-1} \\
&+ \beta_{11}\, \%\ of\ Cash_i + \beta_{12}\, Corporate\ Focus_i + \beta_{13}\, FCF_{i,t-1} \\
&+ \beta_{14}\, Volatility_{i,t-1} \\
&+ \beta_{15-23}\, Industry\ Dummy_i + \beta_{24-32}\, Year\ Dummy_i + \varepsilon_i
\end{aligned}
$$

4.3.1 Incentive variables

Our variables of interest are a set of incentive variables. Coles, Daniel, and Naveen (2006) found empirical evidence of strong causal relation between the structure of managerial incentives and value-critical managerial decision. Thus, we include several incentive variables: salary, bonus, fair value of stocks and options, CEO ownership and a dummy variable indicating whether the CEO served as a director during the fiscal year.

4.3.2 CEO characteristics

Several studies have examined the effects of CEO characteristics on firm performance. We expect such characteristics to impact the choice of target firms, and have adopted control variables from Brick, Palmon, and Wald (2006). They

included characteristics such as CEO age, gender and tenure in their study on firm performance.

4.3.3 Deal characteristics

We also include deal characteristics that may affect the size of the deal. Other expected determinants of transaction size are payment method and corporate diversification. In addition, we have controlled for year-specific effects with year dummies.

4.3.4 Bidder characteristics

It is well known in the literature that free cash flow affects the investments a firm undertake. Jensen (1986) argue that firms with large free cash flows are more likely to engage in low-benefit or value-destroying mergers. Moreover, we include the annual stock price volatility of the bidder firm. Volatility prior to the deal is expected to reflect the risk profile of the firm, and thus affect the choice of target firm.

4.4 Binomial logistic regression analysis

We use a binomial logistic regression model to evaluate the probability that the target firm acquired is within the same industry as the bidder. We include the same control variables as the previous model, and the discussion related to control variables above apply similarly to our logistic regression model.

Given any random variable z_i, the binomial logistic regression model is the cumulative logistic probability distribution function (Brooks, 2014), which can be expressed as

$$F(z_i) = \frac{e^{z_i}}{(1+e^{z_i})} = \frac{1}{1+e^{-z_i}}$$

where we interpret $F(z_i)$ as a probability based on z_i. Thus, $F(z_i)$ can take on values between 0 and 1. We can then express the estimated logistic model as

$$p_i = \frac{1}{1+e^{-(\beta_1+\beta_2 X_{2i}+\cdots+\beta_k X_{ki}+u_i)}}$$

The output will be equal to p_i if the probability of the dependent variable equals: $y_i = 1$. Our logistic regression models are performed in Stata using the command –logit-. Furthermore, our code includes –mtx- to obtain odds ratios. Odds ratios are easier to interpret and used to calculate probabilities for corporate focus:

$$\Pr(y_i = 1) = \frac{\beta_{vi}}{1 + \beta_{vi}}$$

where β_{vi} is the odds ratio for variable v of firm i.

$$\begin{aligned}\Pr(Corporate\ focus) &= \alpha + \beta_1\, Salary_{i,t-1} + \beta_2\, Bonus_{i,t-1} \\ &+ \beta_3\, Value\ of\ Options_{i,t-1} + \beta_4\, Value\ of\ Stocks_{i,t-1} \\ &+ \beta_5\, CEO\ Ownership_{i,t-1} + \beta_6\, Directior_{it} + \beta_7\, Male_i \\ &+ \beta_8\, CEO\ age_{it} + \beta_9\, CEO\ tenure_{it} + \beta_{10}\, Relative\ Size_{i,t-1} \\ &+ \beta_{11}\, \%\ of\ Cash_i + \beta_{12}\, TransactionValue_i + \beta_{13}\, FCF_{i,t-1} \\ &+ \beta_{14}\, Large\ Equity_{i,t-1} \\ &+ \beta_{15-23}\, Industry\ Dummy_i + \beta_{24-32}\, Year\ Dummy_i + \varepsilon_i\end{aligned}$$

4.5 Endogeneity

Endogeneity concerns can arise from three different sources. That is, omitted variables, simultaneity and measurement error. We will discuss the possibility of endogeneity concerns in our models in light of the sources relevant for our study.

If there exist omitted variables that are correlated with our included independent variables, the dependent variable will be correlated with the error term, and thus the model will suffer from an endogeneity problem. As a result, our estimated coefficients will be inconsistent, and a problem of inference arise (Roberts & Whited, 2013). When analyzing CEO compensation and managerial decisions that affect firm performance, endogeneity concerns regarding unobservable bidder and CEO characteristics are plausible. One factor that may have this property is managerial ability. As with the discussion about CEO compensation and firm size by Gabaix and Landier (2008), it can be argued that managerial ability is (positively) correlated with CEO compensation. If that is the case, managerial ability, expressed in the error term, is correlated with the dependent variable (value of transaction and corporate focus dummy). However, to

address this concern, we have added several control variables that is expected to correlate with the unobserved omitted variables. In the example given, we include variables of the CEO's age and CEO tenure.

Simultaneity bias occur when both the dependent variable and one or more of the independent variables are determined in equilibrium, so that either the independent variable(s) causes the dependent variable or vice versa (Roberts & Whited, 2013). We look at announcement returns, which are less likely to be affected by endogeneity issues. In addition, we include variables from income statements, balance sheets and compensation data from the end of the fiscal year prior to announcement to avoid simultaneity in our models.

4.6 Diagnostics

4.6.1 Breusch-Pagan test for heteroscedasticity

We perform a Breusch-Pagan test for heteroscedasticity for both OLS regression models, as well as our model constructed to check robustness. This is performed in Stata with the command –estat hettest-. Unsurprisingly, the Breusch-Pagan test conclude the same for all models. The null hypothesis of homoscedasticity is rejected at all levels for all models. Results from the tests are reported in exhibit D. Heteroscedasticity is present and violate the Gauss Markov assumptions necessary to estimate the best linear unbiased estimator (BLUE) in OLS. To address the issue of heteroscedasticity, we use robust standard errors in our models, and thus obtain unbiased standard errors of OLS coefficients.

4.6.2 Multicollinearity

To check if two or more variables are near perfect linear combinations of one another, we use the Stata command –vif-. Variance inflation factor (VIF) above 10, as a rule of thumb, indicate further inspection of multicollinearity. Exhibit E present the results from our tests. Industry dummies for information technology, health care and industrials have a VIF above 5 and are all inspected further in a correlation matrix (see exhibit B). From the correlation matrix, we conclude that multicollinearity is not an issue given that the highest correlation is 0.4929.

Due to limitations regarding VIF and logistic regressions, we only inspect the correlation matrix (exhibit C) for model 5 and 6 to conclude that multicollinearity is not present.

4.6.3 Specification error

After running our logistic regression with the –logit- command in Stata, we use the –linktest- command to detect a specification error. The output, reported in exhibit F, show that _hat is significant at all levels and _hatsq insignificant, suggesting that our model is correctly specified.

5.0 Empirical Findings

In the following, we present the results from our models constructed according to our research design. Furthermore, we explain our findings with respect to relevant research and literature. We start with a brief overview of the results obtained from the event study and OLS regression analysis of target firm size and corporate diversification on bidders' abnormal return on announcement. Then we present and discuss the results from the OLS regression and logistic regression performed on managerial incentives and deal characteristics.

5.1 Transaction size and corporate diversification on announcement return

Table 5: Regression results from model 1

5-day CAR	Coef.	Robust Std. Err.	t	P>t
Deal characteristics				
Transaction value ($ bn)	**-.0004795****	**.0001988**	**-2.41**	**0.016**
Corporate focus	**.0037905**	**.0033402**	**1.13**	**0.257**
Relative size	.0133867***	.0050046	2.67	0.008
% of Cash	.0169415***	.0062227	2.72	0.007
Bidder characteristics				
Large Equity	-.0018961	.0050101	-0.38	0.705
Tobin's q	-.0002788	.0022078	-0.13	0.900
Free Cash Flow	.0086505	.0377394	0.23	0.819
Leverage	.0000812	.0002088	0.39	0.698
Volatility	-.0003191	.0031531	-0.10	0.919
Materials	-.0240491	.0162952	-1.48	0.141
Health Care	-.0201691	.0167927	-1.20	0.231
Energy	-.0264756	.0170193	-1.56	0.121
Financials	-.0206074	.0173133	-1.19	0.235
Discretionary	-.0174035	.01606	-1.08	0.279
Industrials	-.0204217	.0161865	-1.26	0.208
Staples	-.0291216*	.01711	-1.70	0.090
Utilities	-.0179618	.0157939	-1.14	0.256
Information Technology	-.0205139	.0165035	-1.24	0.215
2008	-.010172	.0077911	-1.31	0.193
2009	.0130412*	.0073621	1.77	0.077
2010	.0042939	.0056188	0.76	0.445
2011	-.0031423	.0066642	-0.47	0.638
2012	-.0066418	.0073604	-0.90	0.367
2013	.0154437**	.0071678	2.15	0.032
2014	.0114944*	.0064212	1.79	0.074
2015	-.003374	.0059751	-0.56	0.573
2016	-.0091921	.0060941	-1.51	0.132
Constant	.0037934	.0149458	0.25	0.800

R-squared = 0.1353

***, ** and *, 1%, 5% and 10% respectively

5.1.1 Transaction size

In this subsection, we examine how target size affect the cumulative abnormal return in the 5-day event window (-2, +2) around the announcement date. The results in table 5 show that transaction value, the variable of interest, is statistically significant at the 5% significance level and an R-squared of 0.1353 for our model. The negative coefficient shows that announcement returns for smaller targets outperform larger targets, which support previous work by Alexandridis et al. (2013). More specifically, the 5-day CAR decrease on average by 0.048% for a $1

billion increase in transaction value. The magnitude of the coefficient may appear small, however, given the mean (median) transaction value of $3.8 billion ($725 million), CAR is moderately affected by transaction value. A possible explanation of the results presented may be the complexity of acquiring larger targets. Alexandridis et al. (2013) also discussed the case of complexity and stated that additional complexity makes the economic benefits of acquisitions difficult to attain. Moreover, the differences may also be explained by the relationship between overpayment of targets and bidder firm size (Moeller et al., 2004).

Another interesting finding is the positive relationship between relative size and CAR. Our model rejects the null hypothesis that the coefficient of relative size is zero. It is significant at all significance levels with a p-value of 0.008. Acquiring a target firm with exactly the same size (measured as total assets) result in 1.34% higher CAR compared to a very large bidder acquiring a very small target. Holding bidder's total assets constant, the coefficient suggests that CAR increase in target firm size which seem to contradict our finding above. However, the ratio contains other properties, unlike the dollar amount of the transaction value, that are well-documented in the literature. Small firms are shown to fare significantly better abnormal return associated with acquisition announcements compared to large firms (Gorton, Kahl, & Rosen, 2009; Moeller et al., 2004).

The results show that bidders' abnormal return around announcement becoming more negative as target size increase. We believe the complexity of the deal and overpayment of targets might affect the market reaction, which also was discussed by Alexandridis et al. (2013) and Moeller et al. (2004). The market may also react to empire building and managers pursuing own interests, which will be discussed later.

5.1.2 Corporate diversification

The main result on the relationship between corporate diversification and CAR is presented in table 5. Corporate focus, a dummy variable equal 1 if the target and bidder firm is operating in the same industry, has a positive coefficient indication support of previous literature (Comment & Jarrell, 1995; Jensen, 1986). However, the null hypothesis that the coefficient is equal to zero is accepted at all significance levels, thus, the variable is insignificant. We find no evidence that either corporate

diversification or corporate focus outperform the other when the acquisition is announced.

5.2 Managerial incentives and deal characteristics

In this subsection, we present our findings regarding managerial incentives effects on transaction value and corporate diversification. Based on the previous results and extensive research, we try to link managerial incentives with shareholder wealth.

5.2.1 Transaction size

Results from model 2 are presented on the left-hand side of table 6. We find a statistically significant causal relationship between transaction value and salary, bonus and (fair) value of options. The incentive variables are statistically significant at the 1%-, 10%- and 5%-level respectively, and all positively correlated with transaction size. An increase in salary, bonus or options is expected to increase the transaction value when controlling for firm size. However, performance-based compensation, bonus and options, have a coefficient that is significantly lower in magnitude than its counterpart, fixed compensation. This relationship, given our findings in subsection 5.1.1, supports the findings of Datta et al. (2001) that argued that stock price performance is positively correlated with equity-based compensation. In order to ensure acquisition of smaller target firms, and thus prevent reduced shareholder wealth, our model suggests that CEOs should be incentivized through bonuses and options. If the CEO is only compensated with bonuses or options rather than salary, the transaction value is expected to be reduced by approximately 83 and 98 percent respectively. Put differently, an increase in salary, bonus and value of options by one unit ($1,000) will increase the transaction value by $6.58 million, $1.15 million and $148,047 respectively. Based on the results from subsection 5.1.1, the different incentives result in a decrease in CAR by 0.0032%, 0.0006% and 0.00007%. Thus, the structure of compensation has a significant impact on the acquisition decision in regards to transaction size and announcement returns. Our results also suggest that well-compensated CEOs engage in larger, value-destroying deals.

We extend our analysis to examine whether well-compensated CEOs engage in larger deals by including the variable total compensation. Furthermore, model 3 tests robustness by examine the relationship between transaction value and total compensation and a performance-based pay to total compensation ratio. Right-hand side of table 6 present the results from model 3. Total compensation, the sum of all compensation received by the CEO during the fiscal year, is statistically significant at the 5%-level. In accordance with results from model 2, we find evidence for a positive relationship between CEO compensation and deal size. For every ten unit increase in total compensation ($10,000), transaction value is expected to increase by $1.89 million. Model 3 does not change the overall interpretation of our results. However, we find no evidence that performance-based pay, expressed as a ratio of total compensation, has any explanatory power on deal size. This seem to support our finding from model 2 that not all performance-based compensation affects the size of transaction.

Table 6: Regression results from model 2 and model 3

	Model 2				Model 3			
R-squared	0.3490				0.2899			
Transaction Value ($mil)	Coef.	Robust Std. Err.	t	P>t	Coef.	Robust Std. Err.	t	P>t
Incentive variables								
Salary	6.57929***	1.91543	3.43	0.001				
Bonus	1.149994*	.6981404	1.65	0.100				
Fair Value of Options	.1480474**	.0635102	2.33	0.020				
Fair Value of Stocks	-.004715	.0782897	-0.06	0.952				
CEO ownership	11.74316	107.2744	0.11	0.913	-70.58905	73.15813	-0.96	0.335
Director	-781.4243	3127.538	-0.25	0.803	1145.187	2705.104	0.42	0.672
Total compensation					.1885908**	.0941011	2.00	0.046
Percent performance					-393.5768	2908.708	-0.14	0.892
CEO characteristics								
Male	829.9153	921.8112	0.90	0.369	926.5688	991.5294	0.93	0.351
CEO age	60.50588	59.90375	1.01	0.313	104.1936	64.29523	1.62	0.106
CEO tenure	-56.78502	56.44347	-1.01	0.315	-47.45699	56.21879	-0.84	0.399
Deal characteristics								
Relative Size	4771.754***	1193.635	4.00	0.000	4464.732***	1207.55	3.70	0.000
% of Cash	-1883.449*	1101.062	-1.71	0.088	-1653.447	1134.062	-1.46	0.146
Corporate focus	1235.001	941.6366	1.31	0.191	609.9844	975.5085	0.63	0.532
Bidder characteristics								
Free Cash Flow	7838.67	7128.51	1.10	0.272	11389.42	7951.624	1.43	0.153
Volatility	-541.7263	954.5471	-0.57	0.571	-1543.224	1260.818	-1.22	0.222
Materials	-12610.19**	6025.145	-2.09	0.037	-14146.48**	6429.308	-2.20	0.028
Financials	-13502.41**	5783.296	-2.33	0.020	-15644.09**	6239.737	-2.51	0.013
Consumer Discretionary	-13260.41**	6456.165	-2.05	0.041	-15426.02**	6895.649	-2.24	0.026
Consumer Staples	-14171.84**	5965.907	-2.38	0.018	-15882.12**	6368.258	-2.49	0.013
Information Techonology	-13723.02**	5880.356	-2.33	0.020	-16812.94***	6331.61	-2.66	0.008
Health Care	-13485.12**	5925.755	-2.28	0.023	-15594.18**	6312.395	-2.47	0.014
Industrials	-13527.1**	5902.431	-2.29	0.022	-15931.01**	6369.246	-2.50	0.013
Utilities	-8125.965	6141.374	-1.32	0.187	-9866.5	6416.527	-1.54	0.125
Energy	-12612.46*	6875.007	-1.83	0.067	-13262.4*	7211.347	-1.84	0.067
2008	-3328.459	2268.566	-1.47	0.143	-3850.803	2379.29	-1.62	0.106
2009	-2392.076	3143.791	-0.76	0.447	-1127.438	3203.842	-0.35	0.725
2010	-4800.731*	2463.455	-1.95	0.052	-4699.512*	2575.478	-1.82	0.069
2011	-4103.446	2682.702	-1.53	0.127	-4339.037	2845.2	-1.53	0.128
2012	-6254.512**	2749.709	-2.27	0.024	-5698.123**	2755.594	-2.07	0.039
2013	-5515.717*	2829.587	-1.95	0.052	-5048.988*	2852.656	-1.77	0.078
2014	-4428.544	2832.641	-1.56	0.119	-4386.325	2927.78	-1.50	0.135
2015	-3547.866	2760.57	-1.29	0.200	-3092.221	2810.951	-1.10	0.272
2016	-1981.192	3091.656	-0.64	0.522	-1764.395	3210.139	-0.55	0.583
Constant	9182.706	7123.956	1.29	0.198	12314.06	7591.377	1.62	0.106

***, ** and *, 1%, 5% and 10% respectively

5.2.2 Corporate diversification

Results from our binomial logistic regressions are presented in table 7. Model 4 find a positive causal relationship between the odds of engaging in corporate diversification acquisitions and salary and bonus. Salary and bonus are statistically significant at the 1%- and 5%-level respectively. We expect a 0.098% and 0.035% increase in the odds of corporate diversification (dependent variable equal to zero) for one-unit increase in salary and bonus respectively. If we compare a well-compensated CEO with $1.5 million in salary with an average-compensated CEO at $900,000, the well-compensated CEO's odds of engaging in corporate diversification is 58.8% higher than the average-compensated CEO. A similar

difference in bonuses only result in 21% higher odds between the two. Our findings suggest that the structure of compensation affect acquisition decisions regarding corporate diversification. That is, higher performance-based compensation is less likely to incentivize the CEO to engage in corporate diversification. Based on previous research on the negative profitability of corporate diversification (Comment & Jarrell, 1995; Jensen, 1986; Lang & Stulz, 1994; Lins & Servaes, 1999; Palich et al., 2000), we can argue that performance-based compensation prevents value-destroying acquisitions.

In addition to salary and bonus, we find that the director dummy variable is significant at the 1% significance level. If the CEO served as a chairman of the board of director, the probability of a corporate diversification acquisition is only 6.58%[3]. This might shed light on "largely inconclusive" findings on CEO duality (Peng, Li, Xie, & Su, 2010). We did not find any evidence that corporate diversification affects the 5-day CAR at announcement. However, our results on CEO duality on corporate diversification combined with previous research (Comment & Jarrell, 1995; Jensen, 1986; Lang & Stulz, 1994; Lins & Servaes, 1999; Palich et al., 2000) implies that CEO duality may be both a structural and psychological empowerment of the CEO, thus encouraging a CEO to better serve the firm and its shareholders (Davis et al., 1997). Hence, CEO duality decreases the likelihood that CEOs enrich themselves at the cost of shareholders, as opposed to the arguments of e.g. Dorata and Petra (2008) who argue that CEO duality provide rich opportunities to make sub-optimal decisions because it reduces effective monitoring.

[3] Probability of corporate diversification: 1- (14.20827/(14.20827+1)) = 0.0658

Table 7: Regression results from model 4 and model 5

	Model 4				Model 5			
Corporate focus	Odds Ratio	Robust Std. Err.	z	P>z	Odds Ratio	Robust Std. Err.	z	P>z
Incentive variables								
Salary	.9990237***	.0003578	-2.73	0.006				
Bonus	.9996535**	.0001618	-2.14	0.032				
Fair Value of Options	.9999783	.0000338	-0.64	0.520				
Fair Value of Stocks	1.000001	.0000176	0.05	0.963				
CEO ownership	1.012258	.0353606	0.35	0.727	1.024431	.0295025	0.84	0.402
Director	14.20827***	14.64117	2.58	0.010	9.283436**	9.46128	2.19	0.029
Total compensation					.9999701	.0000189	-1.58	0.113
Percent performance					1.265707	.7754916	0.38	0.701
CEO characteristics								
Male	2.028321	1.153502	1.24	0.214	1.854515	1.098858	1.04	0.297
CEO age	.9968918	.0199401	-0.16	0.876	.9932909	.0195189	-0.34	0.732
CEO tenure	.993773	.0224361	-0.28	0.782	.9929414	.0219812	-0.32	0.749
Deal characteristics								
Transaction Value ($ mil)	1.000024	.0000158	1.54	0.123	1.000012	.0000157	0.75	0.451
Relative Size	1.869642**	.5966391	1.96	0.050	2.010612**	.6544774	2.15	0.032
% of Cash	1.040363	.3812723	0.11	0.914	.9991824	.3692617	-0.00	0.998
Bidder characteristics								
Large Equity	1.303899	.6495719	0.53	0.594	1.120503	.5512023	0.23	0.817
Free Cash Flow	1.735396	4.627415	0.21	0.836	1.243622	3.277896	0.08	0.934
Consumer Discretionary	2.398577	2.288534	0.92	0.359	2.388326	2.024057	1.03	0.304
Energy	11.51748**	13.13227	2.14	0.032	8.977085**	9.550233	2.06	0.039
Financials	10.33827**	10.62841	2.27	0.023	8.67903**	7.409254	2.53	0.011
Health Care	2.316534	2.177025	0.89	0.371	2.257157	1.835573	1.00	0.317
Industrials	3.035922	2.787207	1.21	0.226	3.156527	2.48188	1.46	0.144
Information Technology	4.098609	3.783835	1.53	0.127	4.379279*	3.470969	1.86	0.062
Materials	2.834145	2.563458	1.15	0.249	2.636347	2.063854	1.24	0.216
Consumer Staples	4.094528	4.487916	1.29	0.198	3.641897	3.514635	1.34	0.180
Utilities	6.932962*	7.27067	1.85	0.065	6.626964**	6.224543	2.01	0.044
2008	1.616003	1.212509	0.64	0.522	1.700141	1.246921	0.72	0.469
2009	3.250324**	1.874992	2.04	0.041	2.808046*	1.574654	1.84	0.066
2010	3.270122**	1.766688	2.19	0.028	3.11621**	1.630608	2.17	0.030
2011	2.228167	1.30067	1.37	0.170	2.265039	1.275811	1.45	0.147
2012	3.365357**	1.889527	2.16	0.031	2.954586*	1.586882	2.02	0.044
2013	5.86235***	3.618078	2.87	0.004	5.49261***	3.228633	2.90	0.004
2014	2.553898*	1.450861	1.65	0.099	2.395859	1.324181	1.58	0.114
2015	3.566084**	2.025771	2.24	0.025	3.341837**	1.858344	2.17	0.030
2016	3.237874**	1.8079	2.10	0.035	3.096555**	1.688512	2.07	0.038
Constant	.006345	.0124208	-2.58	0.010	.0061969	.0121661	-2.59	0.010
Psuedo R-squared		0.1044				0.0857		

***, ** and *, 1%, 5% and 10% respectively

Results from model 4 indicate that total compensation, not only the structure of compensation, affect the CEOs attitude towards corporate focus and diversification. That is, both salary and bonus increase the odds of engaging in corporate diversification (dependent variable equal to 0). We perform a similar model with total compensation and performance-based pay to total compensation ratio to check the robustness of our findings. Model 5, reported on the right-hand side of table 7, show some interesting differences compared to model 4. In model 5, we find no empirical evidence that total compensation affects decisions of corporate diversification. It is rejected at all significance levels with a p-value of

0.113. This reflect a similar interpretation as model 4. That is, not all compensation has an explanatory power on the decision to acquire across industries. However, the robustness check does not change the overall interpretation of CEO duality (director dummy), which remain significant, at the 5%-level. The probability of corporate diversification acquisition is 9.72%[4] when the CEO is a chairman at the board of directors, up from 6.58% in model 5. Alignment of CEO- and shareholder interests due to CEO duality is implied across both models.

5.3 Possible explanations of our findings and why CEOs engage in value-destroying acquisitions

Our results imply that fixed managerial compensation incentivizes sub-optimal acquisition in comparison to performance-based pay. This raises the question why CEOs engage in sub-optimal acquisitions, i.e. large acquisitions and corporate diversification acquisitions. Harford et al. (2012) discussed how managers acquire value-destroying targets due to incentives of empire building. The positive relationship between CEO compensation and transaction value can be explained by the motivation of increased power and private benefits associated with larger firms. A substantial part of the variation in managerial bonus in mergers and acquisitions is explained by deal size and managerial power (Grinstein & Hribar, 2004). Their perspective may explain why CEOs pursue large deal, even when it destroys shareholder value. In addition, Wright, Kroll, and Elenkov (2002) showed that increased compensation is explained by increased firm size where external monitoring is weak. Hence, the acquisition of a large firm is expected to increase the CEOs total compensation, power and private benefits; all of which incentivizes the CEO to pursue large deals.

Jensen (1986) and Stulz (1990) argued that power and prestige associated with managing a larger firm motivate CEOs to acquire firms outside its own industry. Another incentive for corporate diversification is higher managerial compensation related to firm size (Jensen & Murphy, 1990). Shleifer and Vishny (1989) presented the argument that corporate diversification helps make the CEO

[4] Probability of corporate diversification: 1 – (9.283436/(9.283436 +1)) = 0.0972

indispensable to the firm. All arguments are similar to the argument that managerial entrenchment and empire building drive value-destroying acquisitions (Harford et al., 2012; Masulis et al., 2007). That is, CEOs engage in acquisitions to increase his/her private benefits, even at the cost of shareholders.

Our findings may also have roots in the free cash flow theory that is closely related to the arguments above. Excess free cash flow may induce conflict of interest between CEO and shareholders. CEOs with higher performance-based incentives and CEOs with aligned interest with shareholders through CEO duality would be more inclined to pay out free cash flow to shareholders to maximize shareholder wealth rather than engage in managerial entrenchment and empire building (Jensen, 1987).

6.0 Conclusion

This paper studies the relationship between managerial incentives and shareholder wealth through value-destroying acquisitions. Initially, we study announcements of acquisitions to examine if transaction size or corporate diversification is positively or negatively related to cumulative abnormal return (CAR). CAR is obtained through an event study and used as the dependent variable in an ordinary least square (OLS) regression analysis. Our model finds evidence of a negative relationship between transaction size and announcement returns. However, we are not able to find a statistically significant relationship between corporate diversification acquisitions and announcement returns. Despite no evidence that either corporate diversification or corporate focus outperform the other, we argue that previous, conclusive research show that corporate diversification is negatively associated with firm performance and firm value (Comment & Jarrell, 1995; Jensen, 1986; Lang & Stulz, 1994; Lins & Servaes, 1999; Palich et al., 2000) and thus shareholder wealth. We identify acquisitions of large targets and across industries to be value-destroying acquisitions.

Further, we examine if managerial incentives affect acquisition decisions regarding transaction size and corporate diversification. The relationship between managerial incentives and transaction size is studied with an OLS regression model. We find evidence that salary, bonus and (fair) value of options are positively

correlated with transaction size. Salary increase transaction size significantly more than bonus and value of options, implying that the structure of compensation affects the acquisition decision. In addition, our results suggest that well-compensated CEOs engage in larger, less profitable deals. We test this by substituting salary, bonus, value of options and stocks with total compensation and a performance-based compensation ratio, and find that transaction size is increasing in total compensation. We conclude that well-compensated CEOs engage in value-destroying acquisitions, which is robust across both models. Moreover, our model imply that performance-based compensation, i.e. bonus and options, prevents value-destruction to some extent compared to fixed compensation.

We find similar results when we perform a logistic regression analysis on corporate diversification and managerial incentives. Salary and bonus are both increasing in the probability of engaging in corporate diversification. However, salary is significantly more likely to incentivize diversifying acquisitions compared to bonus. Thus, we argue that performance-based compensation prevents value-destroying acquisitions. Another interesting finding is that CEO duality is negatively related to the probability of engaging in corporate diversification. We argue that CEO duality align interests between CEO and shareholders, and thus prevent value-destroying acquisitions.

Our thesis suggests that shareholders should focus on performance-based compensation and inclusion of the CEO among board of directors to maximize shareholder wealth in acquisitions. Among all types of compensation, options incentivize CEOs the most to acquire firms that maximizes announcement return and thus shareholder wealth. On the other hand, fixed compensation gives the CEO least incentives to acquire optimal target firms. We conclude that performance-based compensation and CEO duality prevent value-destroying acquisitions to some extent.

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Appendix

Appendix A: Variable description

Variable name	Description
Transaction Value	Total value of consideration paid by the acquirer, excluding fees and expenses. The dollar value includes the amount paid for all common stock, common stock equivalents, preferred stock, debt, options, assets, warrants, and stake purchases made within six months of the announcement date of the transaction. Liabilities assumed are included in the value if they are publicly disclosed. Preferred stock is only included if it is being acquired as part of a 100% acquisition.
Corporate Focus	Dummy variable equal to 1 if target is within acquirers industry, 0 if acquisition is diversifying.
Salary	The dollar value of the base salary (cash and non-cash) earned by the named executive officer during the fiscal year. Units: Thousands of dollars.
Bonus	The dollar value of a bonus (cash and non-cash) earned by the named executive officer during the fiscal year. Units: Thousands of dollars.
Fair Value of Options Granted	Value of the CEO's Option Awards according to FAS 123R (Financial Accounting Standard by the Financial Accounting Standard Board).
Fair Value of Stocks Awarded	Value of the CEO's Stock Awards according to FAS 123R (Financial Accounting Standard by the Financial Accounting Standard Board).
Total Compensation	Total compensation for the individual year, comprised of the following: Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black-Scholes), Long-Term Incentive Payouts, and All Other Total.
Percent Performance	Percentage performance-based compensation of total compensation. (Bonus + Options + Stocks)/Total Compensation
CEO Ownership	Percentage of total shares owned by the CEO in the same year as the announcement.
Director	Dummy variable equal to 1 if the CEO served as a director during the fiscal year, 0 if the CEO did not serve as a director during the fiscal year.
CEO Age	Age of the executive as reported in the annual proxy statement
CEO Tenure	Calculated as Announcement date – date became CEO.
Male	Indicates the gender of the CEO. Equals 1 for male, and 0 for woman.
Relative Size	Acquirer total assets/target total assets, at the end of the fiscal year prior to announcement.
% of Cash	Percentage of consideration paid in cash: Value paid in cash divided by total value.
Large Equity	Acquirer. Dummy variable equal to 1 if market value of equity is above $100 million, 0 otherwise.
Free Cash Flow	Free cash flow at the end of the fiscal year prior to announcement. Calculated as operating (income before depreciation – total interest and related expenses – total income taxes - capital expenditures)/total assets
Leverage	Leverage at the end of the fiscal year prior to announcement. Calculated as (total debt in current liabilities + total long-term debt)/shareholders' equity.
Tobin's q	Tobin's q at the end of the fiscal year prior to announcement. Calculated as (total assets + market value on equity – total common equity)/total assets
Volatility	Annualized volatility. Standard deviation of inter-day return multiplied by the square root of 252 (assumed 252 business days in a year).

Appendix B: Pearson correlation matrix 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
(1) CAR5	1.0000																											
(2) Transaction value	-0.0931	1.0000																										
(3) Diversification	0.0665	-0.0105	1.0000																									
(4) Large Equity	-0.0523	0.3360	-0.0816	1.0000																								
(5) Relative Size	0.0164	0.1324	0.0186	-0.0958	1.0000																							
(6) % of Cash	0.1302	-0.1744	-0.0763	0.0825	-0.2115	1.0000																						
(7) Tobins' Q	0.0296	0.0056	0.0331	0.0860	-0.0285	0.1697	1.0000																					
(8) Free cash flow	0.0629	0.0166	-0.0335	0.1359	-0.0415	0.3092	0.4929	1.0000																				
(9) Leverage	0.0192	0.0001	-0.0064	0.0045	0.0176	-0.0914	0.0006	-0.0041	1.0000																			
(10) Volatility	0.0317	-0.1030	0.0525	-0.1485	0.0841	-0.1110	-0.1254	-0.0687	-0.0003	1.0000																		
(11) Materials	-0.0130	0.0766	-0.0190	0.1048	-0.0250	0.0470	0.1708	0.2001	-0.0517	-0.0646	1.0000																	
(12) Health Care	0.0150	-0.0492	-0.0809	-0.1224	-0.0610	0.1928	0.0348	0.1193	-0.0610	-0.0220	-0.1919	1.0000																
(13) Energy	-0.0957	0.0415	0.0738	-0.0022	-0.0018	-0.2982	-0.0743	-0.3406	-0.0280	0.0190	-0.0724	-0.0767	1.0000															
(14) Financials	-0.0312	-0.0532	0.0951	-0.0770	0.2018	-0.1083	-0.1416	-0.1496	-0.0459	0.0540	-0.1014	-0.1074	-0.0405	1.0000														
(15) Discretionary	0.0210	0.0259	-0.0284	-0.0009	0.0936	-0.0623	0.0812	0.0199	0.1378	-0.0057	-0.1271	-0.1345	-0.0508	-0.0711	1.0000													
(16) Industrials	-0.0109	-0.0746	-0.0338	0.0199	-0.0459	-0.0285	-0.1005	0.0381	0.0332	0.0155	-0.1901	-0.2012	-0.0760	-0.1064	-0.1333	1.0000												
(17) Staples	-0.0253	-0.0376	-0.0197	-0.0227	-0.0290	0.0780	0.0278	-0.0039	0.0019	-0.0626	-0.0879	-0.0931	-0.0351	-0.0492	-0.0617	-0.0922	1.0000											
(18) Utilities	-0.0339	0.0804	0.0304	-0.0623	0.0264	-0.1719	-0.1376	-0.2822	0.1417	-0.0720	-0.0820	-0.0868	-0.0328	-0.0459	-0.0575	-0.0860	-0.0398	1.0000										
(19) IT	0.0534	-0.1435	0.0987	-0.0522	-0.0499	0.1328	0.0669	0.0631	-0.0589	0.1189	-0.2328	-0.2464	-0.0930	-0.1303	-0.1633	-0.2442	-0.1129	-0.1054	1.0000									
(20) 2008	-0.0705	-0.0829	-0.0147	-0.0710	-0.0196	0.0004	0.1520	0.0052	-0.0412	0.0651	-0.0258	0.0313	-0.0374	0.0559	-0.0211	-0.0325	-0.0454	-0.0423	0.0828	1.0000								
(21) 2009	0.0820	0.0518	0.0071	-0.0045	0.1156	-0.1214	-0.0639	0.0667	-0.0597	0.3650	0.0729	-0.0957	-0.0116	0.0588	-0.0768	0.0584	-0.0327	-0.0686	0.0360	-0.0782	1.0000							
(22) 2010	0.0185	-0.1008	0.0054	-0.0324	-0.0760	0.0283	-0.0794	-0.0387	-0.0471	-0.0257	0.0082	0.0497	0.0629	-0.0002	-0.0422	-0.0257	-0.0107	-0.0002	0.0019	-0.0898	-0.1456	1.0000						
(23) 2011	-0.0415	-0.0064	-0.0220	-0.0536	0.0236	-0.0187	-0.0717	0.0121	-0.0585	-0.0293	0.0396	0.0241	-0.0077	0.0295	-0.0717	0.0041	-0.0707	0.0688	-0.0285	-0.0752	-0.1219	-0.1399	1.0000					
(24) 2012	-0.0699	-0.0961	0.0046	0.0007	-0.0531	0.0511	0.0416	0.0770	-0.0213	0.0085	0.0127	-0.0020	-0.0590	0.0639	0.0772	-0.0218	0.0117	-0.0224	-0.0523	-0.0762	-0.1235	-0.1418	-0.1187	1.0000				
(25) 2013	0.1554	-0.0450	0.0861	-0.0123	-0.0025	0.0540	-0.0848	-0.0697	0.1119	0.0029	0.0362	-0.0018	-0.0007	-0.0366	0.0017	-0.0234	-0.0211	-0.0138	0.0150	-0.0700	-0.1134	-0.1302	-0.1090	-0.1105	1.0000			
(26) 2014	0.1051	0.0028	-0.0034	-0.0123	0.0309	0.0014	0.0083	-0.0248	-0.0064	-0.1292	0.0117	-0.0490	-0.0542	-0.0759	-0.0305	0.0004	0.1575	0.0815	-0.0060	-0.0700	-0.1134	-0.1302	-0.1090	-0.1105	-0.1014	1.0000		
(27) 2015	-0.0431	0.0390	0.0362	0.1215	-0.0199	0.0253	0.1259	0.0200	0.0641	-0.1033	-0.0266	0.0056	-0.0064	-0.0430	0.0531	-0.0147	0.0155	0.0258	0.0159	-0.0742	-0.1202	-0.1380	-0.1155	-0.1171	-0.1075	-0.1075	1.0000	
(27) 2016	-0.1181	0.0755	0.0141	0.0260	-0.0094	-0.0051	-0.0229	-0.0296	-0.0404	-0.0567	-0.0363	0.0380	0.0391	-0.0112	0.0143	0.0187	-0.0726	-0.0237	0.0020	-0.0772	-0.1252	-0.1437	-0.1203	-0.1219	-0.1119	-0.1119	-0.1187	1.0000

Appendix C: Pearson correlation matrix 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
(1) Transaction value	1.0000																																		
(2) Diversification	-0.0105	1.0000																																	
(3) Salary	0.3869	-0.1797	1.0000																																
(4) Bonus	0.1112	-0.0681	0.1025	1.0000																															
(5) Options	0.0432	-0.0398	0.0929	0.0287	1.0000																														
(6) Stocks	0.1370	-0.0763	0.3218	0.0425	0.0053	1.0000																													
(7) CEO Ownership	-0.1013	0.0495	-0.2351	0.0088	0.2117	-0.1162	1.0000																												
(8) Director	-0.0128	0.0869	0.0506	-0.0015	0.0449	-0.0302	0.0447	1.0000																											
(9) Total Compensation	0.2290	-0.1215	0.5189	0.1256	0.4945	0.7971	-0.0497	-0.0147	1.0000																										
(10) % performance	0.0653	0.0083	0.0902	0.2252	0.2482	0.3656	-0.2208	-0.0048	0.3207	1.0000																									
(11) Male	0.0278	0.0641	-0.0324	0.0464	-0.0533	-0.0791	0.0345	-0.0317	-0.0611	-0.0508	1.0000																								
(12) CEO age	0.0817	-0.0438	0.2104	-0.0676	0.0973	0.0480	0.0109	-0.0489	0.1334	-0.0523	-0.0426	1.0000																							
(13) CEO tenure	-0.0321	0.0079	-0.0396	0.0229	0.1447	-0.0551	0.3619	0.0630	0.0347	-0.0918	0.1120	0.3340	1.0000																						
(14) Relative Size	0.1324	0.0186	-0.0836	0.4617	-0.0790	-0.0131	-0.0263	-0.0212	-0.0272	0.0575	0.0449	0.0123	0.0461	1.0000																					
(15) % of Cash	-0.1744	-0.0763	0.0376	-0.0549	0.1137	0.0086	0.0033	-0.0166	0.0479	0.0261	-0.0520	0.0739	0.0204	-0.2115	1.0000																				
(16) Free Cash Flow	0.0166	-0.0335	0.0469	-0.0389	0.1279	-0.0431	0.0199	0.0514	0.0237	0.0597	-0.0320	0.0147	-0.0410	-0.0415	0.3092	1.0000																			
(17) Volatility	-0.1030	0.0525	-0.2121	0.0256	-0.0609	-0.0718	0.1247	0.0142	-0.1301	-0.0646	-0.1406	-0.0972	0.0459	0.0841	-0.1110	-0.0687	1.0000																		
(18) Materials	0.0766	-0.0190	0.1888	-0.0638	0.0294	0.0100	-0.1153	0.0114	0.0609	-0.0225	0.0597	0.0784	-0.0786	-0.0250	0.0470	0.2001	-0.0646	1.0000																	
(19) Financials	-0.0532	0.0951	-0.1174	0.2144	-0.0282	-0.0347	-0.0258	-0.0457	-0.0416	0.0264	0.0523	-0.0944	0.0263	0.2018	-0.1083	-0.1496	0.0540	-0.1014	1.0000																
(20) Discretionary	0.0259	-0.0284	0.0142	-0.0571	-0.0363	-0.0022	0.1034	-0.0887	0.0150	-0.1014	0.0656	0.0359	0.0152	0.0936	-0.0623	0.0199	-0.0057	-0.1271	-0.0711	1.0000															
(21) Staples	-0.0376	-0.0197	0.0361	-0.0351	0.0434	-0.0436	-0.0564	0.0299	-0.0279	0.0038	-0.2626	0.0385	-0.1008	-0.0290	0.0780	-0.0039	-0.0626	-0.0879	-0.0492	-0.0617	1.0000														
(22) IT	-0.1435	0.0987	-0.2680	0.0130	0.0369	-0.0196	0.2076	0.0790	-0.0840	0.0527	-0.0248	-0.0043	0.1829	-0.0499	0.1328	0.0631	0.1189	-0.2328	-0.1303	-0.1633	-0.1129	1.0000													
(23) Health Care	-0.0492	-0.0809	0.0314	-0.0140	0.0709	-0.0161	-0.0557	0.0651	0.0215	0.0811	0.0664	0.0051	0.0151	-0.0610	0.1928	0.1193	-0.0220	-0.1919	-0.1074	-0.1345	-0.0931	-0.2464	1.0000												
(24) Industrials	-0.0746	-0.0338	-0.0469	-0.0093	-0.0697	-0.0250	-0.0380	-0.0325	-0.0544	-0.0941	-0.0658	-0.0954	-0.0881	-0.0459	-0.0285	0.0381	0.0155	-0.1901	-0.1064	-0.1333	-0.0922	-0.2442	-0.2012	1.0000											
(25) Utilities	0.0804	0.0304	0.0108	-0.0397	-0.0470	0.0163	-0.0223	-0.1666	-0.0059	-0.0135	-0.0234	0.0719	-0.0632	0.0264	-0.1719	-0.2822	-0.0720	-0.0820	-0.0459	-0.0575	-0.0398	-0.1054	-0.0868	-0.0860	1.0000										
(26) Energy	0.0415	0.0738	0.0642	0.0323	-0.0027	0.0533	-0.0234	0.0246	0.0457	0.0763	0.0374	0.0023	-0.0599	-0.0018	-0.2982	-0.3406	0.0190	-0.0724	-0.0405	-0.0508	-0.0351	-0.0930	-0.0767	-0.0760	-0.0328	1.0000									
(27) 2008	-0.0829	-0.0147	-0.1917	0.0037	-0.0386	-0.0580	0.2141	0.0317	-0.1147	-0.0663	-0.0100	-0.2447	0.0289	-0.0196	0.0004	0.0052	0.0651	-0.0258	0.0559	-0.0211	-0.0454	0.0828	0.0313	-0.0325	-0.0423	-0.0374	1.0000								
(28) 2009	0.0518	0.0071	0.0179	0.0780	-0.0101	-0.0466	0.0563	-0.0629	-0.0301	-0.0196	-0.0376	-0.0687	0.0061	0.1156	-0.1214	0.0667	0.3650	0.0729	0.0588	-0.0768	-0.0327	0.0360	-0.0957	0.0584	-0.0686	-0.0116	-0.0782	1.0000							
(29)2010	-0.1008	0.0054	-0.0199	-0.0071	-0.0198	-0.0358	0.0050	-0.0441	-0.0143	-0.0805	0.0898	0.0210	0.0871	-0.0760	0.0283	-0.0387	-0.0257	0.0082	-0.0002	-0.0422	-0.0107	0.0019	0.0497	-0.0257	-0.0002	0.0629	-0.0898	-0.1456	1.0000						
(30) 2011	-0.0064	-0.0220	-0.0651	0.0257	0.0347	-0.0640	-0.0342	-0.0095	-0.0048	-0.0169	0.0354	-0.0116	0.0193	0.0236	-0.0187	0.0121	-0.0293	0.0396	0.0295	-0.0717	-0.0707	-0.0285	0.0241	0.0041	0.0688	-0.0077	-0.0752	-0.1219	-0.1399	1.0000					
(31) 2012	-0.0961	0.0046	0.0104	0.0422	0.0042	-0.0363	-0.0208	0.0501	-0.0470	0.0539	-0.0026	0.0168	-0.0073	-0.0531	0.0511	0.0770	0.0085	0.0127	0.0639	0.0772	0.0117	-0.0523	-0.0020	-0.0218	-0.0224	-0.0590	-0.0762	-0.1235	-0.1418	-0.1187	1.0000				
(32) 2013	-0.0450	0.0861	0.0162	-0.0061	0.0809	0.0039	0.0648	-0.0165	0.0404	0.0018	0.0277	0.0417	0.0390	-0.0025	0.0540	-0.0697	0.0029	0.0362	-0.0366	0.0017	-0.0211	0.0150	-0.0018	-0.0234	-0.0138	-0.0007	-0.0700	-0.1134	-0.1302	-0.1090	-0.1105	1.0000			
(33) 2014	0.0028	-0.0034	-0.0114	-0.0195	-0.0381	-0.0109	-0.0533	0.0460	-0.0540	0.0254	0.0277	0.0690	0.0197	0.0309	0.0014	-0.0248	-0.1292	0.0117	-0.0759	-0.0305	0.1575	-0.0060	-0.0490	0.0004	0.0815	-0.0542	-0.0700	-0.1134	-0.1302	-0.1090	-0.1105	-0.1014	1.0000		
(34) 2015	0.0390	0.0362	0.0918	-0.0740	-0.0122	0.0772	-0.0701	0.0488	0.0619	0.1178	-0.0869	0.0375	-0.1245	-0.0199	0.0253	0.0200	-0.1033	-0.0266	-0.0430	0.0531	0.0155	0.0159	0.0056	-0.0147	0.0258	-0.0064	-0.0742	-0.1202	-0.1380	-0.1155	-0.1171	-0.1075	-0.1075	1.0000	
(35) 2016	0.0755	0.0141	0.0305	-0.0304	0.0051	0.0483	-0.0485	-0.0069	0.0392	0.0127	-0.0008	0.0181	0.0200	-0.0094	-0.0051	-0.0296	-0.0567	-0.0363	-0.0112	0.0143	-0.0726	0.0020	0.0380	0.0187	-0.0237	0.0391	-0.0772	-0.1252	-0.1437	-0.1203	-0.1219	-0.1119	-0.1119	-0.1187	1.0000

Appendix D: Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

Ho: Constant variance
Variables: fitted values of CAR

	Model 1	Model 2	Model 3
chi2(1)	8.83	870.46	843.46
Prob > chi2	0.0030***	0.0000***	0.0000***

***: Ho rejected at 1%

Appendix E: VIF-tests, model 1-3

Model 1		
Variable	VIF	1/VIF
Information Technology	6.74	0.148441
Health Care	5.57	0.179389
Industrials	5.20	0.192323
Materials	4.92	0.203206
Consumer Discretionary	3.30	0.303385
Financials	2.59	0.386554
2010	2.47	0.405253
2009	2.45	0.407856
Consumer Staples	2.28	0.438796
2012	2.16	0.463300
2011	2.13	0.468782
2016	2.08	0.480000
Utilities	2.04	0.490061
2015	2.01	0.497038
2013	2.01	0.497122
2014	1.97	0.508779
Energy	1.93	0.518421
Free Cash Flow	1.86	0.537496
Tobin's q	1.66	0.600640
2008	1.58	0.633312
Relative Size	1.52	0.658643
% of Cash	1.51	0.662534
Transaction Value	1.49	0.670151
Large Equity	1.40	0.715437
Volatility	1.28	0.781515
Leverage	1.11	0.904947
Corporate focus	1.10	0.911534
Mean VIF	2.46	

Model 2		
Variable	VIF	1/VIF
Information Technology	6.40	0.156130
Health Care	5.02	0.199289
Industrials	4.85	0.206137
Materials	4.58	0.218267
Consumer Discretionary	3.10	0.322171
Financials	2.56	0.391090
2009	2.50	0.399728
2010	2.48	0.403453
Consumer Staples	2.27	0.441139
2011	2.12	0.472315
2012	2.12	0.472383
2016	2.08	0.481666
Utilities	2.05	0.488273
2013	2.00	0.500428
2015	1.98	0.504264
2014	1.96	0.510745
Energy	1.86	0.537225
2008	1.70	0.587161
Salary	1.65	0.605568
Free Cash Flow	1.54	0.648418
CEO Tenure	1.50	0.665112
% of Cash	1.49	0.670526
CEO Ownership	1.41	0.708380
CEO Age	1.37	0.729470
Volatility	1.34	0.747925
Relative Size	1.33	0.749306
Male	1.20	0.834986
Fair Value Options Granted	1.18	0.850472
Fair Value Stocks Awarded	1.15	0.868264
Interindustrials	1.14	0.878909
Director	1.12	0.891456
Bonus	1.12	0.895046
Mean VIF	2.19	

Model 3		
Variable	VIF	1/VIF
Information Technology	5.86	0.170591
HealthCare	4.77	0.209432
Industrials	4.58	0.218290
Materials	4.46	0.224193
Consumer Discretionary	3.01	0.332516
2009	2.48	0.403299
2010	2.47	0.405041
Financials	2.34	0.428097
Consumer Staples	2.20	0.455459
2012	2.14	0.466344
2011	2.09	0.478828
2016	2.08	0.480953
Utilities	2.01	0.496520
2015	2.00	0.498961
2013	1.99	0.501749
2014	1.98	0.506193
Energy	1.86	0.538142
2008	1.70	0.587920
Free Cash Flow	1.53	0.654947
CEO Tenure	1.50	0.667689
% of Cash	1.49	0.672142
CEO Ownership	1.37	0.730355
CEO Age	1.35	0.739530
Relative Size	1.34	0.745189
Volatility	1.31	0.762197
Total Compensation	1.31	0.763214
Percent Performance	1.30	0.766484
Male	1.19	0.839285
Interindustrials	1.12	0.894210
Director	1.11	0.901125
Mean VIF	2.20	

Appendix F: Specification tests, model 4 and 5

Model 4

Number of obs	391
LR chi2(2)	56.45
Prob > chi2	0.0000
Pseudo R2	0.1060
Log likelihood	-238.02

Corporate focus	Coef.	Std. Err.	z	P>z
_hat	.9149223	.1775391	5.15	0.000
_hatsq	-.1283189	.1445055	-0.89	0.375
_cons	.0504486	.129152	0.39	0.696

Model 5

Number of obs	391
LR chi2(2)	47.03
Prob > chi2	0.0000
Pseudo R2	0.0883
Log likelihood	-242.73

Corporate focus	Coef.	Std. Err.	z	P>z
_hat	.8847917	.1886139	4.69	0.000
_hatsq	-.2045572	.180446	-1.13	0.257
_cons	.0705121	.1325656	0.53	0.595